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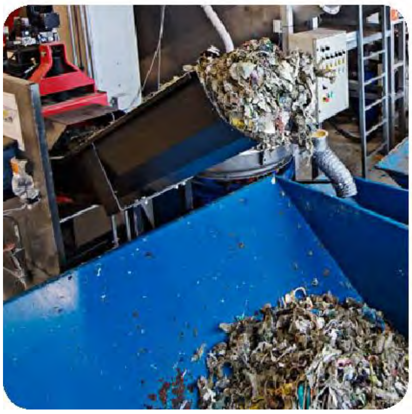


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Non-Technical Summary

Introduction

DONG Energy proposes to develop **REnescience Northwich**, a bioresources facility that will recover recyclable materials from waste and generate renewable electricity at the Lostock Works industrial site near Lostock Gralam and Northwich, Cheshire. The proposed facility will have a nominal capacity to treat up to 144,000 tonnes of waste per year, using 'REnescience' technology, anaerobic digestion and mechanical sorting.

In the REnescience process, enzymes are used to remove biodegradable material from waste, resulting in cleaner, higher quality recyclable materials (such as plastics, metals and aggregates) that can be used elsewhere. Anaerobic digestion of the separated biodegradable material produces biogas, which is then used to generate renewable heat and electricity. The REnescience and anaerobic digestion treatments are low-temperature, biological processes: the proposed development does not involve waste incineration. it is designed to treat the mixed, left-over ('residual') waste that remains after recyclable materials have already been separately collected. It will therefore complement existing recycling schemes and help to improve the overall recycling rate by recovering materials from waste that might otherwise have been landfilled or incinerated.

DONG Energy is one of the leading energy groups in northern Europe, headquartered in Denmark, with around 6,500 employees including 600 in the UK. This project has been developed by DONG's New Bio Solutions arm, which promotes low-carbon alternatives to conventional fossil-fuelled energy generation.

The proposed development site is presently-disused brownfield land, with a more than 100-year history of industrial use in the chemical industry, and is located within the active Lostock Works chemical industry complex.

A planning application is being submitted to Cheshire West and Chester Council (CWCC), which is the waste planning authority for the area in which the proposed development site is located. In its Local Plan, CWCC has allocated the proposed development site for waste treatment uses.

The planning application includes a Planning Statement, Environmental Statement (ES), Design and Access Statement (D&AS) and Statement of Community Involvement (SoCI). The Planning Statement explains the need for the proposed development and how it meets the goals of CWCC's development planning policies in the Local Plan. The D&AS describes how the design of the development has evolved and shows the final design proposed, while the SoCI describes how the public and other stakeholders have been consulted, and summarises the feedback that has been received. It may be helpful to read the D&AS and SoCI alongside this document.

This document is a non-technical summary of the ES, which has been written to convey the findings of the Environmental Impact Assessment (EIA) of the proposed development that has been undertaken. The ES documents are in four volumes, as follows.

Volume 1 (Non-Technical Summary) is this document. On the following pages, it briefly describes the proposed development, explains the EIA process, and summarises the findings of the EIA studies, drawing attention to any significant environmental effects that are predicted to be caused by the proposed development. It is written in non-technical language for a general public audience.

Volume 2 (ES Chapters) describes the approach and results of the assessments carried out in each environmental topic area. Chapter 1 goes into more detail about the EIA process; Chapter 2 fully describes the proposed development and the environmental setting and history of the site on which it will be constructed; and Chapter 3 explains how environmental issues raised by CWCC, various consultees and members of the public have been responded to. The remaining chapters give the technical findings of each EIA study and contain detailed technical content.

Volume 3 (ES Appendices) contains all of the appendices and annexes to the ES chapters. These give further technical detail and data supporting the studies, and also contain environmental management plans such as those for managing the construction period, including noise and traffic, the landscape planting, and odour control during operation (which will be regulated by the Environment Agency under an Environmental Permit).

Volume 4 (ES Figures) contains the plans, drawings and figures for each ES chapter. Figures 2.A to 2.L in this volume show the development site location, a bird's eye view of the proposed layout of the site, and ground-level drawings of its elevations. Together with the D&AS, the figures will be helpful to look at when reading this non-technical summary.

Environmental Impact Assessment

EIA is a process that seeks to identify and study the likely significant environmental impacts of a development, in order to recommend measures that avoid, reduce or offset any significant harmful (adverse) effects and that help maximise any potential beneficial effects or environmental enhancement opportunities. EIA studies the baseline (the existing and future situation without the development) and how this may change if the development were to proceed.

EIA is employed when the nature or scale of a proposed development means that it is considered to have the potential to cause significant environmental effects. 'Environment' in this context means both the natural and human world, including elements such as natural habitats and species, air, water and land quality, places where people live, roads, footpaths and workplaces. It also includes less tangible elements such as landscape character and cultural heritage.

The ES talks about 'impacts' and 'effects' and makes a distinction between these. Impacts are changes in the environment caused by some aspect of the proposed development's construction or operation and effects are the consequences of an impact. For example, construction work will cause noise that isn't currently present on the site, which is an impact. The effect of this noise might be to cause disturbance and annoyance to people in nearby residences, if it were loud enough to be noticeable and intrusive. If this effect were potentially significant, the impact could be mitigated (e.g. by limiting working hours or using an alternative construction technique) to reduce the effect. Impacts and effects can be adverse or beneficial.

The 'significance' of an effect is based on the magnitude of the impact together with the importance and sensitivity of the element of the environment (the 'receptor') that is affected. The size of an impact is described in a range from negligible, low, medium to high, or there may be no change (a neutral impact). Taking into account the importance and sensitivity of the receptor, the resulting effect may be described as being negligible, low, moderate or major. Typically, effects that are negligible or low are not considered to be significant, whereas moderate or major effects may be. EIA studies and the evaluation of the significance of effects are carried out using professional guidance or standards, and with regard to legislation protecting specific elements of the environment, but also rely upon the professional judgement of the topic expert who has undertaken the assessment.

The EIA studies are based upon the development design as specified in Chapter 2 of Volume 2 of the ES and the planning application drawings, and use up-to-date baseline information gathered from published sources and surveys undertaken specifically for the project. Where there is uncertainty in the assessments, which is inherent to some degree when predicting future impacts and effects, the EIA takes a conservative approach and uses 'worst-case' assumptions, erring on the side of caution with regard to adverse impacts.

The EIA studies also consider potential cumulative effects that may result from the combination of impacts from the proposed development and other major developments that are proposed or have planning consent but have not yet been constructed. This may involve assessing the combined impact of the proposed development and other developments together (e.g. additional traffic from multiple developments on local roads) or may involve assessing impacts on new receptors introduced by other developments (e.g. new residential areas).

EIA is carried out at the same time as a proposed development is being designed and the public and other stakeholders are being consulted. In this way it can influence the design and respond to concerns about environmental impacts that are raised during consultation. Mitigation and enhancement measures therefore become included in the proposed development design, with the goal of ensuring that significantly adverse environmental effects are avoided and advantage is taken of opportunities for beneficial effects. Mitigation and enhancement measures, being embedded into the proposed scheme for which planning permission is being sought, will be secured by the planning consent if granted.

The following topic areas have been studied as part of the EIA undertaken for the proposed development. The conclusions of each assessment are summarised on the following pages.

- Landscape and Visual Impact
- Archaeology and Cultural Heritage
- Traffic and Transport
- Ecology and Nature Conservation
- Hydrology and Flood Risk

- Geology and Ground Conditions
- Air Quality and Odour
- Noise and Vibration

The Proposed Development

Site location and setting

The proposed development site is located off the A530 Griffiths Road, near Northwich and Lostock Gralam, Cheshire, at national grid reference 367920, 374201. The main site (excluding the shared access road within Lostock Works) is approximately 3.37 ha in size. It is a brownfield site with a more than 100-year history of industrial use, including chemicals and munitions, that was most recently used for chlorine manufacturing until 2001. At present, the site is disused and has been cleared to ground level, with only some foundation slabs, hardstanding/roadways and a disused one-storey security hut outside the entrance gate remaining. Some further site investigation and site clearance (removal of concrete slabs and foundations) is anticipated during 2015.

Photographs taken in July 2015 of the proposed development site in its baseline condition are shown overleaf.

The proposed development site is set in a predominantly industrial area of existing and former chemical industry works operated by Tata Chemicals, Solvay and INEOS Enterprises, and previously by others including ICI and Brunner Mond. It is approximately 0.6 km from the residential outskirts of Northwich and Rudheath to the west and south (or around 2 km from Northwich town centre), and 1.2 km from the village of Lostock Gralam to the east. The closest residences are on the north side of A559 Manchester Road, approximately 180 m to the north of the site, separated from it by a rail line, a tree belt and area of open space, warehouses and commercial developments, and the A559. To the west of the site is another cleared brownfield site formerly used for coal and limestone stockpiles.

Immediately to the south of the site is Wade Brook, and further south is Griffiths Park, a former lime bed and landfill that has been redeveloped into a park/recreation area. This is separated from the site by a rail siding, conveyor structure and chemical recycling works, adjacent to the park's northern boundary. The Trent and Mersey Canal runs roughly north-south between the Tata Chemicals and INEOS chemical works and the A530, to the east of the proposed development site. The canal is used by pleasure craft and its towpath (around 420 m from the proposed development site at the closest point) is a public right of way, separated from the chemical works by security fencing.

The site itself is not covered by any statutory nature conservation designations, has little vegetation and is of low ecological value. Nature conservation sites in the local area include the Ashton's and Neumann's Flashes Local Wildlife Site (900 m distance) and the Plumley Lime Beds and the Witton Lime Beds Site of Special Scientific Interest (SSSI) at around 1.5 km distance.

The historic character of the site setting is one of active industry, with the Lostock Works site and surroundings having been used for chemical and other industrial works since the late 19th century. The

Trent and Mersey Canal is a conservation area, and the nearest scheduled monument, Lion Salt Works, is adjacent to the canal around 1.3 km north of the development site. There is evidence for Roman and later activity in the wider area, including working of salt and the probable alignment of a Roman road on the eastern side of the proposed development site.

Photo 1: Looking east-south-east from western end

Photo 2: Looking west-north-west from western end

Photo 3: Looking east from western end

Photo 4: looking north-east from central southern end

Photo 5: Looking south-west from central southern end

Approximate photograph locations

The site is accessed via an existing private road serving the cluster of chemical industry facilities on the Lostock Works site, from a junction with the A530 around 0.5 km south (as the crow flies) of the proposed development site boundary.

The area is well served by road and rail communications. The nearest access to and from the M6 is at Junction 19, located approximately 7 km to the north east of the site via the A556. The A556 serves as a bypass for Northwich and its satellite settlements. The A530 (Griffiths Road) runs past the eastern edge of the chemical works adjacent to the proposed development site, south of its junction with the A559 (Manchester Road). However, traffic from the A559 to the north is restricted due to the low bridge under the railway. All HGV traffic to and from the proposed development will be to the south via the A530, which provides access via Middlewich to the A54 and M6 Junction 18, approximately 12 km away. The A556 also gives access to the west, via the A54, A49 and M53.

Applications and consents for other nearby developments

There are three other consented waste management facilities and a consented electricity generation facility on land within the Lostock Works site, none of which has been constructed: a mechanical-biological waste treatment facility with consent granted in 2007 on land to the west; the Lostock Sustainable Energy Plant (SEP) with consent granted in 2012 on land to the south and south-east; a construction waste processing site with consent granted in 2011 to the south; and within that land, a peaking power plant using natural gas fired engines with consent granted in 2015.

In the wider local area, ten further major proposed developments have planning consent or have submitted planning applications, including several residential schemes on land to the south-west, south-east and north (beyond Manchester Road).

Description of the development

The proposed REnescience Northwich development is a bioresources project, comprising mechanical and biological treatment of waste, recovery of materials and renewable energy generation. It will have a peak waste input capacity of up to 18 tonnes per hour (tph), equivalent to 144,000 tonnes per annum (tpa) over the course of around 8,000 annual operating hours. It will be an independent merchant facility, treating commercial waste, municipal waste and fines that are supplied from existing intermediary waste transfer and treatment sites. The biological treatment processes and energy generation will operate 24 hours per day, but the working hours for waste deliveries and mechanical sorting will be 07:00 to 19:30 Monday to Friday and 08:00 to 13:00 on Saturday.

If approved, the proposed development would be constructed over a period of around 12 months from early 2016 to early 2017. Phased start-up and commissioning of the REnescience and AD processes would start from December 2016, with the development being operational and exporting electricity to the national grid or by private wire to nearby industrial consumers by March 2017.

As discussed in the introduction section above, the facility will use a ‘REnescience’ enzymatic waste treatment process developed by DONG Energy, which has been proven at a commercial demonstration plant operating in Copenhagen, Denmark for six years that has treated waste from around Europe, including household and commercial waste from the UK. The REnescience process uses enzymes to remove biodegradable matter from mixed waste, in order that recyclable materials can be efficiently recovered and renewable energy can be generated. The REnescience process separates waste into four constituent fractions, all of which are expected to be capable of further use or recovery.

In the proposed development, the separated biodegradable fraction (in the form of bioliquid) will be treated on site using the established anaerobic digestion (AD) process to generate biogas, which will then be used to generate up to around 6.2 megawatts (MWe) gross of renewable electricity in on-site reciprocating gas engines, of which at least 5 MWe will be exported to the grid or by private wire to nearby industrial consumers during normal operation. Waste renewable heat from the gas engines will also be utilised in the REnescience process on site. The separated recyclable materials will be mechanically sorted and transported off-site for recycling and further use.

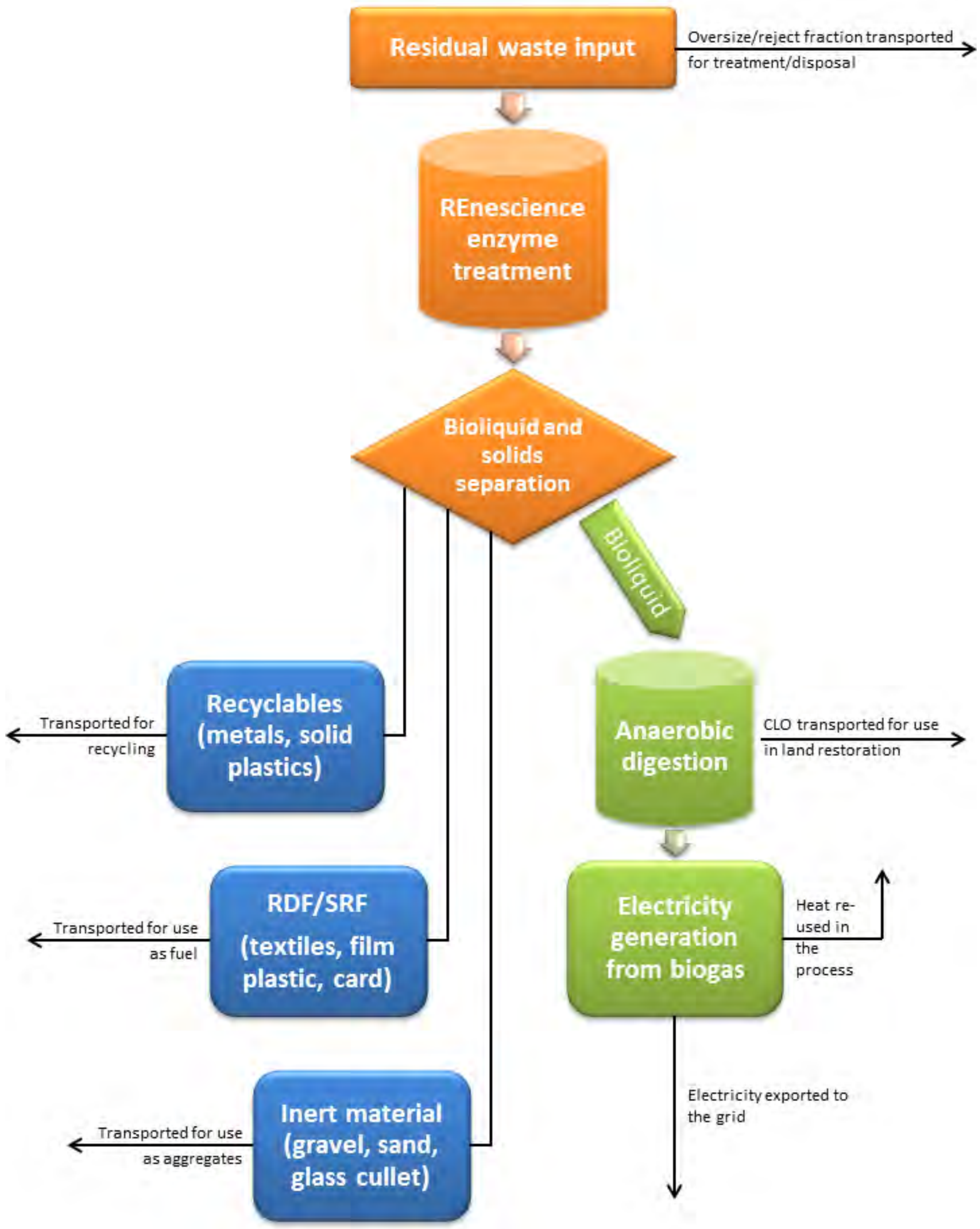
The four separated waste fractions and their recycling/recovery/disposal routes are as follows and as illustrated overleaf.

- **Bioliquid**, containing concentrated biodegradable material in a liquid suspension. This will be further treated on-site using AD to yield:
    - **biogas**, used to generate renewable heat and electricity in reciprocating gas engines; and
    - **digestate**, de-watered to leave a **compost-like output (CLO)** that will be suitable for use in land restoration.
- **Recovered recyclable materials**: ferrous and non-ferrous metal and solid plastics (e.g. plastic bottles).
- Other recovered materials such as film plastics, textiles and remaining cardboard, which together form a **refuse-derived fuel (RDF)** or **solid recovered fuel (SRF)** that can be used for energy generation at facilities elsewhere.
- **Recovered inert materials** such as gravel and glass cullet/sand that can be re-used as aggregates.

The REnescience process is undertaken at low temperature and ambient pressure conditions in two fully enclosed vessels (‘bioreactors’). In overview, the built development will comprise one main building with varying façades and roof heights to accommodate the offices and control room, waste bunker with crane, mechanical sorting stage and storage/loading area for recovered materials. The above-mentioned bioreactors (sealed rotating horizontal cylindrical tanks approximately 45 m long and 4.5 m diameter) will adjoin this building, with the materials feeds into and out of the bioreactors enclosed within the building.

Further storage for full containers of output products pending transport off-site will be located externally on hardstanding in a covered area in the east of the site. A second external covered area for storage and loading of CLO will be located in the south of the site closer to the post-digester tanks.

The AD stage is anticipated to comprise two external circular tanks for bioliquid storage, one tank for retention of any off-spec bioliquid, four tanks for digestion, two post-digester tanks, and associated pipework, biogas treatment and pumping equipment. Detailed design of this element of the proposed development is ongoing, and for the purposes of the planning application and EIA, a design envelope has been defined based on the ground footprint of the AD tank area shown in the planning application drawings and maximum height of the digester tanks (20 m).



Up to five reciprocating gas engines will be located externally (in standard containers) and will share a single stack or bundle of flues 33 m in height. An enclosed flare up to 10 m in height will also be provided as a back-up for flaring biogas temporarily if the gas engines are unavailable (e.g. due to breakdown), to avoid any uncontrolled biogas release. A water treatment plant (WTP) will treat water from de-watering the digestate and provide clean water to the washing stages of the mechanical sorting process. All remaining 'dirty' water will be recirculated into the REnescience process, with the exception of a concentrated residual output stream from the WTP, which will be transported off-site by road tankers for disposal at an appropriate facility.

Renewable electricity generated by the gas engines will be exported to the national grid or by private wire to nearby industrial consumers. The grid connection will utilise capacity in the existing 132 kV substation that is located immediately adjacent to the southern boundary of the site. The proposed development's export transformer will be located adjacent to this existing substation, requiring a very short cable outside the site boundary into the existing substation to provide the grid connection. No new overhead power line is required.

A small proportion of the electricity will be used on-site to power pumps, conveyors, waste separators, AD tank stirrers and other machinery in the waste treatment process. Waste heat from the gas engines will also be used to pre-heat water from the AD process that is mixed with incoming waste and re-circulated into the REnescience bioreactors.

The waste market prior to the start of operation at REnescience Northwich will determine the sources of waste treated. DONG Energy is in ongoing commercial negotiations with waste suppliers. For the purpose of this EIA, in particular to understand impacts on the local road network, it has been assumed that the waste will come from the Cheshire area, the North West and the North Midlands.

Waste will be sourced from intermediary bulking and transfer sites operated by the third party waste suppliers and will be delivered by HGV in closed containers with average 22.5 t payload. The existing rail sidings to the north of the application site offer the potential for delivery of waste or export of the recovered materials by rail. However, to do so would require one or more waste suppliers or customers for materials with equivalent access to a railhead and loading facilities. This cannot be secured at the time of making a planning application, and there are also considerations of the necessary scale of bulk material transport to make a railway routing slot both logistically and commercially viable, which would in turn also affect the feasibility of waste storage and unloading on the application site.

The ES therefore assumes as a worst case that all material is delivered and collected by road. However, the proposed development layout retains un-built space adjacent to the rail sidings in the northern part of the site for future access should rail transport of materials become feasible.

Landscape and Visual Impact

The landscape and visual impact assessment has considered potential impacts on the landscape or townscape character and impacts on visual amenity due to changes in views from residences, footpaths, roads and other viewpoints in the surrounding area. It has defined a 'zone of theoretical visibility' based on the scale of the development and landscape topography, and has used viewpoint photography onto which outlines and a rendered photomontage of the proposed development have been overlain.

The overall context of the site is that of an industrial townscape to the east of Northwich between the A559 Manchester Road and Manchester-Chester railway, the existing chemical industry facilities on the Lostock Works site and Griffiths Park. The townscape is influenced by a variety of land uses including chemical industry, commercial, open land, disused land, transport corridors and residential. The changes that will occur in the Lostock Plain urban character area as a result of the development of REnescience Northwich can be accommodated without unacceptably significant adverse effects.

Construction of the 33 m stack, building and tanks and cranage will be visible from some places, above adjoining landform, vegetation and existing structures, which currently screens the existing disused site from most directions. Construction activities will appear as new elements in some views. During operation, after the cranes have gone, the tops of buildings, tanks and the stack will likewise appear as new elements in some views, set in the context of existing industrial buildings on the Lostock Works site.

The new building, tanks and stack are of a similar industrial character to existing neighbouring development and attention will not generally be drawn to them. From some viewpoint locations, the redevelopment of the site will extend the built development of the industrial area, albeit still seen in context with existing industry. In close views, the proposed development will become part of a wider industrial area and where noticeable, the upper sections of the building, tanks and stack will appear above or filtered by intervening vegetation, particularly from Manchester Road and Griffiths Park.

From the east and north east the proposed development facility will be concealed by the existing larger chemical works and from the south any visible elements will be seen in context with other larger industrial buildings. From the west, only the top section of the stack and building will be visible above or heavily filtered by intervening vegetation, presenting only a minor intrusion to views dominated by foreground vegetation.

Landscape mitigation and enhancement proposals have been included as an integral part of the REnescience Northwich design, and will soften the area's industrial character, assimilate the development and provide important links with existing vegetation along Wade Brook. This will build upon the existing screening offered by vegetation outside the development site. The boundary landscape treatment using native trees and shrubs and wildflower grassland provides a vegetation structure appropriate to the area. The modern architectural design of the building provides a suitable form that breaks up the overall massing of the building in a way that is appropriate to the site.

The location of the REnescience Northwich facility in the western part of the Lostock Works site, adjacent to the industrial and commercial area of Northwich, results in a relatively small number of places in the settlement of Northwich and adjacent villages experiencing a change in view. Together with appropriate site layout and building design, the landscape proposals seek to ensure that the site will function well and add to the overall character and quality of the area. Overall, no significant adverse landscape or visual impacts during construction or operation are predicted.

Cumulative developments within the Lostock Works site would intensify the industrial character of the site within an already influenced industrial landscape. This would not increase the significance of the effect of the proposed development on landscape/townscape character. Cumulative residential developments would introduce some new sensitive receptors closer to Lostock Works, but these would have no greater sensitivity than existing receptors assessed.

Archaeology and Cultural Heritage

The archaeology and cultural heritage assessment has considered potential impacts on the historic environment, comprising heritage assets in the form of archaeology, built heritage and the historic landscape. Views of the proposed development have the potential to affect built heritage and the historic landscape, and its construction has the potential to affect any below-ground archaeological features of the site itself.

Much of the archaeology of the wider area is associated with exploitation of salt, evidence for which occurs from at least the Iron Age in the locality. During the Roman period, the wider area contained several roads and a Roman road ran through the eastern side of the proposed development site. Through the medieval period, the land-use in the area was characterised by agriculture.

During the past century or so, the proposed development site has formed part of the chemical industry, largely based on salt. During the Second World War the wider area was used for the production of munitions. The chemical industry remains significant in the area and is an important human socio-cultural heritage factor affecting many families living in the area.

The designated heritage assets in the wider area are seen to a greater or lesser extent in this context, and indeed heritage assets such as the Lion Salt Works itself, the Brunner Library and several other industrial or associated buildings constitute a number of these assets, which have value in their own right. No significant adverse impacts on the built heritage assets or historic landscape are predicted.

Given the apparent location of the Roman road, the possibility of the proposed development site containing archaeological remains of an early date cannot be entirely ruled out, although this is unlikely, given the previous development that has taken place on the site. The remainder of the proposed development site itself seems to have been agricultural land from antiquity until the later 19th century when the Lostock Bleach Works was built. Remains of the bleaching works may therefore also survive within the proposed development site. An archaeological watching brief will be put in place during the construction phase of the proposed development. With this mitigation, no significant adverse effects on below-ground archaeology are predicted.

No significant cumulative effect on the settings of heritage assets or archaeology is predicted.

Traffic and Transport

The assessment of traffic and transport impacts has considered the type and amount of traffic that would be generated by the proposed development, potential effects on local highways for all users (taking into account their existing condition and capacity), and the accessibility of the site for pedestrians, cyclists and by public transport. It has accounted for background future traffic growth (i.e. that which occurs anyway, without the proposed development) on the highway network by including typical background annual traffic growth rates from 2015-17 and adding traffic from the other major cumulative proposed developments in the local area in 2017.

The proposed development would generate up to 38 staff trips and 96 HGV trips per day when operational (counting both arrivals and departures). This would be on average four HGV arrivals and four departures per hour (i.e. one HGV arriving and departing again every 15 minutes on average) spread over a 12 hour working day. Staff arrivals and departures would be at shift changeover times, distributing staff traffic between peak and non-peak times for traffic on the highway network. HGV traffic generated during the construction phase is expected to be of a similar scale at peak.

All HGVs on the A530 Griffiths Road will be routed to and from the south of the junction with the proposed development site access road, via the A530/A556 roundabout, due to the low rail bridge on Griffiths Road to the north. Staff traffic may travel in either direction. From the A530/A556 roundabout, HGV traffic would use the A556 east of the A530 to reach the M6 via junction 19, the A530 south of the A556 to junction 18 on the M6, and the A556 to points west.

The assessment has assumed as a worst-case that all materials are transported by road, and that HGVs make empty return trips.

The site access road within Lostock Works has a continuous pedestrian footway, connecting with the footway on the A530 that in turn connects to public rights of way (including the canal towpath) giving access to Manchester Road via Works Lane, Lostock Hollow and Broken Cross. There are currently no cycle facilities on the A530, but the canal towpath provides a quiet traffic route linking with the traffic routes lining the A556 westbound. This route connects Broken Cross and Rudheath with the southern area of Northwich, providing access to the wider cycle network of Northwich.

A review of injury and accident data held by CWCC for the last five years indicates that the A530 and roundabout with the A556 have a good existing level of safety, with a total of 22 accidents recorded over five years, of which two were serious and none were fatal.

Based on existing baseline flows and projected growth in baseline flows to 2017, the local highway links that would be used by traffic from the proposed development are considered to have capacity in the through-flow for additional traffic growth beyond the 2017 baseline.

Management plans setting strategic routes for HGVs and arrival/departure phasing for both HGV and staff traffic will be implemented for the construction and operational periods, to minimise highways impacts.

Increases in total traffic flows over all time periods on all public highway links due to the proposed development are not predicted to exceed 3% on weekdays, or 5% at weekends (when the existing flows are lower), including peak times. These minor increases are well below the thresholds for any significant adverse effects.

Although the rate of traffic flow and HGV numbers will be low in absolute terms and no significant adverse effects on severance and pedestrian amenity, driver delay and road safety are predicted, regard has been had for local resident concerns regarding pedestrian delay and severance.

It is therefore proposed that the development would make a financial contribution to the provision of traffic signals at the Middlewich Road/A530 junction, which offers an opportunity to further improve the safety record at this junction and facilitate safe pedestrian movements, or a pedestrian crossing elsewhere on Griffiths Road or other pedestrian safety scheme, as agreed with CWCC.

Cumulative impacts with other proposed developments are included within the background traffic growth, as discussed above.

Ecology and Nature Conservation

The ecology and nature conservation assessment has considered potential impacts on habitats and species of biodiversity and nature conservation interest at the proposed development site and in the wider surrounding area.

Searches of existing habitat designations and species records have identified three SSSIs and a Local Nature Reserve within 5 km of the site (with the nearest, Witton Lime Beds SSSI, being at 1.5 km distance), and four Local Wildlife Sites within 2 km of the development site (the nearest, Ashton's and Neumann's Flashes Local Wildlife Site, being at 900 m distance). Records of otter and at least eight species of bat were found within 5 km of the site, with five other species of mammal, 73 birds, two amphibians, six invertebrates and five plants recorded within 2 km of the site. A total of four invasive plants were recorded within 2 km of the site.

The proposed development site is considered to be sufficiently far from the nature conservation sites identified that there will be no effects on them during the construction of operation. The air quality assessment (see below) also found that the designated sites will not be affected by emissions from the proposed development once it was operational.

A habitat survey undertaken at the proposed development site found that it is of low ecological value, predominantly comprising areas of bare ground and ephemeral/short perennial vegetation with smaller areas of trees and scrub, grassland, tall ruderals and bracken. However, a very low number of fragrant orchids were found on the site (which are listed on The Vascular Plant Red Data List for Great Britain, albeit as a species of 'Least Concern') and ragwort was also identified in low numbers, which is the food plant for the cinnabar moth caterpillar, a 'Species of Principal Importance' in England. The existing scattered trees and scrub also provide some limited habitat suitable for nesting birds.

The landscape proposals include the retention/recreation of a small area of ephemeral/short perennial vegetation to ensure this habitat type is retained on the site. Fragrant orchids found in other parts of the site will be moved into this area. This area will also be suitable for ragwort.

Tree and shrub planting will also be undertaken along parts of the site boundary and will more than compensate for the loss of existing trees and shrubs on the site. The existing trees and shrubs are young and scattered around the periphery of the site. The new planting will therefore quickly provide a more mature structure and improve habitat connectivity around the site boundaries. The tree and shrub planting will enhance the site by introducing a greater variety of native species than currently present, which in turn will provide suitable habitat for a range of animals and increase the connectivity with the existing habitat along the Wade Brook river corridor to the south of the site.

The tree and shrub planting will more than compensate for the loss of breeding bird habitat resulting from the clearance of existing trees and scrub. To compensate for the period between the existing vegetation being cleared and new planting taking place, bird boxes will be erected on the site to ensure there are nesting opportunities present.

The landscaping proposals also include the creation of an area of wildflower grassland along the northern boundary, which will introduce a new habitat onto the site.

The habitat survey of the site and its immediate setting outside the boundary found that there was potential for the protected species badger, water vole and otter to be present (mainly in the habitat of Wade Brook and its banks, immediately to the south of the site). The existing security hut outside the site entrance was also considered to potentially be a bat roost. Additional surveys for these species were therefore undertaken. No evidence of badger, water vole or otter was found.

Dawn and dusk bat emergence surveys found that the security hut contained a common pipistrelle bat roost, probably being used by a solitary male. The building will not be disturbed by the proposed development and lighting will be directed away from it (particularly the southern and western sides) and away from Wade Brook, to avoid disturbance to the bat(s) when emerging to forage.

Overall, no significant effects on ecology and nature conservation are predicted.

Loss of habitat at other development sites nearby has the potential to increase the cumulative impact on breeding birds. However, all of the developments (including the REnescience Northwich development) include measures that would protect breeding birds from such negative effects, and no significant cumulative effect is predicted. No other cumulative ecology and nature conservation effects are predicted.

Hydrology and Flood Risk

The hydrology and flood risk assessment has considered potential flood risk (including increased rainfall due to climate change) to the site from other sources, how changes in runoff from the site may affect flood risk, and how drainage should be managed to avoid adverse impacts on Wade Brook or other downstream watercourses. It is supported by a drainage strategy and drainage design.

The Environment Agency’s flood risk maps indicate that the application site is located within Flood Zone 1, defined as having low vulnerability to flooding.

Surface water runoff from the site has historically been discharged to Wade Brook via a network of underground surface water drains to a single outfall. This outfall will continue to be used for clean surface water drainage, and the drainage strategy will provide runoff attenuation from new buildings and hardstanding to limit water discharge to a rate no greater than the pre-development site characteristics. There will therefore be no increase in flood risk off-site due to the proposed development.

During construction, a temporary drainage system with appropriate runoff attenuation and settling areas will be provided, to avoid harmful impacts due to sediment loading on Wade Brook.

There will be no contaminated runoff or water discharges from the waste treatment process to Wade Brook, other surface water or to the sewer network. The REnescience process is water-efficient, designed to re-circulate water within the enzymatic and anaerobic digestion treatment stages.

Containment bunds will be constructed around the AD tanks and bioreactors to capture liquid in the event of a leak. They are large enough to contain 110% of the capacity of the largest tank or 25% of the capacity of all the tanks, depending on which is the larger. Manually operated valves that default to a closed position will be used to drain clean rainwater accumulating in these areas after inspection for any contamination from leakage. Any liquid leakage captured in these bunded areas and from other drained waste treatment areas around the site will be pumped back into the REnescience process or, if not appropriate, will be tankered off-site for treatment elsewhere, and not allowed to mix with clean surface water runoff.

Appropriate hardstanding and containment bunds will also be provided for areas of fuel storage and other areas of possible water contamination (e.g. gas engines and substation transformers) during construction and operation.

Water management and discharges will be regulated by the Environment Agency under the facility's Environmental Permit. Overall, no significant effects on hydrology and no increase in flood risk is predicted as a result of the proposed development. No significant cumulative effects are predicted.

Geology and Ground Conditions

The assessment of geology and ground conditions has considered the potential risk of ground contamination due to past uses of the site, together with the underlying geology and hydrogeology of the site and how that may affect potential contamination mobilisation, any necessary remediation options, and construction techniques.

The site and surrounding area have been occupied by industrial land uses, primarily associated with chemical manufacture, since the 19th century. The site itself has historically been occupied by a bleach works and chlorine plant. A previous site investigation undertaken during 2009 identified elevated concentrations of metals in soils and groundwater across the site. It also identified localised contamination in the form of polyaromatic hydrocarbons (PAHs) and volatile organic compounds (VOCs). An initial risk assessment based on this data indicates that at present there is the theoretical potential for existing contamination associated with soil and groundwater to affect human health and controlled waters, should it be disturbed.

A further programme of ground investigation and monitoring will be undertaken prior to construction work commencing, which will be used to refine the risk assessment. If necessary (depending on the findings of the refined risk assessment), a remediation strategy will be developed in agreement with CWCC to treat materials arising. This could involve removing contaminated soil for treatment or using construction techniques that avoid disturbance to contaminated areas and provide cover of them, avoiding exposure during construction and operation.

With appropriate management measures in place, no significant adverse effects are predicted. If remediation work is found to be necessary due to contamination, undertaking this remediation would be a minor beneficial effect. No significant cumulative effects are predicted, as other local developments affected by contamination would be required to employ equivalent mitigation measures.

Air Quality and Odour

The assessment of air quality and odour impacts has considered the potential emissions from the proposed development, including odour, dust and bioaerosols. The main source of emissions is the combustion of methane in the gas engines, which, when burnt, forms carbon dioxide and water, with trace quantities of nitrogen oxides. No plastics are burnt and the by-products associated with this are not generated.

Potential effects on people and natural habitats have been assessed in the context of existing air quality, air quality standards set to protect health, habitat sensitivity, and potential annoyance or disturbance due to odour or dust.

Existing background air quality in the area of the proposed development is good, with pollutant concentrations being well below the relevant air quality standards.

Detailed air pollutant dispersion modelling of emissions from the stack, biogas flare and traffic, using very conservative worst-case assumptions, indicates that air pollutant concentrations at all modelled receptors (i.e. residential areas) would remain well within air quality standards set to protect health, with no significant adverse effect predicted. Nationally-designated protected habitats are all too distant from the proposed development site to be adversely affected by air pollutant emissions. There is no significant effect predicted at the nearest Local Wildlife Site.

Taking into account cumulative air pollutant emissions from traffic associated with other local developments, stack emissions from the consented Lostock SEP to the south and stack emissions from the consented ‘Bedminster’ technology bio-energy plant to the west, the maximum nitrogen dioxide concentrations would remain within the relevant air quality standard, with no significant adverse effect predicted.

The proposed development has been carefully designed to control potential for nuisance odour. Waste will be delivered in enclosed vehicles, unloading into a waste bunker that is fully enclosed inside the building. Air from this building will be continuously extracted and exhausted through activated carbon filters to remove odour. This continuous, controlled ventilation will mean that fresh air is drawn in from the outside when the automatically closing building doors are opened for waste deliveries, preventing odorous air from inside the building being released.

All of the biogas produced in AD tanks will be collected and the enzyme and biological treatments take place inside fully enclosed vessels and sealed pipework. Since the REnescience treatment process removes the biodegradable material from mixed waste, which is the component that generates odour as it decomposes, the output materials (separated recyclables, RDF/SRF and CLO) will have a low potential for odour. These control measures are set out in an Odour Management Plan that will be regulated by the Environment Agency under the facility Environmental Permit.

Measures to control dust during construction, such as dampening down working areas, covering stockpiles and vehicle wheel-washing will also be employed as needed, as part of the Construction Environmental Management Plan.

Overall, taking into account the emissions control measures that will be employed (regulated by the Environment Agency under the facility's Environmental Permit), no significant adverse air quality or odour effects are predicted.

Noise and Vibration

The noise and vibration impact assessment has considered potential for annoyance or disturbance resulting from construction activities, noise sources on the proposed development site once operational, and road traffic generated by the development.

The assessment has used baseline noise monitoring undertaken at representative locations to characterise the existing environment, with modelling of noise from sources within the proposed development site to predict how noise exposure may change.

Noise during construction will be temporary, likely only to be noticeable when significant works such as piling are being undertaken, and overall below the threshold for significant observed effects (i.e. disturbance/annoyance causing complaints or significant changes in people's behaviour). Best practicable means to minimise noise during construction will be followed, as part of the Construction Environmental Management Plan. Residents will be kept informed via a community liaison group, which will be set up at an early stage during construction. Due to the distance to residences, no effects from vibration during construction are predicted.

During operation, the biogas engines and the electric motors powering internal cranes, conveyors, pumps and other equipment will be located inside buildings or containers, and the gas engines' stack will be fitted with a silencer. The main external noise sources will be loading vehicles operating on the site. There is no high pressure steam generated by the proposal.

The operational noise modelling indicates that it is possible that noise from site activities will be noticeable on occasions at the closest residences to the site (on Manchester Road). Existing noise levels at Manchester Road are high, mainly attributed to existing road traffic. In this context it is unlikely that noise from the proposed development will add to the existing environment to an extent that it would be intrusive or cause a perceived change in quality of life, and no significant adverse effects are predicted.

At all other residential locations, the overall noise level (taking into account the existing baseline and the proposed development) would be within guidance levels for resting during the daytime and sleeping during the night-time, and within the guidance levels for quiet enjoyment of gardens during the daytime, indicating no significant adverse impacts.

No significant noise effects from road traffic, including cumulative traffic with other developments, are predicted due to the relatively small changes in traffic flows. No significant cumulative noise effects are predicted with other developments (considering both cumulative industrial noise-generating developments and residential developments that introduce new sensitive receptors), due to the noise controls and planning conditions applicable to those developments. The combined road traffic generation by all of the committed cumulative developments may lead to a minor or moderate adverse noise impact from traffic on Griffiths Road, were all of the developments to be constructed, but the proposed development would not make a significant contribution to road traffic noise in this scenario.

Conclusion

Overall, the proposed development design responds to the environmental constraints and opportunities of the site, and incorporates a range of embedded mitigation and enhancement measures recommended during the course of the EIA and stakeholder engagement process. Taking into account the design, embedded mitigation/enhancement, and good operational management (which will be regulated under the facility's Environmental Permit), no significant adverse environmental effects are predicted.

The proposed landscape planting and habitat creation will have minor beneficial environmental effects, as would any necessary remediation of ground contamination if found. The site will be brought back into beneficial and productive use by the proposal.

The proposed development will provide waste treatment capacity which is needed, recovering recyclable materials, generating renewable energy and bringing investment and employment creation to the Northwich area, with minimal traffic and without causing any significant adverse environmental effects.

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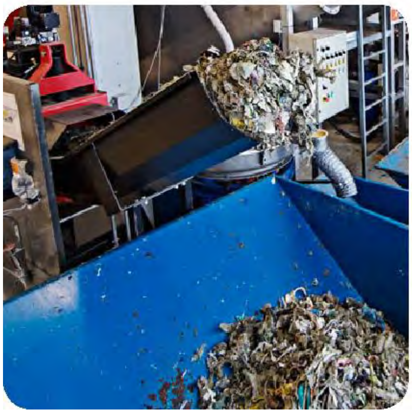
Chapter 1: Introduction and Approach to EIA

REnescience Northwich







Quality Management

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DISCLAIMER

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1 Introduction

Preamble

1.1 This Environmental Statement (ES) has been prepared by RPS to accompany an application to Cheshire West and Cheshire Council (CWCC) for planning consent to construct and operate **REnescience Northwich**, a bioresources project comprising mechanical and biological treatment of waste, recovery of materials and renewable energy generation, at the Lostock Works industrial site near Lostock Gralam and Northwich, Cheshire.

1.2 The REnescience Northwich application is being made by DONG Energy Ltd (the Applicant), pursuant to the Town and Country Planning Act (as amended) and Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 2011 as amended in 2015.

1.3 DONG Energy is one of the leading energy groups in northern Europe. Its business is based on procuring, producing, distributing and trading in energy and related products in Northern Europe. Headquartered in Denmark, DONG Energy has around 6,500 employees, including 600 in the UK. The Group generated DKK 67 billion (EUR 9 billion) in revenue in 2014. DONG is a leading investor and developer of offshore renewables both in the UK and Europe, an industry in which Denmark is a global leader. This project has been developed by DONG's New Biomass Solutions (NBS) arm as a low-carbon alternative to conventional fossil-fuelled energy generation.

1.4 CWCC previously resolved to grant planning consent on this site in 2010 for Viridor to develop a waste treatment plant with a higher throughput capacity of 200,000 tonnes per annum (tpa), comprising mechanical sorting of recyclables and biodrying of residual waste to produce solid recovered fuel (SRF). That application was withdrawn in 2013 and the development has not gone ahead. The former chlorine works industrial buildings on the site have been demolished and it is an undeveloped brownfield site, allocated in the Local Plan for waste related uses.

Site location and proposed development

1.5 The proposed development site is located off the A530 Griffiths Road, near Northwich and Lostock Gralam, Cheshire, at national grid reference 367920, 374201. The main site (excluding the shared access road within Lostock Works) is approximately 3.37 ha in size. It is a brownfield site with a more than 100-year history of industrial use, including chemicals and munitions, and is within an area allocated for waste management in the CWCC Adopted Local Plan (Part One) [1] under strategic policy ENV 8 *Managing Waste*.

1.6 Chapter 2: Site Context and Project Description gives details of the site location, setting, and proposed development. The site location is shown in Figure 2.A: Site Location Plan and the proposed development is shown in Figure 2.E: Site Layout Plan.

1.7 In overview, the proposed development will use a 'REnescience' enzymatic waste treatment process developed by DONG Energy NBS, which removes organic matter from mixed residual wastes, in order that recyclable materials can be efficiently recovered and renewable energy can be generated. The process is designed to treat unsorted, residual ('black bag') municipal and commercial waste: REnescience Northwich will not accept source-segregated recyclables and will complement existing municipal and commercial recycling, helping to raise the overall recycling rate. It will treat up to 144,000 tonnes per annum of residual waste.

1.8 By using enzymes to target organic materials entrained in the waste and concentrate these organics into a separate, liquid stream, the process removes contamination from the remaining fractions, thus generating cleaner recyclable materials and enabling a higher degree of recycling to be achieved. The separated organic fraction (in the form of bioliquid) will be treated on site using anaerobic digestion (AD) to generate biogas, which will then be used to generate at least 5 MW (net) of renewable, low-carbon electricity for export to the national grid.

Environmental Impact Assessment

1.9 Section 1, below, gives an overview of the approach that has been adopted in the Environmental Impact Assessment (EIA) that is reported in this ES. Further detail of environmental topic-specific approaches is given in each topic chapter within the ES, the structure of which is set out on page 1–9. The findings of the EIA are summarised in the Non-Technical Summary, which is Volume 1 of the ES.

2 Approach to EIA

Legislative framework and requirements for the ES

2.1 In 2011, the original EIA Directive [2], and its three amendments [3], [4], [5] were consolidated [6]. In the UK, the EIA Directive is implemented by the Town and Country Planning (Environmental Impact Assessment) Regulations 2011 [7] as amended by the Town and Country Planning (Environmental Impact Assessment) (Amendment) Regulations 2015 [8] (together referred to as the EIA Regulations in this ES).

2.2 Only certain types of project require an EIA to be carried out under the EIA Regulations. Schedule 1 to the EIA Regulations sets out those developments for which EIA is mandatory. EIA is not mandatory for the REnescience Northwich development, which falls under Schedule 2 of the EIA Regulations. Schedule 2 identifies types of development that may need an EIA, subject to whether or not significant environmental effects are likely.

2.3 Under Schedule 2 (11) (b), an EIA is required for installations for the disposal of waste where the development area exceeds 0.5 ha or the installation is to be sited within 100 m of any controlled waters. Although REnescience Northwich is an installation for treatment of waste, recovering energy and resources, as opposed to disposal, 'disposal' is typically interpreted broadly. The proposed development will be greater than 0.5 ha in size and less than 100 m from controlled waters (Wade Brook), thus requiring an opinion as to whether or not EIA is required (see paragraph 2.19).

2.4 The main aim of the EIA Directive is to ensure that when an authority giving consent for a particular project makes its decision, it does so in the knowledge of any likely significant effects on the environment. An EIA provides a systematic assessment of a project's likely significant environmental effects for consideration by both the public and the relevant competent authority before a decision is made.

2.5 Planning Practice Guidance [9], which replaced Circular 02/99 Environmental Impact Assessment on 7 March 2014, provides guidance and explains the requirements of the 2011 Regulations. This covers areas within the planning and EIA process, such as use of planning conditions, what development is covered, legislation used, how proposed mitigation measures should be secured, how to prepare an ES and the procedures for submitting an ES. However, it is generally not prescriptive in detail about ES contents or EIA methodology. Schedule 4 provides details of the minimum information to be included in an Environmental Statement.

Revised EIA Directive

2.6 Directive 2014/52/EU [10] (the Revised EIA Directive) amending Directive 2011/92/EU came into force on 16 April 2014, and must be given effect by transposition into national legislation by no later than 16 April 2017. This has not yet been undertaken in the UK.

2.7 Paragraph 39 of the Explanatory Notes to the Revised EIA Directive states that in accordance with the principles of legal certainty and proportionality, the provisions of Directive 2011/92/EU should apply in its un-amended form if the "*environmental impact assessment report is submitted before the time-limit for transposition*".

2.8 Many of the revisions to the EIA Directive already form part of good practice for EIA in the UK. The main changes that may extend existing good practice are, in summary, requirements to:

- assess impacts on population and human health, including from accidents or disasters;
- assess impacts on biodiversity, with particular attention to species and habitats protected by the Habitats Directive (92/43/EEC) and Birds Directive (2009/147/EC);
- assess impacts on and from climate, in terms of greenhouse gas emissions and vulnerability to climate change;
- assess how a project's vulnerability to major accidents or hazards could cause or affect its environmental impacts;
- describe reasonable alternatives, including the future baseline scenario (as far as this can be reasonably estimated) without the proposed development; and
- estimate consumption of energy, materials and natural resources and generation of waste (quantities and types), during construction/demolition and operational phases of a development, and assess the sustainable availability of natural resources affected.

2.9 In addition, there is a duty on member states to ensure the monitoring of identified significant environmental effects or the implementation and effectiveness of mitigation measures for significant effects (whilst ensuring that monitoring requirements are proportionate to impacts and avoiding duplication of monitoring already undertaken under existing legislation).

2.10 Although the Revised EIA Directive is not applicable to REnescience Northwich, a number of its additional requirements are already met by assessments undertaken in this EIA, as set out below.

2.11 Impacts on the human environment, including populations that may be affected by health pathways relevant to REnescience Northwich such as air quality, noise and traffic safety, are already included in the relevant EIA topic assessments, with reference where applicable to existing standards set to protect health. Likewise, the assessment of impacts on protected species and habitats considers biodiversity where this may be affected. Vulnerability to flooding, considered to be the principal applicable climate change risk for the development, is assessed in Chapter 8: Hydrology and Flood Risk.

2.12 A primary purpose of the proposed development is to reduce GHG emissions and resource consumption by generating renewable energy and improving recycling, by recovering materials from waste. This is discussed further in the project description in Chapter 2. An estimation of GHG emissions avoided due to electricity generation by REnescience Northwich is also given in the chapter.

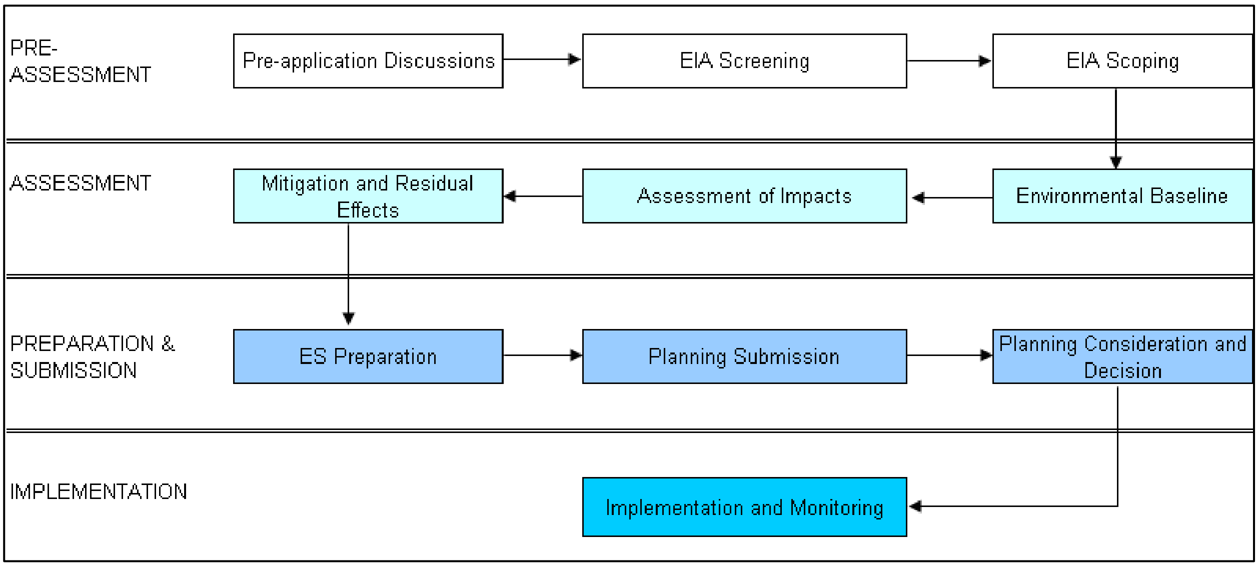
2.13 The site location is within an industrial area housing several processes that are major accident hazards. However, it is considered that this is addressed by existing legislation and safeguards in the UK. Further information concerning the safety of the proposed development itself is given in Chapter 2. The proposed development is not classified as a major accident hazard.

2.14 The need for the proposed development and alternatives that have been considered are discussed further on page 1–8 of this chapter and in the Planning Statement accompanying the planning submission, but is essentially established in the Local Plan and its supporting evidence, which allocates the site for the type of use proposed.

EIA process

2.1.1 The EIA process seeks to identify the likely significant environmental impacts of a development, to avoid, reduce or offset any material adverse effects through mitigation measures, and to identify potential environmental enhancement opportunities. Impacts and effects may be on the physical, biological and human environment. EIA typically follows a series of key stages, as shown in Figure 2.1.

Figure 2.1: EIA stages flow diagram



2.15 Although there are a series of stages in the process, in practice EIA is an iterative process, with feedback mechanisms ensuring that each stage is completed satisfactorily and that the design evolves taking account of the environmental issues identified during the EIA process.

2.16 As described further below, in the embedded mitigation and enhancement section and Figure 2.2, the assessments reported in this ES have been undertaken iteratively with close co-operation between the design team and EIA team (both part of RPS). This is seen in elements such as site layout and building design (informed by ground conditions, flood risk, visual impact and noise assessments and traffic safety considerations), ventilation and stack design (informed by air quality and odour assessments), landscape planting and building size, form and appearance (informed by landscape, visual and ecology assessments), among others. Design evolution is documented in the Design and Access Statement accompanying the planning submission.

2.17 Further to this, extensive statutory and public consultation has been undertaken, with feedback considered and incorporated into the project design and environmental assessment scope where appropriate. Feedback from the public consultation process and response to statutory consultation responses is discussed in Chapter 3: Scoping and Consultation. The design and assessment response to feedback from public consultation in July 2015 was presented at further public events in September 2015, which is documented in the Statement of Community Involvement (SoCI) accompanying the planning submission.

2.18 The main stages in the EIA process in respect of REnescience Northwich are summarised below:

- screening to determine the need for EIA;
- scoping to determine the subject matter of the EIA and to identify potentially significant issues;
- data gathering, involving compiling and reviewing available data and/or undertaking baseline surveys to generate site-specific data;
- public consultation, to gather additional local information and views on potentially significant issues, that may affect the scope of assessments or inform the baseline;
- assessment and design iteration, whereby the potential impacts of the development during the construction, operational and decommissioning stages of its life are assessed and feedback is provided to the design and engineering team(s) to modify the development in order to avoid, prevent, reduce and, where possible, offset any significant adverse effects on the environment;
- identifying any residual effects and any further mitigation or compensation requirements;
- preparing the ES, reporting on the EIA; and
- controlling and monitoring the effects of the project during construction, operation and decommissioning in accordance with the mitigation measures identified in the ES and/or conditions of the planning consent.

Screening and Scoping

2.19 Under Part 2 of the EIA Regulations, a development may be determined to be an ‘EIA development’ either by the choice of an applicant to submit an ES or by the adoption of a screening opinion to that effect by the planning authority.

2.20 At a pre-application meeting with CWCC on 18 June 2015, the Applicant proposed that in view of the development’s potential for environmental impact and the fact that the Viridor facility (of a similar nature, previously proposed for this site, albeit with a greater throughput capacity) was screened as requiring EIA, an EIA should be undertaken and an ES submitted. Accordingly, the

Applicant has not requested that CWCC adopt a formal EIA Screening Opinion, although CWCC has informally indicated its view that an EIA should be undertaken.

2.21 The Applicant submitted a Scoping Note giving a description of the proposed development and outlining the suggested EIA scope to CWCC on 8 July 2015, and requested that CWCC provide a Scoping Opinion under Part 4 of the EIA Regulations. CWCC provided its Scoping Opinion on 13 August 2015, with input from the statutory consultees Network Rail, the Health & Safety Executive, Natural England, the Environment Agency and Historic England. Responses from CWCC concerning noise and contaminated land, not available at the time the Scoping Opinion was issued, were provided separately in direct correspondence with the relevant specialists in RPS, documented in Chapters 11 and 9, respectively.

2.22 Matters raised by the CWCC Scoping Opinion and how they have been responded to in the ES are summarised in Chapter 3: Scoping and Consultation.

Consultation

2.23 A programme of public and other stakeholder consultation was undertaken during July-September 2015 in order that feedback could be sought and taken into account, where possible and appropriate, during the design and EIA process prior to submission of the planning application. This is discussed further in Chapter 3: Scoping and Consultation and full details of the public consultation process are provided in the SoCI that accompanies the planning submission.

2.24 Statutory consultees were consulted formally at the scoping stage by CWCC to provide opinions on the scoping report and make further recommendations. The responses, informing CWCC's Scoping Opinion, are likewise summarised in Chapter 3: Scoping and Consultation. Further consultation was held directly between EIA topic assessors and the relevant statutory consultees during the environmental assessment process. Details of this one-to-one technical consultation are summarised in each ES topic chapter.

Other consents and assessments

Habitats Regulation Assessment

2.25 A Habitats Regulation Assessment (HRA) can be required under the Habitats and Species Regulations 2010 [11] as amended in 2012 [12] where a development may impact on European designated sites. Natural England has confirmed in pre-application consultation that due to the distance between the proposed development and any European designated sites, an HRA does not need to be undertaken. This consultation is detailed in Chapter 7: Ecology and Nature Conservation.

Environmental Permit

2.26 An Environmental Permit to operate REnescience Northwich as a waste installation is required under the Environmental Permitting (England and Wales) Regulations 2010 [13] as amended in

2011 [14] and 2015 [15]. The Applicant will submit an Environmental Permit application to the Environment Agency (EA) in parallel with the planning application. The Environmental Permit will regulate the management of the REnescience Northwich facility, including limits on its emissions/discharges to land, air and water, monitoring requirements for the same, auditing of its energy, water and material efficiency, and necessary actions in response to an accident or emergency with potential environmental consequences.

2.27 Many of the assessments in this ES also provide supporting evidence for the Environmental Permit application.

Trade Effluent Discharge Consent

2.28 A Trade Effluent Discharge Consent will not be required, as the proposed development makes efficient use of water, with no waste process water discharge during normal operation. This is detailed in the process description section of Chapter 2.

Alternatives

2.29 The need for the proposed development is discussed in the Planning Statement accompanying the planning submission. In brief, CWCC carried out a Waste Need Assessment study (Update 2015) as evidence to underpin the Cheshire West and Chester Local Plan (CWCLP). The study identified waste arising in the area (municipal and commercial), existing and planned waste management capacity and waste forecast for the period until 2030. The assessment concluded that the area had adequate waste management capacity for this period. However, this included a number of proposals that benefited from planning permission but have not yet been developed. There are no operational facilities in the application area that can derive benefit (such as renewable energy) from waste management. CWCC adopted the CWCLP in January 2015. This plan provides the strategic planning framework for the area for the period until 2030. Policy ENV8 requires that operational capacity is kept under review, allowing for the consideration of more efficient proposals which may replace development that is consented but is unlikely to be delivered.

2.30 The development site is allocated for waste management in the CWCC Local Plan, and members of CWCC previously resolved to grant planning permission for a larger (by annual throughput) waste treatment facility on this site in 2013. Waste site allocations have been reviewed in the preparation of the Local Plan; Policy ENV8 replaces policies and site allocations of the Cheshire Waste Local Plan. The application site, which is located in Lostock Works, has been identified as a key site for waste uses. As such, it is considered to clearly be a suitable site in principle, and provided that the EIA does not find that the proposed development at this site has material adverse impacts that cannot be mitigated, no further assessment of alternative sites is considered necessary. This view was expressed in the Scoping Note requesting CWCC's Scoping Opinion (see Volume 3, Appendix 3.A). Alternative approaches to dealing with residual waste, such as incineration with energy recovery, have not been considered within this EIA, but it is noted here that the technology employed by DONG is not only consistent with the waste hierarchy, but allows improved recovery of materials compared with landfill or large scale energy-from-waste (EfW) incineration.

2.31 As discussed above, the EIA process has been iterative, with a number of alternative designs considered during the assessment process, together with suggestions from public consultation and other stakeholder feedback. The final development design, as proposed, incorporates a range of embedded environmental mitigation and enhancement measures prompted by the early findings of environmental assessments as various alternative designs were considered. These measures are summarised in the Embedded Mitigation and Enhancement subsection of Section 2: Description of the Development in Chapter 2. The design evolution of the development, with iterations of the site layout and building design, is documented in the Design and Access Statement accompanying the planning submission. Responses to public and stakeholder feedback regarding alternatives to consider are documented in the SoCI.

2.32 In the absence of the proposed development, the site might remain in its existing state as unused brownfield land, or could be redeveloped for another waste management project, as it is allocated for that use in the Local Plan. Another waste management project, such as that previously proposed for this site by Viridor, would have environmental impacts of a similar nature and scale, as set out in the ES that accompanied the previous application. If the site were not developed, or depending on the nature of an alternative development, potential environmental enhancements from the proposed development (including investigation and where necessary remediation of ground contamination and landscape planting with habitat creation) might not happen.

2.33 The alternative of not developing the site is the baseline position, against which the effects of this proposal have been evaluated. As discussed above, an earlier EIA was undertaken for the Viridor proposal, which is a matter of public record. While a detailed comparison has not been undertaken here, the overall effects are likely to be similar, and it is further noted that the purpose of the land use planning system is to help bring forward development of this nature. On the basis of the above and set in the context of the Local Plan, other alternatives have not been considered further.

Assessment approach

2.34 This EIA uses a systematic, evidence-based approach in order to evaluate and interpret the potential impacts and subsequent effects of the proposed development upon physical, biological and human receptors. This ES has been prepared in accordance with the EIA Regulations, which require in Schedule 4 that a developer provides inter alia a "*description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development...*" (Schedule 4, Part 1 (4)).

2.35 The general approach adopted for assessments in the EIA is set out below. Further detail concerning the methodology for the topic-specific assessments is set out in each ES topic chapter, drawing on relevant policy, established good practice and professional guidance in each field, referenced in the chapters concerned.

Design envelope

2.36 Where some aspects of a proposed development cannot be fixed in precise detail at the time of application, the ES sets out, to the best of the Applicant's knowledge, what the maximum parameters of the proposed development may be, and assesses the environmental effects to which the development could give rise on that basis. This is known as a 'Rochdale envelope' or a 'design envelope'.

2.37 The maximum parameters have been defined in this ES on the basis that they are worst-case assumptions (i.e. have the greatest potential for adverse impact) for one or more topic-specific environmental assessments. This can include parameters such as the greatest or tallest building dimensions, or longest or most frequent occurrence of an activity. The general parameters of the proposed development are given on this basis in Chapter 2: Site Setting and Project Description. Where necessary, further details of worst-case assumptions employed are given in the topic-specific assessment methodologies in each EIA topic chapter.

2.38 Overall, this approach ensures that any development design parameters equal to or less than those assessed in this ES will have environmental impacts of the same level or less, and will therefore have no greater effect on receptors for the topic under consideration.

Study area

2.39 A study area is defined and described in the methodology section of each assessment topic chapter. Where applicable, study areas have been agreed in consultation with local authorities and/or statutory consultees. In some instances, e.g. ecology desk searches for species and habitats with various levels of importance/protection, more than one study area is defined in accordance with relevant standards and guidance for that topic.

Baseline conditions

2.40 The likely significant effects of the proposed development need to be identified and assessed against a clear baseline scenario. For this EIA the following baselines have been used:

- the existing situation, using the latest baseline data available; and
- a future baseline without development in 2017, which is when REnescience Northwich is anticipated to become operational.

2.41 Baseline data have been obtained from existing published information and/or from the results of surveys commissioned specifically for this EIA. The future baseline incorporates changing factors such as background growth in traffic levels (which would increase the baseline traffic flows by the time the development is operational from the flows surveyed at the time of the application) or the future presence of other committed developments in the study area.

2.42 The future baselines relevant to each assessment topic have been informed by an extrapolation of the currently available data by reference to, for example, growth trends, Government policy, planning applications and expert judgement of the individual topic specialists. The baseline data and information sources to define it for each assessment topic are detailed in each assessment chapter.

Embedded mitigation and enhancement

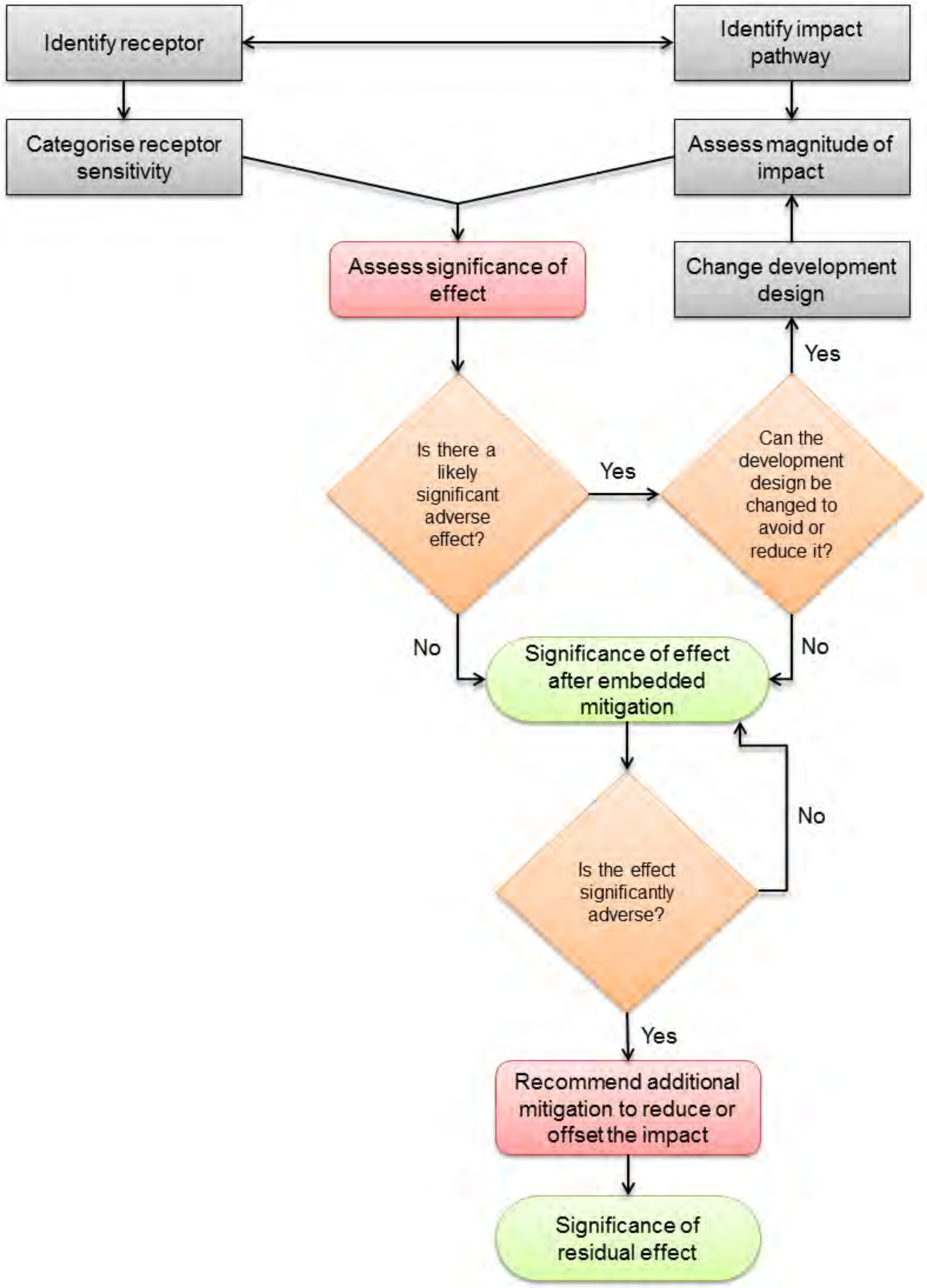
2.43 Schedule 4 of the EIA Regulations requires that "*a description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment*" should be included in the Environmental Statement.

2.44 As discussed above, the REnescience Northwich EIA has been undertaken using an iterative approach, in order to demonstrate commitment to appropriate mitigation of development-related impacts by including them in the design of the development. This iterative approach during the assessment process involves the feedback loop illustrated in Figure 2.2. An environmental impact pathway has been initially assessed, and if the effect was considered to be significantly adverse in EIA terms, changes have been made (where practicable) to the project design to avoid, reduce or offset the magnitude of that impact. Where this is not feasible and where effects remain significant, additional mitigation or compensation may be recommended.

2.45 Similarly, where the initial assessment has identified opportunities to create or enhance beneficial environmental impacts, these changes have been made to the project design, if practicable.

2.46 The summary of impacts, mitigation and residual effects in Chapter 12 lists effects after taking embedded mitigation into account, and where the residual effects remain significant, any additional mitigation is recommended and the final residual effect predicted. The embedded mitigation and enhancement measures forming part of the development design are summarised in Chapter 2.

Figure 2.2: Iterative EIA approach



Identification of impacts and assessment of significance of effects

2.47 The development of REnescience Northwich has the potential to create various 'impacts' causing 'effects' on the physical, biological and human environment. The definitions of impact and effect used in this ES are drawn from the Design Manual for Roads and Bridges (DMRB) methodology [16], which provides a widely-adopted framework for EIA that is applicable to projects of many types. In this ES, the term 'impact' is used to define a change in the environment that is caused by some aspect of REnescience Northwich's construction or operation, including associated activities or development off-site such as traffic or its grid connection. For example, combustion of biogas in the gas engines (operational activity) will lead to emission of air pollutants (one impact) and noise (a second impact).

2.48 Impacts can be direct or indirect/secondary, cumulative with other developments or have inter-relationships with other impacts, may be short- or long-term and temporary (reversible) or permanent, and may be beneficial or adverse.

2.49 The term 'effect' is used in this ES to express the consequence of an impact. Continuing the example above, noise from the gas engines (impact) may have the potential to cause disturbance and annoyance to noise-sensitive receptors (e.g. people in nearby residences), an adverse effect. If this effect were potentially significant, the impact could be mitigated (e.g. by relocating or insulating the gas engines) to reduce the effect.

2.50 The 'significance of effect' is determined by considering the magnitude of the impact alongside the importance, or sensitivity, of the receptor or resource, in accordance with defined significance criteria.

2.51 For all impacts assessed in this ES, an assessment has been made of the magnitude of impact, taking into account the spatial extent, duration, frequency and reversibility of the impact, where applicable. The scale of impact magnitudes used in this ES is:

- no change or neutral;
- negligible;
- low;
- medium; and
- high.

2.52 Topic-specific definitions of how this impact magnitude scale is applied in each assessment are defined in each ES topic chapter, where appropriate to that assessment. The design of these scales draws upon relevant guidance, standards and policy, including the specialist knowledge of the assessor.

2.53 Receptors are defined in this ES as the physical, biological or human resource or user group that would be affected by the project impacts. This is informed by baseline studies that have been completed in the course of undertaking the EIA.

2.54 The magnitude of an effect does not directly translate into its significance. For example, a significant effect may arise as a result of a relatively modest impact affecting a resource of national value, or a large impact on a resource of local value. Therefore, the significance of the effect can depend on both its magnitude and the sensitivity / importance of the receptor.

2.55 Where sufficient information exists to value a receptor and to understand the magnitude of the impact, the assessment methodology often uses an assessment matrix to determine the level of significance of the effect, as in Table 2.1 overleaf. This is the case for example with ecological and cultural heritage designations, which have clearly defined relative values (e.g. a site designated at a national level is valued more highly than one that is undesignated or designated at a local level).

2.56 In determining levels of significance, recognised assessment methods for specific topics have been used where appropriate, but in the absence of these, general levels of significance have been used as set out in Table 2.1. Although there is limited guidance for the determination of such levels, the terms set out below have been informed by draft guidance from the Department for Communities and Local Government (DCLG) [17], while the significance matrix has been adapted from the DMRB guidance [16]. The general significance criteria are as follows.

- Substantial – effects may be key factors in the decision-making process. They are generally, but not exclusively, associated with sites and features of national or regional importance and resources/features that are unique and which, if lost, cannot be replaced or relocated.
- Major – effects of the development are of greater than local scale and, if adverse, are potential concerns to the project depending upon the relative importance attached to the issue during decision making.
- Moderate – effects of the development that may be judged to be important at a local scale but are not likely to be key decision-making issues. Nevertheless, the cumulative effect of such issues may lead to an increase in the overall effects on a particular area or on a particular resource and taken together could be a factor in the decision making process.
- Minor – effects of the development that may be raised as a local issue but which are of low importance in the decision-making process.

2.57 These levels of significance apply to both adverse and beneficial effects. A further category of 'negligible' is used to describe effects that are of such low importance that they are considered to be unimportant to the decision making process.

2.58 'Residual effects' are those that remain after any additional mitigation has been taken into account. A summary of impacts, embedded mitigation, effects, additional mitigation and residual effects (together with a summary of cumulative impacts) is given in Chapter 12: Cumulative Impacts, Mitigation and Residual Effects.

Table 2.1: EIA significance matrix

		Magnitude of impact			
		Large	**Medium**	**Small**	**Imperceptible**
Sensitivity	**Very high**	Substantial	Substantial	Major	Moderate
	High	Substantial	Major	Moderate	Minor
	Medium	Major	Moderate	Minor	Negligible
	Low	Moderate	Minor	Negligible	Negligible

Adapted from [16] (Volume 11, Section 2, Part 5, Table 2.4).

2.59 Although modifications to the significance criteria may be required for some topics, based on specific guidance, this terminology remains broadly similar throughout the ES, enabling comparison of different effects between topic areas.

Inter-relationships

2.60 There are many inter-relationships between impacts that may arise under different environmental topic areas (for example, traffic and air quality), and these interactions may affect the magnitude of inter-related effects on a particular receptor or class of receptors.

2.61 Inter-relationships in environmental impacts have been considered within the assessment through close co-operation between assessment specialists, working in an inter-disciplinary team, with cross-references made within topic-specific chapters where appropriate. For example, cross-references are made between the landscape, visual and ecology impact assessments, concerning planting and habitat creation. There are further interactions between the ecology and air quality assessments concerning the impact of air pollutant deposition.

Cumulative effects

2.62 Cumulative effects are defined as those that result from incremental changes caused by other reasonably foreseeable actions alongside the project in question. This includes the impact of other relevant developments that were not present at the time of data collection, e.g. site specific surveys.

2.63 Other proposed developments that are in the planning process, or have development consent but have not yet been constructed, may form part of the future environment in which the REnescience Northwich development is set. Such developments need to be identified in order that the potential for cumulative environmental effects can be assessed in this EIA.

2.64 CWCC's online database of planning applications and consents was searched over an area extending around 1 km in radius from the proposed development site. One kilometre was not a prescriptive limit, however, and was informed by the scope for potential cumulative environmental impacts or potential to add new sensitive receptors in areas where there is potential for an environmental impact: for example, the search was extended farther along Griffiths Road to the junction with the A556 (some 1.6 km distance), since this would be the access route for HGV traffic to the REnescience Northwich site.

2.65 Two broad criteria were used to identify relevant developments:

- applications or consents active in the CWCC database within the last five years; and
- major developments, either of a commercial/industrial nature that may have potential for significant cumulative environmental impacts, or residential/public developments that may introduce new sensitive receptors.

2.66 The CWCC database lists a large number of minor developments, such as renovations or extensions to existing properties. It is not considered that these change the nature of the receiving environment, since residential development is already present and these do not extend existing areas of residential or other sensitive receptors closer to the REnescience Northwich site. Where relevant they have been taken into account as new receptors, or in underlying growth, e.g. for traffic.

2.67 Details of the identified potential and committed developments resulting from this search were submitted to CWCC during pre-application discussion. Additional relevant developments identified during consultation by CWCC and during public consultation were taken into account, as above.

2.68 Information concerning the likely environmental impacts and effects of other cumulative developments was taken from documents and assessments, available in the CWCC database, submitted as part of the planning application process for those developments.

2.69 Cumulative impacts and effects are identified in each ES topic chapter, and summarised in Chapter 12: Cumulative Impacts, Mitigation and Residual Effects.

Structure of the ES

2.70 The structure of the ES is shown overleaf (see also the contents page in each volume of the ES). A summary of the proposed development and all conclusions of the specialist EIA topic chapters is given in the Non-Technical Summary in Volume 1, in language suited to a lay audience. The process and findings of the EIA assessments are reported in detail in each ES chapter in Volume 2, together with a summary of the predicted residual effects from all the topics in Chapter 12 of this volume.

2.71 Further supporting technical detail such as methodologies, baseline surveys and data tables for each chapter (where necessary) is given in appendices in Volume 3. Appendices are numbered to correspond with the chapter number in Volume 2. For example, appendices to Volume 2, Chapter 3 are in Volume 3, Appendix 3.A, 3.B, etc. Annexes to appendices are also in Volume 3, in turn named to correspond with the appendix number and letter: for example, Annex 6.A.1, 6.A.2, etc. for annexes to Appendix 6.A.

2.72 Figures are in Volume 4, numbered in the same way as the Volume 3 appendices (e.g. figures for Volume 2, Chapter 4 are in Volume 4, Figure 4.A, 4.B, etc.). Smaller figures in-line with the text are shown and referenced within each chapter or appendix.

VOLUME 1: Non-Technical Summary

VOLUME 2: ES Chapters

Chapter 1: Introduction and Approach to EIA

Chapter 2: Site Context and Project Description

Chapter 3: Scoping and Consultation

Chapter 4: Landscape and Visual Impact

Chapter 5: Archaeology and Cultural Heritage

Chapter 6: Traffic and Transport

Chapter 7: Ecology and Nature Conservation

Chapter 8: Hydrology and Flood Risk

Chapter 9: Geology and Ground Conditions

Chapter 10: Air Quality and Odour

Chapter 11: Noise and Vibration

Chapter 12: Cumulative Impacts, Mitigation and Residual Effects

VOLUME 3: Appendices

VOLUME 4: Figures

2.73 The ES also makes reference to the following documents that form part of the planning submission:

- Planning Statement;
- Design and Access Statement; and
- Statement of Community Involvement (SoCI).

References

[1] CWCC, “Local Plan (Part One) Strategic Policies,” 2015.

[2] *Council Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment,* 1985.

[3] *Council Directive 97/11/EC amending Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment,* 1997.

[4] *Directive 2003/35/EC of the European Parliament and of the Council providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation,* 2003.

[5] *Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide and amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC &c,* 2009.

[6] *Directive 2011/92/EU of the European Parliament and of the Council on the assessment of the effects of certain public and private projects on the environment,* 2011.

[7] *SI 2011 No. 1824. The Town and Country Planning (Environmental Impact Assessment) Regulations,* 2011.

[8] *SI 2015 No. 660. The Town and Country Planning (Environmental Impact Assessment) (Amendment) Regulations,* 2015.

[9] Department for Communities & Local Government, “Planning Practice Guidance,” [Online]. Available: http://planningguidance.planningportal.gov.uk/. [Accessed 28 July 2015].

[10] *Directive 2014/52/EU of the European Parliament and of the Council amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment,* 2014.

[11] *SI 2010 No. 490. Conservation of Habitats and Species Regulations,* 2010.

[12] *SI 2012 No. 1927. Conservation of Habitats and Species (Amendment) Regulations,* 2012.

[13] *SI 2010 No. 675. The Environmental Permitting (England and Wales) Regulations,* 2010.

[14] *SI 2011 No. 2043. The Environmental Permitting (England and Wales) (Amendment) Regulations,* 2011.

[15] *SI 2015 No. 918. The Environmental Permitting (England and Wales) (Amendment) Regulations,* 2015.

[16] Highways Agency and devolved Governments, “Design Manual for Roads and Bridges, Volume 11, Section 2, Part 5: Assessment and Management of Environmental Effects. HA205/08.,” The Stationary Office Ltd, London, 2008.

[17] DCLG, “Environmental Impact Assessment: A guide to good practice and procedures. A consultation paper.,” DCLG Publications, London and Wetherby, 2006.

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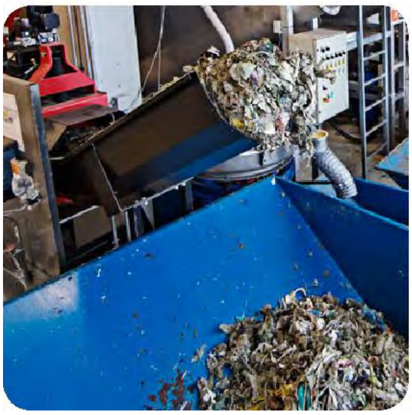
Chapter 2: Site Context and Project Description

REnescience Northwich







Quality Management

Prepared by:	Tom Dearing	Senior Environmental Consultant		28/09/15
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Revision History				
Rev	**Date**	**Status**	**Reason for revision**	**Additional comments**
0	21/05/15	Draft	-	-
1	05/06/15	Draft	Working draft for circulation	-
2	07/07/15	Draft	Client comments	-
3	17/09/15	Draft	Updated project design	-
4	28/09/15	Final	Client comments	-

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Appendix 2.C: Code of Construction Practice and Construction Environmental Management Plan

1 Site Location and Setting

Site Location and Description

Location

1.1 The proposed development site is located within Lostock Works, off the A530 Griffiths Road, near Northwich and Lostock Gralam, Cheshire. The national grid reference is 367920, 374201 and the site location is shown in Figures 2.A and 2.B in Volume 4. The main site (excluding the shared access road within Lostock Works) is approximately 3.37 ha in size.

1.2 The site is located within the administrative area of Cheshire West and Cheshire Council (CWCC), which is the minerals and waste planning authority. The site is within an area ('*Lostock Works'*) allocated for waste management in the CWCC Adopted Local Plan (Part One) [1] under strategic policy ENV 8 *Managing Waste*.

Access

1.3 The site is accessed via an existing private road serving the cluster of chemical industry facilities on the Lostock Works site, from a junction with the A530 around 0.5 km south (as the crow flies) of the proposed development site boundary.

1.4 The area is well served by road and rail communications. The nearest access to and from the M6 is at Junction 19, located approximately 7 km to the north east of the site via the A556. The A556 serves as a bypass for Northwich and its satellite settlements. The A530 runs past the eastern edge of the chemical works adjacent to the proposed development site, south of its junction with the A559. However, traffic from the A559 to the north is restricted due to the low bridge under the railway. To the south, the A530 provides access to M6 Junction 18 via Middlewich at a distance of approximately 12 km.

1.5 The Manchester—Chester railway line runs in a roughly east-west alignment close to the northern boundary of the site, with sidings and two rail spurs into the proposed site itself and adjacent industrial facilities to the east and south.

Description

1.6 The site is brownfield land that was previously used for chlorine manufacturing until 2001. At the time of the previous (Viridor) planning applications in 2009 and 2010, buildings and associated pipework were still present, but they have subsequently been demolished to ground level in 2013. At present, the site is cleared to ground level, with only some foundation slabs, hardstanding/roadways and a disused one-storey security hut outside the entrance gate remaining. The site is enclosed by a 2.5 m green-painted steel palisade fence, which is in good condition.

1.7 The site is generally flat, with a large central plateau (irregularly shaped, around 120 m wide north-south and 210 m long east-west) at around 25 mAOD, defined by banks at its edge to the south, west and north-west where the ground drops fairly steeply to a lower terrace at around 23 mAOD. This lower terrace extends to the site boundary to the south, west and north-west, ranging from around 15 m to 30 m wide. To the east and south-east the site remains generally level to its boundaries with the neighbouring Solvay chemical works and 132 kV substation, respectively. The 25 mAOD plateau extends almost into the north-east corner of the site, sloping down more gently west from this corner to the site’s boundary with the adjacent track and rail sidings at around 24 mAOD.

1.8 The site predominantly comprises areas of hardstanding and bare ground, from which vegetation is absent save for some early recolonisation by ephemeral/short perennial and tall ruderal vegetation. Small areas of scrub and scattered young trees and saplings have also established at points around the site boundaries. There is a single stand of dead Japanese Knotweed, with no signs of new growth evident, and no other invasive species recorded.

1.9 The habitats on the site are considered to be of relatively low ecological value. Some trees and areas of scrub on the site have the potential to support nesting birds, and fragrant orchid was found to occur occasionally in the east of the site. There is potential for cinnabar moth caterpillars to be present, as ragwort occurs occasionally on the site. Details are provided in Appendix 7.C in Volume 3.

1.10 Photographs of the site in its baseline condition are shown in Figure 1.1, overleaf.

Figure 1.1: Baseline site photographs

Photo 1: Looking east-south-east from western end

Photo 2: Looking west-north-west from western end

Photo 3: Looking east from western end

Photo 4: looking north-east from central southern end

Photo 5: Looking south-west from central southern end

Approximate photograph locations

Site History

1.11 The site is located in a larger area, including Lostock Works and other industrial complexes near Northwich, Wincham and Winnington, that has been used for industry and chemical manufacture for nearly 200 years. The Trent and Mersey Canal was constructed in 1777, maps of the area from the early 19th century indicate likely marl or salt pits among rural land-uses, and the Manchester to Northwich railway was completed in 1863. Soda ash and bleaching powder production commenced in the Lostock Works area in the late 18th century and much of the surrounding land, particularly to the south west and east, has been used for lime waste disposal associated with soda ash manufacture. During the First World War it is understood that ammonium nitrate production for use in explosives was undertaken at the soda works. Later, during the Second World War, a range of products were made on the Lostock Works site at the request of the Ministry of Supply, including chlorine, mono chloro-benzene and carbon tetrachloride.

1.12 Within the boundary of the proposed development site itself, historic records show use for arable and pasture fields in 1845 as part of the Overstreet Farm estate, but by 1897 or earlier the site had become part of the Bowman Thompson & Co Ltd works, with buildings, drains, brine pipes and an acid main marked on a works plan from 1897 and OS map from 1898. The 1898 OS map records this as Lostock Bleach Works. In 1900 the Bowman Thompson & Co Ltd works were taken over by Brunner Mond, and by 1910 the development site lay within a heavily industrialised area. OS maps from the time of the second world war show no features on the Lostock Works site (presumably for security reasons), but by 1945 the proposed development site itself had been cleared of buildings.

1.13 The development site remained cleared (aside from railway sidings running across it) until at least 1954, but by 1977 a chlorine manufacturing works had been constructed, which remained in use until 2001. In 2013 it was demolished to ground level, and the site has remained as cleared brownfield land until the present.

1.14 Further details of the site's history are given in Chapter 5: Archaeology and Cultural Heritage.

Site Setting

1.15 The proposed development site is set in a predominantly industrial area of existing and former chemical industry works operated by Tata Chemicals, Solvay and INEOS Enterprises, and previously by ICI and Brunner Mond among other firms. As described above, the site itself has a history of use in chlorine manufacturing and, earlier, bleach production.

1.16 In the area immediately around the site are:

- to the north – access track to adjacent site, rail lines and sidings, open space/ponds, warehouses/commercial development and Manchester Road;

- to the east – Solvay chemical works, Tata Chemicals chemical works, INEOS brine purification plant and the Trent and Mersey Canal;
- to the west – a cleared brownfield site and rail siding;
- to the south – Wade Brook, a rail siding and conveyor structure, ECO-Option (formerly Edelchemie) chemical recycling facility, and Griffiths Park (former waste lime landfill).

1.17 The area immediately to the south east of the site has planning consent granted in 2012 for the proposed Lostock Sustainable Energy Plant (SEP), which has not yet been constructed, on the site of the former Lostock Power Station (which is still standing but no longer in use). Planning consent has also been granted for a peaking power plant using gas engines on land immediately to the south and west of the SEP site, occupying part of a larger plot of land with consent for a construction waste treatment and transfer station. The land immediately to the west of the site has planning consent granted in 2008 to Organic Waste Management Ltd for a ‘Bedminster’ technology mechanical-biological treatment (MBT) and pyrolysis facility. The consent has been implemented to the extent that ground has been broken, but the facility has not been constructed. Other development consents in the area are discussed further below.

1.18 Figure 2.C shows the site and its immediate setting.

Local communities and amenity

1.19 The site is located approximately 0.6 km from the residential outskirts of Northwich and Rudheath to the west and south (or around 2 km from Northwich town centre), and 1.2 km from the village of Lostock Gralam to the east.

1.20 The closest residences are on the north side of A559 Manchester Road, approximately 180 m to the north of the site, separated from it by the railway, a tree belt and area of open space, warehouses and commercial developments, and the A559. There are further residences and commercial land uses along Manchester Road and around the A559 and A530 junction to the east, between the site and Lostock Gralam.

1.21 To the south of the site is Griffiths Park, a former lime bed and landfill that has been redeveloped into a park/recreation area. This is separated from the site by a rail siding, conveyor structure and chemical recycling works, adjacent to the park’s northern boundary.

1.22 The Trent and Mersey Canal runs roughly north-south between the Tata Chemicals and INEOS chemical works and the A530, to the east of the proposed development site. The canal is used by pleasure craft and its towpath (around 420 m from the proposed development site at the closest point) is a public right of way, separated from the chemical works by security fencing. A further public right of way branches west from the canal towpath to connect with Works Lane, around 250 m north-east of the proposed development site boundary at the closest point. Other public rights of way are present further away, beyond the A559 to the north.

Nature conservation and landscape setting

1.23 The site itself is not covered by any statutory nature conservation designations; however, the Witton Lime Beds SSSI and Plumley Lime Beds SSSI are both located around 1.5 km and 2.5 km from the site, to the northwest and east, respectively. Ashton's and Neumann's Flashes Local Wildlife Site is located at around 900 m distance.

1.24 The ecological designated sites within 15 km of the proposed plant (a conservatively large search area, given the proposed development's limited potential for ecological impacts due to air pollutant emissions) are:

- Oak Mere Special Area of Conservation – 12.5 km south west from site
- Rostherne Mere RAMSAR – 11.8 km from site
- West Midland Mosses Special Area of Conservation – 9.2 km from site;
- Midland Meres and Mosses Phase and Phase 2 Ramsars – 9.2 km from site; and
- 27 SSSIs – the two closest being Witton Lime Beds (2.4 km from site) and Plumley Lime Beds (2.6 km from site).

1.25 Details of the ecology and nature conservation setting are given in Chapter 7.

1.26 As noted above, the site itself has little vegetation and low ecological value. The adjacent site to the west and adjacent gravel track and railway sidings to the north are similar in habitat. To the east is the Lostock Works complex, offering no wildlife habitat. The Wade Brook river corridor to the south has dense bracken, bramble scrub and scattered trees, offering potential habitats for badgers, water vole and otters. However, no signs of these species' presence were found in surveys undertaken (see Appendices 7.E and 7.F in Volume 3). The disused security hut outside the site entrance (and outside the application boundary) has a common pipistrelle bat roost (see Appendix 7.D).

1.27 The landscape setting includes a mixture of urban and industrial areas (with a historic and retained current industrial character), the Northwich Salt Heritage Landscape, salt flashes, and some river valley with woodland areas on the generally open, flat plains landscape.

1.28 Landscape features and parks with public access of interest within 5 km of the proposed development site include:

- Griffiths Park, an area of parkland located on a former landfill site managed by the local authority, which lies to the south of the project site;
- The Trent and Mersey Canal, which runs to the east of the project site; and
- Northwich Woodlands to the north-west, which includes within it Anderton Nature Park, Witton Flashes, Marbury Country Park, Neumann's and Ashton's Flashes (a local nature reserve) and Carey Park (again on a former landfill site).

1.29 Further detail of the landscape setting and character is given in Chapter 4: Landscape and Visual Impact.

Historic environment

1.30 The historic character type of the development area is ‘20th century industry active’, which remains strongly in evidence. As discussed above, the Lostock Works site and surroundings within which the development site sits have been used for chemical and other industrial works since the late 19th century.

1.31 There are no scheduled monuments, or registered parks or gardens, within 3 km of the development site. The Trent and Mersey Canal is a conservation area, and there is one scheduled monument (Lion Salt Works) adjacent to the canal around 1.3 km north of the development site. There are in total 38 listed buildings within 3 km of the site, all Grade II with the exception of the Grade I listed Church of St Helen.

1.32 There is evidence for Roman and later activity in the wider area, including the probable alignment of a Roman road on the eastern side of the proposed development site.

1.33 Details of the historic environment and below-ground archaeology are given in Chapter 5: Archaeology and Cultural Heritage.

Other development applications and consents

1.34 As discussed above, there are three other consented waste management facilities and a consented electricity generation facility on land within the Lostock Works site, that have not been constructed: the Organic Waste Management Ltd site to the west; the Lostock SEP; the Broadthorn Construction Ltd construction waste site to the south; and within that land, the GF Energy Ltd peaking power plant. In the wider local area, ten further relevant developments have planning consent or have submitted planning applications: these are summarised, together with those on the Lostock Works site, in Table 1.1 and the locations are shown in Figure 2.D.

1.35 These proposed developments are relevant to the assessment of potential cumulative environmental impacts. The approach to identifying them is detailed in Chapter 1: Introduction and EIA Approach; cumulative impacts, where relevant, are described in the EIA topic chapters 4–11; and cumulative impacts are summarised in Chapter 12: Cumulative Impacts, Mitigation and Residual Effects.

Table 1.1: Other development applications and consents

Application date	Status	Date approved	CWCC ref.	Applicant	Address	Description
03/01/08	Pending		08-0020-OUM 08-0021-OUM	NPL Estates Ltd	Land At Hargreaves Road, Northwich	08-0020-OUM: outline planning for 306 unit residential development with associated infrastructure. 08-0021-OUM: outline planning for a continuing care retirement home with 96 bedroom care home, 170 unit retirement village, 8 other residential units, health facility, retail units and services. Although these applications were first submitted in 2008, protracted s.106 negotiations and lack of finance delayed the projects; amended applications were re-submitted in 2013 and are pending determination. A third application (08-0022-OUM), for a second phase of residential development, was withdrawn in September 2013.
10/01/08	Approved	21/04/08*	08-0034-FZ5	Organic Waste Management Ltd	Lostock Works, Griffiths Road, Lostock Gralam, Northwich, CW9 7NU [The site and its access track are immediately adjacent to the REnescience Northwich site to the west and north.]	"Construction of a bio-energy plant". A 'Bedminster' technology MBT and advanced thermal treatment (ATT) plant processing up to 150,000 tpa of waste and 50,000 tpa of other biomass. The plant would use digestion and pyrolysis to treat organic waste, generating electricity, and separate some recyclables. **included despite the consent being more than five years old, as this consent is understood to have been implemented to the extent that ground has been broken, although the facility has not been constructed.*
23/04/09 11/07/14	Approved Approved	20/12/11 10/09/14	09/10799/CPO 14/03017/DIS	Broadthorn Construction Ltd	Land To The South West Of Lostock Works, Griffiths Road, Lostock Gralam, Northwich	Non-hazardous (principally construction) waste recycling and transfer centre with the erection of a mixed waste transfer building and ancillary works. Discharge of condition 33 (land remediation).
24/02/10	Approved	02/10/12	10/00691/DECC	Tata Chemicals Europe (formerly Brunner Mond) and E.ON Energy from Waste Limited	Land formerly occupied by the Lostock Power Station, Lostock	Lostock Sustainable Energy Plant (SEP), an energy-from-waste facility generating up to 60 MW of electricity and 100 tonnes per hour of steam from 600,000 tpa of waste-derived fuel. Comprising the main SEP buildings on the site of the former Lostock Power Station, and an ash handling and waste reception facility at existing rail sidings to the west.

Application date	Status	Date approved	CWCC ref.	Applicant	Address	Description
26/04/11	Unknown		11/01968/OUT	Gladedale Estates Ltd & Russell Homes (UK) Ltd & Witton Albion Football Club & Wincham Village	Land South Of Chapel Street And East Of New Warrington Road, Wincham	"Gladedale", outline planning for a mixed-use development with 950 residential units and 2,500 m^2 of commercial space.
13/08/12	Approved	24/05/13	12/03652/OUT	Mr and Mrs Lees	Land Adjacent to Cottage Close, Rudheath, Northwich	Outline planning for a 13 unit residential development off Griffiths Road.
13/08/12	Approved	24/05/13	12/03653/OUT	INEOS Enterprises Ltd	Land At End Of Farm Road, Rudheath	Outline planning for a 48 unit residential development off Farm Road.
13/03/13	Approved	09/10/13	13/01134/FUL	British Salt	Pipeline route from Warmingham via Middlewich to Lostock Works	Development of three brine pipes and fibre optic cable link between the salt factory at Middlewich and the chemical works at Lostock, and buffer tank and pumping station at Lostock. Pipeline route at Lostock crosses the Trent and Mersey canal and then runs south to Middlewich, initially east of the A530 and then generally following this road to Middlewich. (The application also includes further development in Middlewich and Warmingham and a pipeline connecting them.)
16/04/13	Approved	12/07/13	13/01652/FUL	Making Space	James Street, Northwich, CW9 7DE	Demolition of building and construction of 14 sheltered apartments with communal facilities.
03/06/13	Approved	23/10/13	13/02449/OUT	Hollins Strategic Land LLP	Land Rear Of Cookes Lane, Rudheath, Northwich	Outline planning for 74 unit residential development off Cookes Lane.
03/11/14	Pending		14/04654/OUT	WR Roberts and Sons	Land To The Rear Of Cedars, Chapel Street, Wincham, CW9 6DA	Outline planning for 105 unit residential development on scrap yard site. Within the larger area covered by the 'Gladedale' application (11/01968/OUT).
08/12/14	Approved	11/02/15	14/05128/S73	Edelchemie Ltd	Eco House, Griffiths Road, Lostock Gralam, Northwich, CW9 7XU	A variation on conditions 6 and 16 of consent 07-3384-FZ5 (granted 24/04/08 to Edelchemie Ltd [now ECO-Option]) for a chemical recycling facility with precious and semi-precious metal recovery and fertiliser manufacture. Variation is to allow the maximum permitted tonnages of materials to be brought to and exported from the site to be

Application date	Status	Date approved	CWCC ref.	Applicant	Address	Description
						raised to 130,000 tpa each and to allow an increase in HGV traffic outside of the peak hours commensurate with the increased tonnages.
08/01/15	Pending		15/00067/FUL	DSJ Electra	Land At Former Canalside Farm, King Street, Rudheath	24 unit residential development. Application is for a change of layout and increase from 20 to 24 units on approved and implemented (first slab built) development consent.
05/03/15	Approved	22/04/15	15/00935/FUL	GF Energy Ltd	Land To The South West Of Lostock Works, Griffiths Road, Lostock Gralam, Northwich, CW9 7XU	Gas-fired peaking power plant using containerised generators, exporting around 21 MW of electricity from 48 MW thermal input.

Note: a consent (ref. 13/05070/DEM) granted on 12 December 2013 to SABIC UK Petrochemicals Ltd to demolish a redundant ethylene blowing plant on the Lostock Works site was also found. This is presumed to have been implemented, as structures were not evident on the site when visited in July 2015.

2 Description of the Development

Overview

2.1 The proposed REnescience Northwich development is a bioresources project, comprising mechanical and biological treatment of waste, recovery of materials and renewable energy generation. It will have a nominal waste input capacity of up to 18 tonnes per hour (tph), equivalent to 144,000 tonnes per annum (tpa) over the course of 8,000 typical annual operating hours. It will be a merchant facility, treating commercial waste, municipal solid waste (MSW) and fines that are supplied from existing intermediary waste transfer and treatment sites.

2.2 The facility will use a 'REnescience' enzymatic waste treatment process developed by DONG Energy, which has been proven at a commercial demonstration plant operating in Copenhagen, Denmark for five years that has treated waste from around Europe, including household and commercial waste from the UK. The REnescience process uses enzymes to remove biodegradable matter from mixed wastes, in order that recyclable materials can be efficiently recovered and renewable energy can be generated. The REnescience process separates waste into four constituent fractions, all of which are expected to be capable of further use or recovery.

2.3 By using enzymes to target biodegradable materials entrained in the waste and concentrate these biodegradables into a separate, liquid output, the process removes contamination from the remaining fractions, thus generating cleaner recyclable materials and enabling a higher degree of recycling to be achieved (the principal benefit of the DONG REnescience process). The process is designed to treat unsorted, residual ('black bag') municipal and non-hazardous commercial/industrial waste[1]: REnescience Northwich will not accept source-segregated recyclables and will complement existing municipal and commercial recycling (not replacing any existing selective kerbside collection systems), helping to raise the overall recycling rate.

2.4 In the proposed development, the separated biodegradable fraction (in the form of bioliquid) will be treated on site using the established anaerobic digestion (AD) process to generate biogas, which will then be used to generate up to around 6.2 MWe gross of renewable electricity in on-site reciprocating gas engines, of which at least 5 MWe will be exported to the national grid or via private wire to local industrial consumers during normal operation. Waste renewable heat from the gas engines will also be utilised in the REnescience process on site. Separating and concentrating biodegradable material into bioliquid before AD treatment maximises the biogas production for renewable electricity and heat generation, and minimises the residual digestate after de-watering, as shown in Figure 2.1.

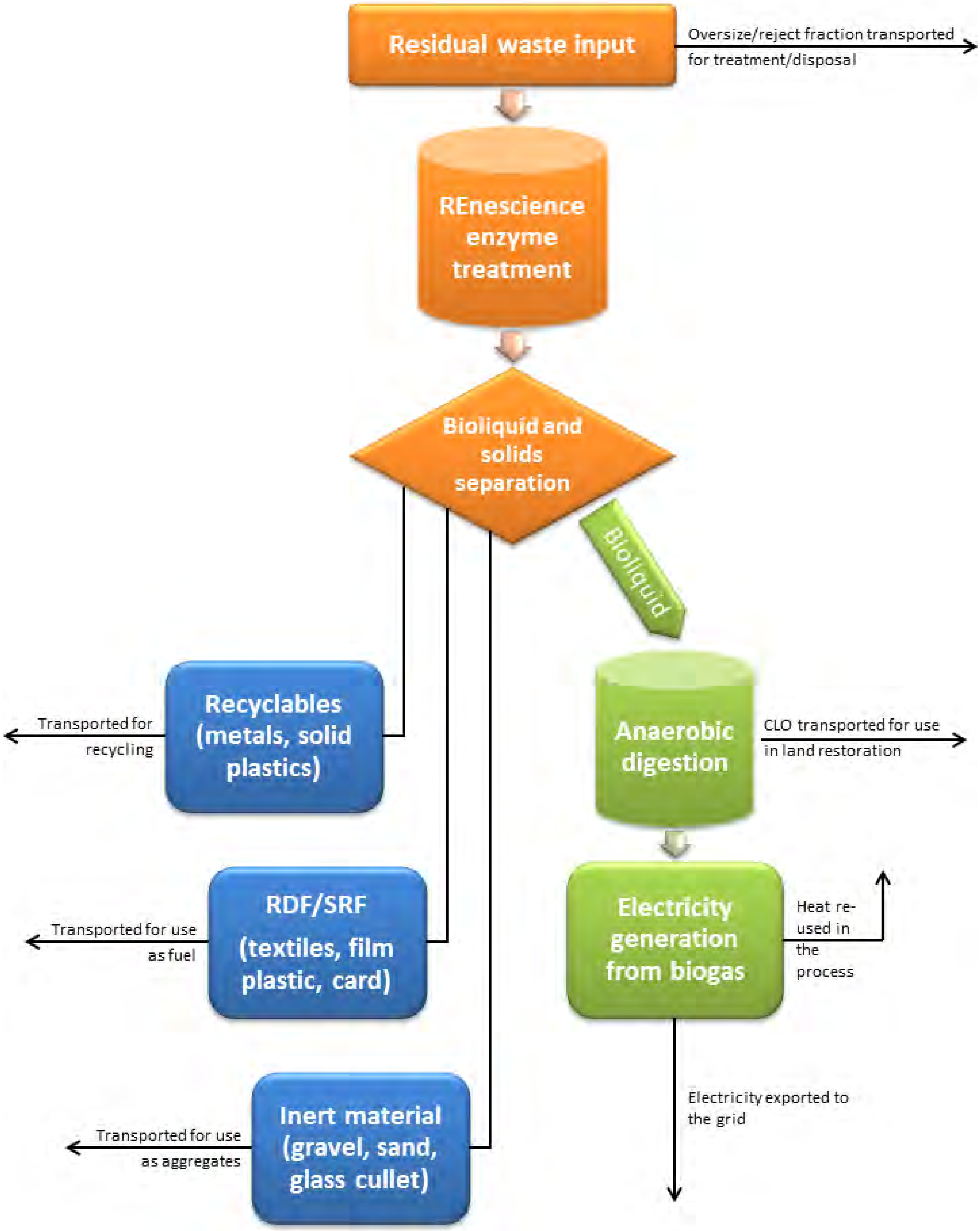
2.5 The four separated waste fractions and their recycling/recovery/disposal routes are as follows.

[1] With the exception the initial start-up and commissioning phase for the anaerobic digesters, for which separately collected food waste or pulped fines will be used. This is discussed further in the commissioning section from page 18.

- **Bioliquid**, containing concentrated biodegradable material in a liquid suspension. This will be further treated on-site using AD to yield:
  - **biogas**, used to generate renewable heat and electricity in reciprocating gas engines; and
  - **digestate**, de-watered to leave a **compost-like output (CLO)** that will be suitable for use in land restoration.
- **Recovered recyclable materials**: ferrous and non-ferrous metal and solid plastics (e.g. plastic bottles).
- Other recovered materials such as film plastics, textiles and remaining cardboard, which together form a **refuse-derived fuel (RDF)** or **solid recovered fuel (SRF)** that can be used for energy generation at facilities elsewhere.
- **Recovered inert materials** such as gravel and glass cullet/sand that can be re-used as aggregates.

2.6 Figure 2.1 summarises the waste treatment process and main outputs. A more detailed process description of each stage is given at the end of this chapter.

Figure 2.1: Process summary diagram



2.8 Figure 2.E shows the proposed site layout. Figures 2.F to 2.J show indicative 3D views, and Figures 2.K to 2.O, 2.Q and 2.R show elevations and floor plans.

2.9 The REnescience technology uses an enzymatic process that is undertaken at low temperature and ambient pressure conditions in two fully enclosed vessels ('bioreactors'), which will be loaded and emptied from areas enclosed in part of the waste reception and processing buildings. These buildings will also house the waste reception bunker (below ground), mechanical 2D and 3D waste sorting stage of the process, output product storage and loading areas, control room and offices/staff amenity areas.

2.10 Further storage for full containers of output products pending transport off-site will be located externally on hardstanding in a covered area in the east of the site. A second external covered area for storage and loading of CLO will be located in the south of the site closer to the post-digester tanks.

2.11 The AD stage is anticipated to comprise two external circular tanks for bioliquid storage, one tank for retention of any off-spec bioliquid, four tanks for digestion, two post-digester tanks, and associated pipework, biogas treatment and pumping equipment. Detailed design of this element of the proposed development is ongoing, and for the purposes of the planning application and EIA, a design envelope has been defined. This is discussed further on the design envelope section on page 19, below.

2.12 Up to five reciprocating gas engines will be located externally (in standard containers) and will share a single stack or bundle of flues 33 m in height. An enclosed flare will also be provided as a back-up for flaring a biogas if the gas engines cannot be used (e.g. due to breakdown). A water treatment plant (WTP) will treat water from de-watering the digestate and provide clean water to the washing stages of the mechanical sorting process. All remaining 'dirty' water will be recirculated into the REnescience process, with the exception of a concentrated residual output stream from the WTP, which will be transported for treatment off-site.

2.13 Renewable electricity generated by the gas engines will be exported to the national grid or by private wire to local industrial consumers. The grid connection will utilise capacity in the existing 132 kV substation that is located immediately adjacent to the southern boundary of the site. The proposed development's export transformer will be located adjacent to this existing substation, requiring a very short cable outside the site boundary into the existing substation to provide the grid connection.

2.14 A small proportion of the electricity will be used on-site to power pumps, conveyors, waste separators, AD tank stirrers and other machinery in the waste treatment process. Waste heat from the gas engines will also be used to pre-heat water from the AD process that is mixed with incoming waste and re-circulated into the REnescience bioreactors.

2.15 Overall, the proposed development has a number of important advantages for waste treatment compared to alternatives such as energy-from-waste (EfW) incineration or other types of MBT.

- Aside from bag-opening and the separation of oversized material, no up-front waste shredding or crushing is required on-site: the enzymatic process is effective in targeting biodegradable material in mixed, unsorted waste. This avoids potential dust, odour, noise or pollutant mobilisation issues that may be associated with shredding waste.
- REnescience is a low temperature, efficient biological process. The proposed development does not involve waste incineration, and is a highly energy- and space-efficient way of recovering recyclables and generating renewable energy from waste. This results in a relatively small site footprint and no requirement for a large incinerator stack, tall boiler house, complex air pollutant emissions abatement equipment or cooling plant.
- The process maximises recovery of value from the residual waste treated. All of the waste input is separated into fractions for recycling and energy recovery (as described above). The only remaining waste output is CLO from the de-watered digestate, production of which is minimised as described below.
- Using the REnescience enzymatic process to target the biodegradable fraction in mixed waste and convert it to bioliquid has a double benefit compared to typical MBT-AD facilities. Firstly, it produces cleaner, higher-value recyclables (metals, plastics) and RDF/SRF. Secondly, the homogenous bioliquid is a better feedstock than typical mixed biodegradable waste for the AD stage: this leads to improved biogas yield and hence greater renewable electricity generation, and minimises the remaining CLO requiring disposal after de-watering.

Waste accepted

2.16 REnescience Northwich will be a merchant facility and is designed to treat residual non-hazardous mixed waste, which may be household waste (referred to as 'municipal solid waste', MSW) and other commercial or industrial (C&I) waste with similar, suitable composition[2]. It will also accept 'fines', which will have a similar composition to the MSW and C&I waste, being smaller residual particles that result from waste processing/sorting at other facilities. Table 2.1 shows expected typical waste compositions.

Table 2.1: Typical waste composition

Waste fraction	Proportion in MSW/C&I	Proportion in fines	Proportion overall *
Paper	13.9%	6.7%	12.7%
Cardboard	5.9%	6.7%	6.1%
Dense plastic	7.4%	4.0%	6.8%
Plastic film	7.6%	2.5%	6.7%

[2] The waste types that the facility is permitted to accept will be defined in its Environmental Permit, using European Waste Catalogue (EWC) categories.

Waste fraction	Proportion in MSW/C&I	Proportion in fines	Proportion overall *
Shoes and textiles	4.3%	0.1%	3.6%
Glass	5.2%	7.4%	5.6%
Miscellaneous combustibles	8.3%	3.4%	7.5%
Miscellaneous non-combustibles	2.1%	4.4%	2.5%
Ferrous metal	2.3%	0.1%	1.9%
Non-ferrous metal	1.3%	0.8%	1.2%
WEEE **	1.0%	0.3%	0.9%
Hazardous household	1.2%	0.0%	1.0%
Putrescibles (garden)	4.3%	0.6%	3.6%
Putrescibles (food)	31.5%	21.1%	29.7%
Fines (< 10 mm)	3.8%	42.0%	10.3%

* Weighted by expected ratio of MSW/C&I to fines, 83% and 17% of total waste by mass accepted, respectively
** Waste electrical and electronic equipment

2.17 Hazardous waste, clinical waste or other waste outside the defined list regulated by the facility's environmental permit will not be accepted[3]; should any be received, it will be stored in a designated area within the waste reception building, separated from other waste, until it can be collected and transported for treatment or disposal by an appropriately licensed waste carrier.

2.18 The waste market prior to the start of operation at REnescience Northwich will determine the sources of waste treated. DONG Energy is in ongoing commercial negotiations with waste suppliers. For the purpose of this EIA, in particular to understand impacts on the local road network, it has been assumed that the waste will come from the Cheshire area, North West England and the North Midlands as indicated in Table 2.2. Further detail concerning traffic volumes and vehicle routing is given in Chapter 6: Traffic and Transport and in Appendix 6.A and Annex 6.A.2 in Volume 3.

Table 2.2: Summary of assumed waste sources and vehicle movements

Source of waste	Estimated proportion	Strategic network route *
North West	44%	M6 north (J19), A556 (e)
North Midlands	22%	M6 south (J18), A54, A530 (s)
Cheshire and points west	33%	A556 (w)

* to reach the A530 Griffiths Road

2.19 Waste will be sourced from intermediary bulking and transfer sites operated by the third party waste suppliers and will be delivered by HGV in closed containers with average 22.5 t payload. No waste deliveries will be made by smaller household refuse collection vehicles (RCVs).

3 With the exception of small amounts of hazardous wastes such as batteries that are found in typical household waste, which can be separated and/or treated in the REnescience process.

2.20 The existing rail sidings to the north of the application site offer the potential for delivery of waste or export of the recovered materials by rail. However, to do so would require one or more waste suppliers or customers for materials with equivalent access to a railhead and loading facilities. This cannot be secured at the time of making a planning application, and there are also considerations of the necessary scale of bulk material transport to make a railway routing slot both logistically and commercially viable, which would in turn also affect the feasibility of waste storage and unloading on the application site.

2.21 The ES therefore assumes as a worst case that all material is delivered and collected by road. However, the proposed development layout retains un-built space adjacent to the rail sidings in the northern part of the site for future access should rail transport of materials become feasible.

Materials recovered and process outputs

2.22 Table 2.3 shows the anticipated mass balance for the facility, indicating the mass of each process output including recovered materials, based on the nominal waste treatment throughput of 144,000 tpa and the typical waste composition shown in Table 2.1.

Table 2.3: Mass balance

In / out	Material	Tonnes per annum
In	Waste treated	144,000
In	Enzymes	1,300
Out	Recovered ferrous metals	2,460
Out	Recovered non-ferrous metals	1,350
Out	Recovered 3D plastics	4,280
Out	Recovered inert material	11,100
Out	RDF/SRF	50,760
Out	CLO	41,240
Out	WTP residual stream	9,520
Out	Biogas	24,590

Built development

2.23 Figure 2.E shows the proposed site layout. Figures 2.F to 2.J show indicative 3D views, and Figures 2.K to 2.O, 2.Q and 2.R show elevations and floor plans.

2.24 In overview, the built development will comprise one main building with varying façades and roof heights to accommodate the offices and control room, waste bunker with crane, mechanical sorting stage and storage/loading area for recovered materials. Two enzyme treatment bioreactors (sealed rotating horizontal cylindrical tanks approximately 45 m long and 4.5 m diameter) will adjoin this building, with the materials feeds into and out of the bioreactors enclosed within the building.

2.25 The parts of the building housing the waste bunker will be 24 m high. The other elements of the building will all be lower, between 10 m and 15 m, as detailed in Table 2.4, below.

2.26 Additional covered external hardstanding for container storage will be provided for process outputs from the mechanical sorting stage (recyclables, RDF/SRF and inert materials), with a second covered external storage area for CLO in the southern part of the site. Weighbridges for arriving and departing HGVs and a car parking area for staff/visitors will be constructed. AD tanks, associated pipework and pumps, gas engines, stack and flare, WTP and electrical transformer will be constructed externally.

2.27 The AD stage is anticipated to comprise two external circular tanks for bioliquid storage, one tank for retention of any off-spec bioliquid pending re-treatment, four tanks for digestion, two post-digester tanks, and associated pipework, biogas treatment and pumping equipment. These will be enclosed in a bunded area at the west of the site. The tanks are proposed to be of concrete construction with flexible, sealed domes. Expected dimensions are shown in the accompanying figures and in Table 2.4; the tank heights range up to 20 m. However, detailed design of this element of the proposed development is ongoing, and for the purposes of the planning application and EIA, a design envelope has been defined as the maximum tank height shown (20 m) and the ground footprint area within the containment bund at the location shown in Figure 2.E. This is discussed further on the design envelope section on page 19, below.

2.28 Up to five gas engines, a start-up boiler, WTP and electrical transformers will be located in the south-east part of the site. The tallest structure on the site will be the exhaust stack for the biogas engines. The optimum height for this, 33 m, has been determined by air pollutant dispersion modelling, detailed in Chapter 10: Air Quality and Odour.

Table 2.4: Key building and structure dimensions

Building / structure	Height (m)	Width (m)	Length (m)	Diameter (m)
Reception hall	11.2	21	22	
Bunker hall	24	29.5	32.5	
Bioreactor end housing x 2	14.5	14	20	
Sorting hall	14.5	19.5	56.2	
Loading hall	10.3	19.5	25	
Administration building	4.8	11.3	24.6	
Recovered materials store	8	14.8	24	
CLO store	8	15	32.5	
Digester tanks x 4 *	20			32
Post-digester tanks x 2 *	16			25
Bioliquid feed tanks x 2 *	15			13
Residual bioliquid tank *	16			9

* The AD tank numbers and dimensions shown are subject to further optimisation, within the design envelope

2.29 The proposed building form has been generated from the processes to be housed (each of which has its own required minimum internal height) and the required interrelationships between the various internal spaces. In order to reduce the external visual mass of the building, these heights were used to generate the external form rather than having a consistent high level roof height over all areas. These staggered roof heights, combined with the central feature offices, give the building visual interest without the need for additional architectural elevation treatment and feature cladding solutions.

2.30 Other than the office element, vertical laid profiled metal cladding is proposed throughout with a neutral grey/silver colour palette. To give focus and prominence to the offices, these are highlighted with a contrasting accent colour and higher quality microrib cladding. Elevations are broken up by using darker cladding to the lower building forms with a light coloured cladding to the taller volumes like the bunker hall; it is intended that in doing this the taller buildings will fade into the sky, giving the appearance of a lower building.

2.31 The Design and Access Statement gives further detail of the proposed design, its evolution, and how it responds to the needs of the REnescience process, site constraints, and environmental factors considered during the EIA process.

Design envelope

2.32 As noted above, detailed design work for the AD tanks is ongoing, so for the purpose of the planning application and EIA, a design envelope has been defined from which EIA studies can take worse-case assumptions. The design envelope comprises, in its width, length and height dimensions, the ground footprint of the bunded AD containment area (an irregular shape with total area 8,692 m^2, as shown in Figure 2.E) and the maximum AD tank height of 20 m.

2.33 Within this envelope, the size, placement and number of individual AD tanks and other elements may vary in the final design from that shown in Figure 2.D, although none will be greater than 20 m in height or lie outside the bunded area.

2.34 The height and area of the containment bund have been designed on the basis of the maximum liquid storage volume required (in accordance with Environment Agency guidelines) and will not increase.

2.35 EIA studies have taken worst-case assumptions from this defined design envelope, in order to assess potential impacts from construction and operation of the AD element of the proposed development. Final design parameters will be equal to or less than those assessed, and will therefore have environmental impacts of the same level or less.

2.36 This principally affects the assessment of landscape and visual impacts, where changes to the height, massing and layout of the AD tanks have the potential to affect views from sensitive receptors. Within the design envelope, any feasible combination of tanks will present a similar overall appearance and massing in medium and far views, with the waste bunker hall and gas engine stack (24 m and 33 m high, respectively) remaining the tallest and most prominent elements of the proposed development. The photomontage from viewpoint seven (looking south from Manchester Road, shown in Figure 4.P) is considered to be worst-case, having the largest and tallest digester tank placed at the north of the design envelope, closest to the viewpoint location. The Landscape and Visual Impact Assessment in Chapter 4 therefore assesses a reasonable worst-case, and any changes to AD tank layout within the design envelope will not lead to greater impacts or effects.

Drainage

2.37 The proposed clean surface water drainage system will be a single gravity network, discharging via the existing 450 mm diameter outfall present on Wade Brook. The surface water drainage run-off flow rate will be restricted to a maximum flow rate that is in line with the existing outfall capacity. The surface water drainage system is designed to contain all flood water within bunded areas and in below-ground pipework and chambers during storms up to and including the 1 in 100 year return period (including climate change).

2.38 External HGV circulation areas and vehicle parking areas will be drained via linear drainage channels, Beany-type linear kerb drains, and/or localised road gullies. All surface water drainage from vehicle parking or circulation areas will be trapped at source to remove silt or debris, then passed through a Class 1 bypass oil separator (with integral high level alarms). An isolated perimeter surface water drainage channel with Class 1 Forecourt oil separator will be provided for the vehicle fuelling station area.

2.39 Surface water drainage from the AD tank area will be contained within a fully watertight bund to avoid potential contaminated surface water being discharged to Wade Brook should any leaks from the tanks or pipework occur. Release of runoff collected within the AD tank area will be controlled via a manually operated penstock valve. The penstock valve will default to the closed position, and only be opened to release collected clean rainfall runoff after formal inspection of the contents by a suitably qualified site operative. The same design will be applied to the bunded area around the external elements of the two REnescience bioreactors.

2.40 The AD tank area has been designed with capacity to contain 110% volume of the largest single liquid containing tank, or 25% of the combined volume of all liquid containing AD tanks, which has been determined as 6,773 m^3. In addition, the bund is sized to contain the volume of water attributable to the 1 in 100 year storm event, which is 1,012 m^3. A minimum freeboard of 100 mm will be provided above the maximum predicted liquid level within the bunded area. The total containment volume within the AD tank bund will be 7,785 m^3, with a bund wall height ranging from 0.83 m to 2.38 m (to account for the 1 in 80 longitudinal fall across the bund base level for drainage purposes).

2.41 The external storages areas for CLO and containers of recovered materials and RDF/SRF will be provided with isolated drainage to below ground holding tanks to capture any liquid leakage, which will be pumped back into the REnescience process. Canopies above these storage areas will direct clean rainwater separately into the clean surface water drainage system.

2.42 Firewater from the fire suppression system in the waste reception hall and waste bunker building would be directed into the waste bunker itself, which has more than adequate capacity. Fire water runoff from general firefighting water used by the Fire Service elsewhere on the site would be controlled using a manually operated penstock closure valve on the outfall of the surface water drainage system to Wade Brook.

2.43 Details of the drainage strategy and design are given in Appendix 8.A in Volume 3 and Figure 8.C in Volume 4.

Landscape scheme

2.44 Viewpoint photographs (see Chapter 4: Landscape and Visual Impact and the Figures 4.I to 4.O in Volume 4) show that the site is generally well-screened by existing vegetation in the land around its perimeter and by the industrial works to the east and south. The vegetation has grown substantially since the last planning application and EIA for this site, by Viridor in 2010, and offers significantly better screening of views than at that time. The site is set in an industrial context, being a former chlorine works and being located within a cluster of active chemical works facilities.

2.45 However, in line with the goal of minimising adverse impact and enhancing views and biodiversity where feasible, significant landscape planting and habitat creation within the site is proposed. The landscape proposals are detailed in the Landscape Management Plan (Volume 3, Appendix 4.C) and shown in Volume 4, Figure 4.Q. The design evolution, including landscape planting options, is discussed in the Design and Access Statement accompanying the planning submission.

2.46 The landscape proposals have been designed as an integral part of the development, to provide treatments for the perimeter of the site and green spaces within the application boundary. The landscape design forms a sequence of specific landscape proposals focussed on the enhancement of the local landscape. The proposals include the following features:

- native tree and shrub planting within a boundary strip to provide a soft boundary treatment and screening of low-level views along the west, south and east of the site, integrating the buildings and tanks particularly when viewed from the north-west;
- native tree and shrub planting along the southern boundary to provide connectivity to existing vegetation retained along Wade Brook;
- a demarcated area of retained existing habitat for translocated fragrant orchids, in the east of the site (also likely to be re-colonised by ragwort, retaining suitable habitat for cinnabar moth caterpillars);
- wildflower grassland along northern boundary of the site; and
- internal areas of shrubs and individual trees.

Lighting

2.47 The plant will operate on a 24 hour basis. Site lighting has been selected and positioned in order to minimise light pollution and energy use, while ensuring security and good working conditions and safety for personnel and security. Internal roads and walkways will be lit and areas of external equipment will be illuminated with specific and directional task-based lighting as required.

2.48 The type, number and location of site lights for the operational phase has been carefully considered to take into account and minimise potential impacts to local residents and wildlife. All lighting will be implemented to minimise disturbance to important ecological receptors, with particular reference to bats. The choice and implementation of lighting has been designed in line with current best practice for the reduction of intrusive light and avoidance of light pollution (e.g. Institution of Lighting Professionals (2011) 'Guidance Notes for reduction of Intrusive Light GN01') and with regard to the need to avoid impacts on pipistrelle bats using the gatehouse outside the site entrance, following the Bat Conservation Trust ‘Bats and Lighting in the UK’ 2008 Guidelines (see Appendix 7.D and Annex 7.D.2 in Volume 3).

2.49 It should be noted that in addition to extensive site lighting at the neighbouring chemical works, there are also a number of existing c. 40 m high flood lights around the site (outside its boundary) to the north and west.

2.50 The proposed lighting design for the REnescience Northwich facility is shown in Figure 2.P and incorporates the following principles.

- Avoidance of illumination in sensitive areas: light spillage will be avoided around bat roosts, along bat flight corridors and high quality wildlife habitats.
- Light source: the potential impacts will be minimised by the use of low or high pressure sodium lamps instead of mercury or metal halide lamps.
- Luminaires and lighting direction: lighting will be directed to where it is needed and light spillage avoided. This will be achieved by the design of the luminaires and by using accessories such as hoods, cowls, louvers and shields to direct light to the intended areas only.
- Timing and duration of use of lighting: where specific needs arise, constraints to the level and duration of lighting will be implemented.
- Light columns: consideration will be given to placing light columns sympathetically for a given location, to retain either a low level lighting column or high level downward/inward directing light column.
- Light levels: light intensity will be determined by the specific need for each location, and minimised to that required.
- Architectural design: to the extent that is consistent with safety requirements, lighting will be designed sympathetically with the architectural design of the REnescience Northwich plant.

2.51 Throughout the construction period, the construction areas will be lit for safety reasons during any periods when the normal operating hours take place in darkness or during poor light conditions. Site lighting will be designed to avoid light spillage and to take into account potential impacts to people and wildlife. Similar principles will apply during the construction phase to those that will be employed during operation. These are detailed in the Code of Construction Practice and Construction Environmental Management Plan (CoCP and CEMP) at Appendix 2.C in Volume 3.

Grid connection

2.52 The proposed development site layout places the grid export transformer immediately adjacent to the south-eastern boundary of the site. The existing 132 kV substation that will be used for the grid connection adjoins the site boundary at this point. No significant off-site associated development work for the grid connection is therefore required and there are is no potential for environmental impacts outside those reported in this ES for the proposed development works within the application boundary.

Operation and management

2.53 The REnescience enzyme treatment and AD stages are relatively slow biological processes that cannot be frequently stopped and started, and during normal operation will operate continuously (i.e. during day and night time, weekdays and weekends). The gas engines will also run continuously during normal operation to make use of the continuous biogas production and provide a 'baseload' electricity output to the national grid.

2.54 Waste will only be delivered and process outputs will only be collected during daytime working hours (07:00 to 19:30 Monday to Friday and 08:00 to 13:00 on Saturday), avoiding peak traffic periods where practicable, in line with a Delivery and Servicing Management Plan that will be prepared prior to operation of the facility. The mechanical waste sorting stage, following enzyme treatment, is expected mainly to operate during daytime working hours.

2.55 Allowing for planned maintenance downtime, the facility is expected to operate for up to 8,000 hours per annum.

2.56 It will employ around 24 full-time equivalent (FTE) staff working in either a three-shift or two-shift pattern. A mix of employment skills will be required: one plant manager, one operational manager, 14 staff operating the process in shifts (control room staff, crane and vehicle operators), three maintenance technicians, one laboratory technician, three administrative staff, and one cleaner. No staff will be employed in hand-picking or sorting of waste, as these processes are mechanical and largely automated (with the exception of human-operated cranes and loading vehicles).

2.57 The control room will be located centrally in the main processing building, elevated so that the waste and recyclables handling processes can be easily overseen. Separately, office space, a workshop and laboratory, and staff amenity facilities (male and female locker rooms, canteen, male and female toilets) will also be provided.

Environmental management

2.58 DONG Energy's goal in operating REnescience Northwich will be for it to be a good neighbour. It will implement an ISO14001 or equivalent Environmental Management System (EMS), which among other measures will define good housekeeping practices for the site to control litter, odour and the potential to attract pests. Waste will only be unloaded in the fully enclosed waste reception hall, where any spillage can be easily cleaned into the waste bunker. Hoses for washing down this area and a separate washing station for HGVs are provided in the site design. Daily checks of the site, especially its perimeter fence, will be made for litter.

2.59 Further details of designed-in measures to avoid nuisance or disamenity from litter, vermin, pests or birds are given at Appendix 2.A in Volume 3.

2.60 Environmental management of the site will be regulated by the Environment Agency using the facility's environmental permit, which will specify operating techniques and will include a regular schedule of audits. The permit will also regulate discharges and emissions from the facility, specifying limits, monitoring and reporting of these.

2.61 A draft Odour Management Plan (OMP) has also been produced, setting out potential sources of odour and the control/management measures that DONG Energy proposes to adopt to minimise potential for odour nuisance. The OMP will be finalised and updated as necessary based on experience during commissioning of the facility in late 2016 and early 2017, and will form part of the REnescience Northwich EMS. The draft OMP is at Appendix 10.E in Volume 3.

Maintenance

2.62 The facility will have an annual planned maintenance cycle, typically with one yearly shut-down of the process to inspect and maintain major components, together with regular inspection and maintenance throughout the year according to technology suppliers' maintenance guidelines. Any unexpected required maintenance of individual components or systems will be undertaken without delay, in accordance with suppliers' maintenance guidelines.

2.63 Maintenance of plant installations is expected to be performed principally by the three maintenance technicians, in cooperation where necessary with contractors specialising in the relevant technology.

Safety

Overview

2.64 In general, safety issues at industrial process plants fall into two main categories. Firstly, there are occupational safety issues that are present at most industrial installations. These include issues such as the guarding of dangerous machinery, working at height, etc. All industrial activity is subject to legislative requirements such as The Health and Safety at Work etc. Act 1974 as amended [2] and associated statutory instruments. The REnescience Northwich project is designed and will be operated in accordance with all relevant legislative requirements. DONG Energy will establish written health and safety policies and procedures, forming part of the facility's management systems, which will be regulated by the Health and Safety Executive (HSE).

2.65 Secondly, there are process safety issues that only arise when hazardous substances are processed, particularly where the substances are present in large quantities and/or are processed at high temperatures and pressures. The REnescience process and the AD process are operated at low temperatures (<100 degrees Celsius) and ambient pressure. REnescience Northwich will not involve the input of any significant quantities of hazardous materials. (Minor quantities of hazardous substances such as cleaning fluids will be present, and risks will be controlled by normal workplace safety measures.) The enzymes used in the process and the bioliquid produced are not hazardous substances.

2.66 The only significant potentially-hazardous substance present will be produced biogas. The composition of the biogas will be approximately 60% methane and 40% carbon dioxide. Methane is a flammable gas, familiar as the main constituent of the natural gas that powers central heating cookers, among other applications. Carbon dioxide is well known as the 'fizz' in fizzy drinks and is also found in specialised fire extinguishers. Carbon dioxide is an asphyxiant gas but not classified as toxic or harmful.

2.67 The facility includes biogas storage in the upper parts of the post-digester tanks, together with associated biogas pipework, cleaning and drying processes, and compressors. In total, up to c. 7,300 m^3 (9 t) of biogas will be present on site.

2.68 Process installations handling the largest quantities of hazardous substances are subject to the additional requirements of The Control of Major Accident Hazards Regulations 2015 [3]. These installations are referred to as COMAH installations or simply major hazards. The 2015 regulations apply to installations handling 10 t or more of flammable gas. As such, the biogas storage on the REnescience Northwich site will place it below the threshold at which the COMAH Regulations apply and it will not be classed as a major hazard facility. However, the requirements of the European ATEX Directive (94/9/EC [4], recast as 2014/34/EU [5] in 2014) and associated guidance, transposed in the UK as the Dangerous Substances and Explosive Atmospheres Regulations 2002 [6] (DSEAR) will be applicable to the detailed design of the proposed development.

Process safety

2.69 Recognition of process hazards in industry, particularly since the Second World War, has led to the development and introduction of new techniques to identify and quantify the hazards and then decide whether additional safety measures are required to manage the hazards. Process plants with greater hazards are subjected to progressively more thorough assessment techniques.

2.70 Techniques most commonly encountered include Hazard and Operability Studies (HAZOP), Layer of Protection Analysis (LOPA) and Quantified Risk Assessment (QRA). These techniques are commonly applied before a new process plant is built or modified, and may be applied retrospectively to existing plants.

2.71 Many of the lessons learned from the assessment of high-hazard sites such as chemical processing plants can be usefully applied to smaller scale, less complex processes, such as those at REnescience Northwich. A HAZOP study will be undertaken as part of the REnescience Northwich detailed design process, and appropriate design/control measures to reduce the risk from hazards identified to an acceptable level will be put in place and approved by the HSE.

2.72 Industrial and waste processes for the production, storage and utilisation of methane/natural gas are well established. Experience of plant handling fuel gases generally extends back well over a century. This accumulated experience can be readily applied to the proposed plant with little change. A main source of standards for the design, construction and operation of gas installations is The Institution of Gas Engineers and Managers (IGEM), a British professional engineering institution founded in 1863. IGEM produces and maintains a wide range of codes and standards applicable to gas installations. HSE has stated that it expects that *'suitable controls must be in place to address all significant hazards … such controls, at a minimum, must achieve the standards of relevant good practice precautions*' [7] (page 3). Compliance with IGEM codes and standards and/or equivalent standards is the means to meet this requirement and comply with the law.

2.73 The presence of carbon dioxide in the biogas reduces its flammability. Because the generation and utilisation of biogas is becoming widespread, there is an increasing amount of research into the flammability of biogas and how it differs from the pure substances contained in it. For example, experimental work has shown that a similar biogas to the composition in this case burns more slowly than pure methane [8]. The burning speed is reduced by about a quarter. The practical significance of this is that releases of biogas are likely to burn as a flame if ignited, rather than give an explosion.

2.74 This increasing knowledge about the hazardous characteristics of biogas combined with the existing knowledge about flammable gas plant and processes provides a sound basis for safety.

Leaks and spills

2.75 Pressure and temperature conditions in the REnescience bioreactors and the AD tanks will be monitored using automated sensors overseen by a plant operator to avoid problems such as foaming (in the AD process). Pressure relief valves and water locks will be fitted to each AD tank to prevent catastrophic failure should overpressure develop. Tanks with biogas storage and valves/flanges in pipework will be fitted with monitoring and alarm systems and stop valves / isolation valves to detect and stop any biogas leakage. A backup biogas flare is provided to flare off excess biogas should the gas engines be unavailable (e.g. due to unplanned maintenance) and the biogas buffer tank capacity be exceeded.

2.76 The AD tanks and REnescience bioreactors will be engineered to appropriate standards to provide primary containment of the liquids within, and will also be provided with bunded secondary containment to ensure there is no significant risk of uncontrolled discharge to land or water (as discussed in the drainage section on page 20, above, and in the Drainage Strategy and Design at Appendix 8.A and Figure 8.C). This will be regulated under the facility's Environmental Permit. Pipework, valves and fill/extraction points will also be located within bunded areas.

Fire and other emergencies

2.77 DONG Energy will put in place written emergency management plans as necessary. The facility will be fitted with fire detection and suppression systems in the waste bunker and waste reception hall, a water supply tank for the sprinkler system, and appropriate firewater containment.

Access and traffic

2.78 Waste will be delivered to the facility in bulk by heavy goods vehicles (HGVs) from existing intermediary waste transfer and treatment sites. No waste delivery will be by household refuse collection vehicles (RCVs). Waste will be sourced from within the region, i.e. Cheshire, the North West and North Midlands, as described in the Waste Accepted section on page 15, above. Access will be via the existing private road serving Lostock Works, off the A530 Griffiths Road, with heavy vehicles arriving and departing from the south on the A530 due to the low rail bridge to the north.

2.79 HGVs will also be used to transport process outputs (separated recyclables, RDF/SRF, CLO, and inert materials). It is possible that the return journeys for HGVs that delivered waste can be used to transport some of these outputs, reducing the total number of HGV movements needed. As a worst-case assumption for the EIA, however, HGV movements with unladen return trips have been assessed.

2.80 As discussed in paragraphs 2.20 and 2.21, above, the ES assumes as a worst-case that all material will be transported by road, as potential use of the adjacent rail network connection cannot be secured at the time of a planning application (due to the need for waste suppliers or materials customers to have equivalent rail access, among other considerations.) However, the proposed development layout retains un-built space adjacent to the rail sidings in the northern part of the site for future access should rail transport of materials become feasible.

2.81 The existing T-junction of the access road with the A530 is considered suitable for the additional traffic that will be using it. Minor improvement works to re-surface or widen the spread of the junction (on the private road, not public highway) may be undertaken in agreement with the existing site users. A "right turn only" sign will be installed at the exit of the private road to remind HGV drivers not to travel north on the A530, due to the low rail bridge.

2.82 The existing private access road through the Lostock Works site is suitable for HGV traffic and has sufficient width for two HGVs to pass abreast at almost all points. However, there are certain narrow points at bends and the site entrance gate where a small amount of road widening (1–3

m) may be desirable. This would be carried out in agreement with the existing Lostock Works site users.

2.83 The private site access road within Lostock Works is lined with a continuous footway to the southern side, approximately 1 m in width, which connects with the existing footway on the public highway (A530). The pedestrian footway would be retained following access road widening works, if undertaken.

2.84 HGVs making waste deliveries will turn after passing over the weighbridge at the entrance of the proposed development site and will reverse into the waste reception hall. The turning area is shown in Figure 2.D in Volume 4. This is directly opposite the site entrance, minimising internal manoeuvring for waste deliver HGVs arriving and departing.

2.85 The car park (with a separate access after the main site gate, separating passenger vehicle flows from HGVs) will have 30 spaces for staff and visitors, including 1 space for drivers with disabilities and two charging points for electric vehicles.

2.86 Secure, covered cycle storage with space for 10 bicycles will be provided at the edge of the car park closest to the main office building and reception. A marked pedestrian crossing will be provided at this spot for safe access from the car/bike park to the reception.

2.87 Access and movement within the site is discussed further in the Design and Access Statement accompanying the planning submission. Pedestrian, cycle, public transport and vehicle access via the public highways and footpath networks are assessed in Chapter 6 in this volume and Appendix 6.A in Volume 3.

Construction

Construction programme and overview

2.88 Should the proposed development be granted planning consent, construction is anticipated to commence in the first quarter of 2016 and to take around 12 months, allowing for commissioning in Q1 2017 and operation by the end of March 2017.

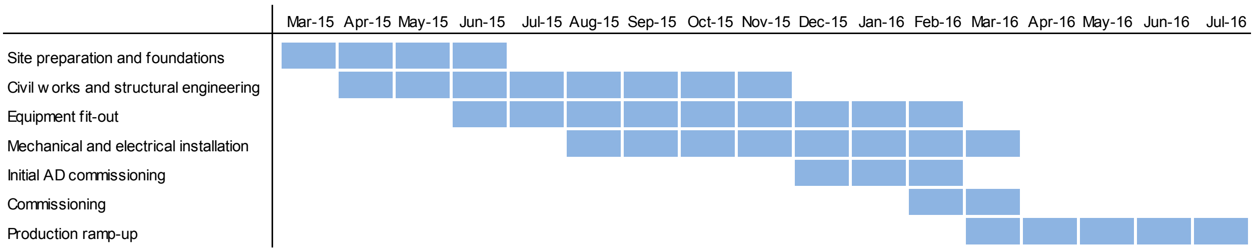
2.89 Construction materials will be sourced locally where appropriate, to minimise the environmental impact of transportation. In order to prepare the site for construction works (enabling a rapid construction programme), the Applicant may undertake initial works in Q4 2015 to complete the removal of foundation slabs from previous structures on site (which can be carried out under the existing prior notification approval for demolition of those structures given in 2013, with an updated method statement and ecology survey information that will be submitted to CWCC) by excavating the remaining foundation slabs and crushing the concrete on-site ready for re-use.

2.90 Following the initial site preparation, piling and foundation works are expected to take three months, from March to June 2016, and the main civil works including structural engineering of the main building, AD tanks and associated equipment will take seven months from April to November 2016. Equipment fit-out will overlap, running for eight months from June 2016 to

February 2017, with mechanical and electrical installation work running from around August 2016 to the end of commissioning in March 2017. The main commissioning phase for initial operation will take approximately one month from February to March 2017, but with earlier commissioning of elements of the AD plant starting from December 2016, described further below. First operation will be by the end of March 2017, following which full production will ramp up over the remainder of H1 2017.

2.91 The construction programme summarised above and in Figure 2.2 describes the expected dates and durations for each phase of work, but it is possible that delays to elements of it due to unforeseen factors (e.g. extreme weather) could occur.

Figure 2.2: Construction programme overview



2.92 During the construction period, the normal hours of working are proposed to be (unless agreed otherwise with the planning authority):

- Monday to Friday: 07:00 to 19:00;
- Saturday: 07:00 to 13:00; and
- Sunday and Bank Holidays: no working unless agreed in advance with the planning authority.

2.93 An extension of working hours on up to 21:00 on Monday to Friday during summer is also proposed, when the daylight permits later working without the need for site floodlighting. Significant noise-generating activities would not be undertaken outside the core working hours of 07:00 to 19:00.

2.94 It is proposed to stagger the various shift start and end times within the construction complex (on weekdays, for example, civil employees 07:30 – 18:30 and mechanical trades 07:00 – 18:00). This small stagger in shift start and ending times will allow for a greater spread in traffic flow over the peak periods and facilitate access to the construction site.

2.95 Non-intrusive and internal activities such as fit out and commissioning may be undertaken outside these normal working hours in order to minimise overall construction time.

Site preparation

2.96 A bulk earthworks operation will be required to prepare the site for re-development. As noted above, this will initially involve removal of all concrete floor slabs, roadways, bases, pits and foundations associated with the former structures on the site, which will then be crushed and stockpiled on site for re-use as a granular fill / capping material.

2.97 Existing surface water pipework connected to Wade Brook outfall will be retained, and measures will be put in place by the construction contractor to ensure temporary rainwater runoff from the site is collected and discharged in a controlled manner, including appropriate management to remove silt and sedimentation from the runoff, as specified in the Drainage Strategy at Volume 3, Appendix 8.A and in the CEMP at Appendix 2.C.

2.98 The site will then be re-profiled to create an adequate formation on which to commence construction of the new development. This will involve filling parts of the lower-lying perimeter areas along the northern, southern and western boundaries of the site, to extend the large flat central plateau on which the new buildings and hardstandings can be constructed. Cut materials for use in the earthworks operation will be generated from the new waste bunker excavations, together with arisings from new building foundation and underground drainage excavations. It is intended that all excavated materials will be retained on site for re-use in the new development, with only minimal quantities of unsuitable materials being disposed off-site.

2.99 Construction laydown areas will be demarcated, with hardstanding and bunded storage areas (or use of self-bunded tanks) for fuel or other liquids required. Internal gravelled roadways will be laid out for construction traffic. A wheel-washing station will be set up at the site entrance to minimise track-out of mud onto the access road and consequent dust generation.

2.100 The existing security hut outside the site entrance will be left in situ and may be used as a site office, subject to the requirement to avoid disturbance to common pipistrelle bats using the roof space (see Chapter 7 in this volume and Appendix 7.D in Volume 3). Lighting mitigation measures to avoid bat disturbance during construction are specified in the lighting section on page 22, above, and in the CEMP at Appendix 2.C in Volume 3.

2.101 Improvements to the site access road, if required, will be made at the earliest practicable stage to assist with construction traffic access.

Civil works

2.102 Foundations for the new building structures on the site are anticipated to be traditional ground bearing pad footings, bearing onto natural Boulder Clay soil strata, which is present below a layer of existing made ground fill present across the site. Foundation excavations will be cut through the made ground fill as necessary to achieve a suitable foundation bearing strata. Where building foundation loadings are likely to be very high, such as the waste bunker superstructure, and/or the depth of made ground fill proves to be excessive, then it is anticipated that driven precast concrete piled foundations may be required. This will equally apply to any large, heavy or settlement-sensitive equipment that may be installed within the building.

2.103 The waste bunker will be formed as a water-retaining reinforced concrete box within an open cut excavation, and will be founded within the natural Boulder Clay soil strata. It is likely that the bunker would be of slip-form construction and as such would involve pouring of concrete on a 24 hour basis.

2.104 Building floor slabs and large external concrete bases required to heavy support tanks or process equipment will generally be constructed within the layer of existing made ground fill, and it is considered that some form of ground improvement will be necessary to achieve a minimum safe bearing capacity and control total and differential settlements beneath such structures. It is anticipated that a vibro stone column ground improvement system will be the most effective means of treatment. External hard surfaced areas will be constructed on the prepared earthworks formation as described previously, and will utilise the site-won crushed granular fill materials to provide a suitable foundation layer.

2.105 Below-ground elements of the final drainage system for the facility will be installed, replacing the initial temporary construction drainage system.

Plant erection and fit-out

2.106 The buildings housing the main components of the REnescience process will mostly be steel framed**.** Erection of the main building columns and beams will be achieved with the use of heavy duty mobile cranes. The AD tanks will be constructed of steel-reinforced concrete.

2.107 Generally, following installation of all main REnescience process, mechanical and electrical plant, the building steelwork, cladding of the walls and installation of the roofs will be completed to provide a weather-tight environment. Certain areas may be clad and roofs installed earlier in the construction programme to minimise overall construction duration and to provide weather resistant areas for follow-on installation activities to occur.

2.108 The principal components REnescience and AD processes will be purchased as complete units, where practicable, and delivered to the application site for installation. Pipe work and ducting will be assembled on the application site.

Construction traffic and abnormal loads

2.109 Construction traffic will access the site using the existing private road through Lostock Works from the A530 Griffiths Road. Construction phase road traffic impacts are assessed in Chapter 6. A Construction Traffic Management Plan (CTMP) has been developed, shown at Annex 2.C.2 in Volume 3. In order to ensure compliance by contractors and suppliers, the requirements of the CTMP will be included in all contract tender documents and will be discussed in detail prior to awarding a contract.

2.110 The largest single elements of the proposed development will be the REnescience bioreactors, which will be 45 m long and 4.5 m in diameter. It is anticipated that these will be delivered in sections (classified as abnormal loads) and welded on site.

Commissioning

2.111 The REnescience bioreactors and the AD process will require an initial commissioning period to start up the processes, and then are likely to ramp up to full production over the course of around four to six months. During that period waste deliveries to site would also ramp up in line with the treatment capacity.

2.112 The AD commissioning stage will take around three to four months in total. The construction programme will therefore prioritise construction of at least one AD digester and post-digester tank, gas engine, and the associated equipment (pipework, pumps, stack and flare, transformers and grid connection) for the end of 2016. This first digester tank will be commissioned using 200 m^3 of separately collected food waste or pulped fines (which will develop the correct bacteria culture to process the REnescience bioliquid) and around 1,500 m^3 of biologically active substrate from another AD facility in Q1 2017, allowing first operation by the end of March 2017. This stage of commissioning on food waste or pulped fines feedstock will take up to one month.

2.113 Material from the first digester tank will then be used to commission the remaining tanks in sequence, in order that overall the AD facility will be fully operational and ready to receive bioliquid from the REnescience process as that is commissioned and ramps up production of bioliquid. All construction, including the REnescience plant and balance of AD plant, will be complete by the end of March 2017. Commissioning of the REnescience bioreactors and ramp-up of bioliquid production will occur in parallel with the commissioning of the remaining three AD digestion tanks and equipment during the remainder of H1 2017.

2.114 During the one-month commissioning of the first AD tank, the digestate used for start-up will be sourced from an existing AD facility in the region, transported in road tanker vehicles and loaded directly into the first AD tank on the REnescience site without being exposed in the open. The food waste or pulped fines start-up material will likewise be transported in enclosed road tankers and added to the AD tank using its feed system, which will have been commissioned in advance. This approach avoids any handling or storage of start-up material for the AD tank in the open and hence avoids potential for odour emissions. The material transport for AD tank commissioning will overlap with the final stages of construction, and has been considered within the construction traffic impact assessment in Chapter 6.

Decommissioning

2.115 The REnescience Northwich plant has been designed for a minimum operational life of 25 years. Decommissioning would be in accordance with a decommissioning plan agreed at the time with the local planning authority. Further detail on decommissioning and site reinstatement arrangements are provided in Appendix 2.B.

2.116 The majority of the buildings will be constructed in steel, comprising steel columns, beams and trusses, which facilitates both construction and dismantling. It also provides flexibility in design, should any future alterations be required, which could be made more easily with a steel construction than where concrete is used. At decommissioning, steel is easily dismantled for re-use or recycling, and has a scrap value that is likely to be maintained or increased over the long term. It is also possible that the buildings, following decommissioning and removal of equipment inside, could be suitable for re-use by another business taking over the site.

2.117 The use of steel in the facility design has also been carried over to the stack, rather than the use of in-situ concrete, which would be more difficult and costly to demolish.

2.118 Below ground level, the substructures will be formed mainly in reinforced concrete. At decommissioning these could be excavated and crushed for re-use. Alternatively, given the loadings required by the facility, they could (subject to obtaining planning permission) form a good development platform for most types of future built redevelopment.

2.119 The condition of the site and any ground contamination risk from the operational phase of the proposed development will be regulated by the facility's environmental permit. Prior to vacating the site a permit surrender application will need to be submitted and approved by the Environment Agency (EA). As part of the permit surrender process information to demonstrate that no significant effect on site condition has occurred will need to be provided. In the event that contamination is identified, a program of remediation works will need to be agreed with the EA and completed, to restore land to at least the same condition as it was prior to development.

2.120 The main activities required in order to decommission the facility would be as follows:

- during the final days of operation all waste storage, residues storage, reagents, silos, storage tanks and consumables would be run down as far as practicable;
- all tanks, silos, pits and containers would be emptied;
- all vessels, pipes, lines, drains and pump units would be flushed out;
- all tanks, containers, silos, drains, ducts, casings and pits would be cleaned and washed out using specialist decontamination contractors where required;
- all drainage outlets (excluding the clean surface water outfall) would be stopped up at the boundaries with other sites;
- all utilities used by the facility would be isolated;
- an inspection and inventory would be undertaken; all electrical systems, including fire alarm detection/suppression and security would be permanently disconnected from the mains electricity supply and the appropriate safety certification issued;
- a 'Decommissioning Certificate' would be issued and the buildings at the facility would be secured; and
- the facility's remaining equipment and, if not retained for re-use by a site purchaser, its buildings would be dismantled, with segregation of waste material for separate disposal and recovery of materials for scrap/re-use/recycling.

Emissions

2.121 There will be controlled emissions to air from the following sources. These are assessed in Chapter 10.

- A single shared stack or bundle of flues for the exhaust of the five gas engines.

- A backup gas flare.
- A stack to exhaust emissions from a natural-gas fired boiler that provides start-up heat to the process following shutdown for planned maintenance.
- Air extracted and vented from the waste handling areas in the main process building. This air will be released through odour control measures to minimise potential for odour emissions.

2.122 Control and monitoring measures will be in place to avoid fugitive releases of biogas.

2.123 Most noise-generating waste treatment activities will be inside the waste processing building. The principal external noise sources will be the gas engines and mobile machinery such as front-end loaders. Noise emissions are assessed in Chapter 11.

2.124 The REnescience process makes efficient use of water, recirculating it between the enzyme and AD treatment stages. During normal operation there will be no process water discharge to watercourses or the sewer network. Clean surface runoff will be discharged to Wade Brook, with appropriate SuDS/runoff attenuation in place. This is assessed in Chapter 8, and the proposed Drainage Strategy is at Appendix 8.A in Volume 3.

Sustainability and GHG emissions

2.125 The purpose of REnescience Northwich is to provide a sustainable form of waste management, recovering useful materials for recycling and generating renewable energy from residual waste that would otherwise be disposed of.

2.126 By recovering materials for re-use, recycling and energy recovery, the facility will contribute to reducing natural resource consumption. Although it will consume natural resources and manufactured materials in its construction, this will be outweighed by the substantial recovery of resources (at an anticipated rate of around 19,000 tpa of recyclables and inert materials, and 51,000 tpa of RDF/SRF, depending on waste composition) over the course of its 25-year or more operational lifetime. In addition, it is proposed to crush and re-use existing concrete foundations on the site for aggregates and fill during construction, and DONG Energy will work with its selected construction contractor to specify recycled and/or sustainably-sourced construction materials where feasible.

2.127 REnescience Northwich will generate renewable heat and electricity from the waste treated, more than sufficient to meet all of its own process energy demands on-site, meaning that it will require no external electricity or heat consumption during normal operation. Similarly, through efficient use and recirculation of water (from moisture present in the incoming waste), the facility will also have no external water consumption during normal operation.

2.128 In addition to supplying its own electricity and heat demand, the facility will export at least 5 MW of electricity to the national grid or by private wire to local industrial consumers when operating at its design capacity and expected waste composition. Over the course of 8,000 typical annual operating hours, this would be 40,000 MWh of electricity, equivalent to the annual electricity consumption of around 9,700 average households[4]. Generating the same amount of electricity in a modern, efficient combined cycle gas turbine power station would release around 15,000 tonnes of CO_2-equivalent. Because the biogas used for energy generation at REnescience Northwich will come from biodegradable material in waste, not fossil fuels, it will be an almost net zero-carbon energy source[5].

Embedded mitigation and enhancement

2.129 Through the iterative EIA and consultation process, a range of environmental mitigation and enhancement measures have been embedded in the development design and proposed operational management. These measures have been taken into account in the assessment of effects, and those relevant to each environmental topic are detailed in the corresponding ES chapter. Table 2.5, below, summarises the embedded mitigation and enhancement measures overall.

Table 2.5: Summary of embedded mitigation and enhancement measures

Embedded mitigation and enhancement	Relevant topic areas	Cross-references
Landscape planting and ongoing management. Native tree and shrub planting; wildflower grassland and amenity grassland; retained orchid/ragwort habitat. Tree retention (where feasible), habitat creation and habitat connectivity improvement.	Landscape and visual impact Ecology and nature conservation	Landscape planting scheme and management plan including orchid translocation plan. Appendix 4.C, Annex 4.C.2 and Figure 4.Q.
Lighting design to Institution of Lighting Professionals (2011), 'Guidance Notes for Reduction of Intrusive Light GN01' and BCT (Version 3 2009) 'Bats and Lighting in the UK: Bats and the Built Environment' standards. Lighting directed away from security hut (bat roost) and Wade Brook.	Landscape and visual impact Ecology and nature conservation	CEMP, Appendix 2.C. Bat Roost Assessment, Appendix 7.D.
Archaeological watching brief during construction phase works.	Archaeology and cultural heritage	Chapter 5
Traffic management during construction to minimise potential impacts on the local highway network.	Traffic and transport	Construction Traffic Management Plan, Annex 2.C.2.
Traffic management during operation to minimise potential impacts on the local highway network, via a Delivery and Servicing Management Plan to be prepared and agreed with the local authority prior to operation. HGV strategic route limitations specified in the traffic and transport assessment and Transport Statement.	Traffic and transport	Chapter 6. Transport Statement, Appendix 6.A.

[4] Based on 4,115 kWh average annual household electricity consumption [3] (page 7).

[5] Considering direct scope one and two GHG emissions at the proposed facility. The facility would also give rise to scope three supply chain GHG emissions (such as from transport) and scope one GHG emissions from use of fuel by vehicles on site. However, even allowing for emissions sources such as these, Defra/DECC's generic lifecycle GHG emissions factor for biogas is 0.039 $kgCO_2e/kWh$, compared to 0.234 $kgCO_2e/kWh$ for natural gas (fossil fuel) [2]. 'Short-cycle' biogenic carbon in organic waste is considered to have a net neutral effect on atmospheric CO_2 concentration when released, given that the CO_2 was recently drawn down from the atmosphere by the biomass growth.

Embedded mitigation and enhancement	Relevant topic areas	Cross-references
All waste deliveries in bulk using enclosed HGVs. Waste offloading within the unloading hall building.	Traffic and transport Air quality and odour	Odour Management Plan, Appendix 10.E.
Nesting habitat removal undertaken outside the nesting season, or with an ecologist in attendance. Bird boxes provided during construction and until landscape planting matures.	Ecology and nature conservation	CEMP, Appendix 2.C.
Heras-type fencing placed to maximise buffer zone from Wade Brook in the south of the site and protect the retained orchid habitat and other retained vegetation as necessary.	Ecology and nature conservation	CEMP, Appendix 2.C.
Temporary drainage and runoff attenuation provided during the construction phase.	Hydrology and flood risk Ecology and nature conservation	Drainage Strategy and design drawing, Appendix 8.A and Figure 8.C. CEMP, Appendix 2.C.
Bunded containment areas, separate clean and potentially-contaminated runoff drainage networks, oil interceptors and runoff attenuation (including storage for storm events) during operation.	Hydrology and flood risk Geology and ground conditions Ecology and nature conservation	Drainage Strategy and design drawing, Appendix 8.A and Figure 8.C.
Phase II Site Investigation and detailed risk assessment. If required, contamination Remediation Strategy and actions. Clean cover (minimum 300 mm) for non-hardstanding areas of the site.	Geology and ground conditions	Phase 1 Risk Assessment, Appendix 9.A. CEMP, Appendix 2.C.
Stack height and gas engines' emissions as specified in air quality assessment.	Air quality and odour	Appendix 10.B and Appendix 10.D.
Dust mitigation during construction phase.	Air quality and odour	CEMP, Appendix 2.C and Dust Management Plan, Annex 2.C.1.
Odour management including waste loading/unloading and sorting in enclosed buildings, monitoring and control of fugitive emissions, and air extraction system with activated carbon filters.	Air quality and odour	Odour Management Plan, Appendix 10.E.
Limited working hours during construction and limited waste delivery/material export hours during operation. Use of well-maintained plant and best practicable means to reduce noise during construction.	Noise and vibration	
All mechanical waste sorting and processing within buildings. Significant external noise-generating plant (gas engines, pumps and similar) in containers/enclosures. Gas engines' stack fitted with silencer. Internal reverberant sound level in buildings and building cladding as specified in noise assessment. Use of well-maintained plant and best practicable means to reduce noise during operation.	Noise and vibration	Appendix 11.A.
Community Liaison Committee and telephone number for information/complaints during construction and operation.	Air quality and odour Noise and vibration Traffic and transport	CoCP and CEMP, Appendix 2.C.

3 Process description

Waste reception

3.1 Two residual waste streams will be accepted by the proposed development: mixed municipal solid waste (MSW) and commercial and industrial (C&I) waste of a suitable, similar composition (hereafter collectively referred to as MSW), anticipated to comprise around 83% of the waste input[6]; and fines (smaller particles of waste, with a similar composition) comprising the remaining 17%. Both of these residual waste streams will be sourced from existing waste transfer stations (WTS) and sorting facilities. All waste will therefore be delivered in bulk using HGVs with enclosed containers. No waste delivery will be by household refuse collection vehicles (RCVs).

3.2 On entering the site, vehicles will be weighed at a weighbridge station and waste acceptance checks will be carried out. This will involve checking that the waste consignment note is present, correctly completed, and indicates that the waste is a type that can be accepted by the facility. A waste consignment that is identified at this point as not being suitable for treatment at the proposed facility will be rejected and returned to its origin. A temporary storage area for rejected waste consignments will be provided in an enclosed and covered area in the north-east part of the site. Any rejected waste consignments would remain in their enclosed container (they would not be unloaded in this storage area) and would be collected within two working days, so this temporary storage will not have any greater odour potential than ordinary arriving waste consignments.

3.3 Waste delivery vehicles will unload waste into the waste storage bunker, below ground level, and a visual check of the waste for oversized or hazardous material will be made. Both the bunker and the HGV unloading area will be fully enclosed in the reception and bunker hall of the main building. Based on the facility's nominal waste processing rate of up to 18 tph, the waste storage bunker will be able to hold up to 3 days' waste supply, although typical residence time will be less than this due to continuous operation.

3.4 Unloading space will be provided for up to three HGVs at once. The HGVs used for waste delivery will use bulk ejector trailers that offload waste through a rear hatch using a push ejector system. Access into the waste reception hall will be through fast-acting automatic roller shutter doors that will be kept closed in-between HGV movements. This will minimise the potential for odour to be released from the waste reception area, which will be kept under a slight negative pressure (drawing air inwards when the doors are opened). Within the unloading area, a front-end loader and floor-washing hoses will be used as required to move any minor waste spillages during unloading into the waste bunker.

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[6] By mass, wet weight basis, as received

3.5 A travelling crane will be used to load MSW from the waste bunker onto a conveyor system via a hopper. (A second crane will be installed as a backup to allow continued operation during crane maintenance.) MSW will be initially passed through a bag-opener and then through a drum separator to remove oversized (>400 mm diameter) material. Oversized material will be stored in containers in the conveyor/pre-sorting area of the building pending collection and transport for treatment at an alternative facility. Following the drum separator, non-oversized MSW will be transported by enclosed conveyor to hydrothermal treatment tanks at the start of the REnescience process. Fines will be loaded from the waste bunker by the travelling crane and mixed into the MSW via a hopper on this conveyor.

3.6 The action of the crane will also provide mixing waste in the storage bunker. This will avoid allowing waste to have a long residence time in the bunker or allowing anaerobic conditions to develop, thereby minimising odour generation.

3.7 If any waste is visually identified in the waste bunker as being unsuitable for treatment (e.g. due to being substantially oversized or potentially hazardous), it will be extracted using the travelling crane and stored in the conveyor/pre-sorting area pending transport for treatment or disposal at an appropriately licensed facility. Within this building, a separate demarcated quarantine area will be provided for temporary storage of any potentially hazardous waste, which will be removed as soon as practicable.

3.8 The waste reception hall, waste bunker and conveyor/pre-sorting area will be kept under slight negative pressure, drawing air inwards (e.g. when the doors are opened for HGVs to enter), with the air exhausted through an odour control system using activated carbon filters to minimise odour release. Further detail concerning the odour control system is given in the Odour Management Plan at Appendix 10.E in Volume 3.

REnescience enzyme treatment

3.9 The first stage of the REnescience process is hydrothermal treatment, in which waste will be fed initially into two enclosed tanks, one per bioreactor, to be mixed with water pre-heated to 70–80 °C.

3.10 During normal operation of the facility, the water added in the hydrothermal treatment tanks will be fully supplied by water recirculated from de-watering the digestate produced by the AD treatment stage. It will retain heat from the AD treatment, being around 40–50 °C, and will be stored in two insulated buffer tanks located externally. Additional heating to the required 70–80 °C will utilise waste heat from the biogas engines.

3.11 During start-up only (anticipated to be once per year to allow for annual planned maintenance, as described above), water for the hydrothermal treatment stage will be supplied from mains or raw water and will either be pre-heated by a 1.5 MW oil, gas-fired or electric boiler, or may be heated by running one gas engine on natural gas or stored biogas.

3.12 Following hydrothermal treatment, the waste will then be fed into each of the bioreactors for enzyme treatment. These horizontal cylindrical tanks will each be 45 m long and 4.5 m diameter with a volume of 715 m^3 and typically holding 270 m^3 of mixed waste and water, set in cradles that allow continuous rotation at a rate of around 1 rpm. This will ensure effective waste mixing and allow the enzymes to reach all of the biodegradable content of the waste. Hydrothermal treatment will be a continuous process.

3.13 The bioreactors will be set on a slight incline, allowing the waste mix to flow through them over the course of a 12–18 hour residence time. In the course of around the first five meters of the bioreactors the waste mix will cool to 50–60 °C, which is the optimum operating temperature for the enzyme process, and the enzymes will be added.

3.14 Inside the bioreactors, enzymes will break down the biodegradable material, reducing it to a bioliquid in which remaining solid non-biodegradable material (metals, plastics, etc) is entrained. This bioliquid mixed with remaining solid waste items will then flow via control valves out of the bioreactors, and the solid material will be separated.

Separation of bioliquid and solids

3.15 Bioliquid will be initially drained from the solid material as it is moved by perforated screw conveyor to the mechanical sorting process. The bioliquid will be passed through vibrating sieves that further separate small inert materials (sand, gravel) that were entrained or suspended in it. The bioliquid will then be pumped into two c. 2,000 m^3 storage tanks located outside the waste processing building, pending AD treatment. A further c. 1,000 m^3 tank will be provided to separately store off-spec bioliquid if necessary, pending further treatment.

3.16 Separated inert material will be washed and moved by conveyor to a storage container pending transport for re-use as aggregates.

Mechanical sorting

3.17 The solid material will be separated into 'two dimensional' (2D, <40 mm sized flat materials such as textiles, plastic film, undigested cardboard) and 'three dimensional' (3D, >40 mm sized metals and solid plastic) fractions in a ballistic separator (an inclined, perforated travelling plane with conveyor that separates materials by size and mass).

3.18 The 2D fraction will be pressed to de-water it. The bioliquid pressed out will be circulated back through sieves and into the bioliquid storage tanks, as described above. Biodegradable matter sieved out (i.e. clumps that were not broken up in the bioreactor) will be crushed and then circulated back into the bioreactors for re-treatment. The remaining 2D material will then pass through two washing and sieving steps using clean water and will be separated into three outputs:

- batteries (separated by overband magnets and eddy current separator);
- inert material (added to the inert material storage as described above); and

- mixed 2D material including plastic and textiles that form RDF/SRF.

3.19 The RDF/SRF will undergo a final de-watering stage and then be transported by conveyor to storage containers located in the mechanical sorting/loading area of the building, pending transport for use as fuel in other facilities. Depending on RDF/SRF customer requirements, a plastic wrap baling system may instead be used for RDF/SRF rather than containers.

3.20 Batteries will be collected and sent for disposal at an appropriate facility.

3.21 The 3D fraction will be washed using clean water (with the wash water then passed through the 2D sieving stages described above to capture any suspended material for recovery) and will then be dried (using waste heat from the gas engines) and moved by travelling crane to a bunker for storage pending further processing through several mechanical sorting stages.

3.22 Overband magnets will be used to separate ferrous metals from the mixed 3D waste and an eddy current separator will be used to separate non-ferrous metals. Finally, a wind sifter will be used to separate 3D plastic (e.g. drinks bottles, containers and similar).

3.23 Recovered plastics, ferrous metal and non-ferrous will be stored in separate containers in the mechanical sorting/loading area of the building.

3.24 The remaining treated 3D fraction waste will comprise RDF/SRF, which will be stored as described above.

3.25 The expected mass of materials recovered per annum, based on the nominal 144,000 tpa waste treatment throughput and the typical waste composition in Table 2.1, was shown in Table 2.3 on page 17, above.

3.26 The 2D and 3D washing water will be supplied by re-circulation from dewatering of the AD digestate, after treatment by evaporation in the facility's water treatment plant (WTP). The AD stage and water recirculation are described further below.

Anaerobic digestion

3.27 Bioliquid from the bioliquid storage tanks will be pumped initially into one of two fully enclosed buffer storage tanks of c. 2,000 m^3 capacity. A third tank of c. 1,000 m^3 capacity will be provided to store any off-spec bioliquid pending re-treatment or if necessary transport off-site for disposal.

3.28 From the buffer tanks, bioliquid will be pumped into one of four fully enclosed c. 16,000 m^3 volume AD tanks, each typically holding 5,000 m^3 of material. In the AD process, the bioliquid will be digested by a series of bacteria under anaerobic conditions, converting it to biogas comprising methane (CH_4, typically 60% of the biogas), carbon dioxide (CO_2, typically 40% of the biogas) and other trace gases including hydrogen sulphide (H_2S). Mesophilic digestion will be used. Depending on its residence time in the buffer tanks, the bioliquid may be warmer or cooler than the optimum temperature. If necessary, it will be re-heated using waste heat from the gas engines.

3.29 Digestion will be a continuous process, with a residence time of around 20 days. Mechanical stirrers will agitate and mix the material within the tanks to promote an even distribution of substrate and active biology in the digester. Pressure and temperature conditions will be monitored using automated sensors overseen by a plant operator to avoid problems such as foaming. Pressure relief valves and water locks will be fitted to each AD tank to prevent catastrophic failure should overpressure develop.

3.30 The biogas will collect in in the upper part of the digestion and post-digester tanks, which will be of reinforced concrete construction with flexible, sealed dome tops, and in total across the six tanks and pipework will hold up to c. 7,300 m^3 of biogas. Produced biogas will pass through desulphurisation, drying and cleaning stages before being used in the gas engines.

3.31 Liquid digestate produced by the AD process will be pumped via a containerised cyclone de-gritter unit to two post-digester (digestate storage) tanks. The digestate from these storage tanks will then be de-watered and the water will be re-circulated into the REnescience process as described below. The remaining digestate, now a CLO with lower moisture content, will be stored pending transport off-site by HGV. The CLO will be suitable for use in land restoration.

3.32 During normal operation, bioliquid from the REnescience process will provide the AD feedstock (substrate) and water from the digestate will be re-circulated back to the bioreactors. For initial commissioning and start-up (as described above), around 1,500 m^3 of biologically active substrate from another AD facility and 200 m^3 of separately collected food waste or pulped fines will be required to start the AD process in one digestion tank. Material from this tank will subsequently be used to start-up the remaining three digestion tanks.

3.33 Subsequently, it is unlikely that this will be required again: partial shutdowns for annual maintenance will be managed so that if AD tanks require emptying (e.g. to check their internal condition), one tank would be emptied at a time and substrate to re-start the AD process can be provided from the other tanks, rather than an external source.

Water treatment, recirculation and disposal

3.34 As described above, the REnescience bioreactors will require warm water to mix with the waste being treated. Washing of materials in the 2D and 3D mechanical sorting stage for recovery and recycling will also require clean water.

3.35 The facility is designed to be highly water-efficient, recirculating water within the process as far as possible to avoid any fresh water requirements during normal operation and minimise the production of effluent requiring treatment and disposal. In normal operation, liquid extracted from the AD digestate will be separated into two streams: some will be recirculated directly to the REnescience process (via insulated external buffer storage tanks) and some will pass through an on-site water treatment plant (WTP).

3.36 During normal operation, these two streams will provide all of the water required for the hydrothermal treatment (together with the moisture in incoming waste) and for washing recovered material in the 2D and 3D mechanical waste treatment stages, meaning there will be no fresh water consumption by the REnescience process. Both water streams will retain heat from the AD and treatment processes.

3.37 The treatment will concentrate contaminants in the water supplied from the digestate de-watering into a limited effluent stream that will be tankered off-site for disposal at a suitable facility.

Electricity generation and export

3.38 Biogas produced in the AD tanks will provide fuel for up to five reciprocating gas engines in two sizes, each connected to an electrical generator. These gas engines will be located in standard containers in the southern part of the site. Their exhaust gases will flow to a single shared 33 m high exhaust stack or bundle of flues to assist atmospheric dispersion of pollutants generated by the combustion, which will be primarily oxides of nitrogen (NO_x) and carbon monoxide (CO).

3.39 The gas engines will typically run in continuous 24-hour operation (aside from periods of maintenance), but the facility will have the flexibility to operate without one or more engines, depending on commercial considerations, electricity demand and the rate of biogas production. Flexibility to stop one or more engines and having engines of two sizes allows the remaining engines to work at their design load, at which they are most fuel efficient, rather than being turned down to reduce generation.

3.40 The 5 MW or more of electricity (assuming all gas engines are operating at their design load) will be exported to the national grid or by private wire to local industrial consumers via the proposed development's substation marked in the south-east corner of the site layout. The grid connection will be via a cable terminating at the transformer busbars (equipped with appropriate safety equipment including circuit breakers). The cable will connect to the existing 132 kV substation located immediately adjacent to the proposed development site's south east corner.

Gas flaring

3.41 A 10 m high enclosed gas flare located in the southern part of the site will be provided as a back-up to flare biogas in the event that the gas engines are temporarily unavailable (e.g. due to breakdown or a problem with the grid connection), as biogas production in the AD process is continuous and cannot be rapidly halted. Flaring will not be routine during normal operation. Providing for flaring biogas if necessary avoids the risk of venting uncombusted biogas, which would have significant odour potential and global warming impact.

References

[1] CWCC, “Local Plan (Part One) Strategic Policies,” 2015.

[2] *Health and Safety at Work etc. Act. Chapter 37.,* 1974.

[3] *SI 2015 No 483. The Control of Major Accident Hazards Regulations,* 2015.

[4] *Directive 94/9/EC of the European Parliament and the Council on the approximation of the laws of the Member States concerning equipment and protective systems intended for use in potentially explosive atmospheres,* 1994.

[5] *Directive 2014/34/EU of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres (recast),* 2014.

[6] *SI 2002 No. 2776. Dangerous Substances and Explosive Atmospheres Regulations,* 2002.

[7] HSE, “Reducing risks, protecting people. HSE's decision-making process.,” HM Stationary Office, http://www.hse.gov.uk/risk/theory/r2p2.pdf, 2001.

[8] W. Anggono, B. Wardaba, M. Lawes, K. Hughes, S. Wahyudi, N. Hamidi and A. Hayakawa, “Biogas Laminar Burning Velocity and Flammability Characteristics in Spark Ignited Premix Combustion,” *Journal of Physics: Conference Series,* vol. 423, no. Conference 1, 2013.

[9] Ricardo-AEA for Defra/DECC, “UK Government conversion factors for company reporting. Ver. 2.0,” Defra/DECC, www.ukconversionfactorscarbonsmart.co.uk/, 2015.

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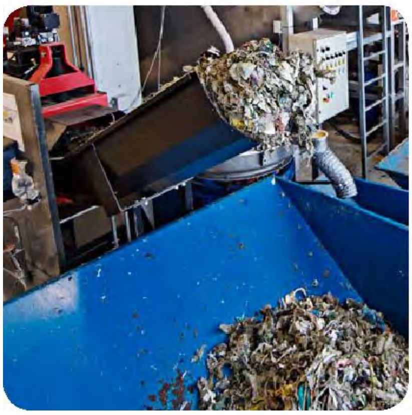
Chapter 3: Scoping and Consultation

REnescience Northwich







Quality Management

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Except for the provision of professional services on a fee basis, RPS does not have a commercial arrangement with any other person or company involved in the interests that are the subject of this report.

Contents

Tables

Appendices

1 Introduction

1.1 A wide range of stakeholders were consulted as part of the EIA process. Liaison with statutory consultees and other stakeholders was undertaken in order to agree the scope of the assessments, adopted methods and mitigation measures, and to gather environmental data relevant to the assessments. A substantial programme of public consultation has also been undertaken as part of the REnescience Northwich planning process.

Statutory consultation

1.2 Statutory consultees were consulted formally at the scoping stage to provide opinions on the scoping report and make further recommendations. Further consultation was held directly between EIA chapter authors and the relevant technical specialists among statutory consultees during the environmental assessment process. Details of this one-to-one technical consultation are given in each EIA topic chapter.

1.3 The approach to EIA screening and scoping is discussed in Chapter 1: Introduction and Approach to EIA. Section 2, below, summarises the issues raised by CWCC and other statutory consultees in the Scoping Opinion, with details and cross-references to how these have been addressed and responded to in the EIA process. The RPS Scoping Note and CWCC Scoping Opinion are at appendices 3.A and 3.B, respectively.

Public consultation

1.4 A programme of public and other stakeholder consultation was undertaken during July-September 2015 in order that feedback could be sought and taken into account, where possible and appropriate, during the design and EIA process prior to submission of the planning application.

1.5 Full details of the public consultation process are provided in the Statement of Community Involvement (SoCI) that accompanies the planning submission.

1.6 Two key stakeholder workshops were held in the morning and evening of Thursday 2nd July. Three public exhibitions in the day and evening were held at venues in Lostock Gralam and Rudheath on Thursday 9th, Saturday 11th and Tuesday 14th July. During and following these events, feedback was sought through discussion, comment forms, a postal address, email address and telephone number for the REnescience Northwich project.

1.7 Three further public exhibitions were held in the day and early evening on Thursday 10th, Friday 11th and Saturday 12th of September in Lostock Gralam, Rudheath and Northwich, giving updated project information and plans after the project team had considered public feedback given during the course of August. Events were advertised in the local press, by direct leaflet drop to residents, and through the project website (www.dongenergy.co.uk/northwich) and social media.

1.8 Section 3, below, summarises the main points raised during public consultation.

2 Scoping Opinion

Table 2.1: Scoping opinion matters and responses

Issue	Response and cross-references
Cheshire West and Chester Council	
An LVIA should be submitted, and should refer to the Landscape Character Study document *'Vale Royal SPD 5 Landscape Assessment and Guidelines: Area 6b Lostock Plain'* Section views to demonstrate levels of the site and surrounding landscape should be provided. The assessment should include worst case views and take note of winter impacts, and if possible should include winter views. The LVIA and development layout should be an iterative process. The LVIA should assess the quarry [sic] in operation and include proposed mitigation measures in the assessment.	An LVIA has been undertaken and its findings are presented in Chapter 4 of the ES. Chapter 4 details the approach taken, including the landscape character areas considered and guidelines followed. Wireline images showing the site levels in the contact of the surrounding landscape are presented in Figures 4.J to 4.O and a photomontage of the most-affected viewpoint is presented in Figure 4.P. Although it has not been possible to take winter views, as the EIA has been undertaken during summer 2015, worst-case views and winter impacts have been considered in Chapter 4. As described in the EIA Approach in Chapter 1, the LVIA and other EIA elements have been an iterative process with the design of the proposed development. Design evolution is documented in the Design and Access Statement and is evident in the images and plans shown during public consultation. The LVIA has assessed the impact of the proposed development during operation and has included proposed mitigation measures. These are set out in full detail in the Landscape Management Plan at Appendix 4.C and the accompanying Landscape Plan shown in Figure 4.Q.
A Travel Plan as well as an assessment of sustainable travel modes/options is expected. The A556/A530 roundabout should be included in the Transport Assessment, including taking account of an existing proposed scheme to increase its capacity and the traffic at peak times. The state of the road surface at the proposed development site access is considered to be poor and would need addressing. Funding towards various previously-planned local road improvement schemes might be expected, depending on the traffic impact of the proposed development.	In view of the low numbers of staff present on site (totalling 19 daily, in shift patterns spread over 24 hours) the implementation of a full Staff Travel Plan is not considered to be necessary. However, a Delivery and Servicing Management Plan will be prepared, which will detail the management of HGV traffic to and from the development once operational. A Construction Traffic Management Plan has also been prepared (Annex 2.C.2), detailing measures to manage construction traffic in order to minimise adverse impacts during the construction phase. The impact on local roads and the A556/A530 junction has been assessed as detailed in Chapter 6. Chapter 6 also sets out appropriate mitigation measures, commensurate with the scale of impact from the proposed development.
An assessment of operational road traffic air pollutant emissions should be provided, on the worst-case basis of all material be transported by road, together with cumulative emissions from the stack and other committed developments in the local	Air pollutant emissions from operational road traffic, the stack, biogas flare, start-up boiler, and cumulative effects with other committed developments have been assessed in Chapter 10. Manchester Ringway meteorological data were used and

Issue	Response and cross-references
area. Manchester Ringway meteorological data should be used. Receptors should be agreed with CWCC.	receptors were agreed with CWCC, as summarised in Chapter 10.
Potential for air or water emissions to impact on the Witton Lime Beds and Plumley Lime Beds SSSIs, Ashton's and Neumann's Flashes, and Wincham Brook Valley should be assessed. An updated Phase 1 Habitat Survey and any further surveys recommended by it should be carried out. Any mitigation proposals and method statements for works should be submitted for approval. It should be demonstrated how Wade Brook will be protected from any potential pollution issues or changes in hydrological regime.	Potential impacts arising from water emissions, including protection from pollution issues and changes to the hydrological regime have been assessed in Chapter 8, with management measures detailed in the Drainage Strategy at Appendix 8.A. Given the distance of these receptors and the proposed drainage of only clean surface run-off, not exceeding current drainage rates, into Wade Brook, no impacts are predicted. Potential impacts arising from air pollutant emissions on the local nature reserve receptors have been assessed in Chapter 10. As noted in the consultation with Natural England, summarised below, the distance to the SSSI receptors and other European sites is considered too great for there to be any impact. An updated Phase 1 habitat survey and recommended Phase 2 surveys have been undertaken. The findings are included in the assessment in Chapter 7 and the surveys are at Appendices 7.C and 7.F. Proposed mitigation is detailed in Chapter 7 and also in the Construction Environmental Management Plan (CEMP) at Appendix 2.C and the Landscape Management Plan at Appendix 4.C.
The proposed approach to assessing archaeology and cultural heritage impacts is considered appropriate. The main focus of the archaeological study is likely to be on the potential below-ground remains of the Roman road and WW1 explosives factory.	This is noted. Below-ground archaeology, including potential remains of these two features, is assessed in Chapter 5.
Consideration should be given to the Cheshire West and Chester Local Plan (Part One) Strategic Policies, retained policies within the Cheshire Replacement Waste Local Plan and National Planning Guidance and policy.	Chapter 1 of the ES sets the legislative context for the ES. Local and national policy and guidance relating to individual topics is discussed in each ES topic chapter. A detailed consideration of local policy relevant to the proposed development, drawing from evidence presented in the ES, is given in the Planning Statement accompanying the planning submission.
Noise, transport and contaminated land comments were not provided in the Scoping Opinion.	RPS has consulted directly with the relevant officers at CWCC regarding these topics. Details are given in Chapters 6, 9 and 11.
Network Rail	
The applicant should contact Network Rail's Asset Protection Team with details and plans of the proposed development, including information regarding drainage, piling, fencing, excavation, cranes, HGV routing and landscaping proposed within 10 m of the railway boundary.	Details were provided to the Asset Protection Team on 21 August and 27 August 2015.
Has the applicant given thought to delivering the waste via railway sidings in place of HGV trips?	This has been considered, and may be feasible in future, but cannot be secured at the time of a planning application due to the need for possible waste suppliers or

Issue	Response and cross-references
	customers for recovered materials to have equivalent railhead access. Logistical and commercial considerations, including the likely scale of bulk waste transport by rail and consequent need for batch storage on site, also apply. This is discussed further in Chapter 2 and in the Planning Statement. However, the proposed development layout retains clear space adjacent to the rail sidings in the northern part of the site for future access should rail transport of materials become feasible.
In further correspondence on 04 September, Network Rail provided plans showing the limit of railway land, a list of matters or limitations due to proximity of the railway that may be relevant to the proposed development, and a request for further information and method statements. In summary these matters comprised: - a strategy and potentially improved highway signage to avoid risk of bridge strike at Griffiths Road bridge by HGVs; - maintaining the existing palisade fence and providing high kerbs or crash barriers where necessary; - method statement and risk assessment for piling rigs and cranes; - limitations on landscape planting on the boundary of Network Rail land; - submit a scheme for any lighting within 10m of Network Rail boundary; - provide details and plans for any changes to ground levels within 10m of Network Rail boundary; - SuDS/soakaways should not be placed within 30m of railway boundary or direct water towards the railway. Network Rail requested that this further information be provided once the development has received local authority approval.	These matters have been noted. Details of drainage design and landscape planting are provided in the Drainage Strategy at Appendix 8.A and the Landscape Plan shown in Figure 4.Q. The HGV routing strategy, detailed in the Construction Traffic Management Plan at Annex 2.C.2 and as will be set out in the Delivery and Servicing Management Plan, will avoid the low railway bridge. Additional highway signs will be discussed with Network Rail following planning submission. The other method statements and plans requested by Network Rail will be provided following planning submission.
Health & Safety Executive	
Providing that biogas is classified as a flammable gas, storage is less than 10t and there are no other hazardous substances which aggregate with biogas, then a Hazardous Substances Consent (HSC) will not be required. If the biogas has an acute toxic classification then HSC may possibly be required.	Biogas is a flammable gas and is not classified as toxic. Total storage will be less than 10t. Further details are provided in the safety section in Chapter 2.
Environment Agency	
Best Available Techniques (BAT) should be employed to prevent or, where not possible, to mitigate odour and noise pollution from the development. In particular, solid and liquid digestate should be stored in a way that allows biogas to be collected, that minimises odour, and that provides for appropriate emissions control and abatement systems.	Chapter 11 (Noise and Vibration) assesses potential noise impacts, including the measures to control and minimise noise from the proposed development. The Odour Management Plan at Appendix 10.E specifies the techniques that will be applied to minimise odour, including appropriate emissions control for digestate

Issue	Response and cross-references
Point-source emissions to air should be designed with a facility for sampling in line with EA guidance.	storage. Up to two post-digester tanks will be used for digestate storage before de-watering, and biogas generated in these tanks will be captured and used. The point-source emissions to air (gas engines' stack and vent from the odour control system) will be designed for sampling as required. This, and the application of BAT, will be specified in the environmental permit application.
Appropriate ecology surveys may be required. This may include surveys for water vole and otter as there are records of these species being present in Wade Brook. The ES must assess the impact on Wade Brook from an ecology perspective. It is unclear how the development will affect the watercourse. The EA would expect to see an appropriate undeveloped buffer strip adjacent to Wade Brook and adequate mitigation for any unavoidable adverse impact. The buffer strip width should be measured from the bank top and be a permanent feature, not just present for the construction period.	An updated Phase 1 habitat survey and recommended Phase 2 surveys have been undertaken. The findings are included in the assessment in Chapter 7 and the surveys are at Appendices 7.C to 7.F respectively. Chapter 7 assesses potential impacts on ecology and natural habitat receptors including Wade Brook. The vegetated strip on the banks of Wade Brook, south of the site redline boundary, is shown on Figure 2.E. This area is approximately 18m wide at the narrowest point, measuring from the brook edge. Within the site boundary, further native species planting at the southern boundary is proposed, as shown in detail in the Landscape Plan at Figure 4.Q. The top of the bank is not clearly defined, but it is considered that sufficient width exists to avoid adverse impacts on Wade Brook, with the good management measures during construction set out in the CEMP at Appendix 2.C and the proposed site Drainage Strategy at Appendix 8.A.
As the site is within Flood Zone 1 (low risk), the primary function of the EIA is to consider flood risk from other local sources and the issue of surface water management. A site drainage scheme should consider HGV/tanker movements, tertiary containment, surface water pre-treatment and settlement (as surface water discharge to Wade Brook is not suitable without pre-treatment during significant construction work), a foul sewer connection, and assessment of any non-mains drainage due to the site being in a Groundwater Vulnerable Zone and Nitrate Vulnerable Zone.	This is noted. The Drainage Strategy at Appendix 8.A responds to these points. Flood risk and the potential impacts of surface water management are assessed in Chapter 8.
Historical land uses have led to elevated concentrations of contamination in the ground which may pose a risk to controlled waters. Given the known and suspected condition of the land, the EA may recommend a planning condition regarding ground contamination and risk to controlled waters. This will depend on the information provided in the ES. Where a positive, significant pollutant linkage is identified, the EA would expect assessment and remediation where necessary. Assessment and remediation should include a preliminary risk assessment, site investigation and detailed risk assessment, an appropriate remediation strategy, and a verification plan for any remediation work.	A Phase 1 Geo-Environmental Risk Assessment has been undertaken and is shown at Appendix 9.A in the ES. Potential ground contamination impacts are assessed in Chapter 9. Contamination risk and appropriate remediation measures, if required, will be considered in further detail in the Phase II Site Investigation and detailed risk assessment.
Infiltration of surface water drainage where adverse concentrations of contamination is only permissible with written consent from the local planning authority (LPA) and where it has been demonstrated that there is no resulting unacceptable risk to	Surface water drainage will be to Wade Brook via appropriate attenuation and SuDS measures. Infiltration of surface water is only proposed on areas of landscaping and the area of site retained in its existing condition for orchid translocation. These

Issue	Response and cross-references
controlled waters. Piling or foundation designs using penetrative methods will likewise only be permissible with written consent from the LPA and where there is shown to be no unacceptable risk to groundwater.	proposals are subject to the findings of the Phase II Site Investigation and detailed risk assessment. Piling and foundation methods will likewise be developed based on the findings of the site investigation. One option that may be suitable for piling would be the use of driven precast concrete piles with conical tips to prevent downwards migration of contaminated soils.
Waste generated on site during construction (e.g. contaminated soils) will need to be adequately characterised in line with BS EN 14899:2005 and managed in accordance with the waste hierarchy, CLAIRE code of practice, and relevant waste management legislation. If the total quantity of hazardous waste produced or taken of site exceeds 500 kg in any 12 month period, the developer may need to register as a hazardous waste producer.	This is noted. A Waste and Materials Management Plan for the construction period is at Annex 2.C.3.
The proposed development lies within 250m of Griffiths Park, a former landfill site that accepted lime and ash wastes, alloprene, brine plant scale, distiller scale, fly ash, oil-fired boiler dust, inert non-hazardous non-flammable industrial waste, sodium bicarbonate contaminated with 1-2% free ammonia and canteen waste. There may be potential for landfill gas to be generated. The developer may be required to carry out a risk assessment of landfill gas from the former landfill.	Risk from landfill gas and appropriate design measures to mitigate this have been considered in the Phase 1 Geo-Environmental Risk Assessment at Appendix 9.A in the ES. This will be considered in further detail in the Phase II Site Investigation and detailed risk assessment.
A Water Framework Directive (WFD) assessment may be required, demonstrating that the proposed development will not cause deterioration in the Biological Quality Elements of a WFD body (i.e. Wade Brook), does not compromise and contributes to achieving the water body's WFD objectives.	Only clean surface water runoff would be discharged to Wade Brook (regulated under the facility's Environmental Permit). The potential for effect on WFD status or objectives of Wade Brook has been assessed in Chapter 8 (Hydrology and Flood Risk).
The development will require an Environmental Permit and the applicant is advised to submit the planning and permit applications in parallel.	Pre-application discussions regarding the permit application have been held with the EA in July and August 2015. It is anticipated that the environmental permit application will be submitted shortly after the planning application, allowing for a parallel determination process.
Natural England	
Natural England provided a largely generic response setting out EIA good practice and listing sources of information and guidance. These general points are not reproduced here, but can be seen at Appendix 3.B. Overall, these points concerned the need to assess impacts on biodiversity and geology at protected sites, impacts on protected species and habitats, landscape and visual impacts, impact on heritage landscapes, and resilience of ecological networks to climate change pressures. Development or site-specific points raised are as follows.	The approach to EIA is summarised in Chapter 1 and detailed, with respect to the topic areas covered by Natural England, in each EIA topic chapter. The general points are addressed in Chapter 4 (Landscape and Visual Impact), Chapter 5 (Archaeology and Cultural Heritage), Chapter 7 (Ecology and Nature Conservation) and Chapter 10 (Air Quality and Odour).
The development site is in close proximity to the following designated nature conservation sites: Witton Lime Beds SSSI and Plumley Lime Beds SSSI. The ES	The proposed development is more than 1.5 km from these SSSIs. As noted below, no impact due to air pollutant emissions is predicted. Chapter 4 assesses impacts on the landscape character, including these SSSIs. Chapter 7 considers potential for

Issue	Response and cross-references
should include a full assessment of potential impacts on these sites.	ecology or nature conservation impacts on these sites, finding that due to distance there would be no change and no impact.
Natural England confirmed that there are no European sites or SSSIs that need to be considered in respect of air pollutant impacts from this development.	This is noted.
Historic England	
Historic England provided a generic response regarding the need for assessment of potential impacts on both designated and un-designated heritage assets, including visual impacts, any changes to drainage patterns, and impacts arising from associated activities such as construction and traffic. Historic England recommended seeking more specific advice from the CWCC Conservation Officer and the Cheshire Archaeology Planning Advisory Service.	Potential impacts on heritage assets are assessed in Chapter 5. The CWCC Conservation Officer's advice is summarised above. The Cheshire Archaeology Planning Advisory Service was also consulted directly, as detailed in Chapter 5.

3 Public Consultation

3.1 Full details of the public consultation process are provided in the SoCI that accompanies the planning submission.

3.2 Over the course of the two stakeholder workshops and six public exhibitions, a total of 104 members of the public and other local stakeholders attended. A number of written consultation responses were received via feedback form, postcard and email (shown in the appendices to the SoCI), in addition to verbal feedback at the events that is also summarised in the SoCI.

3.3 Overall, there was more public support for the project than opposition to it, with support in particular for the concept and technology of the waste treatment process (as compared to alternatives), the re-use of an existing industrial site, and the employment and inward investment it would bring. The main environmental questions and concerns raised during public consultation were:

- traffic generation, the source of waste, delivery vehicle routes, the condition and capacity of existing roads and what effect on them the proposed development may have;
- potential for emissions to air or water (e.g. odour or releases into Wade Brook), as part of wider questions about how the proposed waste treatment process would work;
- potential cumulative impacts from the proposed development together with other consented developments on the Lostock Works site and wider local area; and
- the visual impact of the development, including size of buildings and AD tanks, in particular visibility from Manchester Road and Works Lane.

3.4 These points have been responded to in the ES and in the embedded mitigation and enhancement measures that are proposed as part of the development design.

3.5 Chapter 6 details traffic generation and the impact of cumulative traffic (including background growth and other consented developments), concluding that there would be no significant adverse impacts, and proposes an additional financial contribution to improve traffic signalling and pedestrian crossing facilities on Griffiths Road.

3.6 Chapter 2 provides a thorough description of the waste treatment process, including water management and odour control measures. Chapter 10 assesses potential odour impacts, and a detailed Odour Management Plan is at Appendix 10.E. Chapter 8 assesses potential hydrology impacts, and the Drainage Strategy at Appendix 8.A details how adverse impacts on Wade Brook will be avoided.

3.7 Chapter 4 assesses visual impact, together with illustrative wirelines and a photomontage of the most-affected view from Manchester Road, which was also presented in the September public exhibitions. The landscape planting proposals shown in Figure 4.Q and the Landscape Management Plan at Appendix 4.C demonstrate the applicant’s commitment to enhancing the development site by providing habitat creation and planting that offers low-level screening and softens views of the site.

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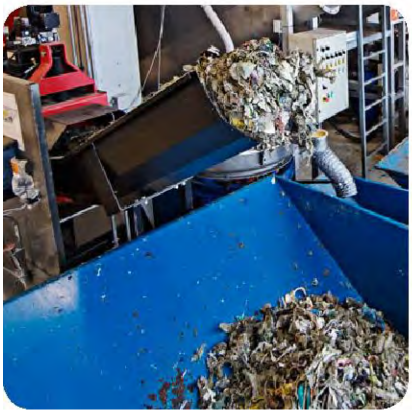
Chapter 4: Landscape and Visual Impact Assessment

REnescience Northwich

REnescience







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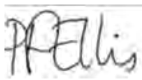
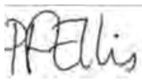
Quality Management

Prepared by:	Jane Betts	Principal Consultant		05/10/15
Reviewed & checked by:	Paul Ellis	Associate Consultant		05/10/15
Authorised by:	Paul Ellis	Associate Consultant		05/10/15
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Rev	**Date**	**Status**	**Reason for revision**	**Additional comments**
0	30/07/15	Draft	-	-
1	19/08/15	Draft	Initial internal review	DS & TAD
2	21/09/15	Draft	Draft for client review	-
3	02/10/15	Final	Finalise	

Executive Summary

The landscape and visual impact assessment has considered potential impacts on the landscape or townscape character and impacts on visual amenity due to changes in views from residences, footpaths, roads and other viewpoints in the surrounding area. It has defined a 'zone of theoretical visibility' based on the scale of the development and landscape topography, and has used viewpoint photography onto which outlines and a rendered photomontage of the proposed development have been composited.

The overall context of the site is that of an industrial townscape to the east of Northwich between the A559 Manchester Road and Manchester-Chester railway, the existing chemical industry facilities on the Lostock Works site and Griffiths Park. The townscape is influenced by a variety of land uses including chemical industry, commercial, open land, disused land, transport corridors and residential. The changes that will occur in the 'Lostock Plain' urban character area as a result of the development of REnescience Northwich can be accommodated without unacceptably significant adverse effects.

Construction of the 33 m stack, building and tanks will potentially be visible above adjoining landform and vegetation, which currently screens the existing disused site particularly from the north and south. Construction activities will appear as new elements in some views. During operation, the tops of buildings, tanks and the stack will likewise appear as new elements in some views, set in the context of existing industrial buildings on the Lostock Works site.

The new building, tanks and stack are of a similar industrial character to existing neighbouring development and attention will not generally be drawn to them. From some viewpoint locations, the redevelopment of the site will extend the built development of the industrial area, albeit still seen in context with existing industry. In close views, the proposed development will become part of a wider industrial area and where noticeable, the upper sections of the building, tanks and stack will appear above or be filtered by intervening vegetation, particularly from Manchester Road and Griffiths Park.

From the east and north east the proposed development facility will generally be concealed by the existing larger chemical works and from the south any visible elements will be seen in context with other larger industrial buildings. From the west, only the top section of the stack and building will be visible above or be heavily filtered by intervening vegetation, presenting only a minor intrusion to views dominated by foreground vegetation.

Landscape mitigation and enhancement proposals have been included as an integral part of the REnescience Northwich design, and will soften the area's urban character, assimilate the development and provide important links with existing vegetation along Wade Brook. This will build upon the existing screening offered by vegetation outside the development site. The boundary landscape treatment using native trees and shrubs and wildflower grassland provides a vegetation structure appropriate to the area. The modern architectural design of the building provides a suitable form that breaks up the overall massing of the building that is appropriate to the site.

The location of the REnescience Northwich facility in the western part of the Lostock Works site, adjacent to the industrial and commercial area of Northwich, results in a relatively small number of places in the

settlement of Northwich and adjacent villages experiencing a change in view. Good design contributes positively to making places better for people. Together with appropriate site layout and building design, the landscape proposals seek to ensure that the site will function well and add to the overall character and quality of the area. Overall, no significant adverse landscape or visual impacts during construction or operation are predicted.

Cumulative developments within the Lostock Works site would intensify the industrial character of the site within an already influenced industrial landscape. This would not increase the significance of the effect of the proposed development on landscape/townscape character. Cumulative residential developments would introduce some new sensitive receptors closer to Lostock Works, but these would have no greater sensitivity than existing receptors assessed.

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Appendices

1 Introduction

General

1.1 This chapter describes and assesses the existing landscape, townscape and visual resources of the REnescience Northwich site and the surrounding area. This includes identification of the character and features of the landscape/townscape and consideration of the changes that would result as a consequence of the project. In addition, it considers the potential visual effects arising as a result of the project.

1.2 The principal objectives of the assessment are:

- to describe, classify and evaluate the existing landscape and townscape likely to be affected by the project during its construction and operational phases;
- to identify visual receptors with views of the project; and
- to identify effects on landscape, townscape and views and assess their significance, taking into account measures proposed to reduce, or avoid any effects identified.

Relevant Guidance

1.3 As a matter of best practice, this assessment has been undertaken based on the relevant guidance on landscape and visual impact assessment described in the following documents:

- Guidelines for Landscape and Visual Impact Assessment, 3rd Edition (2013), Landscape Institute and Institute of Environmental Management and Assessment;
- Landscape Character Assessment Guidance for England and Scotland, (2002), Countryside Agency and Scottish Natural Heritage; and
- An Approach to Landscape Character Assessment, (2014), Natural England.

Study Area

1.4 The study area for REnescience Northwich relates to the Zone of Theoretical Visibility (ZTV) established for the 33 m gas engine stack within the facility. The landscape/townscape character and visual receptors have been identified and described within a 15 km radius of the application site following current guidance. However, due to the character of the local landscape and limited visibility of the existing site and proposed scheme, viewpoints beyond 10 km have not been considered. The study area is illustrated on Figure 4.A.

Consultation

1.5 In carrying out the landscape and visual impact assessment, consultation has included:

- public consultation events in July and September;

- review of feedback from public consultation, as summarised below;
- the formal EIA scoping process;
- discussion with the developers of the project (DONG Energy);
- liaison with other members of the design and environmental team, including principally the project architect and ecologist; and
- consultation with Cheshire West and Chester Council (CWCC) with regard to viewpoint locations.

1.6 A plan with suggested viewpoints together with site photographs has formed the basis for the consultation and was emailed to John Seiler on 24 June 2015. The response raised two queries:

- a suggested viewpoint from footpath Northwich FP19 from Works Lane; and
- the limitations of summer photography.

1.7 The view from FP19 is a channelled view and would be predominantly of a car park and existing industrial buildings, and following discussion the suggested viewpoints were considered appropriate for assessing the site.

1.8 During public consultation, residents requested that the view of the site from Manchester Road should be considered. Viewpoint seven has been selected as a close location with the least obscured view of the site from Manchester Road and a photomontage has been prepared for this viewpoint, shown in Figure 4.P. It should be noted that other views along Manchester Road will be more obscured than this location. Viewpoint 3 from Griffiths Park to the south is shown in Figure 4.J, as it is a sensitive receptor used by a relatively large number of people.

1.9 Wireline views have been produced for other viewpoints around the site showing what elements of the facility would be visible/obscured by intervening structures, topography and vegetation. Based on a review of the wireline illustrations, no other locations for fully rendered photomontages were identified.

Scoping

1.10 As detailed in Chapter 3, a formal scoping exercise has been undertaken to inform the scope of the Environmental Impact Assessment. The scoping response from CWCC and correspondence with the CWCC Landscape Officer highlighted the following issues relevant to landscape and visual impact assessment:

- *'Pre application correspondence with the applicants Landscape representative has led to agreement on the viewpoints and zone of theoretical visibility'.* The ZTV and photographs from 13 viewpoints agreed with John Seiler at CWCC are included within this chapter.
- *'The submitted LVIA should include: introduction, methodology, baseline information and Landscape Character Areas and refer to the Vale Royal SPD 5 Landscape Assessment and Guidelines: Area 6b Lostock Plain'.* The format and content of this chapter follows that

suggested and a full assessment of the potential impacts of the development on local landscape character has been made including the effect on Lostock Plain.

- *'Please ask the applicant's Landscape Consultant to contact me directly to discuss and confirm the key viewpoints which will require photomontages'.* Wirelines were submitted to John Seiler on 18th and 25th August with a request for comments but no response has been received at time of writing. A photomontage from Manchester Road is included and review of the wirelines did not identify any further locations for photomontages.
- *'Layout and Mitigation – the LVIA and proposed development layout should be an iterative process'.* Landscape proposals have been designed as an integral part of the project and are included as part of the iterative design process to provide treatments for the perimeter and internal green spaces.
- *'Effects – Landscape and Visual'.* Sensitive landscape and visual receptors have been identified and effects have been assessed in this chapter and full assessment tables included in Appendix 4.B: Master Impact Table.

2 Assessment Methodology

2.1 The Guidelines for Landscape and Visual Impact Assessment (GLVIA3) are broad guidelines rather than detailed prescriptive methodologies. The methodologies tailored for the assessment of this development are based on GLVIA3 guidelines, presented in detail at Appendix 4.A and summarised below.

2.2 The Landscape and Visual Impact Assessment (LVIA) considers the potential effects of the development upon:

- individual landscape features and elements;
- landscape character; and
- visual amenity and the people who view the landscape.

Distinction between Landscape and Visual Effects

2.3 In accordance with the published guidance, landscape and visual effects have been assessed separately, although the procedure for assessing each of these is closely linked. A clear distinction has been drawn between landscape and visual effects as described below.

- Landscape effects relate to the effects of the project on the physical and other characteristics of the landscape and its resulting character and quality.
- Visual effects relate to the effects on views experienced by visual receptors (e.g. residents, footpath users, tourists, etc.) and to the visual amenity experienced by those people.

Direct and Indirect Effects

2.4 The landscape, townscape and visual resource of an area can be affected both directly and indirectly. Visual effects are always direct because when an object is not in view, by implication there can be no effect. Landscape effects on the other hand can be either direct or indirect. Change that affects the onsite physical features (e.g. vegetation, buildings and landform), or the character area/type in which the site is located, is a direct landscape effect, whereas an effect on the character of adjacent or surrounding character areas/types is indirect. It is generally assumed that indirect effects would be intrinsically less significant that direct ones. However, this is not necessarily always the case and is dependent on the nature of the proposal and the landscape in which it is situated.

Duration of Landscape and Visual Effects

2.5 The LVIA assesses both permanent effects relating to the operational lifetime of the project and also temporary effects associated with its construction. Effects that occur during the construction phase but which are permanent are considered to be permanent effects (e.g. removal of trees).

2.6 Consideration has been given to seasonal variations in the visibility of the development.

2.7 Consideration has been given to changes in the significance of effects likely to take place as new planting, proposed as part of the project, matures.

Character Assessment

2.8 Landscape Character evaluation requires professional judgement in relation to the resource's 'condition', 'value' and 'sensitivity'. Condition relates to the intactness of the landscape. Value is concerned with the relative importance that is attached to different landscapes. Sensitivity is based on the ability of the landscape resource to accommodate the proposed change without detrimental effects on its character, features or elements.

2.9 Potential impacts are identified by addressing the following issues:

- nature and value of any resources likely to be lost due to the development;
- visual relationships between the site and its setting;
- value of the setting and its sensitivity to change; and
- sensitivity to change based upon the combination of each area's individual character, condition and visual environment.

2.10 Landscape character assessment criteria and definitions used to describe the likely nature and magnitude of changes to individual elements and characteristics and the consequential effect on landscape character resulting from the REnescience Northwich development are detailed in Appendix 4.A.

Zone of Theoretical Visibility

2.11 Preliminary site evaluations and consideration of the effects on viewpoints were undertaken at the baseline assessment stage. In order to determine available views and hence assess visual receptors and the visual amenity, a Zone of Theoretical Visibility (ZTV) has been mapped for the REnescience Northwich development. The ZTV is the theoretical area from which part of the development is potentially visible and broadly defines the study area for both the character and visual assessment. Photographic and GIS-based information supported by field survey work was used to identify visually significant structures and vegetation. Intervening vegetation and structures can affect the extent of visibility.

2.12 Visual receptors include the public and community at large, residents and visitors to the area. Visual receptors that lie within the ZTV have been identified. An estimate of the number and type of receptors that are likely to experience visual changes is provided and their sensitivity to changes in views is considered.

2.13 An assessment of visual impact is undertaken from viewpoints that have been identified as being either particularly sensitive or representative and takes into account the:

- sensitivity of the views and viewers (visual receptor) affected;
- nature, scale and duration of the change;
- extent of the proposed development that would be visible;
- degree of visual intrusion or obstruction that would occur;
- distance to views; and
- change in character or quality of the views compared to existing views.

2.14 In order to evaluate what the visual impact of the development would be and, if appropriate, what could be done to ameliorate the impact, it is necessary to describe the existing situation to provide a basis against which any change can be assessed. Each assessment of visual impact would therefore be made taking into consideration the character and quality of the existing view.

2.15 The criteria and definitions use in the visual impact assessment are given in Appendix 4.A.

Limitations of the Assessment

2.16 The visual assessment is based on analysis of views towards the application site from publically accessible viewpoints in the surrounding landscape. Although every effort has been made to include viewpoints in sensitive locations and locations from which the development would be most visible, not all public viewpoints from which the development would be seen have been included in the assessment. Where impacts to residential and other private views (e.g. commercial occupiers) are noted these have necessarily been estimated.

2.17 The visual assessment and associated field work has been carried out during the summer in 2015 when deciduous trees were in leaf. As such, the photography in the assessment is not presenting the ‘worst case’ scenario. Judgements have necessarily been made regarding the winter situation.

Mitigation and Residual Impacts

2.18 The layout design proposals incorporated as an integral part of the scheme are taken into account in the following assessment of the proposed development. Landscape proposals have been designed as an integral part of the project to provide treatments for the perimeter green spaces. This designed-in mitigation is shown on the Site Layout Plan in Figure 2.E, and in greater detail in the 1:500 scale plan in Figure 4.Q. A Landscape Management Plan with full details of how DONG Energy will implement and maintain the landscape proposals is included at Appendix 4.C.

Cumulative Impacts

2.19 Reference has been made to any major proposed developments within the vicinity of the project which would lead to a significant change in the baseline situation. These are listed in Chapter 2 and shown in Figure 2.D.

3 Planning Policy Context

Introduction

3.1 The aim of this section is to identify the national and local policies of relevance to landscape issues in relation to landscape and inform the baseline assessment for the proposed development.

3.2 The project is not located in a nationally designated landscape (statutory National Park or Area of Outstanding Natural Beauty). No local landscape designations (non-statutory) apply to the application site, as shown in Figure 4.B.

National Policy

National Planning Policy Framework (NPPF)

3.3 The NPPF published in 2012 sets out the Government's desire to enable sustainable development.

3.4 Importance is attached to the design of the built environment, as stated as a core principle at paragraph 17 *"always seek to secure high quality design and good standard of amenity for all existing and future occupants of land and buildings'* with the objective that good design *'should contribute positively to making places better for people".*

3.5 The NPPF states at paragraph 109 that *"the planning system should contribute to and enhance the natural and local environment by:*

- *"Protecting and enhancing valued landscapes…"*

3.6 With respect to landscape and visual resources, the project complies with this national policy and takes account of local circumstances.

Local Policy

Cheshire West and Chester Local Plan (Part One) Strategic Policies – adopted on 29 January 2015

3.7 Environmental policies are addressed in Chapter 8 of the Local Plan. Those relevant to the proposed development and relating to landscape resources comprise of the following.

3.8 **Policy ENV 2** relates to Landscape and states:

"The Local Plan will protect and, wherever possible, enhance landscape character and local distinctiveness. This will be achieved by:

- *The identification of key gaps in the Local Plan (Part Two) Land Allocations and Detailed Policies Plan between settlements outside the Green Belt that serve to protect and maintain their character;*
- *Supporting the designation of Local Green Space;*
- *Protecting the character of the boroughs estuaries and undeveloped coast.*

Development should:

- *Take full account of the characteristics of the development site, its relationship with its surroundings and where appropriate views into, over and out of the site; and*
- *Recognise, retain and incorporate features of landscape quality into the design."*

3.9 **Policy ENV 3** relates to Green Infrastructure and states:

"The Local Plan will support the creation, enhancement, protection and management of a network of high quality multi-functional Green Infrastructure. This will be achieved by:

- *Development incorporating new and/or enhanced Green Infrastructure of an appropriate type, standard and size or contributing to alternative provision elsewhere.*
- *Increased planting of trees and woodlands, particularly in urban area and the urban fringe."*

3.10 In order to enhance landscape character and local distinctiveness, the development is planned and designed with the landscape design integral to the scheme with the aim of offering landscape enhancements and boundary treatments in accordance with local policy.

Vale Royal Local Plan First Review Alteration (Adopted June 2006) – polices saved after 29 January 2015

3.11 The Local Plan contains policies concerned with protection of different aspects of the landscape. The following are the relevant policies and are saved until further notice.

- **Policy NE7**: 'Protection and Enhancement of Landscape Features'.
- **Policy NE8**: 'Provision and Enhancement of Landscape in New Development'.
- **Policies NE9** and **NE10**: 'Trees and Woodland'.
- **Policy NE12**: 'Areas of Significant Local Environmental Value'.

3.12 The landscape treatment of the site boundary and internal spaces is provided using native species as promoted in Policy NE8 and NE10.

The Cheshire Replacement Waste Local Plan

3.13 The Waste Local Plan acknowledges that all waste management facilities create some visual impact dependent on the size, operation and location of the facility. The Waste Local Plan contains Policy 14 specific to Landscape:

"An application to develop a waste management facility will not be permitted where, during its operational life and, where applicable, upon restoration, it would have an unacceptable impact on

the landscape and (or) townscape and where the restoration would not make a positive contribution to the landscape."

3.14 The Waste Planning Authority seeks to support well-designed facilities that would be integrated with the landscape and/or townscape and offer enhancements to the environment. Policy 36 relates to Design:

"An application to develop a waste management facility shall demonstrate that the proposal is well designed. Design must address its integration into the landscape and/or townscape, its functionality and the minimisation of impacts. An application to develop a waste management facility will not be permitted where the design of the proposed development will have an unacceptable impact upon landscape and/or townscape."

3.15 The landscape scheme has been designed to retain and create features that would provide opportunities for landscape structure and biodiversity that link the site with adjacent green areas, particularly Wade Brook, as an enhancement to a local corridor.

4 Existing Conditions

Landscape Baseline – Site Features

Introduction

4.1 The site description focuses on the REnescience Northwich application site at Lostock Works, comprising the proposed buildings for receiving and treating waste, sorting and loading recovered materials, and housing the facility office. The application site boundary also encompasses two storage buildings, external circular anaerobic digester tanks and digestate/biogas storage tanks, biogas engines, a 33 m exhaust stack, and a backup biogas flare stack. The site access is via an existing private road through the Lostock Works site from the A530 Griffiths Road, across the Trent and Mersey Canal.

4.2 In addition to the proposed development, associated works may be undertaken by third parties to widen the private access road and provide an off-site connection to the electricity grid via underground cable. Further detail is given in Chapter 2: Site Context and Project Description.

The Application Site

4.3 The application site is approximately 2 km east of Northwich town centre and 1 km west of Lostock Gralam on the south side of the A559, Manchester Road, and the Manchester-Chester railway line. The application site is situated within an area of industrial development bounded by the railway line to the north. To the south the application site boundary is defined by Wade Brook. It is located on the site of a former chlorine manufacturing plant. The buildings have been demolished and the site is cleared apart from some areas of foundations, hardstanding and road surfaces. The existing landscape of the site is disused, dominated by industry and in particular the scale and extent of the chemical works to the east and the rail siding and conveyor structure serving them to the south.

4.4 The site is approximately 3.7 hectares in size and is generally rectangular with a curved western boundary. The main building of the REnescience Northwich facility would be located in the centre of the site, with tanks and other installations at intervals across the site. The proposed site layout is shown in Figure 2.E.

4.5 Access to the application site would be from the existing private access road from the A530 Griffiths Road, across the Trent and Mersey Canal. The section of access road from the A530 to west of the canal is also a public footpath. The A530 links to the motorway network via the A556 north east to Junction 19 of the M6 or the A54 south to Junction 18 of the M6 at Middlewich.

Vegetation on the Application Site

4.6 No significant vegetation is present on the site. The site predominantly consists of waste ground and hardstanding with emerging ephemeral/short perennial vegetation, tall ruderal vegetation/ scrub and occasional groups of shrubs.

Other Features on the Application Site

4.7 There are no landscape features of note on the application site. The site is within the area of the Mersey Forest, an environmental regeneration initiative that promotes sustainable landscape improvements across Cheshire and Merseyside with the aim of promoting green infrastructure to compliment and sustain community and economic development.

Rights of Way

4.8 No public rights of way cross the application site.

4.9 The Cheshire Ring Canal Walk follows a route along the Trent and Mersey Canal. At its closest, it passes approximately 400 m to the east of the site. Much of the route is contained by residential or industrial development or by riparian vegetation along the canal with some short gaps allowing open views in an otherwise consistent visual barrier.

4.10 There are a few other footpaths within the surrounding urban or industrial area. One footpath (Northwich FP19) links Manchester Road via Works Lane under the railway to the canal towpath. This section of FP19 is separated from the application site by the Solvay chemical works and part of the Tata Chemicals works.

4.11 Other footpaths provide links from the urban area to the countryside particularly to the north and east of the application site.

4.12 Public rights of way are shown on Figure 4.H.

Adjacent Features

4.13 Northwich Woodlands to the north of Wade Brook, around 900 m from the application site, form a part of Mersey Forest and provide more than 350 hectares of parkland open to the public, including Carey Park, Marbury Country Park, Anderton Nature Park and Neumann's and Ashton's Flashes as described below.

4.14 The following nearby features are noted. Refer to Figure 4.H.

- Griffiths Park, an area of parkland located on a former landfill site managed by the local authority, which lies to the south of the application site;
- The Trent and Mersey Canal, which runs to the east of the application site and follows a north to south alignment;
- The Manchester to Chester railway line to the north of the application site;
- The vegetated linear feature of Wade Brook to the south of the application site;

- The existing Solvay and Tata Chemicals works to the east of the application site; and
- An area of derelict ground that bounds the application site to the west.

4.15 Other land uses within 5 km of the application site include the following.

- Anderton Nature Park, which forms part of the Northwich Woodlands to the north-west of the application site. The park is located in an area of former salt works and large scale salt extraction where the River Weaver meets the Trent and Mersey Canal resulting in the creation of Witton Flashes. Public access is provided along surfaced routes suitable for pedestrians, equestrians and cyclists and access is also available from the canal.
- Marbury Country Park, part of Northwich Woodlands, is located around the former residence of the Smith-Barry family and is now managed by Cheshire West and Chester Council as a country park. There are a variety of walks and trails for visitors and features include a children's play area and orienteering course.
- Neumann's and Ashton's Flashes, also forming part of the Northwich Woodlands. This is the most recently reclaimed area of land within the Woodlands and provides access for pedestrians, equestrians and cyclists along linear and circular routes which link to the wider Northwich Woodlands area. A variety of bird species including waders and water fowl are found at this location and visitors can view wildlife from bird hides which are wheelchair accessible.
- Carey Park, Northwich has been developed on a former landfill site and is also part of Northwich Woodlands. It is close to the town centre with direct access from the town and parking areas and provides a green link between the urban area and the rest of the Northwich Woodlands. An elevated viewpoint is accessible within the park.
- Watercourses including the River Dane to the south-west, the Wade Brook to the south of the application site and Wincham Brook to the north of Manchester Road.
- Agricultural land extending to the east and beyond the A556.

Topographical Context

4.16 The application site is generally flat and located within a low lying area approximately 25 m AOD with a slight slope south towards Wade Brook (which itself has steeply sloping banks).

4.17 The landform of the study area ranges from 10 m to 100 m AOD as a series of river corridors and tributaries leading from the surrounding higher ground. Refer to Figure 4.C.

Landscape Sensitivity

4.18 The existing site features are considered to have low sensitivity due to the essentially derelict appearance of the overall site set within an industrial area. The application site is not considered to make any particularly important contribution to the general landscape character of the surrounding area and is part of the industrial character.

Landscape Baseline – Landscape Character

Introduction

4.19 The assessment of landscape effects focuses on the effect of the development on landscape character. Landscape character areas and landscape character types can be defined at a variety of scales and a substantial amount of existing published information is available at the national, county and district levels. The principal published information comprises Natural England's national landscape characterisation of England and the county level characterisation undertaken by the former Cheshire County Council prior to its division into unitary authorities.

National Landscape Context

4.20 At a national level, the site is identified within National Character Area (NCA) 61: Shropshire, Cheshire and Staffordshire Plain, which extends from Manchester in the north to Telford in the south. To the almost immediate west of Northwich is NCA 62: Cheshire Sandstone Ridge. NCA 60: Mersey Valley is to the north of the study area. Refer to Figure 4.D.

4.21 The key characteristics of the Shropshire, Cheshire and Staffordshire Plain character area pertinent to the study area are as follows.

- Extensive, gently undulating plain, dominated by thick glacial till from the late Pleistocene Period, producing productive, clay soils and exemplifying characteristic glacial landforms including eskers, glacial fans, kettle holes, moraines and a landscape of meres and mosses.
- Prominent discontinuous sandstone ridges of Triassic age, characterised by steep sides and freely draining, generally infertile soil that supports broadleaved and mixed woodland.
- Few woodlands, confined to the area around Northwich and to estates, cloughs and deciduous and mixed woods on the steeper slopes of the wind-swept sandstone ridges. Locally extensive tracts of coniferous woodland and locally distinctive orchards scattered throughout.
- Strong field patterns with generally well-maintained boundaries, predominantly hedgerows, with dense, mature hedgerow trees. Sandstone walls occur on the ridges and estate walls and Cheshire-style (curved topped) metal railing fences occur locally on estates in Cheshire.
- Dairy farming dominates on the plain, with patches of mixed farming and arable in the north and large areas in the south-east.
- Diversity of wetland habitats includes internationally important meres and mosses comprising lowland raised bog, fen, wet woodland, reed bed and standing water, supporting populations of a host of rare wildlife, including some species of national and international importance.

- Extensive peat flood plains where flood plain grazing marsh habitats support regionally important populations of breeding waders in areas such as Baggy Moor, Weald Moor and Doxey Marshes.
- Many main rivers and their flood plains lie in this area, including the Dee, Dane, Severn, Penk and Sow. Significant areas of grazing marsh, alluvial flood meadows and hay meadows associated with the rivers Dee, Sow, Gowy and Severn. The area has the highest density of field ponds in Western Europe.
- Nationally important reserves of silica sand and salt. Active extraction of salt has developed a locally distinctive landscape of subsidence flashes, particularly around the area of Sandbach. Adjacent to these saline flashes are areas of salt marsh rarely found at inland sites.
- The numerous canals are important for recreation as well as habitat. Several National Cycle Routes and nearly 5,000 km of public rights of way cross the plain. Six National Nature Reserves (NNRs) are scattered throughout, close to large population centres and well used for recreation.

Cheshire Landscape Character Assessment, November 2008

4.22 At a county level, the former Cheshire County Council undertook a study to further refine and subdivide the national character areas. The application site is located within the urban and adjacent to the industrial landscape type. Refer to Figure 4.E.

4.23 The adjacent landscape character areas include Salt Flashes at Anderton (SF2), to the north of the railway and A559, which are part of the Landscape Character Type 11: Salt Flashes. The Arley character area (LFW3) is to the north east and is part of Landscape Character Type 10: Lower Farms and Woods. The Stablach character area ELP4 to the south of the urban and industrial area is part of the Landscape Character Type 7: East Lowland Plain. Also to the south of the urban area is the Lower Dane character area R4, part of the Landscape Type 13: River Valley.

4.24 The Anderton character area is a remnant of the former salt works and continues to be dominated by factory structures, chimneys and conveyors. The document describes that "*much of the derelict land within this area was reclaimed under a comprehensive land regeneration programme initiated in the 1980's and utilising government funding. In locations such as Wincham this involved the development of new industrial estates, perpetuating the area's former industrial character.*"

4.25 The Mersey Forest initiative has enabled extensive regeneration and planting programmes, which have assimilated industrial development within a woodland landscape and often the large factory units appear to rise out of extensive tracts of woodland.

Vale Royal Landscape Character Supplementary Planning Document, September 2007

4.26 The Vale Royal Landscape Character Supplementary Planning Document was adopted in 2007. The application site falls within the urban/industrial area of Northwich in the western part of the Lostock Plain (6C) landscape character area, which is adjacent to the Stublach Plain (6B) character area to the south and bounded by the Northwich Salt Heritage Landscape (13A) character area to the north. Refer to Figure 4.F.

4.27 The Lostock Plain (6C) is described as a distinct area of the East Cheshire Plain, located to the east of Northwich where one of the key characteristics is *"Long range views across the open, flat landscape with electricity pylons prominent on the skyline. Industrial works at Northwich East form a backcloth to the Lostock Plain."*

4.28 In the document, guidance is given on landscape management, which should *"Seek opportunities to create a woodland setting for the industrial and business areas to the east of Northwich"* and states that *"Planting near watercourses should consist of native species."* With regard to built development, guidance suggests that views from the canal should be considered and that the built edges of Northwich should be softened by the use of native species.

4.29 The adjoining Stublach Plain (6B) *"forms a flat pastoral plain"* and *"is bounded to the north by the more industrialised Lostock Plain…"* In relation to this landscape character area it is noted that *"Industrial works at Northwich East have a visual influence on the Stublach Plain."* The presence of hedgerow oaks contributes to the texture of this flat and open landscape and filters views across the plain to the industrial edge at Northwich. The landscape management for the area seeks to create a woodland setting 'J' for the industrial area to the north east of Northwich.

4.30 The Northwich Salt Heritage Landscape (13A) is *"an area of formerly extensive salt works on the northern outskirts of Northwich. It incorporates the confluence of Wade Brook and Marbury Brook with the River Weaver and a large area of subsidence flashes."* The key characteristics of this character area include *"subsistence flashes surrounded by a mosaic of grassland, marsh, scrub and woodland forming the heart of the Northwich Community Woodlands"* and it is recognised that *"Current industry influences the area".*

The Changing Landscape

4.31 Having established the existing baseline character of the area, it should be noted that landscapes are dynamic and all subject to change. The landscape is always changing to accommodate new development. There is a need to accommodate change while maintaining and enhancing the quality of the landscape where possible. New development should respect the environment and its location by way of scale, design and landscape treatment.

Visual Baseline

Zone of Theoretical Visibility (ZTV)

4.32 Areas where views of the proposed development would be theoretically possible are determined by means of the ZTV. The ZTV is considered to be influenced by the buildings and associated 33 m stack. The full extent of the ZTV has been computer generated on the basis of the 33 m stack. Refer to Figure 4.G.

4.33 The extent of the theoretical visibility is largely restricted to within 10 km of the application site south of the M56, west of the developed edge of Knutsford and north of the developed edge of Middlewich and Winsford. The screening effect of landscape features including built form, woodland, hedgerows and hedgerow trees is not taken into account. Site survey has indicated that intervening built environment and vegetation cover is such that many areas identified within the ZTV would not receive views of the project.

Visual Receptors

4.34 The application site is relatively flat and is part of a derelict area bounded by existing industrial buildings to the east. To the north the railway is bordered by vegetation on both sides, with the area of regenerating woodland extending, in places, over flat ground to Manchester Road. Commercial buildings including warehouses, offices and car showrooms are set within vegetation south of Manchester Road. To the south of the application site is an area of higher ground, known a Griffiths Park, with established vegetation cover. The height of the proposed buildings and associated stack would be open to views from these directions.

4.35 The visual assessment has primarily been based on an assessment of thirteen representative viewpoints agreed with the local planning authority. These visual receptors, including notes regarding their baseline views, are described in Table 4.1, below. In addition, ZTV information, supplemented by site visits, has been used to identify and consider all of the main visual receptors within the vicinity of the application site.

Residential Areas (High Sensitivity)

4.36 The main locations where there could be potential visual effects on residential properties at the edge of urban areas comprise:

- Northwich to the west;
- Rudheath and Brocken Cross to the south;
- Lostock Green to the south east;
- Marston and Wincham to the north; and
- Lostock Gralam to the north east.

Other Built-Up Areas (High Sensitivity)

4.37 Other principal residential areas are further afield and include:

- Plumley to the east (3.7 km);
- Great Budworth (3.5k m) and Pickmere (2.6 km) to the north; and
- Middlewich to the south (7.3 km).

4.38 Site survey has indicated that the vegetation and intervening built environment is such that the majority of these areas would not receive views of the project. Where residential views might be gained, from properties at higher elevations, these have been considered in combination with local publically accessible views in the subsequent sections.

Public Rights of Way and Public Access (High Sensitivity)

4.39 Reference to the Ordnance Survey map has confirmed the extent and status of public rights of way in the immediate vicinity of the application site. These are shown on Figure 4.H. Open views of the application site are not achievable from publically accessible locations due to extensive vegetation cover or intervening buildings. However, partial views of the building and/or stack would be gained from the following resources:

- public footpaths close to the site including the Trent and Mersey Canal Path (Cheshire Ring Canal Walk);
- Griffiths Park to the south of the application site; and
- Northwich Woodlands, which extend to over 350 hectares of public open space to the north of the A559 and includes Carey Park.

4.40 Areas of public access with potential long distance views towards the site include:

- the Dane Valley Way; and
- Vale Royal Abbey Gold Course.

Recreation Areas (Medium Sensitivity)

4.41 Areas used for outdoor sport or recreation with potential views of the application site include:

- a sports field off Works Lane/Manchester Road.

Roads and Railway (Low Sensitivity)

4.42 There would be some views of the application site from nearby major roads, other roads and railway within the study area. These include:

- A559 Manchester Road;
- A530 Griffiths Road;
- A556 east and west of the application site; and
- A559 north of the application site; and

- Manchester to Chester railway.

4.43 In addition, there would be some glimpse views towards the application site from minor roads within the study area, particularly from the lanes around Lach Dennis to the south east and between Comberbach and Pickmere to the north of the application site.

4.44 Rail passengers would gain some transitory glimpse views of the application site between gaps in intervening vegetation that borders the railway.

Industrial and Employment Areas (Low Sensitivity)

4.45 Receptors at the work place are considered of low sensitivity and would include many of the closest visual receptors at the adjacent industrial and commercial areas:

- Brickfield Business Centre;
- Booker warehouse;
- Various car sales showrooms along Manchester Road; and
- Solvay chemical works.

Viewpoint Assessment

Selection of Representative Viewpoints

4.46 Thirteen representative viewpoints have been selected to assess the effects of the proposed development. Refer to Figures 4.G and 4.H. Their selection has been based on:

- interrogation of ZTV information;
- a range of distances and locations;
- important or potentially sensitive locations; and
- confirmation of potential visibility (i.e. absence of local land cover).

4.47 The viewpoints have been agreed with the local authority.

Distance of View

4.48 The distance of the view from the application site has been estimated and defined by the following criteria:

- short (close) distance views up to 2 km from the application site;
- middle distance views, 2 to 5 km from the application site; and
- long distance views, over 5 km from the application site.

4.49 All viewpoints selected are publically accessible.

Schedule of Representative Viewpoints and Baseline Conditions

4.50 Table 4.1 provides a schedule of the selected viewpoints and their baseline conditions. The photographic views are illustrated in a series of Figures 4.I to 4.O. The photographs were taken on 2 June 2015 and show summer conditions with deciduous vegetation in full leaf.

Table 4.1: Representative Viewpoints

View-point No.	Viewpoint Location	Distance to Application Site*	Baseline Description
1	Footpath (Rudheath FP6) to canal, Griffiths Road	400 m	A close cluttered view looking north west towards the application site. The foreground is dominated by security fencing containing redundant rough ground. Beyond, in the middle distance the land rises as rough grassland with groups of shrubs and regenerating trees are visible. Lighting columns, gantry, pylons and powerlines are vertical visual features that punctuate the skyline. Other visual detractors in the view include a storage container and the chemical works.
2	Trent and Mersey Canal Towpath (Rudheath FP10), Rudheath	600 m	A close open view looking north towards the application site. The foreground comprises tall grasses, herbs, reeds and rushes that constitute an area of wet grassland adjacent to the canal. Beyond, in the middle distance, a watercourse is defined by a belt of trees and shrubs that cuts across the view. Beyond this belt of vegetation the landform rises to the wooded area of Griffiths Park. The electricity grid pylon forms a prominent vertical feature in the view and the existing large scale buildings of the chemical works are visible.
3	Griffiths Park	500 m	A close open elevated view looking north towards the application site. The foreground is wildflower grassland that extends to mixed woodland blocks, which have established sufficiently to contain the view and screen adjacent industrial buildings. A path is visible winding through a gap between the woodland blocks.
4	Griffiths Park	200 m	A very close contained elevated view looking north from the northern boundary of Griffiths Park towards the application site. The foreground is wildflower grassland with woodland providing visual containment to the view. In summer the woodland planting provides sufficient cover to predominantly screen the adjacent industrial sites. The top of the conveyor building is visible as a glimpse above vegetation and heavily filtered by foreground vegetation in summer. The pylon is a vertical feature above the tree line.
5	James Street, Rudheath	500 m	A close contained view looking north east from the residential edge of James Street. The foreground is rough grassland with a path that takes a route to an area of recent planting and regenerating vegetation that provides sufficient screen to adjacent commercial and industrial buildings south of Manchester Road. The tops of pylons, gantries and poles and power lines are apparent in the view.
6	Footpath (Northwich FP15), Cranage Lane/ Manchester Road	300 m	A close roadside view looking south towards the application site. The foreground is tarmac road surface which is bounded by a mown grass verge strip and taller grasses. A group of mature trees is visible against the roadside. Beyond the roadside grass middle ground is an area of regenerating woodland including birch and willow. Scaffold lighting towers are vertical features visible above the vegetation. Road markings and kerbs provide a sense of direction and perspective towards the left of the view and include roadside lighting, a bus shelter and signage.
7	Manchester Road	200 m	A close contained roadside view looking south towards the application site. The foreground comprises tarmac, curb, tall roadside grasses and herb species. An area of hardstanding bounded by ‘armco’ barrier fencing is a horizontal feature that draws the eye to the centre of the view. Further into the middle ground, metal pipework ducts act as the visual focus, beyond which a band of shrubs and semi-mature trees extends across the view.

View-point No.	Viewpoint Location	Distance to Application Site*	Baseline Description
			The view is enclosed to the left by a group of semi-mature alder, birch, sycamore and poplar trees. The buildings of the Toyota showroom are a visual edge to the right of the view. In the distance pylons and gantry are visible vertical features in the view. The view is cluttered and disjointed.
8	Footpath (Lostock Gralam FP2) access from Lostock Hollow	1.0 km	A close open view looking west towards the application site. The foreground, through a fence gateway, is over grazing pasture with areas of rush on wet ground. A pylon is the dominant feature of the middle ground. Areas of shrubs, intermittent hedge and groups of willow trees near ponds together create continuous vegetation cover across the view. Other features of the middle ground include poles, powerlines and concrete surface features. The background is complicated by the large scale redundant power station and existing chemical works which emit steam across the view.
9	Carey Park	2.0 km	A middle distance view looking south east towards the application site. The made landform and landscape generally filters and screens views out of the country park. Many general views form Carey Park are restricted by vegetation. A footpath track follows a circular route around the park and vegetation along the track is dense. This viewpoint has been chosen as it is the most open view between a gap in the vegetation towards the application site. The foreground is over wildflower grassland to a group of semi-mature birch trees in the middle ground with blocks of trees and shrubs beyond. The foreground trees filter the view from this location and the redundant power station is glimpsed between the summer foliage. Other large scale industrial buildings are also partly screened but nevertheless evident in the view. The distant view is generally of an industrial landscape set amongst woodland.
10	Park Lane, Pickmere	3.3 km	A middle distance open view looking south towards the application site. The foreground, over remnant roadside hedgerow, comprises a gently sloping arable field. The field slopes to a watercourse that drains Pick Mere and is demarked by intermittent shrubs. Residential and agricultural buildings are visible across the middle ground set amongst small woodland blocks. In the distance the existing chemical works break the skyline and the large scale industrial buildings at Wincham are visible.
11	Footpath (Nether Peover FP11) near Cheadle Farm, Plumley	4.2 km	A middle distance view looking west towards the application site. The foreground comprises grazed pasture field contained by clipped field hedgerow that extends to the middle of the view. Mature hedgerow trees are distinctive features in the view and frame visible houses and farm buildings. Poles and powerlines are vertical visual features in the view. In the distance the top of the chemical works is visible but appears as part of the irregular vegetated skyline.
12	Dane Valley Way, Middlewich	7.9 km	A distant open view looking north west across a rural landscape towards the application site. The foreground comprises a large pasture field with post and rail fence demarking the tarmac drive to Kinderton Hall. The buildings of Kinderton Hall are visible in the middle ground set between groups of trees and contained by boundary hedgerows. Distant views are prevented by intervening woodland blocks, mature hedgerow trees and other vegetation cover.
13	Vale Royal Abbey Golf Course (Winsford FP5)	6.2 km	A distant enclosed view looking north east towards the application site. The view is representative of residential properties on the northern fringes of Park Royal. The foreground is close mown golf course fairway interrupted by reed, rush and waterside species that demark a watercourse across the middle of the view. Due to the influence of mature and semi-mature trees, no existing views are gained of the large scale industrial buildings form this elevated location and illustrates the visual effect of vegetation characteristic of the area.

* Note: the distances given are from the viewpoint location to the application site boundary.

Potential Changes to Baseline Conditions

4.51 The following projects and initiatives with planning consent or in the planning application process are located within the vicinity of the proposed development and may affect the baseline conditions over the coming years:

- Tata/E.ON – Lostock Sustainable Energy Plant (SEP);
- Organic Waste Management Ltd – 'Bedminster' technology Bio-Energy Plant;
- Edelchemie – metal recovery;
- Broadthorn – waste recycling; and
- GF Energy – gas-fired peaking electricity generation plant.

4.52 Further details of these developments are provided in Chapter 2 and the site locations are shown in Figure 2.D. The developments are located within the Lostock Works site, and close distances between REnescience Northwich and these other schemes would allow intervisibility between them.

4.53 Nine residential development schemes either consented or in the planning process are proposed in the area round there site:

- Cedars;
- Chapel Street;
- Land at Hargreaves Road (x2);
- Making Space;
- Farm Road;
- Cottage Close;
- Canalside Farm; and
- Cookes Lane.

4.54 These developments would extend the residential edges of Rudheath and Northwich closer to the REnescience Northwich site and introduce new sensitive receptors. A cumulative impact assessment, taking these schemes that introduce new sensitive receptors into account, is included at Section 7 of this chapter.

4.55 Establishment of woodland areas under the Mersey Forest and Northwich Woodlands initiatives and maturity of existing restoration works to the north of the A559 and at Griffiths Park will progressively increase the continuity of woodland cover in the area. Medium distance views from the north and close distance views from the south are therefore likely to take on an increasingly wooded character, with in which REnescience Northwich would sit together with other adjacent facilities (both existing and proposed) within the Lostock Works and surrounding area.

5 Proposed Development and Landscape Proposals

Introduction

5.1 REnescience Northwich is a bioresource project comprising stages of mechanical and biological treatment of waste and renewable energy generation. A full description is given in Chapter 2 and the accompanying plans. The development will include the following built environment components.

- The waste reception, treatment, sorting area for recovered materials and site offices are contained within a building covering an area as shown on Figure 2.E. The design with variable level roof heights is proposed to break up the overall massing of the building.
- The bioliquid reception and retention tanks, anaerobic digester tanks and post-digester tanks are clustered in a separate bunded compound to the west of the main building.
- Internal vehicle circulation roads and turning areas, weighbridge, parking and a recovered material storage building to the west of the main building.
- Up to five biogas engines, other smaller installations such as pumps and pipework, and a covered compost-like output (CLO) storage building are located south of the main building.
- The tallest structure will be the exhaust stack (33 m) for the biogas engines. A smaller 10 m enclosed biogas flare stack will be located in the same area. The tallest building will be the waste bunker at 24 m.
- Perimeter and internal landscape planting, 4,266 m^2, wildflower grassland 3,223 m^2 and amenity grassland 601 m^2.
- Fragrant orchid habitat, 415 m^2.

5.2 The proposed building form has been generated from the processes to be housed (each of which has its own required minimum internal height) and the required interrelationships between the various internal spaces. In order to reduce the external visual mass of the building, these heights were used to generate the external form rather than having a consistent high level roof height over all areas. These staggered roof heights, combined with the central feature offices, give the building visual interest without the need for additional architectural elevation treatment and feature cladding solutions.

5.3 Other than the office element, vertical laid profiled metal cladding is proposed throughout with a neutral grey/silver colour palette. To give focus and prominence to the offices, these are highlighted with a contrasting accent colour and higher quality microrib cladding. Elevations are broken up by using darker cladding to the lower building forms with a light coloured cladding to the taller volumes like the bunker hall; it is intended that in doing this the taller buildings will fade into the sky, giving the appearance of a lower building.

5.4 The maximum roof height of the main building would be 24 m. The tallest tanks would be 20 m high. Further details of the built form are given in Chapter 2 of the ES and in the Design and Access Statement accompanying the planning submission.

5.5 The proposed development is smaller but would be seen in the context of the existing Tata Chemicals, Solvay and INEOS chemical works. The tallest elements of these are believed to be the Tata Chemicals works, with a 50 m high building and 40 m high gas vent stack. The consented Lostock SEP main building would be 48 m high with a stack of 90 m height. Also of note is that the previously-proposed Viridor facility on this site, for which members of CWCC resolved to grant consent but whose application was withdrawn in 2013, which would have had a main building 19 m high and 27 m high stack.

Lighting

5.6 Site lighting would be selected and directed into the site in order to minimise light pollution but to ensure good working conditions, safety of personnel and security. Internal roads and walkways would be subject to low level lighting where possible. Lighting design principles are detailed in Chapter 2 of the ES.

The Landscape Scheme

5.7 The landscape proposals have been designed as an integral part of the project to provide treatments for the perimeter of the site and green spaces within the application boundary. The landscape design forms a sequence of specific landscape proposals focussed on the enhancement of the local landscape. Refer to the Landscape Management Plan at Appendix 4.C and the Landscape Proposals drawing in Figure 4.Q. The proposals include the following features.

- Native tree and shrub planting within a 5 m to 10 m strip to provide a soft boundary treatment and screening along the west, north-west and east boundary of the site to integrate the tanks and building particularly when viewed from Manchester Road.
- Mixed native species trees and shrubs along the south boundary to provide landscape integration and connectivity to the existing vegetation and green corridor associated with Wade Brook.
- Wildflower grassland on the open area in the north-eastern part of the application site, adjacent to the access road and railway siding.
- Fragrant orchid and short perennial habitat area which provides a suitable area in which a small number of orchids present on the site will be relocated (see Chapter 7: Ecology and Nature Conservation).
- Internal wildflower grassland, amenity grassland, ivy and individual trees.

5.8 A Landscape Management Plan with full details of how DONG Energy Ltd will implement and maintain the landscape proposals is included at Appendix 4.C.

Summary

5.9 The landscape proposals seek to reflect the character of the site and the surrounding landscape by establishing vegetation using native species appropriate to the local area, which would provide a transition in the landscape and connect the industrial site with the surrounding area and contribute to the integration of different features and characteristics. The landscape proposals would be an enhancement of the existing disused site conditions, and together with the appropriate site layout and building design seek to ensure that the site will function well add to the overall character and quality of the area.

6 Assessment of Effects

Introduction

6.1 Using the methodology described in section 2, the landscape and visual impacts of the proposed development have been assessed separately. The change from baseline conditions has been described and the significance of effect evaluated.

6.2 Throughout the life of a development, the component characteristics vary and this is most apparent between the construction and operational phases. The phases are characterised by different elements and activities, so a separate assessment for each stage is provided to understand the scheme and then predict landscape and visual effects.

6.3 Consequently, this section of the chapter is separated into two parts, firstly dealing with the landscape and visual effects during the construction phase and secondly covering the landscape and visual effects during operation of the development.

6.4 A summary of the findings is presented below and full assessment tables are included as Appendix 4.B.

Construction Assessment

6.5 The construction phase of REnescience Northwich would be temporary and is expected to last for a period of approximately 12 months. The activity would be adjacent to existing industrial installations to the east. The construction site would be surrounded by hoardings and/or the existing security fencing. Located within the site area would be site offices, materials, spoil storage areas and cranes resulting in a temporary change of character due to intensity of use, construction movements and material storage.

6.6 Normal construction working hours would be 07.00 to 19.00, Monday to Friday and 07.00 to 13.00 on Saturday. There would be no working on Sunday or Bank Holidays unless agreed in advance with the planning authority. Lighting would be required for working outside daylight hours. Where provided, hoardings would screen ground level activities. However, cranes, high level construction activities, large plant and vehicles would be visible above these barriers.

6.7 The programmed period for construction site occupation is approximately one year, from Q1 2016 to March 2017.

Predicted Landscape Effects

6.8 The likely effects on the landscape and townscape fabric and character are set out in Appendix 4.B and described below. Except where stated otherwise, the effects discussed in the following section are adverse.

6.9 At a national scale, direct effects on the landscape apply to the Shropshire, Cheshire and Staffordshire Plain character area. Refer to Figure 4.D. The project would affect the townscape and industrial fringes of Northwich and Wincham. This part of the character area is of poor condition and would be of low sensitivity to change. Effects of medium magnitude are anticipated during construction, giving rise to a minor effect in the short term. No night time effects are considered important during the construction period.

6.10 The neighbouring character area of Cheshire Sandstone Ridge is low sensitivity and would experience a temporary effect that would be small in magnitude resulting in a neutral effect. No night time effects are considered important during the construction period.

6.11 At a regional scale, landscape character within which the project falls is identified as Urban in the Cheshire Landscape Character Assessment. Refer to Figure 4.E. The townscape and landscape of the urban character area have a poor condition and are of low sensitivity to change. The magnitude of change is medium in the urban area leading to a minor effect in the short term.

6.12 At a local level, the wider landscape unit includes the urban area of Northwich in the Lostock Plain character area. Refer to Figure 4.F. The character area has a poor condition and local value, with the existing industrial development being a characteristic element within the landscape. The construction of the proposed development would have a direct effect on this character area. The character area's sensitivity to change through the effects of construction activities within the application site would be low. Low level ruderal vegetation and scrub would be cleared from the site as part of the construction phase. This vegetation is not visually significant within the wider landscape and its loss would not open up views. The direct effects of the construction works on the derelict site would create a medium magnitude of change to the character, which would be adverse in nature, but only short term in duration. The overall effect on the Lostock Plain character area during construction would be minor.

6.13 The adjacent character areas include the Northwich Salt Heritage Landscape and Stublach Plain. The condition of these areas ranges from poor to ordinary with a low to medium sensitivity to change through the effects of construction activity. The magnitude of change experienced by these adjacent areas is small leading to an effect of minor to neutral during construction.

6.14 Temporary lighting proposals during the construction phase would result in an extension of the existing well-lit industrial conditions on adjacent land and roads. In the lit context of the existing industrial area, the sensitivity of the urban landscape is considered to be low, with a small magnitude of change. During construction the night-time effect on the urban character area would be neutral.

6.15 The overall townscape/landscape effect during construction can be summarised as **minor to neutral**.

Predicted Visual Effects

6.16 The zone of theoretical visibility (ZTV) for the existing site would increase during the construction phase due to the introduction of tall structures, buildings and cranes into a relatively flat landscape. The activities associated with the construction of the stack, building and tanks would potentially be visible above adjoining landform and vegetation which currently screens the existing site with limited features particularly from the north and south. Construction activities would appear as new elements in views. Again, except where stated otherwise, the effects discussed in the following section are adverse.

6.17 Some close visual receptors to the site would be people in cars travelling along Manchester Road to the north or walking along the pavement and are receptors of low sensitivity. These people would have partial views over roadside or other intervening vegetation to high construction activities leading to a medium magnitude of change and a minor effect. Potential views from residential properties along Manchester Road are generally concealed by roadside vegetation or have views in the context of existing industry. These high sensitivity receptors are predicted to experience small magnitude of change due to high level construction activity leading to a moderate effect.

6.18 Other potential near views gained by people using Griffiths Park for recreational purposes would largely be restricted and generally prevented in the summer and filtered in winter due to the established boundary vegetation of the park. Receptors of high sensitivity would experience small to negligible magnitude of change resulting in moderate to minor effect during construction.

6.19 Occupiers of residential properties at Rudheath, Wincham and Lostock Gralam on the fringes of the industrial areas surrounding the site would potentially gain filtered views through intervening industrial development of high level construction activities. These receptors are considered to be of high sensitivity with the magnitude of change during the construction phase considered to be small to negligible. The effect for the receptors would be moderate to minor.

6.20 Users of the local rights of way network would be receptors of medium to high sensitivity including those using the Cheshire Ring Canal Walk along the Trent and Mersey Canal. Potential close views of high level construction activity would be obtained with a small to negligible magnitude of change resulting in a moderate to minor effect.

6.21 Employees at industrial premises adjacent to the application site and along the edges of Rudheath and Wincham would be visual receptors of low sensitivity and form the largest group of receptors in close proximity to the project. Many views of the REnescience Northwich construction activities would be gained through intervening development of a similar character or filtered by existing vegetation. The scale of the project would potentially create a small magnitude of change in view due to the similar nature of the proposals, leading to a neutral effect.

6.22 The effects on views from the thirteen identified viewpoint locations are set out in Appendix 4.B.

6.23 The accompanying photographic views are described below and illustrations can be found as Figures 4.I to 4.O in Volume 4.

Viewpoint 1: Footpath (Rudheath FP6), Griffiths Road

6.24 Walkers using the footpath would gain partially obscured views of the high level construction activities in a cluttered context and adjacent to existing industrial buildings. The sensitivity of receptors in this industrial fringe location is considered to be medium and the magnitude of change in view is small and temporary in nature, leading to a minor effect on views.

Viewpoint 2: Trent and Mersey Canal Path (Rudheath FP10), Rudheath

6.25 Walkers and people engaged in leisure pursuits would gain near interrupted view of the facility during construction focusing on the high level crane activity. The works would be undertaken within an industrial landscape adjacent to an area containing heavy industry. The sensitivity of receptors using recreational routes in this industrial fringe is considered to be high and the magnitude of change in view would be small and temporary in nature leading to a moderate effect.

Viewpoint 3: Griffiths Park

6.26 Near contained and filtered views by park users would focus on high level crane activity. The works would be undertaken in an industrial landscape which has become separated from Griffiths Park by the maturing structure planting at the park boundary and low level construction would be concealed by intervening vegetation, particularly during the summer. The sensitivity of receptors at this industrial fringe location is considered to be high and the magnitude of change in view would be small and temporary in nature, leading to a moderate effect on views.

Viewpoint 4: Griffiths Park

6.27 Walkers and recreational users of the park would gain a contained view of high level crane activity during construction of the REnescience facility. Low level activity would be concealed or filtered by intervening vegetation seen in context with adjacent industrial buildings. The sensitivity of receptors would be high and the magnitude of change small resulting in a moderate effect.

Viewpoint 5: James Street, Rudheath

6.28 Residents of James Street would gain close views of crane activity above intervening vegetation during temporary high level construction activity. Vehicle movements and low level construction would be concealed from view. The high sensitivity receptors have a small magnitude of change in view leading to moderate effect in the short term.

Viewpoint 6: Cranage Lane/Manchester Road (Northwich FP15)

6.29 Pedestrians and residents would gain a close view of cranes as a new element during construction together with high level construction of tanks seen in context with existing high level gantry structures. The receptors would be high sensitivity and the magnitude of change in view is judged to be small leading to a moderate effect.

Viewpoint 7: Manchester Road

6.30 Vehicle travellers would gain close transient views of crane and high level construction activity of stack and building at the industrial / commercial edge of Wincham, Lostock Gralam and Northwich. Some filtered vehicle movements and low level construction would be potentially visible from the road. The sensitivity of receptors is low and the magnitude of change medium leading to a minor effect.

Viewpoint 8: Footpath (Lostock Gralam FP2), Lostock Hollow

6.31 Walkers would gain near views of the industrial edge of Lostock Works. High level construction activity would be concealed by intervening large scale industrial buildings. Medium sensitivity receptors in this industrial fringe location would not experience a change in view resulting in a neutral effect.

Viewpoint 9: Carey Park

6.32 Walkers and people engaged in leisure pursuits would gain filtered middle distance views of the REnescience facility during construction, focussing on the high level construction activity, with the majority of the works screened by existing vegetation within the park, particularly in summer. The works would be undertaken in an industrial landscape and adjacent to a site already containing heavy industry. The sensitivity of the receptor is considered to be high and the magnitude of change would be negligible and temporary in nature, leading to a minor effect.

Viewpoint 10: Park Lane, Pickmere

6.33 Vehicle travellers would gain mid distance transient view of crane and high level construction activity that would be a minor component at this distance and seen in context with existing adjacent large scale industry. The sensitivity of receptors is low and the magnitude of change is small leading to a neutral effect on views.

Viewpoint 11: Footpath (Nether Peover FP11) near Cheadle Farm, Plumley

6.34 Walkers would gain long filtered views of the crane and high level construction that would be barely discernible at this distance and the majority of the works would be screened by intervening vegetation. The medium sensitivity receptors would experience a negligible magnitude of change leading to a neutral effect on views.

Viewpoint 12: Dane Valley Way, Middlewich

6.35 Due to distance and intervening vegetation walkers would not get a view of construction activity. The high sensitivity receptors would not experience a change of view resulting in a neutral effect.

Viewpoint 13: Vale Royal Abbey Golf Course (Winsford FP5)

6.36 Walkers, people engaged in leisure pursuits and those living in adjacent properties would not experience a change in long distance heavily filtered views that conceals construction activity. The receptors are considered high to medium sensitivity and would experience a neutral effect on views.

6.37 The overall visual effect during construction can be summarised as **neutral to moderate adverse.**

Operational Assessment

6.38 The project layout, design and landscape proposals are described section 5, with further detail available in Chapter 2 and its accompanying figures, the Design and Access Statement, Appendix 4.C and Figure 4.Q.

Predicted Landscape Effects

6.39 The effect on landscape receptors is set out in Appendix 4.B, Table 4.B.3.

6.40 Direct effects on national landscape character relate to the Shropshire, Cheshire and Staffordshire Plain. The proposed development would affect the townscape of the industrial area of Northwich which is of poor condition. The low sensitivity and medium magnitude of change would result in a minor long term effect where proposed changes will fit in well with the existing quality of the townscape within the wider character. This would be of a beneficial nature due to development of a disused industrial site with appropriate landscape treatment.

6.41 The neighbouring character area of Cheshire Sandstone Ridge (also of low sensitivity) would experience a negligible magnitude of change resulting in a neutral long term effect on landscape character.

6.42 Direct effects on landscape at a regional scale relate to the Urban landscape type and character area identified in the Cheshire Landscape Character Assessment. The proposed development would affect the townscape of the urban area of Northwich which is of poor condition. The character area's sensitivity to change through the effect of the project's activities would be low. The project would offer the opportunity to improve the immediate character of the urban landscape through the introduction of a modern, high quality integrated development that incorporates landscape structure planting. The effect of the project would create a medium magnitude of change in an area of poor condition resulting in a minor effect which would be beneficial in the long term.

6.43 The redevelopment of the application site would include some low level directional lighting that would be an imperceptible intensification of the existing lit character of the night landscape resulting in a neutral effect.

6.44 Direct effects on local landscape character relate to the Lostock Plain (6C) character area, which has a poor to ordinary condition. The development would be located within an existing industrial area that is a characteristic element of the Lostock Plain. Although the scale of the project is large, within the context of the extensive industry of Northwich that includes the larger chemical works, the project would be accommodated within this character area without significant effects on key features or characteristics.

6.45 The application site is disused and of poor condition, being generally bare rubble, foundations and hard standing, with no significant vegetation that would be lost to the proposed development, and is consequently considered to have low sensitivity to change. The proposed development would offer the opportunity to enhance the urban/industrial area of Northwich through high quality integrated development that includes landscape structure planting and grassland. The direct effect of the development would create a medium magnitude of change in an area of low sensitivity. The change in character would be beneficial in nature in the long term with the establishment of a soft landscape setting resulting in minor beneficial effect.

6.46 The indirect effects of the development would vary on the wider landscape character areas. The sensitivity of adjacent landscape units ranges from the Northwich Salt Heritage Landscape at low sensitivity to Stublach Plain at medium sensitivity. The magnitude of change for these areas is small resulting in neutral to minor effects, respectively.

Summary of Landscape Effects

6.47 The development of the application site would result in the removal of hardstanding and foundations. Scattered ruderal vegetation or occasional shrubs would be replaced by new buildings, tanks, infrastructure, roads, parking and landscape planting and grassland where possible within the development.

6.48 The application site is typical of the urban and industrial character of Northwich. The area has a poor condition, no more than local value and low sensitivity to change. The introduction of a group of relatively large scale buildings, tanks and a high stack into this location would form a visually prominent new element in an industrial setting. An opportunity exists to include areas of native tree and shrub planting around part of the perimeter of the site, at internal areas and areas of wildflower grassland. The use of native trees and shrubs would link to the existing vegetation and create a buffer between other industrial sites. Redevelopment of the application site would be on a substantial scale, however opportunities also exist for enhancement of existing site conditions.

6.49 The overall townscape/landscape effect during operation can be summarised as **neutral to minor beneficial.**

Predicted Visual Effects

6.50 The operational phase ZTV for the REnescience Northwich project would generally extend over the same area as the construction phase ZTV, as the cranes used for construction would be of a similar height to the stack. Refer to Figure 4.G.

6.51 The assessment of operational phase visual impacts concentrates on the same 13 specific viewpoint locations assessed for the construction phase. The effect on views from visual receptors is set out in Appendix 4.B, Table 4.B.4 and illustrated in photographs and photomontages Figures 4.I to 4.P in Volume 4, which should be viewed alongside the text set out below. A photomontage has been produced for Viewpoint 7, together with wirelines for the other viewpoints, demonstrating that views of the facility would be very heavily screened by intervening topography, structures and vegetation.

6.52 Again, except where stated otherwise, the effects discussed in the following section are adverse.

Viewpoint 1: Footpath (Rudheath FP6), Griffiths Road

6.53 A near cluttered view gained by pedestrians accessing the canal path would focus on the large scale buildings, tanks and stack of the REnescience facility above intervening vegetation and beyond prominent existing security fencing that bounds the footpath. The built form would be a new element in the view; however, the tanks, stack and building would appear as an intensification of industrial features from this location. The sensitivity of the receptor is medium and the magnitude of change is small leading to a minor effect.

Viewpoint 2: Trent and Mersey Canal Path (Rudheath FP10), Rudheath

6.54 Pedestrians and recreational users on the canal would gain a close open view of the top of the highest section of the main building filtered by intervening vegetation and the stack rising up above mid-ground vegetation as new elements in the view. The tanks and lower part of the building would be concealed by intervening landform. The proposal would be seen in the context of the larger chemical works buildings and vertical pylons in the view. The sensitivity of receptors is high and the magnitude of change small, resulting in a moderate effect.

Viewpoint 3: Griffiths Park

6.55 Walkers and recreational users of Griffiths Park would gain a close view of the stack as a new element rising up above park boundary vegetation. Any potential filtered view (particularly in winter) of the REnescience facility would be screened by the existing conveyor building to the fore of the development, and it would therefore appear as an extension of the existing conveyor, which is concealed from view by the summer vegetation. The screening will be further complemented as the vegetation within the park continues to mature. The majority of the proposed development would be screened. The high sensitivity receptors would experience a negligible magnitude of change leading to minor effect.

Viewpoint 4: Griffiths Park

6.56 A close filtered view through park boundary vegetation would be gained by walkers and recreational users of Griffiths Park. A major part of the REnescience facility would be concealed by the foreground conveyor building, which is heavily screened by intervening summer vegetation. The top of the AD tanks would be seen as an extension above the conveyor. The top section of the stack would be a new element in the view, seen in context with the top of a pylon rising up above foreground vegetation. The sensitivity of receptors is high and the magnitude of change is negligible leading to a minor effect.

Viewpoint 5: James Street, Rudheath

6.57 Residents and pedestrians would gain heavily filtered close views of only the top corner of the main building, which would be a negligible intrusion to the view dominated by foreground vegetation. The light colour of the upper sections of the installation would merge with the skyline. The receptors are high sensitivity and the magnitude of change would be negligible leading to a minor effect.

Viewpoint 6: Cranage Lane/ Manchester Road, (Northwich FP15)

6.58 Pedestrians and residents at Cranage Lane are receptors of high sensitivity and would have a largely concealed view of the main building by virtue of roadside vegetation, with the top section of tanks and stack visible as new elements above foreground vegetation. The proposals would be a minor component in the view. The high sensitivity receptors would experience a negligible magnitude of change resulting in a minor visual effect.

Viewpoint 7: Manchester Road

6.59 People at work and people in vehicles would gain a contained view of the main REnescience building and stack as new elements framed by existing vegetation and commercial warehouses. This is not a typical view from Manchester Road but offers the closest and worst case open view towards the proposed development. Residents of Manchester Road (of higher sensitivity) would generally have a greater level of intervening vegetation obscuring views of the development and a lesser effect. Views of the tanks would be heavily filtered by mid-ground vegetation. The REnescience facility would be prominent but would form part of the existing industrial and commercial development in the view. The low sensitivity receptors would experience a medium magnitude of change leading to a minor effect.

Viewpoint 8: Footpath (Lostock Gralam FP2), Lostock Hollow

6.60 No permanent structure within the REnescience facility would be visible from this location, as it would be concealed by the existing chemical works. The receptors of medium sensitivity would have no change of view leading to a neutral effect.

Viewpoint 9: Carey Park

6.61 Walkers and people engaged in leisure pursuits would gain heavily filtered mid-distance views of the REnescience facility and associated stack adjacent to the chemical works and former power station and in the context of other industrial development from this location. Any views of the proposal would be further obscured as existing vegetation within the park continues to mature. This is not a typical view from Carey Park as generally views from footpaths within the park are contained by vegetation that prevent open views out from the Park. This viewpoint is where a gap occurs in boundary planting. The sensitivity of the receptor is considered to be high and the magnitude of change in view would be negligible leading to a minor effect on views.

Viewpoint 10: Park Lane, Pickmere

6.62 Drivers and their passengers are receptors of low sensitivity who would have mid-distance views over arable, pasture land and vegetation of the tops of tall buildings and stack as barely perceptible new elements. The REnescience facility would be seen in context with the existing large scale industrial buildings and not uncharacteristic of the existing view and could be missed by the casual observer. The low sensitivity receptors would experience negligible magnitude of change leading to a neutral effect.

Viewpoint 11: Footpath (Nether Peover FP11), near Cheadle Farm, Plumley

6.63 Heavily filtered mid-distance views of top sections of the building and stack would be gained from sections of the footpath. The stack would be barely discernible at this distance, appearing similar in scale to existing poles carrying power lines in the view and the development would be an intensification of the industrial buildings visible in the view. The sensitivity of the receptor is considered to be medium and the magnitude of change would be negligible resulting in a neutral effect.

Viewpoint 12: Dane Valley Way, Middlewich

6.64 No permanent structure within the REnescience facility would be visible from this location. The high sensitivity receptor would have no change to its view resulting in a neutral effect.

Viewpoint 13: Vale Royal Abbey Golf Course (Winsford FP5)

6.65 No permanent structure within the REnescience facility would be visible from this location. The medium sensitivity receptor would have no change to its view resulting in a neutral effect.

Summary of Visual Effects

6.66 Throughout the assessment, the sensitivity of people at residential properties, public rights of way and open space is generally high to medium. From many viewpoint locations, however, the existing industrial Lostock Works is prominent or features in views towards the application site. The introduction of further industrial development of a similar nature, although relatively large scale, would not be uncharacteristic or at odds with the adjoining townscape/landscape. Visual receptors could be considered to be less sensitive to visual change of this scale when viewed within the existing industrial context.

6.67 In many instances, footpaths with the study area are not in a predominantly rural or nationally designated landscape and Lostock Works is often visible, having a high level of influence over views, in particular from higher ground to the north and west. The REnescience facility would be of a similar scale to the immediately adjacent industrial and commercial development and smaller than the existing chemical works. Generally the proposal would appear as an extension or slight intensification of the industrial area in many instances. The level of magnitude of change is reduced, even though the development is large, due to the existing urban context into which the buildings, tanks and stack would be placed.

6.68 Close views of the site area are limited in extent. In close views at all orientations from the site, either built form, topography or vegetation would largely conceal the lower parts of the building, tanks and stack from view. Receptors along Manchester Road to the north would gain close range views of the top sections of buildings and the stack as new features within the urban edge of Northwich, with lower sections and the tanks being screened by summer vegetation and filtered by existing vegetation in the winter. In close range views from the west the large scale buildings of the chemical works would generally conceal the proposed development from view. From the Trent and Mersey Canal and Griffiths Park to the south, views would be gained of the tops of buildings and the stack above intervening topography and/or vegetation as visible new features within a complex of industrial development.

6.69 Mid-distance views are potentially available from all orientations around the site and generally the REnescience facility would be seen as an extension and slight intensification of existing industrial development. The introduction of industrial development, albeit of relatively large scale, would not be uncharacteristic or at odds with the adjoining landscape or effects on views and in most cases the development would be partially concealed, with only the tops of the buildings and stack visible.

6.70 Distant views of the proposed development would not be gained, due to the influence of intervening vegetation and vegetation within and close to the viewpoints providing effective screening of the development.

6.71 In most instances where the new buildings, tanks and stack of the REnescience facility would be visible, this would be in a view that contains existing views of industry or industrial features.

6.72 The levels of visibility would increase in winter but would not lead to significant effects.

6.73 The overall visual effect during operation can be summarised as **neutral to moderate adverse**.

Associated Development

6.74 Associated works may also be undertaken by the applicant or third parties to improve the existing shared private access road through Lostock Works, within the planning application boundary. This may involve widening at certain points to ease passing and turning of HGVs. This widening would be limited (anticipated to be <3 m) as the access road is constrained by the industrial facilities through which it runs. Re-surfacing some sections may also be undertaken if necessary. Any works undertaken would be in agreement with the land owner and other road users.

6.75 Due to the location and nature of these works within the Lostock Works industrial site, no effects landscape or visual are considered likely to arise.

7 Residual and Cumulative Effects

Cumulative Effects

7.1 Potential future major developments in planning or already consented include the following relevant to landscape and visual impacts:

- Tata/E.ON – Lostock Sustainable Energy Plant (SEP);
- Organic Waste Management Ltd – 'Bedminster' technology Bio-Energy Plant;
- Broadthorn Construction – construction waste recycling; and
- GF Energy – gas-fired peaking electricity generation plant.

7.2 The approved developments within the Lostock Works site (listed above and shown in Figure 2.D) would intensify the industrial character of the site within an already influenced industrial landscape. These developments would lie within the same Lostock Plain character area as REnescience Northwich. It is possible that the construction phases of these projects could overlap, resulting in temporary cumulative effects on the townscape character. Permanent effects on this landscape of a minor nature would occur as a result of the cumulative effect of these developments, although the land use and character of this part of Northwich would remain intact as industrial fringe.

7.3 REnescience Northwich would be visible as a minor addition to a number of the schemes approved within the Lostock Works site for the receptors at viewpoints 1–7. From viewpoints further afield, the development would be viewed in combination as a minor addition: for example, from Carey Park (viewpoint 9). There may be a sequential effect when driving (low sensitivity) along Manchester Road and Griffiths Road, with a small magnitude of change resulting in a minor effect. For more distant transient visual receptors the cumulative effect would likely to be unnoticed by the casual viewer.

7.4 These developments are large in scale and particularly the consented Lostock SEP would be visually prominent in the landscape/townscape in its own right, although it would replace the existing derelict power station. During construction and operation, visual receptors would gain views of cranes and high level construction in the context of a redeveloping location. There would still be some views of REnescience Northwich from identified receptors.

7.5 Nine proposed or consented residential development schemes have been identified within a 2 km radius of the proposed development. These are shown in Figure 2.D and further details are listed in Chapter 2.

7.6 Seven of the residential sites are west and south of Lostock Works and would be located in the Lostock Plain character area. The construction effects of these new developments may overlap resulting in temporary cumulative effects in the landscape character. The land use would change in the long term with the cumulative loss of areas of undeveloped land increasing the built up area of Lostock Plain.

7.7 Residential housing development would be low level and would not alter the nature of the area but would introduce some new visual receptors of no greater sensitivity than those already existing but at locations closer to Lostock Works.

Residual Impact

7.8 Landscape mitigation proposals have been included as an integral part of the proposed REnescience Northwich project. The range of treatments include a mosaic of native trees and shrubs, wildflower grassland and individual trees, which would be implemented as part of the proposals. A Landscape Management Plan with full details of how DONG Energy will implement and maintain the landscape proposals is included at Appendix 4.C. The assessment of the landscape/townscape and visual effects has been undertaken based on the scheme at year one after completion, when planting proposals are newly established.

7.9 No further on-site or off-site mitigation measures are needed to address residual effects of the scheme on receptors. However, as the landscape proposals mature they would become a more significant aspect of the scheme, capable of softening and enhancing the quality of its industrial townscape. There would be a negligible reduction in adverse effects on views from the closest visual receptors. At mid distances the improvement in views from receptors would not be perceptible seen in context with other adjacent vegetation.

8 Conclusions

8.1 The overall context of the site is that of an industrial townscape to the east of Northwich between the A559 Manchester Road and Manchester-Chester railway, the existing chemical industry facilities on the Lostock Works site and Griffiths Park. The townscape is influenced by a variety of land uses including chemical industry, commercial, open land, disused land, transport corridors and residential. The proposed industrial development of the site would complement the adjoining chemical works, is smaller than existing large scale buildings and would be consistent with the local industrial character.

8.2 Due to the lack of significant site features, in the form of built development or vegetation, following the demolition of the former chlorine works, the existing site is not prominent in views from the surrounding area. The site is largely contained by existing vegetation and easily missed as a gap within the wider Lostock Works site.

8.3 The new building, tanks and stack are of a similar industrial character to existing neighbouring development and attention would not generally be drawn to them. From some locations the redevelopment of the site would extend the built development of the industrial area closer to sensitive receptors, which would be seen in context with existing industry. In close views the development would become part of a wider industrial area and where noticeable, the upper sections of the building, tanks and stack would appear above or filtered by intervening vegetation particularly from A559 Manchester Road and Griffiths Park.

8.4 From the east and north east the REnescience facility would generally be concealed by the existing larger chemical works and from the south any visible elements would be seen in context with other larger industrial buildings. From the west only the top section of the stack and building would be visible above or heavily filtered by intervening vegetation presenting only a minor intrusion to views dominated by foreground vegetation.

8.5 The changes that would occur in the Lostock Plain urban character area as a result of the development of REnescience Northwich can be accommodated. The ordinary condition of the townscape of the site and lack of significant designations provide the opportunity for introducing the new elements of the proposals without unacceptably significant adverse effects. The proposals would result in the loss of the townscape element of a disused site with some emergent vegetation, which is replaced with a modern designed facility including an integrated landscape scheme.

8.6 Landscape mitigation and enhancement proposals have been included as an integral part of the REnescience Northwich scheme. The range of treatments including tree and shrub belts, individual trees and wildflower grassland would be implemented as part of the proposals. The assessment of the landscape/townscape and visual effects has been undertaken based on the scheme at year one after completion, when the planting is newly established. However, as the landscape proposals mature they would become a more significant aspect of the scheme, capable of further softening and enhancing the quality of its townscape.

8.7 The proposed landscape planting is an integral part of the proposal and would soften the area's urban character, assimilate the development and provide important links with existing vegetation along Wade Brook. The boundary landscape treatment using native trees and shrubs and wildflower grassland provide a vegetation structure appropriate to the area.

8.8 The modern architectural design of the building as a series of intersecting boxes provides an appropriate form which breaks up the overall massing of the building that is appropriate to the site.

8.9 The location of the REnescience Northwich facility in the western part of the Lostock Works site, adjacent to the industrial and commercial area of Northwich, results in a relatively small number of visual receptors in the settlement of Northwich and adjacent villages experiencing a change in view. A new stack and the tops of tanks and building would generally be seen in the immediate context of existing large scale buildings and structures.

8.10 Good design contributes positively to making places better for people. Together with appropriate site layout and building design, the landscape proposals seek to ensure that the site will function well and add to the overall character and quality of the area.

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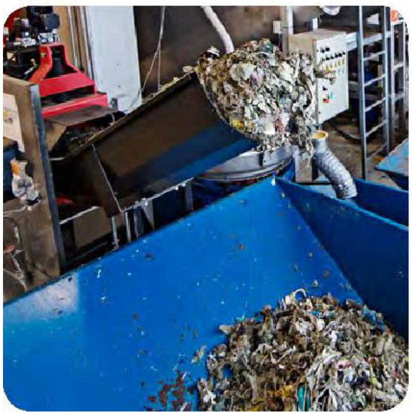
Chapter 5: Archaeology and Cultural Heritage

REnescience Northwich








Quality Management

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Executive Summary

This chapter presents the results of the Environmental Impact Assessment (EIA) of the proposed development during its construction and operation on the historic environment. The chapter has assessed the likely significant effects of the proposed development on heritage assets in terms of archaeology, built heritage and the historic landscape. The likely impacts have been assessed during both the construction and operational phases of the proposed development.

Much of the archaeology of the wider area is associated with exploitation of salt, evidence for which occurs from at least the Iron Age in the locality. During the Roman period, the wider area contained several roads and a Roman road ran through the eastern side of the proposed development site. Through the medieval period, the land-use in the area was characterised by agriculture.

During the past century or so, the proposed development site has formed part of the chemical industry, largely based on salt. During the Second World War the wider area was used for the production of munitions. The chemical industry remains significant in the area and is an important human socio-cultural heritage factor affecting many families living in the area.

The designated heritage assets in the wider area are seen to a greater or lesser extent in this context, and indeed the Lion Salt Works itself, the Brunner Library and several other industrial or associated buildings constitute a number of these assets, which have value in their own right.

Given the apparent location of the Roman road, the possibility of the proposed development site containing archaeological remains of an early date cannot be entirely ruled out, although this is unlikely, given the previous development that has taken place on the site. The remainder of the proposed development site itself seems to have been agricultural land from antiquity until the later 19th century when the Lostock Bleach Works was built. Remains of the bleaching works may survive within the proposed development site.

There are a number of designated assets in the wider area and the effect, if any, of the proposed development on these has been assessed.

Appropriate mitigation measures for the proposed development have been incorporated into the assessment of residual effects. They comprise a watching brief during development.

No mitigation measures for effects on the settings of designated assets, other than those built into the design of the proposed development, are considered to be necessary.

There are predicted to be no significant effects on any heritage assets.

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Tables, Figures and Appendices

Tables

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Appendix

1 Introduction

1.1 This chapter assesses the potential likely effects of the implementation of the proposed development on cultural heritage in terms of archaeology, built heritage and the historic landscape. The likely impacts are assessed during the construction and operational phases of the proposed development. Full details of the development proposed are presented in Chapter 2 and accompanying figures, which set the basis against which this assessment has been conducted.

1.2 This chapter:

- presents the existing environmental baseline established from desk studies, dedicated surveys and consultation undertaken;
- identifies and assesses the relative importance of heritage assets likely to be affected by the proposed development;
- presents the potential environmental effects on the historic environment, based on the information gathered and the analysis and assessments undertaken to date;
- identifies any assumptions and limitations encountered in compiling the environmental information; and
- highlights any necessary monitoring and/or mitigation measures which could prevent, minimise, reduce or offset the possible environmental effects identified at the relevant stage in the EIA process.

1.3 The effect, if any, of the proposed development on below ground archaeological remains within and immediately surrounding the site has been considered. In addition, consideration has been given to information on Scheduled Monuments (SMs), Registered Parks and Gardens and Registered Battlefields, Conservation Areas, Listed Buildings and historic landscapes from a wider area so that the effect, if any, of the proposed development on their setting could be considered. An iterative approach has been taken, based on any likely impact on their setting.

2 Assessment Methodology

Relevant Policy and Guidance

2.1 The National Planning Policy Framework (NPPF) (DCLG 2012) provides advice to planning authorities regarding the protection of heritage assets within the planning process. The NPPF takes an integrated approach to the historic environment and 'heritage assets', including buildings, landscapes and archaeological remains.

2.2 Paragraph 128 notes that in determining applications, local planning *authorities should require an applicant to provide a description of the significance of any heritage assets affected and the contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance.*

2.3 A heritage asset is defined in the NPPF at page 52 as '*a building, monument, site, place, area or landscape positively identified as having a degree of significance meriting consideration in planning decisions because of its heritage interest. Heritage asset includes designated heritage assets and assets identified by the local planning authority (including local listing)*.'

2.4 Setting is defined in the NPPF at page 56 as *'the surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral.*'

2.5 Paragraph 131 of the NPPF notes that in determining planning applications, local planning authorities should take account of the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation; the positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and the desirability of new development making a positive contribution to local character and distinctiveness.

2.6 Paragraph 132 notes that when considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation. The more important the asset, the greater the weight should be.

2.7 Paragraph 135 notes that *the effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that affect directly or indirectly non designated heritage assets, a balanced judgement will be required, having regard to the scale of any harm or loss and the significance of the heritage asset.*

2.8 Listed buildings are protected under the provisions 54(i) of the Town and Country Planning Act (1971), as amended by the Planning (Listed Buildings and Conservation Areas) Act (1990) which empowers the Secretary of State for the Department of Culture, Media and Sport (DCMS) to maintain a list of built structures of historic or architectural significance.

2.9 Scheduled monuments are protected through the Ancient Monuments and Archaeological Areas Act (1979), which has been updated in the National Heritage Act (1983). Scheduled monuments are maintained on a list held by the Secretary of State for DCMS. Any alterations or works to a scheduled monument (including archaeological investigation) requires scheduled monument consent (SMC).

2.10 Historic Battlefields have received recognition under the Historic Buildings and Ancient Monuments Act 1953 (as amended). Such sites are described on a Register maintained by Historic England (HE) for DCMS, but such designation does not afford statutory protection.

Local Policy

2.11 The Development Plan relevant to the project currently comprises:

- Cheshire West and Chester Local Plan
- Cheshire West and Chester Local Plan (Part One) Strategic Policies – adopted on 29 January 2015
- Vale Royal Borough Local Plan – policies saved after 29 Jan 2015
- Cheshire Replacement Waste Local Plan (July 2007) – policies retained after 29 January 2015

2.12 Relevant policies are as follows.

Cheshire West and Chester Local Plan (Part One) Strategic Policies – adopted on 29 January 2015

Strategic Objective 12

2.13 Ensure new development is of sustainable and high quality design that respects heritage assets, local distinctiveness and the character and appearance of the landscape and townscape.

Policy ENV5 Historic Environment

2.14 The Local Plan will protect the borough's unique and significant heritage assets through the protection and identification of designated and non-designated heritage assets* and their settings.

2.15 Development should safeguard or enhance both designated and non-designated heritage assets and the character and setting of areas of acknowledged significance. The degree of protection afforded to a heritage asset will reflect its position within the hierarchy of designations.

2.16 Development will be required to respect and respond positively to designated heritage assets and their settings, avoiding loss or harm to their significance. Proposals that involve securing a viable future use or improvement to an asset on the Heritage at Risk register will be supported.

2.17 Development which is likely to have a significant adverse impact on designated heritage assets and their settings which cannot be avoided or where the heritage asset cannot be preserved *in situ* will not be permitted.

2.18 Where fully justified and assessed, the Council may consent to the minimal level of enabling development consistent with securing a building's future in an appropriate viable use.

2.19 Development in Chester should ensure the city's unique archaeological and historic character is protected or enhanced.

2.20 Heritage assets are defined as a building, monument, site, place, structure, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. Heritage assets include designated heritage assets and non-designated heritage assets identified in the Cheshire Historic Environment Record, including local assets.

Vale Royal Borough Local Plan – policies saved after 29 Jan 2015

Historic Environment - Listed Buildings

Policy BE5

2.21 Proposals for the development of land which result in decay, destruction or damage to buildings and structures of special architectural or historic interest or their settings including any curtilage buildings will not be allowed.

Development of Sites Outside the Conservation Area

Policy BE11

2.22 Proposals for development on sites which lie outside the conservation area but which would affect its setting or views in or out of the area, will be allowed provided they preserve or enhance the character or appearance of the conservation area.

Ancient Monuments/Archaeological Sites

Policy BE13

2.23 Development proposals which would adversely affect scheduled ancient monuments and other nationally important archaeological sites and monuments or their settings will not be allowed.

Other Sites of Archaeological Importance

Policy BE14

2.24 Development proposals which could affect local ancient monuments and sites of archaeological importance, including sites and areas of archaeological potential and those identified in the Cheshire historic towns survey, will not be allowed unless it can be demonstrated, as part of the submitted planning application, that the particular site or monument will be satisfactorily preserved either *in situ* or where it is not feasible, by record.

Historic Parks and Gardens

Policy BE15

2.25 In considering proposals which may affect those historic parks and gardens and their settings, identified on the proposals maps, or any that may subsequently be added to the national register of parks and gardens of special historic interest in England, the borough council will have regard to the following:

(i) the need to preserve the character and appearance of such historic parks and gardens;

(ii) the need to prevent sub-division of historic parks and gardens; and

(iii) the need to conserve features of architectural, archaeological and historic interest;

(iv) the need to record such features.

Study Area

2.26 The study area for desk study and survey is based upon recent experience of similar developments, the site visit and consideration of the landscape study, including the zone of theoretical visibility (ZTV) that has been defined in Chapter 4. This assessment, for the purpose of buried archaeology, focuses on a study area of 1km around the proposed development. For the purpose of the settings of heritage assets, the assessment focuses on a study area of 3km around the proposed development while taking into consideration evidence from a wider area if appropriate.

2.27 With respect to the settings of heritage assets, only those assets which lie within the ZTV are assessed, using that the guidance prepared by Historic England in their document “The Setting of Heritage Assets” (Historic England 2015) along with “Conservation Principles” (Historic England 2008).

Baseline Methodology

2.28 A draft desk assessment was undertaken in 2015 and is reported in the baseline section of this chapter. The desk assessment comprised, in the first instance, consultation with the Cheshire Archaeology Advisory Service and their Historic Environment Record (HER). The HER data is shown at Appendix 5.A. Data on World Heritage Sites, SMs, listed buildings, registered parks and gardens and registered battlefields was obtained from Historic England. Data on conservation areas and locally listed buildings was obtained from the LPA and/ or the HER as appropriate. A review of relevant documentary and archival material held in libraries and archives was undertaken. An iterative approach was adopted during this process to determine the scope of the above consultations/searches.

2.29 A site visit was undertaken in June 2015 to establish the presence of above ground archaeology, whether or not previously recorded. The site visit also provided an indication of the suitability of any further survey techniques and an indication of the settings of nearby designated assets.

Consultation

2.30 A summary of all consultation with stakeholders or consultees is provided in Table 2.1, below.

Table 2.1: Consultation responses relevant to this chapter

Date	Consultee and Issues Raised	How/ Where Addressed
29th May 2015	Email from the office of the County Historic Environment Record Officer, who noted that there are only two features of interest on the site, the Roman Road (CHER 436/1/0) and the WWI explosives works (CHER 4238/0/0). The former could be easily dealt with by a watching brief (if required). Any upstanding remains of the explosives works were probably levelled in your area of interest by the late 1940s, but the area may benefit from a thorough walkover to make sure.	A walkover survey has been undertaken and suitable mitigation measures are provided in the relevant section below. A watching brief will be included during the construction phase.

Significance Criteria

2.31 In order to reach an understanding of the likely effect that a project may have on a heritage asset, it is necessary to understand the significance and importance of that asset.

2.32 Establishing the importance of a heritage asset is principally a means of identifying the extent to which the asset should be valued. For example, is it important at a national level or at a local level?

2.33 Significance can primarily be understood through examination of why a structure, site or area should be considered as a heritage asset. In the NPPF the significance of an asset is defined as:

'The value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting.' (DCLG 2012, Annex 2)

2.34 These levels of interest broadly tie in with previous guidance from English Heritage expressed in the document Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment (English Heritage, 2008). This provides guidance on understanding heritage values and also included a section (Section 6) advising on how to assess heritage significance.

2.35 According to the guidance published by English Heritage (2008), heritage values fall into the following four inter-related groups.

- Evidential value – the potential of a place to yield evidence about past human activity.
- Historical value – this derives from the ways in which past people, events and aspects of life can be connected through a place to the present. This value tends to be illustrative (providing insights into past communities and their activities) or associative (association with a notable family, person, event or movement).
- Aesthetic value – this derives from the ways in which people draw sensory and intellectual stimulation from a place.

- Communal value – this derives from the meanings of a place for the people who relate to it, or for whom it figures in their collective experience or memory.

Assessment of Asset Importance – Archaeological Assets

2.36 There are no national government guidelines for evaluating the importance of heritage assets. For archaeological assets, the Department of Culture, Media and Sport (DCMS) has adopted a series of recommended (i.e. non-statutory) criteria for use in the determination of national importance when scheduling ancient monuments. These are expressed in the document Scheduled Monuments – Identifying, Protecting, Conserving and Investigating Nationally Important Archaeological Sites under the Ancient Monuments and Archaeological Areas Act 1979 (DCMS 2010). The criteria include period, rarity, documentation, group value, survival/condition, fragility/vulnerability, diversity and potential, and can be used as a basis for the assessment of the importance of historic remains and archaeological sites. However, the document also states that these criteria '*should not be regarded as definitive; but as indicators which contribute to a wider judgement based on the individual circumstances of a case.'*

2.37 The criteria described above may also be used as a basis for the assessment of the importance of archaeological assets of less than national importance. However, the categories of regional and district/local importance are less clearly established than that of national and implicitly relate to local, district and regional priorities, which themselves vary within and between regions. Where available, local, district and regional research agenda, and local or structure plans may assist in this process.

2.38 It is noted that a high degree of professional judgement is required in the identification of importance for archaeological assets and that approach has been applied to this assessment, guided by acknowledged standards, designations and priorities. It is also important to recognise that buried archaeological remains may not always be well-understood at the time of assessment and can therefore be of uncertain importance.

2.39 The most recent guidance from any national agency regarding cultural heritage and EIA is from the Highways Agency and is expressed in Guidance Note 208/07 (August 2007) that now forms part of the Design Manual for Roads and Bridges, Volume 11, Section 3, Part 2 (HA 208/7) (Highways Agency et al., 2007).

2.40 The following table is primarily based on HA 208/07 and has been used to inform the assessment.

Table 2.2: Assessing the importance of archaeological assets

Sensitivity	Typical descriptors
Assets of the highest significance	World Heritage Sites. Assets of acknowledged international importance. Assets that can contribute significantly to acknowledged international research objectives. Scheduled Monuments.

Sensitivity	Typical descriptors
	Undesignated assets of schedulable quality and importance.
High	Assets that can contribute significantly to acknowledged national research objectives.
Medium	Designated or undesignated heritage assets that contribute to regional research objectives.
Low	Undesignated heritage assets of local importance. Assets compromised by poor preservation and/or poor survival of contextual associations. Assets of limited value, but with potential to contribute to local research objectives.
Negligible	Assets with very little or no surviving archaeological interest.
Unknown	The importance of the resource cannot be ascertained.

Assessment of Asset Importance – Historic Buildings

2.41 For historic buildings, assessment of importance is usually based on the designations used in the Listed Building process. Where historic buildings are not listed or where the listing grade may be in need of updating, professional judgement has been used.

2.42 The criteria used in establishing the importance of historic buildings within the Listed Building process include architectural interest, historic interest, close historic association (with nationally important people or events) and group value. Age and rarity are also taken into account. In general (where surviving in original or near-original condition), all buildings of pre-1700 date are listed, most of 1700 to 1840 date are listed, those of 1840 to 1914 date are more selectively listed, and thereafter even more selectively. Specific criteria have been developed for buildings of 20th century date. At a local level, buildings may be valued for their association with local events and people or for their role in the community.

2.43 HA 208/07 provides a basis for the following table as a guide for establishing the importance of historic buildings. This has been used to inform the current assessment.

Table 2.3: Definition of terms for establishing the importance of historic buildings

Sensitivity	Typical descriptors
Assets of the highest significance	Standing buildings inscribed as of universal importance as World Heritage Sites. Other buildings of recognised international importance. Scheduled Monuments with standing remains. Grade I and II* listed buildings. Other listed buildings that can be shown to have exceptional qualities in their fabric or historical association not adequately reflected in the listing grade. Conservation Areas containing very important buildings. Undesignated structures of clear national importance.
High	Grade II listed buildings. Historic (unlisted) buildings that can be shown to have exceptional qualities in their fabric or historical association. Conservation Areas containing important buildings.
Medium	Historic Townscape or built-up areas with historic integrity in their buildings, or built settings (e.g. including street furniture and other structures).

Sensitivity	Typical descriptors
Low	'Locally listed' buildings. Historic (unlisted) buildings of modest quality in their fabric or historical association. Historic Townscape or built-up areas of limited historic integrity in their buildings, or built settings (e.g. including street furniture and other structures).
Negligible	Buildings of no architectural or historic note; buildings of an intrusive character.

Assessment of Asset Importance – Historic Landscapes

2.44 The sub-topic of Historic Landscape is recognised as having significant overlaps with other topics, such as landscape and townscape and therefore a multi-disciplinary approach to assessment has been adopted. This is to avoid double counting and duplication of effort. Impacts and effects on landscape and townscape character are reported in Chapter 4 of the ES.

2.45 There are also significant overlaps with the other cultural heritage sub-topics of archaeological remains and historic buildings. The elements that are considered within those two sub-topics can make significant contributions to the historic landscape. This latter sub-topic has therefore concentrated on the overall Historic Landscape Character (HLC) and its value, rather than the individual elements within it.

2.46 All landscapes have some level of historic significance, as all of the present appearance of the urban and rural parts of England is the result of human or human-influenced activities overlain on the physical parameters of climate, geography and geology.

2.47 A number of designations can apply to historic landscapes, including World Heritage Sites (inscribed for their historic landscape value), Registered Parks and Gardens, Registered Battlefields and Conservation Areas. Some local plans include locally designated Historic Landscape Areas and Historic Parks and Gardens (or similar), although Cheshire West’s Plan does not do so.

2.48 A model has been produced by the Council for British Archaeology (Rippon, 2004 Historic Landscape Analysis Deciphering the Countryside), whereby the historic landscape can be divided up into units that are scaled from smallest to largest, as follows:

- Elements – individual features such as earthworks, structures, hedges, woods etc.;
- Parcels – elements combined to produce, for example farmsteads or fields;
- Components – larger agglomerations of parcels, such as dispersed settlements or straight-sided field systems;
- Types – distinctive and repeated combinations of components defining generic historic landscapes such as ancient woodlands or parliamentary enclosure;
- Zones – characteristic combinations of types, such as Anciently Enclosed Land or Moorland and Rough Grazing;

- Sub-regions – distinguished on the basis of their unique combination of interrelated components, types and zones; and
- Regions – areas sharing an overall consistency over large geographical tracts.

2.49 The model described above can be used as the principal part of the overall assessment usually known as Historic Landscape Characterisation (HLC). However, although HLC has been undertaken for much of England, there is no specific guidance or advice regarding the attribution of importance or significance to identified HLC types.

2.50 The following table is based on the guidance provided in HA 208/07 with regard to evaluating the importance of historic landscape character units and has been used to inform the current assessment.

Table 2.4: Definition of terms for evaluating Historic Landscape Character units

Sensitivity	Typical descriptors
Assets of the highest significance	World Heritage Sites inscribed for their historic landscape qualities. Historic landscape of international sensitivity, whether designated or not. Extremely well-preserved historic landscapes with exceptional coherence, time-depth, or other critical factor(s).
High	Designated historic landscapes of outstanding interest. Undesignated landscapes of outstanding interest. Undesignated landscapes of high quality and importance, and of demonstrable national sensitivity. Well-preserved historic landscapes exhibiting exceptional coherence, time-depth, or other critical factor(s).
Medium	Designated special historic landscapes. Undesignated historic landscapes that would justify special historic landscape designation, landscapes of regional sensitivity. Averagely well preserved historic landscapes with reasonable coherence, time-depth, or other critical factor(s).
Low	Robust undesignated historic landscapes. Historic landscapes with specific and substantial importance to local interest groups, but with limited sensitivity. Historic landscapes whose sensitivity is limited by poor preservation and/or poor survival of contextual associations.
Negligible	Landscapes with little or no significant historical interest.

Assessment of Impact Magnitude – Archaeological Assets

2.51 The magnitude of an impact is assessed without regard to the value of the heritage asset. In considering the magnitude of impact, the principle established in section 12 of the NPPF that preservation of the asset is preferred, and that total physical loss of the asset is least preferred, has been taken into account.

2.52 It is not always possible to assess the physical impact in terms of percentage loss and therefore it can be important in such cases to try to assess the capacity of the heritage asset to retain its character and significance following any impact. Similarly, impacts resulting from changes within the settings of buried archaeological assets may also be more difficult to assess as they do not involve physical loss of the resource and may be reversible.

2.53 The magnitude of the predicted impact is assessed using the criteria expressed in the table below. These are primarily based on the guidance provided in HA 208/07.

Table 2.5: Definition of terms for assessment of magnitude of impact on archaeological assets

Magnitude	Typical criteria descriptors
High	Change to most or all key archaeological elements, such that the asset is totally altered and much of its significance is lost. Substantial change within the setting leading to considerable loss of significance of the asset.
Medium	Changes to many key archaeological elements, such that the asset is clearly modified and there is some loss of significance. Change within the setting leading to some loss of significance of the asset.
Low	Changes to key archaeological elements, such that the asset is slightly altered and there is a slight loss of significance. Slight change within the setting leading to a slight loss of significance of the asset.
Negligible	Very minor changes to key archaeological elements or within the setting that hardly affect the significance of the asset.
None	No substantive change to key archaeological elements or within the setting.

Assessment of Impact Magnitude – Historic Buildings

2.54 As for archaeological assets, the magnitude of impact in relation to historic buildings is assessed without regard to the importance of the asset, so the total destruction of an insignificant historic building has the same degree of magnitude of impact as the total loss of a high value historic building. Determination of the magnitude of impact is based on the principle that preservation of the asset and its setting is preferred and that total physical loss of the asset and/or its setting is the least preferred.

2.55 Changes within the settings of historic buildings may result from vibration, noise and lighting issues as well as visual impacts, and may be reversible. Additional methodology regarding the assessment of effects resulting from changes within settings is provided below.

2.56 The magnitude of the predicted impact is assessed using the criteria expressed in the table below. These are primarily based on the guidance provided in HA 208/07.

Table 2.6: Definition of terms for assessment of magnitude of impact on historic buildings

Magnitude	Typical criteria descriptors
High	Change to key historic building elements, such that the asset is totally altered and much of its significance is lost. Substantial change within the setting of an historic building leading to considerable loss of significance of the asset.
Medium	Change to many key historic building elements, such that the asset is clearly modified and there is some loss of significance. Change within the setting of an historic building leading to some loss of significance of the asset.
Low	Changes to key historic building elements, such that the asset is slightly altered and there is some loss of significance. Change within the setting of an historic building

Magnitude	Typical criteria descriptors
	leading to a slight loss of significance of the asset.
Negligible	Slight changes to historic building elements or within its setting that hardly affect the significance of the asset.
None	No substantive change to fabric or within the setting.

Assessment of Impact Magnitude – Historic Landscapes

2.57 Historic landscapes cannot be destroyed or damaged but impacts on them can change their character. Impacts are assessed using evaluated HLC units, not the elements/parcels/components that contribute towards the character. There may be impacts resulting from changes within the settings of identified units, especially with regard to designated historic landscapes. Additional methodology regarding the assessment of effects resulting from changes within settings is provided at paragraph 2.65 et seq below.

2.58 The magnitude of the predicted impact is assessed using the criteria expressed in the table below. These are primarily based on the guidance provided in HA 208/07.

Table 2.7: Definition of terms for assessment of magnitude of impact on historic landscapes

Magnitude	Typical criteria descriptors
High	Change to most or all key historic landscape elements, parcels or components; extreme visual effects; gross change of noise or change to sound quality; fundamental changes to use or access; resulting in total change to HLC unit and complete loss of significance.
Medium	Changes to many key historic landscape elements, parcels or components; visual change to many key aspects of the historic landscape; noticeable differences in noise or sound quality; considerable changes to use or access; resulting in moderate changes to HLC and some loss of significance.
Low	Changes to few key historic landscape elements, parcels or components; slight visual changes to few key aspects of historic landscape; limited changes to noise levels or sound quality; slight changes to use or access; resulting in limited changes to HLC and slight loss of significance.
Negligible	Very minor changes to key historic landscape elements, parcels or components; virtually unchanged visual effects; very slight changes in noise levels or sound quality; very slight changes to use or access; resulting in a very small change to HLC and very little loss of significance.

Significance of Effects

2.59 The significance of an effect is a combination of the importance of the heritage asset and the magnitude of impact on that asset.

2.60 Effects can be adverse or beneficial. Beneficial effects are those that mitigate existing impacts and help to restore or enhance heritage assets, therefore allowing for greater understanding and appreciation. Based on the approach in HA 208/07, the following matrix has been used for the assessment of archaeological remains, historic buildings and historic landscapes.

Table 2.8: Significance of effect assessment matrix

Sensitivity	Magnitude of impact				
	None	**Negligible**	**Low**	**Medium**	**High**
Negligible	Neutral	Negligible	Negligible or minor	Negligible or minor	Minor
Low	Neutral	Negligible or minor	Negligible or minor	Minor	Minor or moderate
Medium	Neutral	Negligible or minor	Minor	Moderate	Moderate or major
High	Neutral	Minor	Minor or moderate	Moderate or major	Major or substantial
Very high	Neutral	Minor	Moderate or major	Major or substantial	Substantial

2.61 Impacts can be either favourable or adverse; however, to avoid confusion; the default position of any effect recorded in this chapter is understood to be adverse unless stated otherwise.

2.62 Where the matrix provides a split in the level of effects, e.g. moderate/minor, the assessor has exercised professional judgement in determining which of the levels is more appropriate.

2.63 For the purposes of this assessment, any effect that is moderate, major or substantial is considered to be significant in EIA terms. Any effect that is minor or below is not significant.

2.64 The significance of any effect on a heritage asset is clearly different from the significance of the asset itself.

Settings

2.65 In 2015, HE published a document entitled 'Historic Environment Good Practice Advice' in 'Planning Note 3: The Settings of Heritage Assets' (Historic England, 2015). This guidance provides further advice on the definition of setting and the general principles of setting in the context of strategic planning and development control.

2.66 Paragraph 2 of the HE advice document in particular deals with the issue of setting and development control. It advises applicants that the information required in support of applications for planning permission and listed building consents should be no more than is necessary to reach an informed decision, and that activities to conserve or invest need to be proportionate to the significance of the heritage assets affected and the impact on the significance of those heritage assets.

2.67 Paragraph 12 of the HE advice document provides the following broad approach to assessment, undertaken as a series of steps that apply proportionately to complex or more straightforward cases.

- Step 1: identify which heritage assets and their settings are affected.

- Step 2: assess whether, how and to what degree these settings make a contribution to the significance of the heritage asset(s).
- Step 3: assess the effects of the proposed development, whether beneficial or harmful, on that significance.
- Step 4: explore the way to maximise enhancement and avoid or minimise harm.
- Step 5: make and document the decision and monitor outcomes.

2.68 Although assessments of changes within the settings of heritage assets can involve non-visual issues such as noise, it is more often the visual aspects of a development that form the major part of the assessment. To this end the ZTV is a useful tool in assessing in general terms the assets which are likely to be impacted by the proposed development likely level (HE 2015: paragraph 14).

2.69 An assessment of visual impacts on the heritage assets and their settings needs to take into account a wide variety of factors. These include the location of the asset within the physical landscape, its relationship with contemporary and non-contemporary features within that landscape and the location, size and character of the project in relation to these factors. The assessment then needs to balance the impact of these various considerations on the basis of informed professional judgment.

2.70 Assessment of the visual effects of the project has been undertaken in accordance with the procedures expressed in the Guidelines for Landscape and Visual Impact Assessment (The Landscape Institute and the Institute of Environmental Management and Assessment 2013). The findings of the landscape and visual assessment are presented in Chapter 4: Landscape and Visual Impact. These findings have been taken into account in considering the impact on settings in this chapter. Where there is the potential for changes within the setting of heritage assets due to noise or other impacts, these have been considered within this chapter using appropriate procedures.

2.71 There should also be consideration of the sensitivity to change of the setting of a heritage asset. This requires examination of the current setting with regard to identifying elements that contribute to the significance of the asset, elements that make a neutral contribution to the significance of the asset and elements that make a negative contribution (i.e. detract from) the significance of the asset.

2.72 Once the impact on the heritage asset has been examined, this has been related to the impact scales defined above for each type of heritage asset. The level of impact has been considered against the importance of the heritage asset in the matrix provided in Table 2.8 to reach a conclusion regarding the overall significance of effect. The effects on heritage assets resulting from change within their settings may be adverse or beneficial.

3 Baseline Conditions

Introduction

3.1 Figure 5.A shows HER data within 1km of the proposed development site, while Figure 5.B shows the designated assets within 3km of the proposed development site and Figure 5.C shows the historic landscape character of the area. Figures 5.D to 5.O show historical OS maps from 1882 to the present day.

Designated Assets

3.2 There are a number of designated assets around the proposed development site.

3.3 There are no scheduled monuments located within 1km of the proposed development site, either within or outside the ZTV.

3.4 There are no registered parks and gardens located within 3km of the proposed development site, either within or outside the ZTV.

3.5 There is only one listed building located within 1km of the proposed development site. This is the Grade II listed milepost at NGR 685734 (list entry number 1329882), which lies within the ZTV.

3.6 There is one conservation area located within 1km of the proposed development site. This is the Trent and Mersey Canal Conservation Area, which extends throughout each of the distance zones considered.

3.7 There is one scheduled monument located between 1km and 2km of the proposed development site. This is the Lion Salt Works and remains of part of the Alliance Salt Works, located adjacent to the Trent and Mersey Canal at Marston, some 1.3km northwest of the proposed development site (list entry number 1020841). The scheduled monument is located within the ZTV.

3.8 There are 14 listed buildings between 1km and 2km of the proposed development site. Of these, 13 are listed at Grade II and one, the Church of St Helen (list entry number 1329880), is listed at Grade I. The listed buildings are shown in Table 3.1, below.

Table 3.1: Listed Buildings located between 1km and 2km of the proposed development

List Entry Number	Name	Grade
1329880	Church of St Helen	I
1139072	Northwich Post Office	II
1139073	Church of St Wilfred (Roman Catholic)	II
1139097	Park Farmhouse	II
1139098	Shippon and Former Barn 15 Metres north west of (No 65) Park Farmhouse	II
1139103	Office In Works Yard, Lion Salt Works	II

List Entry Number	Name	Grade
1160985	Engine Shed and Pump House at Lion Salt Works	II
1161074	Sundial 8 Metres south of South Porch of Church of St Helen (Witton Church)	II
1161149	Brunner Public Library	II
1244513	Trent and Mersey Canal Milepost at SJ 6828 7293	II
1244547	Trent and Mersey Canal Milepost north of Bridge Number 192 at SJ 6750 7528	II
1329875	Pan Sheds and Stoves and Store Shed behind Lion Salt Works	II
1329876	Canal Salt Shed at Lion Salt Works	II
1385195	Plaza Bingo Club	II

3.9 All the above listed buildings are located within the ZTV.

3.10 There are no scheduled monuments located between 2km and 3km of the proposed development site, either within or outside the ZTV.

3.11 There are 24 listed buildings between 2km and 3km of the proposed development site, each of which is listed at Grade II and lies within the ZTV. The listed buildings are shown in Table 3.1, below.

Table 3.2: Listed Buildings located between 2km and 3km of the proposed development

List Entry Number	Name	Grade
1139101	Lane Ends Farmhouse	II
1139102	Farm Building 20 Metres east of Lane Ends Farmhouse	II
1139109	Gates and Gatepiers to Verdin Park	II
1139111	The Brockhurst	II
1139112	British Waterways Board Area Office	II
1139113	Weir east of Hunt's Lock, with Footbridge	II
1139115	16, Winnington Street	II
1160988	Canal Milestone at NGR 6638 7620	II
1161050	Church of The Holy Trinity	II
1161087	Weaver Railway Viaduct	II
1161095	Weaver Hall	II
1161109	Clock Tower between British Waterways Board Office and River Weaver	II
1240202	Dock Road Pumping Station	II
1240207	Navigation House	II
1245351	Mile Post at SJ 6604 7227	II

List Entry Number	Name	Grade
1261148	Stable Block with Attached Outbuildings, Walls and Gateway at Navigation House	II
1310242	Hunt's Locks	II
1310259	Hayhurst Bridge over Weaver Navigation, and Control Cabin	II
1329874	Uplands Farmhouse	II
1329879	Town Bridge over Weaver Navigation, and Control Cabin	II
1329881	Nos 256,258,260,262,264,266 and 268*	II
1329883	Victoria Infirmary, Old Wing	II
1329911	Home Farmhouse	II
1417201	Former Verdin Technical Schools & Gymnasium, Northwich	II

* This asset comprises a row of seven early 19th century cottages

Undesignated Assets

Prehistoric and Roman

3.12 Evidence for Prehistoric activity in the wider area is limited, with only a few finds made and no significant sites recorded (Shaw and Clarke 2003: 3).

3.13 There is considerable evidence for Roman infrastructure in the area. Northwich, located some 2km west of the proposed development site was a Roman settlement of some importance, and is identified with the settlement named in the 3rd century Antonine Itinerary as Condate (the confluence), apparently referring to its location at the meeting point of the Rivers Weaver and Dane (Shaw and Clarke 2003: 3).

3.14 A Roman auxiliary fort was constructed on the west bank of the River Weaver, with a period of military occupation beginning in c. AD 70 and a further period finishing around AD 140, with an apparent gap between the two phases. Evidence for a civilian settlement has been found adjacent to the fort, with further evidence for a cemetery. The local brine springs were being used during this period and a number of lead pans associated with saltworking have been found. A first century brine kiln has been identified in the locality (Shaw and Clarke 2003: 4-5).

3.15 A section of the Roman road locally called Watling Street runs between Chester and York, via Manchester. The road runs from the Roman fortress at Chester via the fort at Northwich to that at Manchester and then to York. The alignment is followed by that of the A559 Manchester Road, which traverses some 180m north of the proposed development site (Shaw and Clarke 2003: 3, HER number 844/1/0)

3.16 A section of King Street Roman Road runs from Sandbach to Warrington. From Sandbach, the alignment passes through Middlewich, and then in a straight line for four miles to Broken Cross, on the east side of Northwich and some 1000m south of the proposed development site. The alignment continues to the northwest through Wincham, where it has been largely lost through saltworking, then to Marston Hall to join the A559 road south of Great Budworth. The Roman road then follows the alignment of the A559 road to Frankley and Stretton and then on to the Roman settlement at Wilderspool on the south side of Warrington and beyond towards Wigan (HER numbers 436/1/0 and 436/1/15, OS 1994). The alignment of this road is shown on early Ordnance Survey (OS) maps passing through the eastern edge of the proposed development site. There is no visible trace of the road on the ground within or adjacent to the proposed development site, based *inter alia* on the findings of the site visit.

3.17 Other than the line of the Roman roads, there are no recorded remains of confirmed prehistoric or Roman date within or in the immediate vicinity of the proposed development site.

Medieval

3.18 There is little material evidence for Anglo Saxon activity in the area, although many of the local place-names, including Leftwich, Northwich, Wincham and Winnington are recorded in the Domesday Book of 1086 and represent pre-existing occupation (Williams and Martin 1992).

3.19 Wincham was held by Gilbert De Venables at the time of Domesday. The manor appears to have been waste (i.e. unproductive land) at least in part at this time (Williams and Martin 1992: 731).

3.20 Northwich was an important salt-producing centre at the time of Domesday. Its value at £8 was the same as that of Middlewich, and some way behind Nantwich (£21). The township of Northwich appears to have been extremely small and presumably originated as a small industrial enclave. It is not known if brine exploitation continued from the Roman into the early medieval period or if salt production was resumed at a particular date (Shaw and Clarke 2003: 5).

3.21 Salt working formed the major part of the economy during the high medieval period in Northwich (Shaw and Clarke 2003: 7). This is likely to have been the case in the surrounding area, although there is no recorded evidence for medieval salt working in the vicinity of the proposed development site.

3.22 The site of a lost medieval road that crossed Wade Brook either at the location recorded on the HER, some 140m east of the proposed development site, or at Lostock Gralam Bridge is recorded in the HER (728/1).

3.23 This evidence of later mapping indicates that the proposed development site was probably used for pasture during the later medieval period. There is no evidence for medieval settlement activity within the proposed development site.

Post-medieval and modern

3.24 The picture of settlement and activity in the wider area during the early post medieval period was presumably similar to that of the later medieval period.

3.25 Platts Hall, also known as the Works House and located some 260m east of the proposed development site, was built in 1655. The HER notes that examination of the building revealed elements of an earlier building and there are documentary references dating from 1631. The building was demolished in 1998 and the timber framed west wing was re-erected at Bostock Hall (HER number 729).

3.26 The industrial revolution arrived in the area in the form of the Trent and Mersey Canal, which opened in 1777. Wincham wharf, located some 550m northwest of the proposed development site, was used for the transhipment of goods, such as coal coming in for Northwich and the surrounding area, and flour from the mill opposite intended for the town (Vale Royal 2000: 3). A number of mile posts were built along the canal. A feature of the track scene of the Trent and Mersey Canal are the mile posts, originally essential for the calculation of tolls. Every mile along the towpath there was a cast iron post showing the distance from the inland ports at either end of the canal (Vale Royal 2000: 17). A canal milepost is located at NGR 685734, some 500m northeast of the proposed development site. The milepost at NGR 685734 is listed at Grade II (list entry number 1329882).

3.27 Broken Cross Farm was constructed in c. 1825 and is now demolished. The building is locally listed (HER number 5828/ DCH10574).

3.28 The Lostock Gralam tithe map of 1845 shows the wider area as being rural in nature. The map shows the proposed development site as divided into a series of four agricultural fields, details of which are provided in Table 3.3, below.

Table 3.3: Tithe apportionment

Parcel Number	Name	Owner	Occupier	Land Use
18	Cow Pasture	Thomas Langford Brooke	William Kinsey	Arable
19	Horse Pasture	Thomas Langford Brooke	William Kinsey	Arable
20	Black Field	Thomas Langford Brooke	William Kinsey	Pasture
21	Sapling Field	Thomas Langford Brooke	William Kinsey	Pasture

3.29 Overstreet Farm, located to the east of the proposed development site, was owned by Thomas Langford Brooke and occupied by William Kinsey. The proposed development site formed part of this estate in 1845. Each of the fields located partly within the proposed development site contained ponds, presumably either marl pits, or salt extraction pits. The ponds lay outside the proposed development site, with the exception of one located at the edge of the southern part of the proposed development site.

3.30 In 1860, the Cheshire Midland Railway Company was given permission by Act of Parliament to construct a railway between Manchester and Northwich. The line was completed in 1863. Part of the line is located immediately north of the proposed development site (HER number 2267/1/0).

3.31 Wincham Mill, located some 600m northeast of the proposed development site, comprises a 19th century storage mill and shop. A plate on the derelict building reads: J K 7 W HESKETH 1870. The building is locally listed (HER number 6749/ DCH10553).

3.32 The first edition twenty-five inch to the mile OS of 1882 shows the railway to the north of the proposed development site. Several marl pits are shown to the west of the proposed development site. Within the proposed development site itself, the remnants of one field boundary is shown, which is not evident on the tithe map of 51 years previously. In addition, a small rectilinear enclosure is shown at the edge of the southern part of the proposed development site, in the location of the marl pit shown on the tithe map. No development is shown within the proposed development site at this time. The OS six inch to the mile edition of 1882 (Figure 5.D) marks Overstreet Farm to the east of the proposed development site. In addition, this map indicates that the structure to the north of the railway is recorded as a brickworks and marks the enclosure at the southern edge of the proposed development site with mature trees, which are not shown on the larger scale OS map of two years previously.

3.33 A plan of the Overstreet Farm Estate dated September 1896 shows an area to the south of Manchester Road, roughly bounded by Manchester Road to the north, the Trent and Mersey Canal to the east and Wade Brook and field boundaries to the south. The area is divided by the Manchester to Northwich railway and presumably represents the area acquired by Bowman Thompson & Co Ltd. A spur from the main line railway to the north and east of the proposed development site and crossing the Wade Brook leads to an area marked as ‘Bowman Thompson & Cos Intended Works’, in the location of the Lostock Works as marked on later editions of the OS. Within the area of the proposed development site itself, no field boundaries are shown, in contrast with the tithe map of 51 years previously. No development is shown within the proposed development site at this time. The Record Office catalogue notes that the plan is probably retrospective because the Bowman Thompson works were actually erected in 1891 (CRO DIC/BM19/10).

3.34 The Schoolhouse, Manchester Road, Northwich comprises a Victorian primary school dated to 1897 and located some 550m northeast of the proposed development site. It has mock Tudor gables and pleasant stained glass windows and is a liftable building, designed to combat the effects of subsidence. The building is locally listed 5922/ DCH9718.

3.35 A plan of land and works belonging to Bowman Thompson & Co Ltd and dated 1897 shows Manchester Road, Wade Brook and railway lines etc. around the proposed development site. Within the proposed development site, the site layout in terms of buildings, drains, brine pipes and the acid main are marked. None of the buildings are individually identified. Within the proposed development site, the plan shows a similar disposition to that shown on the OS of 1898 (CRO DIC/BM19/11).

3.36 The OS twenty-five inch to the mile edition of 1898 shows Overstreet Farm to the east of the proposed development site, as does the six inch to the mile edition of 1899, albeit with the farm unlabelled (Figure 5.E). The railway spur located to the north and east of the proposed development site, leading to the Lostock Works is shown in the 1898 edition, with a gasometer to the west. A further spur from the smaller line is shown running roughly east to west through the northern part of the proposed development site. Within the proposed development site itself, the Lostock Bleach Works had been constructed. A number of buildings and other structures are shown, none individually identified. A number of small railway lines lead into the buildings and connect with the external network via the spurs. A pumping station and brine cistern are shown and marked immediately west of the proposed development site. The map contains evidence of ground raising on the southern and western sides of the proposed development site. The plant was taken over by Brunner Mond in 1900 (Stratton and Trinder: 81, HER number 4238/0/0).

3.37 An untitled plan of the Lostock Works area dated June 1903 shows the sites of old, existing and new lime beds as well as water levels in the canal and Wade Brook, but provides little detail of the proposed development site (CRO DIC/BM19/12). The Brunner Mond office building, located some 200m east of the proposed development site, was built around the turn of the 20th century. The building is locally listed (HER number 4238/0/1).

3.38 The OS twenty-five inch to the mile edition of 1910 shows a very similar disposition to that of the previous edition. The line of Wade Brook had been altered, presumably to improve flow following the survey of 1903 shown on CRO DIC/BM19/12. The map contains further and more pronounced evidence of ground raising on the southern and western sides of the proposed development site. The OS six inch edition of 1910 (Figure 5.F) shows that by this time the brickworks to the north had been removed but that the proposed development site lay within a heavily industrialised area, with salt pans to its south, the Lostock Works to its east and the railway to the north.

3.39 The 1938 edition of the six-inch OS (Figure 5.G) shows no features in the area of the chemical works, presumably for security reasons. In 1942 the Lostock Gralam plant began to manufacture Winafill, which is a form of activated calcium carbonate used in rubber sealants and plastics. Stratton and Trinder (81) note that the works was still producing this material during the 1990s using plant dating from 1955.

3.40 Historic aerial photographs available through Google Earth indicate that by 1945 the proposed development site had been entirely cleared of buildings and contained a large mound at its western end, in the location of part of the area of ground-raising shown on the OS edition of 1910. The remainder of the proposed development site was apparently being used for the storage of bulk materials. The 1954 to 1976 editions of the OS (Figures 5.H to 5.K) show a number of railway lines running at an oblique angle across the proposed development site and confirm the position shown on the aerial photographs of 1945.

3.41 The 1977 edition of the OS (Figure 5.L) shows that a works had been constructed adjacent to the proposed development site and labels the site itself ‘Chemical Works’. A works complex on the site itself is shown on OS maps from 1993 up to and including the current edition of the OS (Figures 5.M to 5.O). The 1993 edition of the OS shows an electricity substation located immediately outside and to the southeast of the proposed development site. Griffiths Park, to the south of the proposed development site, was formed from the reclamation of waste lime reservoirs, probably during the first decade of the 21st century.

3.42 The site visit has indicated that the proposed development site is surrounded by a modern painted steel fence. There is a security entrance building located close to the site entrance in its south-eastern corner, immediately outside the application boundary. The proposed development site itself is level with steep slopes at its edges, particularly to the south and west, to meet surrounding ground surface. The original ground surface slopes down to the west from the buildings of the existing chemical works located outside and to the east of the proposed development site. The surrounding ground surface lies up to 2m below the current ground surface of the proposed development site.

3.43 All buildings within the proposed development site were demolished to ground level in 2013. The modern gatehouse remains standing outside the steel fence outside the southeast corner of the proposed development site. Immediately outside and to the southeast of the proposed development site the electricity substation remains in use.

3.44 The historic landscape characterisation indicates that the proposed development site (HLC number HCH15049) lies within the 20th century industry active character type in an area historically represented by late post medieval agricultural improvement. The recorded character type remains strongly in evidence.

Data Limitations

3.45 A comprehensive desk assessment has been undertaken using all available relevant sources. On this basis there are no major data limitations.

Mitigation Measures Adopted as Part of the Project

3.46 The location (on previously developed land), nature and design (i.e. an industrial development of appropriate scale and massing) of the proposed development minimises or removes any effects on the settings of designated assets.

3.47 The remaining boundary alignments around the proposed development site would be preserved *in situ* and the landscape pattern would remain unchanged.

4 Assessment of Construction and Operational Effects

4.1 Impacts on buried archaeological remains could occur during the construction phase. In addition, impacts during the construction and operational phase of the proposed development may affect the setting of cultural heritage assets. Impacts on heritage assets would reach their maximum at the end of the construction phase of the proposed development.

Designated Assets

4.2 The proposed development site contains no designated assets. There are a number of designated assets in the wider area.

Scheduled Monuments

4.3 There are no registered parks and gardens within 3km of the proposed development site, either within or outside the ZTV.

Designated Assets Within 1km of the Proposed Development Site

4.4 There are no scheduled monuments located within 1km of the proposed development site, either within or outside the ZTV.

4.5 There is one listed building located within 1km of the proposed development site. This is the milepost at NGR 685734, listed at Grade II (list entry number 1329882). This asset is considered with the Trent and Mersey Canal Conservation Area at paragraph 4.6 *et seq*, below.

4.6 There is one conservation area located within 1km of the proposed development site. This is the Trent and Mersey Canal Conservation Area.

4.7 The Conservation Area Appraisal (Vale Royal 2000) describes a number of Character Areas. The part of the conservation area located within the ZTV and within 1km of the proposed development site and all the conservation area within 3km of the north of the proposed development site is located within the Broken Cross to Barnton character area. The Conservation Area Appraisal (Vale Royal 2000: 6) notes that the *character of this section becomes more urban as the canal contours around the outskirts of Northwich, through Broken Cross, Wincham, Marston and adjacent to Anderton and Barnton. Between Broken Cross and Barnton, the townscape is dominated by the salt industry, from the remnants of salt works which lined the canal banks in the last century, to the large salt-based chemical works at Lostock and Winnington. These vast industrial complexes, with towering chimneys and steam-hissing pipes, dominate the views from the surrounding areas.*

4.8 To the south of the proposed development site the part of the conservation area located within the ZTV and between 1km and 3km of the proposed development site is located within the Croxton Aqueduct to Broken Cross character area. The Conservation Area Appraisal (Vale Royal

2000: 5) notes that the *section is essentially rural in character, with very few buildings, alternating between open vistas of the surrounding countryside and attractive wooded sections. The original brick built bridges within this section enhance the character of the canal. Throughout this section there are areas where the original stone wall of the canal remains intact.* The Conservation Area Appraisal (Vale Royal 2000: 6) goes on to note that that the *character becomes more industrial between bridges 181 and 183 approaching Broken Cross. After bridge 181 is the first sighting of the intrusive Morrison's warehouse which dominates the views along this section and has a detrimental effect on the character and setting of the canal. Noise from traffic, Morrison's warehouse, encroaching development from Gadbrook Park to the west and the increased boating activity associated with Orchard Marina all disturb the tranquillity of the canal. Beyond the A556 road bridge 183A, the character changes approaching Broken Cross, as a modern residential housing development backs onto the canal.*

4.9 The above characteristics represent the heritage values of those parts of the conservation area located within the ZTV. The conservation area is of **high** significance. Setting makes a significant contribution to the significance of the conservation area.

4.10 Given the current industrial setting of the conservation area and the nature and scale of the proposed development, there would be very minor changes to the setting of the conservation area and those assets (listed buildings etc.) which lie within it, which include list entry numbers 1329882, 1244513, 1244547 and 1160988. The magnitude of impact is assessed as being **negligible**. The effect of the proposed development on the conservation area is assessed as being **minor**.

Designated Assets Between 1km and 2km of the Proposed Development Site

4.11 There is one scheduled monument located between 1km and 2km of the proposed development site. This is the Lion Salt Works and remains part of the Alliance Salt Works, located adjacent to the Trent and Mersey Canal at Marston, some 1.3km northwest of the proposed development site (list entry number 1020841). Four listed buildings, Office in Works Yard, Engine Shed and Pump House and Canal Salt Shed at Lion Salt Works and Pan Sheds and Stoves and Store Shed behind Lion Salt Works (list entry numbers 139103, 1160985, 1329876 and 1329875 respectively) are located within the SM and are considered here. The scheduled monument and listed buildings are located within the ZTV.

4.12 The heritage values of the SM are as follows.

- Evidential and historical – the value derives primarily from the upstanding remains of the Lion Salt Works and the buried remains of part of the earlier Alliance Salt Works. The historical value is partly illustrative, although there are associations with a large number of documented individuals, including the owners, workers, etc.
- Aesthetic – the value derives from the visible remains of the SM and listed buildings.

- Communal – the value of the SM and listed buildings derives from their symbolic and economic value as part of the local community.

4.13 The SM with the associated listed buildings is of **highest** significance. Setting makes a contribution to the significance of the SM and listed buildings mainly in the deterministic sense that the salt works is located at a convenient point in relation to the salt resource and transportation links via the canal.

4.14 The setting of the designated assets comprises their relationship with the adjacent canal, fields, flashes and settlements at Marston and Wincham. Views towards the proposed development would be in the context of the existing adjacent heavy industry.

4.15 There would be very minor changes to the setting of the designated asset, and the magnitude of impact is assessed as being **negligible**. The effect of the proposed development on the designated assets is assessed as being **minor**.

4.16 There are 14 listed buildings between 1km and 2km of the proposed development site. Of these, 13 are listed at Grade II and one, the Church of St Helen (list entry number 1329880), is listed at Grade I. All of these listed buildings are located within the ZTV. Of these listed buildings, four (Office in Works Yard, Lion Salt Works, Engine Shed and Pump House at Lion Salt Works, Pan Sheds and Stoves and Store Shed behind Lion Salt Works and Canal Salt Shed at Lion Salt Works list entry numbers 139103, 1160985, 1329875 and 1329876 respectively) are located within the Lion Salt Works complex and are considered at paragraph 4.11 *et seq*, above.

4.17 The Church of St Helen (list entry number 1329880), listed at Grade I, is located in Northwich, some 1.45 km west of the proposed development site. In addition, Northwich Post Office, Church of St Wilfred, the Sundial 8 Metres south of South Porch of Church of St Helen (Witton Church), the Brunner Public Library and the Plaza Bingo Club, all listed at Grade II (list entry numbers 1139072, 1139073, 1161074, 1161149 and 1385195 respectively), are located in the built development of Northwich and in the vicinity of the parish church. Together they represent a group of urban buildings, mainly of the 19th and 20th centuries and the medieval parish church.

4.18 The heritage values of the listed buildings are as follows.

- Evidential and historical – the evidential value derives primarily from the fabric of the listed buildings and, in the case of the parish church, the potential for associated buried archaeological remains. The historical value is largely illustrative.
- Aesthetic – the value derives from the design value of the listed buildings in terms of their expression of the architecture of the 19th and 20th centuries as well as medieval and later religious architecture.
- Communal – the value of the listed buildings derives from their symbolic value as part of the local community.

4.19 The listed buildings are of **high and highest** significance. Setting makes a significant contribution to the significance of the listed buildings.

4.20 The setting of the listed buildings is primarily each other and the urban development of Northwich in which they are located. Although they are nominally within the ZTV, the proposed development would be seen from the listed buildings in the context of the adjacent heavy industry. In any event the proposed development would form a small part of the view from the listed buildings when looking in its direction.

4.21 There would be slight changes to the setting of the listed buildings that hardly affect them and the magnitude of impact is assessed as being **negligible**. The effect of the proposed development on the listed buildings is assessed as being **minor**.

4.22 Park Farmhouse (list entry number 1139097) a brick farmhouse, probably of the 17th century, and Shippon and Former Barn 15 Metres northwest of (No 65) Park Farmhouse (list entry number 1139098), probably of the 18th century, are located at Lostock Green, some 1.7km southeast of the proposed development site. Each building is listed at Grade II.

4.23 The heritage values of the listed buildings are as follows.

- Evidential and historical – the evidential value derives primarily from the fabric of the listed buildings and the potential for associated buried archaeological remains. The historical value is largely illustrative.
- Aesthetic – the value derives from the design value of the listed buildings in terms of their expression of the rural architecture of the 17th and 18th centuries.
- Communal – the value of the listed buildings derives from their symbolic value as part of the local village and farming community.

4.24 The listed buildings are of **high** significance. Setting makes a significant contribution to the significance of the listed buildings.

4.25 The setting of the listed buildings is primarily each other and the built development of Lostock Green, in which they are located. Although they are nominally within the ZTV, the proposed development would be seen from the listed buildings in the context of the adjacent heavy industry. In any event the proposed development would form a small part of the view from the listed buildings when looking in its direction.

4.26 There would be slight changes to the setting of the listed buildings that hardly affect them and the magnitude of impact is assessed as being **negligible**. The effect of the proposed development on the listed buildings is assessed as being **minor**.

4.27 There is one conservation area located between 1km and 2km of the proposed development site. This is the Trent and Mersey Canal Conservation Area.

4.28 The effect of the proposed development on the conservation area is assessed at paragraph 4.6, *et seq*, above.

Designated Assets Between 2km and 3km of the Proposed Development Site

4.29 There are no scheduled monuments between 2km and 3km of the proposed development site, either within or outside the ZTV.

4.30 There are 24 listed buildings between 2km and 3km of the proposed development site. Each of these is listed at Grade II. All these listed buildings are located within the ZTV.

4.31 Of the above listed buildings, the following are each listed at Grade II and are all located within the built development of Northwich and Leftwich. Together they represent a group of urban buildings, mainly of the 19th and 20th centuries.

- Gates and Gatepiers To Verdin Park (list entry number 1139109);
- The Brockhurst (list entry number 1139111);
- British Waterways Board Area Office (list entry number 1139112);
- Weir East of Hunt's Lock, with Footbridge (list entry number 1139113);
- 16, Winnington Street (list entry number 1139115);
- Church of the Holy Trinity (list entry number 1161050);
- Weaver Railway Viaduct (list entry number 1161087);
- Weaver Hall (list entry number 1161095);
- Clock Tower between British Waterways Board Office and River Weaver (list entry number 1161109);
- Dock Road Pumping Station (list entry number 1240202);
- Navigation House (list entry number 1240207);
- Mile Post at SJ 6604 7227 (list entry number 1245351);
- Stable Block with attached Outbuildings;
- Walls and Gateway at Navigation House (list entry number 1261148);
- Hunt's Locks (list entry number 1310242);
- Hayhurst Bridge Over Weaver Navigation, and Control Cabin (list entry number 1310259);
- Town Bridge Over Weaver Navigation, and Control Cabin (list entry number 1329879);
- Nos 256,258,260,262,264,266 and 268 (list entry number 1329881);
- Victoria Infirmary, Old Wing (list entry number 1329883); and
- Former Verdin Technical Schools & Gymnasium, Northwich (list entry number 1417201).

4.32 The heritage values of the listed buildings are as follows.

- Evidential and historical – the evidential value derives primarily from the fabric of the listed buildings. The historical value is largely illustrative.
- Aesthetic – the value derives from the design value of the listed buildings in terms of their expression of the architecture of the 19th and 20th centuries.
- Communal – the value of the listed buildings derives from their symbolic value as part of the local community.

4.33 The listed buildings are of **high** significance. Setting makes a significant contribution to the significance of the listed buildings.

4.34 The setting of the listed buildings is primarily each other and the urban development in which they are located. Although they are nominally within the ZTV, the proposed development would be seen from the listed buildings in the context of the adjacent heavy industry. In any event the proposed development would form a small part of the view from the listed buildings when looking in its direction.

4.35 There would be slight changes to the setting of the listed buildings that hardly affect them and the magnitude of impact is assessed as being **negligible**. The effect of the proposed development on the listed buildings is assessed as being **minor**.

4.36 Lane Ends Farmhouse (list entry number 1139101) and Farm Building 20 Metres east of Lane Ends Farmhouse (list entry number 1139102), each listed at Grade II, are located at Higher Marston, some 2.5km north of the proposed development site.

4.37 The heritage values of the listed buildings are as follows.

- Evidential and historical – the evidential value derives primarily from the fabric of the listed buildings and the potential for associated buried archaeological remains. The historical value is largely illustrative.
- Aesthetic – the value derives from the design value of the listed buildings in terms of their expression of the rural architecture of the 17th and 18th centuries.
- Communal – the value of the listed buildings derives from their symbolic value as part of the local village and farming community.

4.38 The listed buildings are of **high** significance. Setting makes a significant contribution to the significance of the listed buildings.

4.39 The setting of the listed buildings is primarily each other, the yard in which they are located, the adjacent farm buildings, the A559 Marston Lane to the south and the built development of the hamlet to the southeast. Although they are nominally within the ZTV, the proposed development would be seen from the listed buildings in the context of the adjacent heavy industry. In any event the proposed development would form a small part of the view from the listed buildings when looking in its direction.

4.40 There would be slight changes to the setting of the listed buildings that hardly affect them and the magnitude of impact is assessed as being **negligible**. The effect of the proposed development on the listed buildings is assessed as being **minor**.

4.41 Uplands Farmhouse (list entry number 1329874) is a farm house of c. 1800, listed at Grade II and located some 2.7km northwest of the proposed development site.

4.42 The heritage values of the listed building are as follows.

- Evidential and historical – the evidential value derives primarily from the fabric of the listed building and the potential for associated buried archaeological remains. The historical value is largely illustrative.
- Aesthetic – the value derives from the design value of the listed building in terms of its expression of the rural architecture of the 18th century.
- Communal – the value of the listed building derives from its symbolic value as part of the local community.

4.43 The listed building is of **high** significance. Setting makes a significant contribution to the significance of the listed building.

4.44 The setting of the listed building is primarily the adjacent fields and woodland. Although the listed building is nominally within the ZTV, the proposed development would be seen from the listed building in the context of the adjacent heavy industry. In any event the proposed development would form a small part of the view from the listed building when looking in its direction.

4.45 There would be slight changes to the setting of the listed building that hardly affect it and the magnitude of impact is assessed as being **negligible**. The effect of the proposed development on the listed building is assessed as being **minor**.

4.46 Home Farmhouse (list entry number 1329911), listed at Grade II is located on the south side of Linnards Lane, some 2.3km northeast of the proposed development site.

4.47 The heritage values of the listed building are as follows.

- Evidential and historical – the evidential value derives primarily from the fabric of the listed building and the potential for associated buried archaeological remains. The historical value is largely illustrative.
- Aesthetic – the value derives from the design value of the listed building in terms of its expression of the rural architecture of the 17th century.
- Communal – the value of the listed building derives from its symbolic value as part of the local village and farming community.

4.48 The listed building is of **high** significance. Setting makes a significant contribution to the significance of the listed building.

4.49 The setting of the listed building is primarily the yard in which it is located, Linnards Lane to the north and the adjacent fields and the built development of Higher Wincham to the northwest. Although the listed building is nominally within the ZTV, the proposed development would be seen from the listed building in the context of the adjacent heavy industry. In any event the proposed development would form a small part of the view from the listed building when looking in its direction.

4.50 There would be slight changes to the setting of the listed building that hardly affect it and the magnitude of impact is assessed as being **negligible**. The effect of the proposed development on the listed building is assessed as being **minor**.

4.51 Although there is one conservation area, the Trent and Mersey Canal conservation area, located partly between 1 and 2 km of the proposed development site, it is assessed at paragraph 4.6 *et seq* above, because it is at the closest distance that the magnitude of impact is likely to be the greatest.

4.52 No other listed buildings, scheduled monuments, registered parks and gardens, registered battlefields or conservation areas or their settings would be affected by the proposed development.

Undesignated Assets

4.53 There is evidence for Roman and later activity in the wider area, including the probable alignment of a Roman road on the eastern side of the proposed development site.

4.54 Surviving remains of the Roman road are of **medium** significance. The asset extends over a wide area. The impact of the proposed development on the asset is assessed as being **low**. The unmitigated effect of the proposed development on the asset and any nearby associated features is assessed as being **minor**.

4.55 Remains of the later 19^{th} century Lostock Bleach Works may survive within the proposed development site. These remains are likely to comprise foundations and perhaps ground floors, below the current ground surface.

4.56 Surviving remains of the bleach works are of **low** significance. The impact of the proposed development on the asset is assessed as being **high**. The unmitigated effect of the proposed development on the asset and any nearby associated features is assessed as being **minor**.

Historic Landscape

4.57 The historic landscape characterisation indicates that the proposed development site (HLC number HCH15049) lies within the 20^{th} century industry active character type in an area historically represented by late post medieval agricultural improvement. The recorded character type remains strongly in evidence.

4.58 The character type is of **low** significance and would have a high ability to withstand change. The proposed development would be constructed within existing boundaries and the landscape pattern would remain unchanged. The impact of the proposed development on the historic landscape is assessed as being **minor**. The unmitigated effect of the proposed development on the asset is assessed as being **minor**.

Further Mitigation

4.59 Further mitigation will comprise a watching brief during development, as agreed with the Cheshire Archaeology Service (see Table 2.1). The watching brief will take the form of a series of visits by suitably qualified and experienced archaeologists to observe excavations. The results would be reported in a suitable format and depending on results, further mitigation may be appropriate.

Future Monitoring

4.60 Mitigation would be complete following the construction phase and no future monitoring would be required.

Associated Development

4.61 Associated works may also be undertaken by the applicant or third parties to improve the existing shared private access road through Lostock Works, within the planning application boundary. This may involve widening at certain points to ease passing and turning of HGVs. This widening would be limited (anticipated to be <3m) as the access road is constrained by the industrial facilities through which it runs. Re-surfacing some sections may also be undertaken if necessary. Any works undertaken would be in agreement with the land owner and other road users.

4.62 Due to their location and nature, these works would have no impact and therefore no effect on heritage assets.

Assessment of Cumulative Effects

4.63 A number of sites with potential cumulative impacts have been identified in the vicinity of the proposed development site.

4.64 Lostock Sustainable Energy Plant (SEP) is located south and east of the proposed development site, within the area of Lostock Works. The SEP may affect below ground remains including King Street Roman Road. Chapter 13 of the ES for the SEP notes at paragraph 13.89 *et seq* that there would be no significant effects on these remains, other below ground remains, or the settings of heritage assets.

4.65 Planning Ref: 08-0034-FZ5 ''Bedminster' technology bio-energy plant is located immediately west of the proposed development site. RPS understands that permission has been implemented to the extent that ground has been broken, but the plant has not been constructed. The cumulative development may affect below ground remains ancillary to the Lostock Bleach Works. The cumulative development would have at most a minor adverse effect on these remains.

4.66 Planning ref 09/10799/CPO is for the *Use of site as a non-hazardous household, commercial and industrial waste recycling centre with the erection of a mixed waste transfer building and ancillary works*. The cumulative site is located some 80m south of the proposed development site in area characterised by extraction. Although on the alignment of King Street Roman road, this is likely to have been entirely removed from the cumulative development site. There would be no effects on these remains, other below ground remains, or significant effects on the settings of heritage assets.

4.67 Planning ref 07-3384-FZ5 is for the *Precious and semi-precious metal recovery plants with fertiliser manufacturer.* The cumulative site is located approximately 100m southwest of the proposed development site. The cumulative site has previously been used for salt pans and developed with buildings which were demolished prior to the current cumulative development. On this basis, there would be no effects on below ground remains, or significant effects on the settings of heritage assets.

4.68 On this basis there would be no significant effect on heritage assets from the cumulative developments. Neither are there any assets significantly affected by the proposed development. On this basis any cumulative effects would not be significant.

Inter-relationships

4.69 The chief inter-relationship with heritage is landscape and this has been considered during the assessment.

Summary of Effects

4.70 This chapter presents the results of the Environmental Impact Assessment (EIA) of the proposed development during its construction and operation on the historic environment. The chapter has assessed the likely significant effects of the proposed development on heritage assets in terms of archaeology, built heritage and the historic landscape. The likely impacts were assessed during both the construction and operational phases of the proposed development.

4.71 The assessment for the proposed development has identified several likely and possible sites and finds of interest. These include the probable alignment of a Roman road on the eastern side of the proposed development site. The potential unmitigated effect of the proposed development on the asset and any nearby associated features is assessed as being minor. Remains of the later 19th century bleaching works may survive within the proposed development site. These remains are likely to comprise foundations and perhaps ground floors, below the current ground surface. The potential unmitigated effect of the proposed development on the asset and any nearby associated features is assessed as being minor.

4.72 Proposed mitigation measures for the proposed development have been incorporated into the assessment of residual effects. The proposed mitigation comprises a watching brief during development. No mitigation measures other than those built into the design of the proposed development against effects on the settings of designated assets are considered being necessary.

4.73 There would be no significant effects on any designated heritage assets. Effects are summarised in Table 4.1, below:

Table 4.1: Summary of likely environmental effects

Activity	**Sensitivity of receptor**	**Likely impact**	**Short / medium / long term**	**Magnitude of impact**	**Significance of effect**	**Significant / insignificant**	**Indirect / direct**
Construction phase							
Undesignated assets	Low	Direct (i.e. removal)	Long term	Medium	Minor	Not significant	Direct
Scheduled Monuments	Highest	Setting	Long term	None	Neutral	Not significant	Direct
Listed Buildings	High to highest	Setting	Long term	None	Neutral	Not significant	Direct
Registered Parks and Gardens and Registered Battlefields	High	Setting	Long term	None	Neutral	Not significant	Direct
Historic landscape	Low	Direct and Setting	Long term	Minor	Minor	Not significant	Direct
Operational phase – all effects will be at their maximum at the end of the construction phase and no further operational effects are likely.							

5 Conclusions

5.1 The assessment has found that there are no designated sites (e.g. Scheduled Monuments, Listed Buildings) within the proposed development site.

5.2 There are a number of designated assets in the wider area. A comparison of these against the ZTV has been undertaken and a detailed assessment has been carried out to assess the effects, if any, on these assets as a consequence of the proposed development. It has been concluded that there would be no significant adverse effects on any of these assets as a consequence of the proposed development.

5.3 There is evidence for Roman and later activity in the wider area, including the probable alignment of a Roman road on the eastern side of the proposed development site. Given the apparent location of the Roman road, the possibility of the proposed development site containing archaeological remains of an early date cannot be entirely ruled out, although this is unlikely given the extent of development at the site.

5.4 The remainder of the proposed development site itself seems to have been agricultural land from antiquity until the later 19^{th} century when a bleaching works was built. Remains of the bleaching works may survive within the proposed development site.

5.5 Appropriate mitigation measures for the proposed development have been incorporated into the assessment of residual effects. They comprise a watching brief during development.

5.6 No mitigation measures for effects on the settings of designated assets, other than those built into the design of the proposed development, are considered necessary.

5.7 There are predicted to be no significant effects on buried archaeological remains, the historic landscape, or any designated heritage assets.

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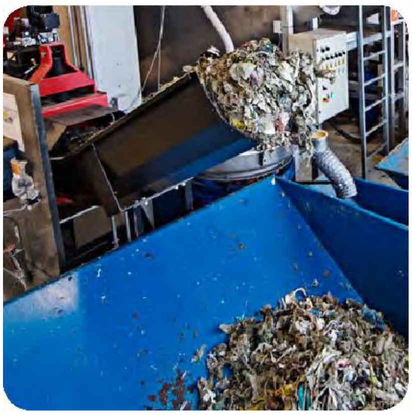
Chapter 6: Traffic and Transport

REnescience Northwich







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2	03/10/15	Draft	Total traffic flow table	-
3	06/10/15	Final	-	-

Executive Summary

The assessment of traffic and transport impacts has considered the type and amount of traffic that would be generated by the proposed development, potential effects on local highways for all users (taking into account their existing condition and capacity), and the accessibility of the site for pedestrians, cyclists and by public transport. It has accounted for background future traffic growth (i.e. that which occurs anyway, without the proposed development) on the highway network by including typical background annual traffic growth rates from 2015-17 and adding traffic from the other major cumulative proposed developments in the local area in 2017.

The proposed development would generate up to 38 staff trips and 96 HGV trips per day when operational (counting both arrivals and departures). This would be on average four HGV arrivals and four departures per hour (i.e. one HGV arriving and departing again every 15 minutes on average) spread over a 12 hour working day. Staff arrivals and departures would be at shift changeover times, distributing staff traffic between peak and non-peak times for traffic on the highway network. HGV traffic generated during the construction phase is expected to be of a similar scale at peak.

All HGVs on the A530 Griffiths Road will be routed to and from the south of the junction with the proposed development site access road, via the A530/A556 roundabout, due to the low rail bridge on Griffiths Road to the north. Staff traffic may travel in either direction. From the A530/A556 roundabout, HGV traffic would use the A556 east of the A530 to reach the M6 via junction 19, the A530 south of the A556 to junction 18 on the M6, and the A556 to points west.

The assessment has assumed as a worst-case that all materials are transported by road, and that HGVs make empty return trips.

The site access road within Lostock Works has a continuous pedestrian footway, connecting with the footway on the A530 that in turn connects to public rights of way (including the canal towpath) giving access to Manchester Road via Works Lane, Lostock Hollow and Broken Cross. There are currently no cycle facilities on the A530, but the canal towpath provides a quiet traffic route linking with the traffic routes lining the A556 westbound. This route connects Broken Cross and Rudheath with the southern area of Northwich, providing access to the wider cycle network of Northwich.

A review of injury and accident data held by CWCC for the last five years indicates that the A530 and roundabout with the A556 have a good existing level of safety, with a total of 22 accidents recorded over five years, of which two were serious and none were fatal.

Based on existing baseline flows and projected growth in baseline flows to 2017, the local highway links that would be used by traffic from the proposed development are considered to have capacity in the through-flow for additional traffic growth beyond the 2017 baseline.

Management plans setting strategic routes for HGVs and arrival/departure phasing for both HGV and staff traffic will be implemented for the construction and operational periods, to minimise highways impacts.

Increases in total traffic flows over all time periods on all public highway links due to the proposed development are not predicted to exceed 3% on weekdays, or 5% at weekends (when the existing flows are lower), including peak times. These minor increases are well below the thresholds for any significant adverse effects.

Although the rate of traffic flow and HGV numbers will be low in absolute terms and no significant adverse effects on severance and pedestrian amenity, driver delay and road safety are predicted, regard has been had for local resident concerns regarding pedestrian delay and severance.

It is therefore proposed that the development would make a financial contribution to the provision of traffic signals at the Middlewich Road/A530 junction, which offers an opportunity to further improve the safety record at this junction and facilitate safe pedestrian movements, or other pedestrian safety scheme, as agreed with CWCC.

Cumulative impacts with other proposed developments are included within the background traffic growth, as discussed above.

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Appendices

1 Introduction and Approach

Introduction

1.1 This chapter provides an assessment of the changes resulting from the proposed REnescience Northwich development in relation to transportation and highways, and describes the mitigation measures included as part of the development proposals. It considers:

- the type and volume of traffic generation from the proposed development; and
- the potential environmental effects that may arise from this traffic.

1.2 The chapter concludes by assessing the significance of the projected traffic increase in light of identified thresholds of significance. The effects of the proposed development are assessed at capacity in 2017 (the anticipated first year of operation), together with consented development that will contribute traffic to the local highway network and traffic growth at that time.

1.3 This chapter incorporates information from the Transport Assessment (TA, at Appendix 6.A), which provides further technical detail on many of the issues discussed below.

1.4 The description of the site and proposed development is provided in chapter 2 of the ES.

1.5 Access to the development site is proposed by way of the existing private road serving the larger Lostock Works industrial site within which it is located, linking with the A530 Griffiths Road south east of the development site.

Approach and Method

1.6 Baseline conditions have been established through desk-top study, consultation and traffic surveys. Potential effects of the proposed development have been identified and assessed. Where relevant, mitigation measures have been identified.

1.7 The significance of potential effects has been assessed in light of recognised thresholds of significance from published guidance (as discussed below). The applicant’s experience of construction and operating facilities of this type has helped inform this assessment.

1.8 Further details of the approach and method are given in the TA at Appendix 6.A.

Legislation and Guidance

1.9 A detailed assessment of the proposed development against the Cheshire West and Chester (CWCC) Local Plan and other material planning policy considerations is contained within a separate supporting Planning Statement, which accompanies the planning application.

1.10 Notwithstanding this, regard has been had to existing transport policy framework, both at a strategic and local level. There is a clear directive from national government that it is no longer practicable, or socially or environmentally acceptable, to continue to accommodate unrestrained traffic growth or generally to continue to add to road capacity. On this basis, policy emphasis has therefore moved towards travel demand management and better provision of sustainable transport modes.

1.11 The relevant planning policy and guidance documents that provide a context for assessing transport impacts are set out below:

- National Planning Policy Framework (2012);
- Planning Practice Guidance (2014);
- Cheshire West and Chester Council – Local Transport Plan: Integrated Transport Strategy 2011 – 2026 (2014);
- (former) Cheshire County Council – Cheshire Replacement Waste Local Plan (2007) (Policies saved after 29 Jan 2015); and
- Guidelines for the Environmental Assessment of Road Traffic (Guidance Note 1), Institute of Environmental Assessment, 1993 (now the Institute of Environmental Management and Assessment).

1.12 At a local level, the development site is safeguarded as part of the elements of wider Lostock Works site under Policy ENV8 'Managing Waste' of the CWCC Local Plan: Part One – Strategic Policies (adopted Jan 2015) for waste related uses.

1.13 **The 'Guidelines for the Environmental Assessment of Road Traffic'** (IEMA 1993) (the 'IEMA Guidelines') are used to inform the assessment of the potential traffic and transportation issues arising from the proposed development. The IEMA Guidelines suggest that two broad rules can be used when screening for the appropriate extent of the assessment area. These are:

- **Rule 1** – include road links where traffic flows would increase by more than 30% (or the number of HGVs would increase by more than 30%); and
- **Rule 2** – include any other specifically sensitive areas where traffic flows would increase by 10% or more.

1.14 In cases where the thresholds are exceeded, Column 3 in Table 2.1 of the IEMA guidelines set out a list of environmental effects which should be assessed for their magnitude of change. The assessment of the proposed development’s effects upon the road links and junctions has been guided by a number of criteria as per the IEMA Guidelines. These portray significance in terms of magnitude of impact and receptor sensitivity.

1.15 It is acknowledged at paragraph 2.4 of the IEMA guidelines that not all the effects listed in Column 3 of Table 2.1 would be applicable to every development. A detailed inspection of the surrounding road network incorporating the current geometric layout of the road, traffic management and regulation orders and general observations of existing road user movements has been undertaken to assist with the assessments.

1.16 Generally, terms such as substantial, moderate, slight and negligible are used to describe the scale of potential environmental impacts. For the purposes of this assessment, the magnitude of impact is specified for individual domains of potential transport and highways impacts.

Consultation

1.17 It was agreed with CWCC (see pre-application correspondence at Annex 6.A.1) that the assessment would address the impact on traffic flows on the A530 (north and south of the A556), and A556 (east and west of the A530) for the future year, together with traffic from other committed and proposed developments. An operational capacity assessment would also be undertaken at the site access junction with the A530 based for the same future scenario.

1.18 CWCC requested that in terms of committed developments, account should be taken of the adjacent consented Sustainable Energy Plant (ref: 11/0198/OUT), as a minimum.

2 Baseline Conditions

Highway Network

2.1 The site access is illustrated in Figure 6.A and shown diagrammatically in Annex 6.A.4. The private access road within Lostock Works adjoins the local public highway network at the A530 south east of the development site in the form of a simple priority junction, with a nearside diverge taper. The access road is approximately 7.5m in width, allowing for two-way HGV traffic flow (see Figure 6.F), and is subject to a 15mph speed restriction.

2.2 A low railway bridge north of the site on the A530 restricts HGV access from the A559. All HGVs will therefore access the site from the south, via the A530/A556 roundabout. Signage will be provided at access road junction with the A530 directing HGV traffic to the facility requiring exiting HGV traffic to turn right (south) on the A530, to avoid the low bridge to the north. Routing will be a contractual requirement, which will be enforced.

2.3 The M6 provides a strategic link to the wider North West and Midlands areas. HGVs will route to/from the site from the M6 using the following strategic links, via the junction with the A530 to and from the south:

- M6 Junction 19/A556/A530; and
- M6 Junction 18/A530/A54.

2.4 HGVs will not be allowed to access the facility via Middlewich Road, nor Manchester Road through Northwich.

2.5 Based on the applicant's discussions with potential suppliers, waste sources are likely to be derived from the North West and Midlands. The applicant anticipates that around two thirds (66%) of total deliveries will access the site from the M6, with two thirds of this fraction (44% of the total HGVs) arriving from J19 and one third (22% of the total HGVs) arriving from J18. The remaining one third (33%) of all deliveries are likely to arrive from the west via the A556/A530 south of the site. These anticipated strategic HGV routes are illustrated in Figure 6.E.

Pedestrian and Cycle Facilities

2.6 The private site access road within Lostock Works is lined with a continuous footway to the southern side, which is approximately 1m in width. This connects with the existing footway on the A530, which is approximately 1.5m in width, continuing south to the A556. North of the site a footway is present to the western side of the A530 approximately 1.5m in width, which continues around the site access junction. The footway provides access to the railway bridge, at which point no pedestrian facilities are provided. North of the railway bridge the footway continues on the eastern side of the carriageway northwards to the junction with the A559.

2.7 The Trent and Mersey Canal runs north-south alongside the A530 and its towpath provides an alternative pedestrian/cycle route. There is also an extensive public rights of way network between the A530 and Lostock Hollow to the east. These alternative routes are considered to be seasonal routes during the drier, summer months when daylight hours are longer.

2.8 The A530 provides access to the local residential area of Broken Cross, south of the site via a number of smaller priority junctions. A continuous footway is present to the western side of the A530 linking with Broken Cross to the south. Pedestrian crossing facilities are provided at junctions by way of dropped kerbs, tactile paving and pedestrian central refuge points. There are currently no pedestrian crossing facilities provided to facilitate pedestrian movement east-west across the A530.

2.9 There are currently no cycle facilities present on the A530; however, the Trent and Mersey Canal towpath provides a quiet traffic route linking with the traffic routes lining the A556 westbound. This route connects Broken Cross and Rudheath with the southern area of Northwich, providing access to the wider cycle network of Northwich also.

2.10 Pedestrian and cycle activity is observed to be relatively low on the site access and local roads surrounding the site.

Baseline Traffic Flows

2.11 The assessment concentrates on the road traffic associated with the operational phase of the proposed development and the effects on the identified access routes ('links') as identified below and illustrated in Figure 6.D:

Link No.	Link Location
1	A530 (Griffiths Road) North of site access
3	A530 (Griffiths road) South of site access (to Middlewich Road)
4	A530 north of A556 (south of Middlewich Road)
5	A556 East of A530
6	A530 South of A556
7	A556 West of A530

2.12 The site access road formed 'Link 2' of the baseline surveys. This link does not form part of the public highway network and is entirely within the Lostock Works industrial site. Only site users (pedestrians, cyclists and drivers) would use this link and no member of the public would use it. In view of the foregoing, this link has not formed part of the assessment area because there are no sensitive receptors along it.

2.13 Traffic surveys have been carried out by Axiom Traffic, for each link of the respective junctions for a 7 day period 24th June, 2015 to 30th June, 2015. The survey period did not coincide with any school holidays or bank holiday periods.

2.14 The purpose of the survey was to provide the baseline traffic conditions for the local network. The average 5 day weekday and Saturday traffic flows are summarised in Table 2.1 and Table 2.2 respectively. The full survey results are included within the Transport Assessment (Appendix 6.A).

Table 2.1: Existing (2015) Local Highway Network Two Way Traffic Flows

5 day weekday average

	Link 1		Link 3		Link4		Link 5		Link 6		Link 7	
	A530 (north of site)		A530 (south of site)		A530 (north of A556)		A556 (east)		A530 (south of A556)		A556 (west)	
TIME PERIOD	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV
0000-0100	21	3	21	3	45	3	125	20	95	29	115	11
0100-0200	16	4	16	5	32	4	78	16	71	23	65	10
0200-0300	13	3	13	4	37	4	86	26	94	34	81	20
0300-0400	17	5	17	5	38	5	99	36	110	40	95	26
0400-0500	33	6	32	7	71	7	172	26	164	40	145	25
0500-0600	90	11	93	13	234	12	468	53	462	49	405	36
0600-0700	185	15	208	19	447	21	1246	102	662	64	967	79
0700-0800	459	18	501	18	977	26	2727	165	1350	69	2256	178
0800-0900	640	15	667	25	1196	38	2980	181	1287	73	2718	189
0900-1000	531	15	569	22	1009	37	2044	159	980	92	1903	133
1000-1100	485	15	502	23	916	34	1652	137	860	89	1421	118
1100-1200	474	13	496	24	918	31	1587	144	823	88	1386	128
1200-1300	562	18	576	24	1015	34	1675	137	959	89	1485	128
1300-1400	555	15	569	23	1014	37	1677	147	968	77	1409	120
1400-1500	552	17	569	23	1043	42	1876	156	1139	87	1536	126
1500-1600	645	17	660	22	1115	33	2202	145	1172	81	1832	127
1600-1700	735	17	760	25	1264	39	2757	162	1458	70	2347	137
1700-1800	802	14	812	19	1388	33	2978	150	1586	58	2561	143
1800-1900	582	16	599	18	1084	20	2384	105	1230	51	2055	92
1900-2000	362	9	361	10	697	15	1374	59	683	33	1237	49
2000-2100	193	5	196	6	426	7	828	35	413	24	760	26
2100-2200	142	4	143	5	311	7	612	21	332	23	592	16
2200-2300	107	5	108	6	225	5	511	24	268	24	468	16
2300-0000	41	3	44	4	106	4	328	25	165	27	276	10
8 H	416	49	445	60	1010	61	2603	305	1823	306	2148	218
18 H	8051	231	8339	318	15152	464	31440	2055	16335	1118	27208	1816
24 H	8241	262	8532	355	15609	499	32469	2232	17331	1332	28113	1945

Table 2.2: Existing (2015) Local Highway Network Two Way Traffic Flows

Saturday

	Link 1		Link 3		Link4		Link 5		Link 6		Link 7	
	A530 (north of site)		A530 (south of site)		A530 (north of A556)		A556 (east)		A530 (south of A556)		A556 (west)	
TIME PERIOD	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV
0000-0100	34	4	37	4	78	3	236	26	182	39	233	10
0100-0200	19	4	20	4	46	3	144	21	85	16	141	19
0200-0300	14	1	11	2	48	3	105	23	99	23	111	22
0300-0400	12	3	13	3	40	3	125	37	108	50	104	20
0400-0500	22	2	25	1	52	2	148	30	151	31	140	28
0500-0600	56	7	59	7	160	5	295	41	330	38	251	27
0600-0700	67	11	81	10	188	10	401	53	312	48	328	24
0700-0800	121	6	141	8	324	9	657	69	483	44	590	39
0800-0900	280	18	283	25	583	23	1060	70	741	47	944	52
0900-1000	367	6	374	9	764	17	1316	74	761	49	1234	70
1000-1100	535	11	533	10	982	17	1649	86	841	51	1605	78
1100-1200	605	12	620	15	1110	18	1860	84	850	52	1763	69
1200-1300	672	11	667	9	1101	22	1763	83	852	47	1731	67
1300-1400	559	9	567	8	1008	13	1706	64	818	58	1618	58
1400-1500	551	6	562	5	931	11	1567	62	821	55	1505	75
1500-1600	531	4	528	7	914	11	1516	53	799	62	1467	46
1600-1700	444	3	454	4	881	10	1619	60	831	36	1507	45
1700-1800	369	5	367	2	788	7	1571	52	837	23	1435	58
1800-1900	292	5	299	4	658	9	1253	32	691	27	1233	29
1900-2000	249	4	252	5	506	10	970	28	475	27	899	25
2000-2100	177	0	179	1	349	2	654	15	312	16	645	13
2100-2200	118	2	122	0	252	2	534	13	259	8	508	9
2200-2300	106	0	109	1	209	1	464	9	212	10	438	10
2300-0000	94	0	96	2	182	1	434	16	199	14	376	3
8 H	318	32	342	33	794	30	1888	247	1466	259	1684	153
18 H	6137	113	6234	125	11730	193	20994	923	11094	674	19826	770
24 H	6294	134	6399	146	12154	212	22047	1101	12049	871	20806	896

2.15 It is anticipated that the development will be operational in 2017. In accordance with best practice, growth factors to 2017 have been applied to the baseline traffic flows using the Department for Transport (DfT) National Transport Model (NTM) central forecast, adjusted to reflect local conditions.

2.16 Growth rates for the operational year of 2017 have been obtained for the Saturday and average weekday for the local area of Northwich and applied to the observed 2015 automatic traffic count (ATC) data. The relevant growth rates are listed below:

	2015 – 2017
Average weekday	1.025
Saturday	1.027

2.17 These growth rates have been applied to the above base traffic flows and the resultant 2017 baseline traffic flows are set out in Table 2.3 and Table 2.4 for the average weekday and Saturday situations respectively.

Table 2.3: 2017 Weekday Baseline Traffic Flows

	Link 1		Link 3		Link4		Link 5		Link 6		Link 7	
	A530 (north of site)		A530 (south of site)		A530 (north of A556)		A556 (east)		A530 (south of A556)		A556 (west)	
TIME PERIOD	**Total Veh**	**HGV**	**Total Veh**	**HGV**	**Total Veh**	**HGV**	**Total Veh**	**HGV**	**Total Veh**	**HGV**	**Total Veh**	**HGV**
00:00	21	3	22	3	46	3	128	21	98	29	118	12
01:00	16	4	16	5	33	4	80	16	73	24	66	11
02:00	14	3	14	4	38	4	88	26	96	34	83	20
03:00	18	5	18	5	39	5	102	37	113	41	97	27
04:00	34	6	33	7	73	7	177	26	168	41	149	26
05:00	92	11	95	14	240	13	480	55	473	50	415	37
06:00	190	15	213	19	458	22	1278	105	679	66	991	81
07:00	470	18	513	18	1002	27	2796	169	1384	71	2313	182
08:00	656	16	684	26	1227	39	3055	186	1319	75	2787	194
09:00	544	15	584	23	1034	38	2096	163	1004	95	1951	137
10:00	497	15	514	24	940	35	1694	140	882	91	1457	121
11:00	486	13	508	25	941	32	1627	148	844	90	1421	131
12:00	576	18	591	24	1040	35	1717	140	983	91	1523	132
13:00	569	16	584	24	1039	38	1720	151	993	79	1444	123
14:00	566	17	583	24	1069	43	1924	160	1168	89	1575	129
15:00	661	18	676	23	1143	34	2258	149	1202	83	1878	130
16:00	754	17	779	25	1296	40	2826	166	1495	72	2406	141
17:00	822	15	832	20	1423	34	3053	154	1626	59	2626	146
18:00	596	17	614	18	1111	21	2445	108	1261	52	2107	94
19:00	372	10	371	10	715	15	1409	61	700	34	1268	50
20:00	198	5	201	7	437	7	849	36	423	25	779	27
21:00	145	4	147	5	319	7	627	22	340	24	607	17
22:00	109	5	110	6	230	5	524	24	275	24	479	16
23:00	42	3	45	5	109	5	336	26	169	28	283	10
8 H	427	50	456	62	1035	63	2669	312	1869	313	2202	224
18 H	8254	237	8549	326	15534	475	32234	2107	16747	1146	27895	1862
24 H	8449	269	8748	364	16003	512	33289	2289	17768	1366	28824	1994

Table 2.4: 2017 Saturday Baseline Traffic Flows

	Link 1		Link 3		Link4		Link 5		Link 6		Link 7	
	A530 (north of site)		A530 (south of site)		A530 (north of A556)		A556 (east)		A530 (south of A556)		A556 (west)	
TIME PERIOD	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV
00:00	35	4	38	4	80	3	242	27	187	40	239	10
01:00	20	4	21	4	47	3	148	22	87	16	145	20
02:00	14	1	11	2	49	3	108	24	102	24	114	23
03:00	12	3	13	3	41	3	128	38	111	51	107	21
04:00	23	2	26	1	53	2	152	31	155	32	144	29
05:00	57	7	61	7	164	5	303	42	339	39	258	28
06:00	69	11	83	10	193	10	412	54	320	49	337	25
07:00	124	6	145	8	333	9	675	71	496	45	606	40
08:00	287	18	291	26	599	24	1088	72	761	48	969	53
09:00	377	6	384	9	784	17	1351	76	781	50	1267	72
10:00	549	11	547	10	1008	17	1693	88	864	52	1648	80
11:00	621	12	637	15	1140	18	1910	86	873	53	1810	71
12:00	690	11	685	9	1130	23	1810	85	875	48	1777	69
13:00	574	9	582	8	1035	13	1752	66	840	60	1661	60
14:00	566	6	577	5	956	11	1609	64	843	56	1545	77
15:00	545	4	542	7	938	11	1557	54	820	64	1506	47
16:00	456	3	466	4	905	10	1662	62	853	37	1547	46
17:00	379	5	377	2	809	7	1613	53	859	24	1473	60
18:00	300	5	307	4	676	9	1287	33	710	28	1266	30
19:00	256	4	259	5	520	10	996	29	488	28	923	26
20:00	182	0	184	1	358	2	672	15	320	16	662	13
21:00	121	2	125	0	259	2	548	13	266	8	522	9
22:00	109	0	112	1	215	1	476	9	218	10	450	10
23:00	97	0	99	2	187	1	446	16	204	14	386	3
8 H	327	33	351	34	815	31	1939	254	1505	266	1729	157
18 H	6301	116	6401	128	12044	198	21556	948	11391	692	20357	791
24 H	6463	138	6570	150	12480	218	22637	1130	12372	894	21363	920

2.18 Details of committed developments within the vicinity of the site have been obtained. These have been included as part of the 2017 baseline, against which to assess the development proposals. The following list provides a summary of those developments which have been taken into consideration, the full details of which are included within the Transport Assessment (Appendix 6.A):

- APP/2001/0223: Lostock Triangle Business Park (consented, partially occupied)
- Gadbrook Park (consented, partially occupied)
- 12/03652/OUT & 12/03653/OUT: Cottage Close and Farm Road residential (consented)
- 08-0020-OUM & 08-0021-OUM: Hargreaves Road residential (pending)

- 11/01968/OUT & 14/04654/OUT: Land south of Chapel Street, Wincham residential (pending)
- 4/08/0034/FZ5: ‘Bedminster’ technology Organic Waste Management Bio Energy Plant (consented, not operational)
- 09/10799/CPO: ‘Broadthorn Recycling Centre’ (consented)
- 10/00691/DECC: ‘Lostock Sustainable Energy Plant’ (consented, not operational)

2.19 Based on the quantum and location of the identified committed developments, it is considered that the associated traffic generation accounts for future background growth in traffic beyond 2017 on the local network. As such, no further growth has been applied to the network for future years beyond 2017.

2.20 The 2017 + committed development weekday and Saturday traffic flows are presented in Table 2.5 and Table 2.6 respectively. These traffic flows are considered to provide the most accurate prediction of baseline traffic flows for the opening year of operation.

2.21 These traffic flows are not considered to be excessive for these road types. This would suggest that there is theoretical capacity in the through flow of traffic on the network for additional traffic growth beyond the 2017 baseline.

Table 2.5: 2017 + Committed Development Weekday Baseline

	Link 1		Link 3		Link4		Link 5				Link 6				Link 7	
	A530 (north of site)		A530 (south of site)		A530 (north of A556)		A556 (east)				A530 (south of A556)				A556 (west)	
TIME PERIOD	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	Total Veh (eb)	HGV (eb)	Total Veh (wb)	HGV (wb)	Total Veh (nb)	HGV (nb)	Total Veh (sb)	HGV (sb)	Total Veh	HGV
00:00	23	3	24	3	53	3	61	13	71	8	56	20	44	9	122	12
01:00	18	4	18	5	38	4	34	10	49	7	46	15	30	9	68	11
02:00	15	3	15	4	44	4	46	17	45	10	59	17	39	18	85	20
03:00	19	5	19	5	45	5	68	24	37	13	72	23	44	18	100	27
04:00	37	6	36	7	84	7	118	16	64	11	84	16	89	25	153	26
05:00	101	11	104	14	276	13	293	28	202	26	174	22	313	28	428	37
06:00	216	15	253	19	547	22	842	63	487	42	347	37	373	29	1025	81
07:00	527	18	613	40	1204	48	1727	116	1190	63	716	45	754	32	2394	186
08:00	730	16	790	52	1454	63	1769	122	1421	75	830	44	574	38	2884	199
09:00	600	15	670	47	1222	61	1223	95	967	78	600	50	461	51	2021	141
10:00	548	15	613	70	1130	77	941	80	836	78	509	57	429	48	1516	132
11:00	536	13	605	69	1131	73	877	86	834	79	456	58	445	45	1479	142
12:00	636	18	676	48	1228	57	917	79	883	72	485	51	555	47	1578	136
13:00	627	16	667	48	1225	61	911	87	888	75	436	41	609	45	1498	128
14:00	628	17	693	68	1284	83	959	93	1055	84	533	49	705	53	1639	140
15:00	734	18	797	69	1372	76	1103	88	1257	78	577	52	699	45	1951	142
16:00	831	17	884	49	1524	63	1364	94	1581	83	688	42	883	37	2490	145
17:00	910	15	950	46	1678	58	1344	61	1840	104	696	36	1019	31	2719	152
18:00	655	17	708	36	1315	38	1086	51	1454	66	580	31	737	27	2181	96
19:00	409	10	418	10	835	15	680	30	781	31	335	11	398	22	1310	50
20:00	218	5	221	7	504	7	392	16	487	19	212	10	230	15	802	27
21:00	160	4	162	5	369	7	299	11	351	11	175	11	180	13	625	17
22:00	127	5	129	6	274	5	212	11	335	13	153	12	146	12	494	16
23:00	52	3	56	5	132	5	138	17	210	9	79	18	105	9	292	10
8 H	480	50	525	62	1219	63	1599	187	1165	125	917	168	1037	145	2273	224
18 H	9144	237	9905	694	18427	819	16784	1202	16857	1061	8409	655	9302	599	28899	1941
24 H	9357	269	10121	732	18967	855	17403	1309	17324	1135	8901	768	9861	706	29855	2073

Table 2.6: 2017 + Committed Development Saturday Baseline Traffic Flows

	Link 1		Link 3		Link4		Link 5				Link 6				Link 7	
	A530 (north of site)		A530 (south of site)		A530 (north of A556)		A556 (east)				A530 (south of A556)				A556 (west)	
TIME PERIOD	**Total Veh**	**HGV**	**Total Veh**	**HGV**	**Total Veh**	**HGV**	**Total Veh (eb)**	**HGV (eb)**	**Total Veh (wb)**	**HGV (wb)**	**Total Veh (nb)**	**HGV (nb)**	**Total Veh (sb)**	**HGV (sb)**	**Total Veh**	**HGV**
00:00	38	4	41	4	85	3	115	16	201	1	124	27	65	13	242	10
01:00	21	4	22	4	51	3	71	13	100	3	47	9	42	7	146	20
02:00	16	1	12	2	52	3	48	12	54	8	56	6	47	17	115	23
03:00	13	3	15	3	44	3	78	24	48	8	71	29	42	23	108	21
04:00	25	2	28	1	58	2	82	16	44	6	78	12	79	20	145	29
05:00	63	7	66	7	178	5	170	17	94	13	137	15	207	24	261	28
06:00	80	11	108	10	225	10	228	29	118	14	207	23	130	27	345	25
07:00	141	6	190	24	389	25	389	36	195	24	249	17	275	33	618	42
08:00	320	18	342	42	661	39	597	41	276	18	527	22	260	31	984	55
09:00	414	6	438	25	856	33	742	44	365	21	501	27	304	28	1285	74
10:00	603	11	643	52	1120	56	920	52	626	38	517	31	387	34	1679	90
11:00	684	12	739	55	1268	55	971	55	753	26	501	40	406	25	1842	80
12:00	756	11	764	25	1238	38	961	49	842	23	412	36	486	17	1801	71
13:00	629	9	652	24	1130	29	947	40	1031	24	463	49	401	16	1683	61
14:00	625	6	655	21	1047	27	860	35	1139	27	479	35	395	26	1567	79
15:00	603	4	616	21	1036	25	843	41	1195	33	436	44	417	24	1527	49
16:00	500	3	528	20	994	26	838	42	1276	28	452	19	425	23	1569	48
17:00	420	5	436	18	899	23	847	32	1265	24	428	16	466	13	1494	61
18:00	334	5	365	20	758	25	687	23	1142	22	379	19	365	14	1286	32
19:00	280	4	293	5	566	10	521	10	714	17	221	6	278	22	938	26
20:00	199	0	200	1	383	2	312	8	451	10	155	5	171	11	670	13
21:00	133	2	137	0	276	2	244	4	350	7	121	2	149	6	528	9
22:00	123	0	128	1	236	1	214	4	308	1	108	4	119	6	455	10
23:00	110	0	114	2	208	1	197	13	204	5	97	10	159	4	391	3
8 H	367	33	407	34	901	31	989	142	863	60	817	131	771	135	1754	157
18 H	6953	116	7347	368	13291	426	11318	560	12248	362	6252	404	5592	359	20660	829
24 H	7129	138	7532	390	13759	446	11882	660	12789	402	6765	503	6074	463	21678	958

Personal Injury Accident Data

2.22 A thorough investigation of the safety of the proposed access routes has been undertaken through the analysis of personal injury accident (PIA) data collated from CWCC for the latest five year period (1st July 2010 to 30th June 2015). The study area covers the A530 between the roundabout junction with the A556 and the priority T junction with the A559.

2.23 The full data output is attached at Annex 6.A.2 together with a locational plan of the reported injury accidents, shown in Figure 6.B. The data indicate that a total of 22 injury accidents occurred during the search period, with two classified as serious and the rest as slight. There were no fatal incidents.

2.24 A serious injury accident took place July 2012, approximately 300 metres south of the T junction with the A559 Manchester Road, whereby a motorcyclist travelling north towards the junction collided with the rear of an HGV turning into a private driveway on the sweeping bend. In the other serious injury accident September 2012, a cyclist travelling north at the A556/A530 roundabout was hit by a car approaching the junction from the western arm, that failed to give-way.

2.25 Ten of the slight incidents took place at the A556/A530 roundabout junction. These were due to shunting incidents, failing to look properly on approach or exit of the junction and a pedestrian crossing the A556 at an inappropriate location. There was one other PIA involving a pedal cyclist at this roundabout where a car driver failed to give way to the cyclist.

2.26 Seven of the slight PIAs took place at the priority staggered crossroad junction between Penny's Lane, the A530 and B5082 Middlewich Road. One of these was due to a car driver, pursued by a police car, colliding with the kerb and barrier whilst turning left from the B5082. Others were attributable to failing to slow down on approach from the B5082 to the junction, driving on the incorrect side of the carriageway, failing to negotiate the left-hand bend whilst travelling south on the A530 and colliding with a parked unattended vehicle.

2.27 The remaining three slight PIAs took place at the A559/A530 priority T junction. One was due to a vehicle travelling over the brow of the hill north-east, where the driver lost control, causing a collision with an oncoming vehicle. In another, a vehicle crossed the path of an oncoming vehicle to enter a private driveway. The other injury accident had unknown factors.

2.28 The analysis demonstrates that the injury accidents that took place over the five year period along the A530 were the result of driver error. A relatively small number of injury accidents caused casualty to vulnerable road users (pedal cyclists and pedestrians). Overall it is considered that the existing safety record indicates that there is a good level of safety on the local highway network.

Information Gaps

2.29 The above data cover the proposed access route and have been obtained from data collected by and used for monitoring purposes by CWCC, as Highway Authority. The data are considered to be representative and reflective of baseline conditions.

3 Types of Impacts Assessed

3.1 Following the IEMA guidelines (as discussed in the approach section, above), the potential impacts that should be considered are summarised below. In the following section, the magnitude of impacts and significance of effects in each of these areas is then assessed.

Severance

3.2 Severance is the perceived division that can occur within a community when it becomes separated by a major traffic artery. The term is used to describe a complex series of factors that separate people from places and other people. Severance can also result from difficulty in crossing a heavily trafficked road (IEMA, March 1993), experience of which has been reported by local residents, for example on Middlewich Road.

3.3 The guidance indicates that severance effects are considered ‘slight’, ‘moderate’ and ‘substantial’ where changes in traffic flows of 30%, 60% and 90% occur, respectively.

Driver Delay

3.4 Where roads affected by development are at or near capacity, the traffic associated with such development can cause or add to vehicle delays. Some roads in the area are typically at or near capacity during the weekday AM (08:00 to 09:00) and PM (17:00 to 18:00) peak hours. Other sources of delay could include:

- at the proposed site access where there will be additional turning movements;
- on the roads passing the application site where there is likely to be additional traffic;
- at other key intersections along the road which might be affected by increased traffic; and
- at junctions where the ability to find gaps in the traffic may be reduced, thereby lengthening delays.

3.5 The effects on driver delay are considered within this chapter and the magnitude of impact identified using professional judgement and the advice provided in the IEMA guidance document.

Pedestrian Delay

3.6 Highly trafficked roads and changes to the volume or speed of traffic may affect the ability of people to cross roads. Studies have shown that pedestrian delay is perceptible or considered significant beyond a lower delay threshold of 10 seconds, for a link with no crossing facilities. A 10 second pedestrian delay in crossing a road broadly is likely to be associated with a two-way link flow of approximately 1,400 vehicles per hour (IEMA, March 1993).

Pedestrian Amenity

3.7 The term pedestrian amenity is broadly defined as the relative pleasantness of a journey. It may be affected by traffic flow, speed and composition as well as footway width and the separation/protection from traffic.

3.8 Pedestrian amenity encompasses the overall relationship between pedestrians and traffic, including fear and intimidation, which is the most emotive and difficult effect to quantify and assess. There are no commonly agreed thresholds for quantifying the significance of changes in pedestrian amenity, although the IEMA guidelines refer to a study which sets out the thresholds shown below in Table 3.1.

Table 3.1: Examples of Fear and Intimidation

Degree of Hazard	Average Traffic Flow Over 18 Hour Day (Veh/Hour)	Total 18 Hour HGV Flow	Average Speed Over 18 Hour Day (mph)
Extreme	1,800 +	3,000 +	20 +
Great	1,200–1,800	2,000–3,000	15–20
Moderate	600–1,200	1,000–2,000	10–15

Accidents and Safety

3.9 The effects of increased traffic on accidents and safety can be estimated from existing accident records, national statistics, the type and quantity of traffic generated, journey lengths and the characteristics of the routes in question.

Hazardous Loads

3.10 Some developments may involve transporting hazardous loads by road such as special wastes, toxic materials and chemicals. There are no such risks for the proposed development.

Dust and Dirt

3.11 Certain types of development, particularly construction sites, can give rise to deposition of dust and dirt on surrounding roads. The overall impact of this phenomenon depends to a large extent on the management practices adopted at the site in question, such as vehicle sheeting and wheel washing.

3.12 Problems with dust and dirt are only likely to occur at distances within 50m from the road (IEMA, March 1993) and can be easily prevented with good management practice. Construction dust is assessed in Chapter 10 of the ES and a Dust Management Plan (Annex 2.C.1) is included as part of the Construction Environmental Management Plan at Appendix 2.C.

Noise and Vibration

3.13 The potential effects relating to noise and vibration as a result of construction traffic are considered in Chapter 11.

Visual Effects

3.14 The visual effect of traffic is complex and subjective, including both visual obstruction and visual intrusion. The IEMA guidelines state that obstruction refers to the blocking of views, by structures for example, and intrusion refers to the more subjective impact by traffic on an area of scenic beauty or of historical or conservation interest.

3.15 It goes on to state that increases in the number of large or high-sided vehicles may have an intrusive impact in areas of scenic beauty and in historic or conservation areas and acknowledges that in the majority of situations the changes in traffic resulting from a development will have little effect.

3.16 Where relevant, the visual effects of traffic are considered within this chapter and the magnitude of impact identified using professional judgement and the advice provided in the above guidance document. The visual effects of the scheme as a whole are considered in Chapter 4 of the ES.

Consideration of Receptors

3.17 Locations that may be sensitive to changes in traffic conditions include:

- people at home;
- people in work places;
- sensitive groups such as children, the elderly or the disabled;
- sensitive locations such as hospitals, churches, schools or historical buildings;
- people walking or cycling;
- open spaces;
- recreational sites;
- shopping areas;
- sites of ecological/nature conservation value; and
- sites of tourist/visitor attraction.

3.18 As a general guide, the determination of receptor sensitivity is based on the criteria of value, adaptability and tolerance. In terms of transport, receptors include people that are living in and using facilities, and using transport networks, in the area.

3.19 Sensitivity to changes in transport conditions is generally focussed on vulnerable user groups who are less able to tolerate, adapt to or recover from changes. Table 3.2 summarises the broad criteria for identifying receptor sensitivity.

Table 3.2: Definitions of Sensitivity

Sensitivity	Typical Descriptors
High	Receptors of greatest sensitivity to traffic flows: schools, colleges, playgrounds, accident black spots (with reference to accident data), retirement homes, urban/residential roads without footways that are used by pedestrians
Medium	Traffic flow sensitive receptor locations including: congested junctions, doctors' surgeries, hospitals, shopping areas with roadside frontage, roads with narrow footways, unsegregated cycleways, community centres, parks recreation facilities
Low	Receptors with some sensitivity to traffic flow: places of worship, public open space, nature conservation areas, listed buildings, tourist attractions and residential areas with adequate footway provision
Negligible	Receptors with low sensitivity to traffic flows and those sufficiently distant from affected roads and junctions

3.20 Road links with descriptions of high or medium sensitivity are considered against the Rule 2 threshold described in the IEMA guidelines approach in section 1 of the chapter. Other links with descriptions of low or negligible sensitivity are considered against the Rule 1 threshold. Where appropriate, professional judgement has been applied in identifying the relevant category for each link.

3.21 Receptors considered within the impact assessment were selected having regard to the route to be taken by vehicles accessing the application site.

3.22 Table 3.3 summarises the sensitivity assessment of each receptor group.

Table 3.3: Sensitivity of Receptors

Receptor	Sensitivity	Qualification
A530 (Griffiths Road) north of site access	Low	Although the road link has a narrow discontinuous foot way to one side of the carriageway, pedestrian activity is negligible. (HGV traffic to and from the site will not use this route.)
A530 (Griffiths road) south of site access	Medium	Road link has a small number of residential properties that are set back from the carriageway with a continuous pedestrian link. There are currently no formal pedestrian crossing points at the junction with Middlewich Road. Some congestion is also experienced at this junction.
A530 north of A556 (south of Middlewich road)	Medium	Road link has residential properties that are separated from the carriageway by a footway. Further housing development is under construction and there are no formal crossing points. Some congestion is experienced at the A530/A556 junction.
A556 east of A530 (westbound)	Low	Road link does not contain any sensitive receptors.
A556 east of A530 (eastbound)	Low/medium	Road link has a segregated shared foot/cycle way to the north side of the carriageway.
A530 south of A556 (northbound)	Low/medium	Road link has a segregated shared foot/cycle way to the west side of the carriageway. An informal crossing point to southbound carriageway is present south of the A556/A530 roundabout
A530 south of A556 (southbound)	Low	Road link does not contain any sensitive receptors.
A556 west of A530	Low	Segregated foot and cycleways to both sides of the carriageway

3.23 On the basis of the above the, threshold against which each respective link will be assessed has been identified as follows:

Rule for Assessment	Link
Rule 1	▪ A530 (north of the site), ▪ A556 (east of the A530 – westbound), ▪ A556 (west of the A530) ▪ A530 (south of the A556 – southbound)
Rule 2	▪ A530 (south of the site), ▪ A530 (north of A556 – south of Middlewich Road) ▪ A556 (east of the A556 – eastbound), ▪ A530 (south of the A556 – northbound)

Assessment of Significance

3.24 The approach to the assessment of significance of effects is based on the relative change between the baseline conditions and the baseline plus construction, operational or decommissioning phase traffic from the proposed development. Effects described as substantial or very substantial are considered to be significant.

4 Significance of Impacts and Effects

Construction Traffic

4.1 It is possible that total car and light vehicle movements associated with staff travelling to and from the site, during some phases of construction, will exceed the number during the operational phase. However, in accordance with standard construction practice, these light vehicle movements will be largely outside of the typical commuter peak hours (08:00 – 09:00 & 17:00 – 18:00), arriving earlier and leaving over an extended peak between 16:00 and 19:00, thereby reducing potential impacts on queue lengths and/or driver delay during these periods.

4.2 Construction traffic will access the site using the existing site access from the A530, with HGVs being required to access the site from the A530/A556 south and turn right to follow this route when leaving the site. A Construction Traffic Management Plan (CTMP) which includes monitoring of this requirement has been prepared and is included with the ES at Annex 2.C.2. The requirements of the CTMP will be included in construction contract tender documents and will be discussed in detail with the contractor prior to awarding a contract.

Development Traffic Generation

Trip Generation Temporal Distribution

4.3 The development traffic has been based on data provided by the applicant, based on the proposed staffing levels and the applicant's and RPS's experience of other similar developments.

4.4 The anticipated staff trips are based on the proposed level of staffing by job role and shift pattern. For staff other than shift operatives, standard working hours have been assumed of 09:00 – 17:00. At the time of application, the shift patterns for the shift operatives are yet to be confirmed, but are anticipated to one of the following three options:

- 2 shifts: 07:00 – 19:00 / 19:00 – 07:00;
- 3 shifts (option 1): 07:00 – 15:00 / 15:00 – 23:00 / 23:00 – 07:00; or
- 3 shifts (option 2): 07:00 – 19:00 / 19:00 – 23:00 / 23:00 – 07:00.

4.5 A three shift system is the preferred option, with five operative staff on site during the daytime and two staff on site during the evening and night time shifts. The proposed three-shift start/finish times for option 1 and option 2 do not coincide with the local network peak periods. The shift start/finish times reduce the level of staff arriving during these periods. Managerial and administrative staff would work typical office hours of 09:00 – 17:00 thus arriving/departing during the AM and PM peak hours respectively.

4.6 For the purposes of this assessment, three-shift option 1 has been assumed. The potential staff trip generation by hour for the full development is presented in Table 4.1. The arrival and departures times are based on the reasonable assumption that staff would arrive and depart during the hour preceding and following the respective start and finish times.

Table 4.1: Staff Trip Generation

Time Period		Staff Trips		
		Arrival	Departures	Total
06:00	07:00	5		5
07:00	08:00		2	2
08:00	09:00	10		10
14:00	15:00	2		2
15:00	16:00		5	5
16:00	17:00			0
17:00	18:00		10	10
22:00	23:00	2		2
23:00	00:00		2	2
TOTAL		19	19	38

4.7 Operational traffic associated with waste imports and material exports has been based on the assumption that all deliveries would be undertaken by road. The site is located adjacent to a former rail siding. However, at this stage it is not known that import or export of materials would be feasible via this route, so all-road delivery has been assumed as a worst-case.

4.8 The potential HGV trip generation is based on the nominal waste treatment capacity of up to 144,000 tonnes per annum. The assessment takes into consideration both waste input and the output of recovered recyclables and other materials from the process. The mass balance for both input and output anticipates a total of 274,740 tonnes per annum. The total mass balance has formed the basis of the trip generation.

4.9 Table 4.2 presents HGV assumptions daily based on the mass balance, working days and average vehicle payload.

Table 4.2: HGV Daily Trip Generation

Material Type	Mode	TPA	Days of Operation	Materials transported per day (T)	Av. Payload	Containers per HGV	Deliveries per day	Deliveries per hour
In	HGV	152,980	278	550	22.5	1	25	2
Out	HGV	121,760	278	438	22.5	1	20	1.7
		Assume one lorry-load per day for reject loads as worst-case					1	
Total		274,740		988			46	4

4.10 DONG Energy proposes a 5.5 day working week for HGV deliveries and exports. Taking into consideration eight bank holidays per annum, this equates to 278 working days annually. The total mass of materials to be transported would therefore be approximately 988 tonnes per day on average.

4.11 All materials transported to and from the proposed development will be in bulk loads with a payload capacity of 25 tonnes. For the purposes of this assessment and to make it robust, the average HGV payload has been assumed to be 22.5 tonnes. Commercially, it will be advantageous to maximise each load to reduce transport costs, so this lower payload assumption is conservative for this assessment.

4.12 Assuming a daily average of 988 tonnes and HGV deliveries at 22.5 tonnes per load, this equates to approximately 45 deliveries of import and export materials per day. An additional HGV load has been accounted for, to remove reject loads of waste (e.g. oversized or otherwise unsuitable material), which again is very conservative as commercial contracts for waste will minimise the amount of reject material. This results in a total of 46 deliveries (92 two way) per day, as summarised in Table 4.2

4.13 While the facility would be operational 24 hours a day, deliveries would occur during normal daytime working hours between 07:00 and 19:00. The 12 hour delivery working period is limited at the source/destination of materials, which is facilities that also only operate deliveries over a 12 hour period. The applicant has advised that a flat profile temporal distribution of deliveries is expected and will be managed during operation. Although some fluctuation around the hourly and daily averages can be expected in practice, these already include a +20% margin from 120,000 tpa design waste treatment capacity to the 144,000 tpa nominal capacity applied for, and the annual total is a realistic upper limit. Therefore, the HGV movements have been distributed evenly across a 12 hour working day (helping to avoid the peak periods). Based on 46 deliveries daily this equate to 3.8 vehicles per hour. For rounding purposes, 4 vehicles per hour have been assumed, thus equating to 48 deliveries daily as summarised in Table 4.3.

Table 4.3: HGV Trip Generation by Hour

5.5 day operation		**HGV Trips**		
Time Period		**Arrival**	**Departures**	**Total**
07:00	**08:00**	4	4	8
08:00	**09:00**	4	4	8
09:00	**10:00**	4	4	8
10:00	**11:00**	4	4	8
11:00	**12:00**	4	4	8
12:00	**13:00**	4	4	8
13:00	**14:00**	4	4	8
14:00	**15:00**	4	4	8
15:00	**16:00**	4	4	8
16:00	**17:00**	4	4	8
17:00	**18:00**	4	4	8
18:00	**19:00**	4	4	8
TOTAL		48	48	96

4.14 The total development traffic can therefore be quantified from the tables above, and is summarised in Table 4.4 below. The total development traffic flow by link is presented in Annex 6.A.9.

Table 4.4: Total Development Trip Generation and Temporal Distribution

5.5 day operation		Total Trips		
Time Period		Arrival	Departures	Total
06:00	**07:00**	5	0	5
07:00	**08:00**	4	6	10
08:00	**09:00**	14	4	18
09:00	**10:00**	4	4	8
10:00	**11:00**	4	4	8
11:00	**12:00**	4	4	8
12:00	**13:00**	4	4	8
13:00	**14:00**	4	4	8
14:00	**15:00**	6	4	10
15:00	**16:00**	4	9	13
16:00	**17:00**	4	4	8
17:00	**18:00**	4	14	18
18:00	**19:00**	4	4	8
19:00	**20:00**	0	0	0
20:00	**21:00**	0	0	0
21:00	**22:00**	0	0	0
22:00	**23:00**	2	0	2
23:00	**00:00**	0	2	2
TOTAL DAILY		67	67	134

Development Traffic Geographical Distribution

4.15 The staff traffic has been distributed based on the 2011 census local journey to work data. The origin destination data for car drivers has been assessed for the Middle Super Output Layers within Cheshire West and Chester to MSOA 018, in which the site lies. The most logical route to the site from each MSOA area has determined the distribution and assignment of staff trips. The full calculations are presented in Annex 6.A.8, with the routing summarised in Table 4.5.

Table 4.5: Distribution of Staff Traffic

Direction of Travel (Arriving)	% Traffic
A530 North / A559 West	18%
A530 North / A559 East	0%
A530 South / A556 West	59%
A530 South / A556 East	0%
A530 South	7%
A530 South / Middlewich Road	16%

4.16 Based on the local census data, the largest proportion of staff are anticipated to travel from the south west (59%) via the A556 (west), from locations within the outer-lying areas of Northwich and Chester. Approximately 18% will travel to the site from the north via the A559. Staff trips across central Northwich and via Middlewich Road are projected to account for 16% of trips.

4.17 Based on the applicant's discussions with potential suppliers, waste sources are likely to be derived from the North West and Midlands. The applicant anticipates that around two thirds (66%) of total deliveries will access the site from the M6, with two thirds of this fraction (44% of the total HGVs) arriving from J19 and one third (22% of the total HGVs) arriving from J18. The remaining one third (33%) of all deliveries are likely to arrive from the west via the A556/A530 south of the site.

4.18 Table 4.6 presents the potential distribution of HGV traffic by route. These anticipated strategic HGV routes are illustrated in Figure 6.E.

Table 4.6: HGV Trip Distribution Analysis

Journey Origin (Arriving)	Route	% Traffic
J19	A556 east of A530	44%
J18	A530 south of A556	22%
West	A556 West	33%

4.19 The distribution is assumed to be applicable to both imported and exported materials, with exported materials being transported to facilities within the regions identified above for use, further processing, onward transport to customers or disposal. Based on the above proportions, the HGV trip generation is given in Table 4.7.

Table 4.7: HGV Trip Generation and Assignment

Route	AM	PM	12H
Site access	8	8	96
A530 north of site access	0	0	0
A530 south of site access	8	8	96
A530 north of A556	8	8	92
A556 west of A530	2	2	24
A556 east of A530	4	4	48
A530 south of A556	2	2	24

4.20 The 2017 baseline traffic flows with proposed development are presented in Table 4.8 and Table 4.9 for the weekday and Saturday scenarios.

Table 4.8: 2017 + Committed Developments + Proposed Development Weekday

	Link 1		Link 3		Link4		Link 5				Link 6				Link 7	
	A530 (north of site)		A530 (south of site)		A530 (north of A556)		A556 (east)				A530 (south of A556)				A556 (west)	
TIME PERIOD	**Total Veh**	**HGV**	**Total Veh**	**HGV**	**Total Veh**	**HGV**	**Total Veh (eb)**	**HGV (eb)**	**Total Veh (wb)**	**HGV (wb)**	**Total Veh (nb)**	**HGV (nb)**	**Total Veh (sb)**	**HGV (sb)**	**Total Veh**	**HGV**
0000-0100	23	3	24	3	53	3	61	13	71	8	56	20	44	9	122	12
0100-0200	18	4	18	5	38	4	34	10	49	7	46	15	30	9	68	11
0200-0300	15	3	15	4	44	4	46	17	45	10	59	17	39	18	85	20
0300-0400	19	5	19	5	45	5	68	24	37	13	72	23	44	18	100	27
0400-0500	37	6	36	7	84	7	118	16	64	11	84	16	89	25	153	26
0500-0600	101	11	104	14	276	13	293	28	202	26	174	22	313	28	428	37
0600-0700	217	15	256	19	550	22	842	63	487	42	347	37	373	29	1028	81
0700-0800	527	18	623	48	1213	55	1729	118	1192	65	717	46	755	33	2398	188
0800-0900	732	16	805	59	1468	71	1771	124	1423	77	832	45	575	39	2893	201
0900-1000	600	15	677	55	1229	68	1224	97	968	80	600	51	462	52	2024	143
1000-1100	548	15	621	77	1138	85	943	82	838	79	510	58	430	49	1519	134
1100-1200	536	13	613	77	1139	80	879	87	835	80	457	59	446	46	1481	144
1200-1300	636	18	684	56	1235	65	919	81	884	74	486	52	556	48	1581	138
1300-1400	627	16	675	56	1233	68	912	89	890	76	437	42	610	45	1500	130
1400-1500	628	17	703	76	1294	91	961	94	1057	86	534	50	706	53	1643	142
1500-1600	734	18	808	76	1383	84	1105	90	1259	80	578	52	700	46	1956	144
1600-1700	831	17	892	57	1532	70	1365	96	1583	85	688	43	884	38	2493	147
1700-1800	912	15	966	53	1693	66	1345	63	1842	106	697	37	1020	32	2727	154
1800-1900	655	17	716	44	1323	46	1088	53	1456	68	581	32	738	27	2183	98
1900-2000	409	10	418	10	835	15	680	30	781	31	335	11	398	22	1310	50
2000-2100	218	5	221	7	504	7	392	16	487	19	212	10	230	15	802	27
2100-2200	160	4	162	5	369	7	299	11	351	11	175	11	180	13	625	17
2200-2300	127	5	131	6	276	5	212	11	335	13	154	12	146	12	496	16
2300-0000	52	3	58	5	134	5	138	17	210	9	79	18	105	9	293	10
8 H	482	50	530	62	1223	63	1599	187	1165	125	918	168	1037	145	2277	224
12 H	9151	237	10027	785	18545	910	16804	1222	16877	1081	8421	665	9314	609	28953	1965
24 H	9364	269	10243	823	19084	946	17423	1329	17344	1156	8912	778	9873	716	29910	2097

Table 4.9: 2017 + Committed Development + Proposed Development Saturday

	Link 1		Link 3		Link4		Link 5				Link 6				Link 7	
	A530 (north of site)		A530 (south of site)		A530 (north of A556)		A556 (east)				A530 (south of A556)				A556 (west)	
TIME PERIOD	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	Total Veh (eb)	HGV (eb)	Total Veh (wb)	HGV (wb)	Total Veh (nb)	HGV (nb)	Total Veh (sb)	HGV (sb)	Total Veh	HGV
00:00	38	4	41	4	85	3	115	16	201	1	124	27	65	13	242	10
01:00	21	4	22	4	51	3	71	13	100	3	47	9	42	7	146	20
02:00	16	1	12	2	52	3	48	12	54	8	56	6	47	17	115	23
03:00	13	3	15	3	44	3	78	24	48	8	71	29	42	23	108	21
04:00	25	2	28	1	58	2	82	16	44	6	78	12	79	20	145	29
05:00	63	7	66	7	178	5	170	17	94	13	137	15	207	24	261	28
06:00	81	11	111	10	228	10	228	29	118	14	207	23	130	27	348	25
07:00	142	6	199	32	398	32	391	38	197	26	250	18	276	34	622	44
08:00	322	18	357	49	675	47	598	43	277	19	529	23	260	32	992	57
09:00	414	6	446	33	864	40	744	46	366	22	502	28	305	29	1287	76
10:00	603	11	650	60	1128	64	921	54	627	40	518	32	388	35	1681	92
11:00	684	12	746	63	1275	63	973	57	754	28	502	41	406	26	1844	82
12:00	756	11	772	33	1245	46	963	50	844	25	413	37	487	18	1803	73
13:00	629	9	660	32	1138	36	948	42	1033	26	464	49	402	17	1686	63
14:00	625	6	655	21	1047	27	860	35	1139	27	479	35	395	26	1567	79
15:00	603	4	616	21	1036	25	843	41	1195	33	436	44	417	24	1527	49
16:00	500	3	528	20	994	26	838	42	1276	28	452	19	425	23	1569	48
17:00	420	5	436	18	899	23	847	32	1265	24	428	16	466	13	1494	61
18:00	334	5	365	20	758	25	687	23	1142	22	379	19	365	14	1286	32
19:00	280	4	293	5	566	10	521	10	714	17	221	6	278	22	938	26
20:00	199	0	200	1	383	2	312	8	451	10	155	5	171	11	670	13
21:00	133	2	137	0	276	2	244	4	350	7	121	2	149	6	528	9
22:00	123	0	128	1	236	1	214	4	308	1	108	4	119	6	455	10
23:00	110	0	114	2	208	1	197	13	204	5	97	10	159	4	391	3
8 H	368	33	410	34	904	31	989	142	863	60	817	131	771	135	1757	157
18 H	6956	116	7413	421	13355	479	11330	572	12260	374	6259	410	5598	365	20687	843
24 H	7132	138	7598	443	13823	499	11894	672	12801	414	6772	508	6080	468	21706	972

Decommissioning Period

4.21 The effects of decommissioning are not assessed at this stage, as the number of vehicles likely to be involved is currently unknown and base traffic flows and planning policy are likely to have changed by such time, meaning that projections of traffic and assessment of effects would have very high uncertainty. Notwithstanding the above, the materials used in the construction of the facility can be deconstructed effectively (detailed in the Decommissioning Statement at Appendix 2.B), and the volume of traffic associated with deconstruction could be controlled so that it does not exceed the levels associated with construction and operation, if necessary at the time. This would be judged at the time, against the prevailing traffic.

Impact of Development Traffic

4.22 The impact of the type and number of vehicle trips associated with the operation of the proposed development has been assessed for the proposed access routes, against the 2017 baseline traffic flows. Table 4.10 and Table 4.11 present the potential impact on weekday and Saturday traffic flows, respectively, as a percentage change from the baseline flows.

4.23 The assessment of the development traffic impact on the 2017 weekday and Saturday baseline traffic flows is discussed below, after the two tables.

Table 4.10: Impact Assessment of Average Weekday Development Traffic

	Link 1		Link 3		Link4		Link 5				Link 6				Link 7	
	A530 (north of site)		A530 (south of site)		A530 (north of A556)		A556 (east)				A530 (south of A556)				A556 (west)	
TIME PERIOD	**Total Veh**	**HGV**	**Total Veh**	**HGV**	**Total Veh**	**HGV**	**Total Veh (eb)**	**HGV (eb)**	**Total Veh (wb)**	**HGV (wb)**	**Total Veh (nb)**	**HGV (nb)**	**Total Veh (sb)**	**HGV (sb)**	**Total Veh**	**HGV**
0000-0100	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0100-0200	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0200-0300	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0300-0400	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0400-0500	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0500-0600	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0600-0700	0.4%	0.0%	1.3%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.3%	0.0%
0700-0800	0.1%	0.0%	1.5%	18.8%	0.7%	15.9%	0.1%	1.5%	0.1%	2.7%	0.1%	1.9%	0.1%	2.6%	0.2%	1.1%
0800-0900	0.2%	0.0%	2.0%	14.7%	1.0%	12.1%	0.1%	1.4%	0.1%	2.2%	0.2%	1.9%	0.1%	2.2%	0.3%	1.0%
0900-1000	0.0%	0.0%	1.1%	16.2%	0.6%	12.5%	0.1%	1.8%	0.2%	2.2%	0.1%	1.7%	0.2%	1.6%	0.1%	1.4%
1000-1100	0.0%	0.0%	1.2%	10.9%	0.7%	9.8%	0.2%	2.1%	0.2%	2.2%	0.2%	1.5%	0.2%	1.8%	0.2%	1.5%
1100-1200	0.0%	0.0%	1.3%	11.0%	0.7%	10.5%	0.2%	2.0%	0.2%	2.1%	0.2%	1.5%	0.2%	1.9%	0.2%	1.4%
1200-1300	0.0%	0.0%	1.1%	15.7%	0.6%	13.3%	0.2%	2.1%	0.2%	2.3%	0.2%	1.7%	0.2%	1.8%	0.2%	1.5%
1300-1400	0.0%	0.0%	1.1%	15.8%	0.6%	12.5%	0.2%	1.9%	0.2%	2.3%	0.2%	2.1%	0.1%	1.9%	0.2%	1.6%
1400-1500	0.1%	0.0%	1.4%	11.2%	0.8%	9.1%	0.2%	1.8%	0.2%	2.0%	0.2%	1.7%	0.1%	1.6%	0.3%	1.4%
1500-1600	0.1%	0.0%	1.4%	11.1%	0.8%	9.9%	0.2%	1.9%	0.1%	2.2%	0.1%	1.6%	0.2%	1.9%	0.3%	1.4%
1600-1700	0.0%	0.0%	0.9%	15.4%	0.5%	12.1%	0.1%	1.8%	0.1%	2.0%	0.1%	2.0%	0.1%	2.3%	0.1%	1.4%
1700-1800	0.2%	0.0%	1.7%	16.6%	0.8%	13.0%	0.1%	2.8%	0.1%	1.6%	0.1%	2.3%	0.2%	2.7%	0.3%	1.3%
1800-1900	0.0%	0.0%	1.1%	20.8%	0.6%	19.9%	0.2%	3.3%	0.1%	2.6%	0.1%	2.7%	0.1%	3.2%	0.1%	2.1%
1900-2000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2000-2100	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2100-2200	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2200-2300	0.3%	0.0%	1.9%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.4%	0.0%
2300-0000	0.7%	0.0%	2.9%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.4%	0.0%
8 H	0.3%	0.0%	0.9%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%
18 H	0.1%	0.0%	1.2%	13.1%	0.6%	11.1%	0.1%	1.7%	0.1%	1.9%	0.1%	1.5%	0.1%	1.7%	0.2%	1.2%
24 H	0.1%	0.0%	1.2%	12.4%	0.6%	10.7%	0.1%	1.5%	0.1%	1.8%	0.1%	1.3%	0.1%	1.4%	0.2%	1.2%

Table 4.11: Impact Assessment of Average Saturday Development Traffic

	Link 1		Link 3		Link 4		Link 5				Link 6				Link 7	
	A530 (north of site)		A530 (south of site)		A530 (north of A556)		A556 (east)				A530 (south of A556)				A556 (west)	
TIME PERIOD	**Total Veh**	**HGV**	**Total Veh**	**HGV**	**Total Veh**	**HGV**	**Total Veh (eb)**	**HGV (eb)**	**Total Veh (wb)**	**HGV (wb)**	**Total Veh (nb)**	**HGV (nb)**	**Total Veh (sb)**	**HGV (sb)**	**Total Veh**	**HGV**
0000-0100	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0100-0200	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0200-0300	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0300-0400	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0400-0500	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0500-0600	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
0600-0700	1.1%	0.0%	3.1%	0.0%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.9%	0.0%
0700-0800	0.3%	0.0%	4.9%	31.3%	2.3%	30.8%	0.4%	4.7%	0.9%	7.1%	0.3%	5.0%	0.4%	2.5%	0.6%	4.8%
0800-0900	0.6%	0.0%	4.6%	18.2%	2.1%	19.5%	0.3%	4.1%	0.6%	9.5%	0.3%	3.9%	0.3%	2.7%	0.9%	3.6%
0900-1000	0.0%	0.0%	1.7%	30.1%	0.9%	23.1%	0.2%	3.8%	0.5%	8.1%	0.2%	3.1%	0.3%	3.0%	0.2%	2.7%
1000-1100	0.0%	0.0%	1.2%	14.5%	0.7%	13.5%	0.2%	3.2%	0.3%	4.4%	0.2%	2.7%	0.2%	2.5%	0.2%	2.2%
1100-1200	0.0%	0.0%	1.0%	13.7%	0.6%	13.7%	0.2%	3.1%	0.2%	6.4%	0.2%	2.1%	0.2%	3.3%	0.1%	2.5%
1200-1300	0.0%	0.0%	1.0%	30.1%	0.6%	20.0%	0.2%	3.5%	0.2%	7.4%	0.2%	2.3%	0.2%	5.0%	0.1%	2.8%
1300-1400	0.0%	0.0%	1.2%	31.3%	0.7%	26.4%	0.2%	4.2%	0.2%	7.1%	0.2%	1.7%	0.2%	5.4%	0.2%	3.3%
1400-1500	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1500-1600	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1600-1700	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1700-1800	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1800-1900	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1900-2000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2000-2100	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2100-2200	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2200-2300	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2300-0000	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8 H	0.2%	0.0%	0.8%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%
18 H	0.0%	0.0%	0.9%	14.4%	0.5%	12.5%	0.1%	2.1%	0.1%	3.3%	0.1%	1.5%	0.1%	1.6%	0.1%	1.7%
24 H	0.0%	0.0%	0.9%	13.6%	0.5%	11.9%	0.1%	1.8%	0.1%	2.9%	0.1%	1.2%	0.1%	1.3%	0.1%	1.5%

Rule 1 Weekday Assessment

4.24 As can be seen from Table 4.10, above, the maximum weekday percentage increases in total traffic flows and HGV flows along the A530 north of the site, A530 south of the A556 (northbound) and A556 (east and west of the A530) are all below the Rule 1 threshold (30%).

4.25 The level of increase in total traffic over all time periods, on all links, does not exceed 3%, with the maximum being 2.9% increase on the A530 south of the site access. With the exception of that link, the impact in terms of total traffic increase is everywhere less than 2%.

4.26 In terms of HGV traffic, the maximum percentage increase in HGV traffic on the public highway links does not exceed the Rule 1 threshold (30%).

Rule 2 Weekday Assessment

4.27 For the A530 South (south of the site), A556 East (eastbound), A530 (north of the A556) and A530 south of the A556 (southbound) the maximum percentage increases in total traffic flows are not forecast to exceed 3%. The percentage increases therefore do not exceed the Rule 2 threshold (10%).

Rule 1 Saturday Assessment

4.28 As presented in Table 4.11, above, the maximum percentage increases in total Saturday traffic flows on the A530 (north of the site), A556 East (westbound) and A556 West do not exceed 5%. For these and all other road links, the percentage increase does not exceed the Rule 1 threshold (30%).

Rule 2 Saturday Assessment

4.29 For the road links A530 (south of the site), A556 East (eastbound), A530 (north of the A556) and the A530 south of the A556 (northbound), percentage increases in total traffic flows do not exceed the Rule 2 threshold (10%). Total traffic flows are not forecast to increase by more than 5% in any one period on these road links.

Assessment Findings

4.30 The percentage increases in traffic on all road links do not exceed the respective Rule 1 and Rule 2 thresholds. Therefore, in accordance with the advice provided within the above IEMA guidance document, the development traffic is not anticipated to cause a significant environmental effect on the local highway network.

5 Enhancement Measures

Construction Traffic Management Plan

5.1 A Construction Traffic Management Plan (CTMP) has been prepared (see Annex 2.C.2) for consideration by the Highway Authority as an enhancement measure prior to determination. The applicant is fully committed to the implementation of a CTMP and will accept a planning condition requiring its implementation.

5.2 It is not envisaged that the CTMP would be a mitigation measure, as such, given that no significant adverse effects are predicted; rather, it will ensure good working practices throughout the construction period. The CTMP and the Construction Environmental Management Plan (CEMP, Appendix 2.C) to which is forms an annex provide the following information:

- arrangements for delivery scheduling and management;
- liaison with other users of the Lostock Works site;
- approved access routes and any necessary restrictions, including during periods of disruption on the highway network;
- temporary signage in the vicinity of the site warning of construction traffic;
- arrangements for road maintenance and cleaning; and
- wheel cleaning arrangements and regular road sweeping runs (to ensure dust and dirt is not transported onto the public roads etc).

Delivery Service Management Plan

5.3 A Delivery and Servicing Management Plan (DSMP) will be prepared and agreed with the Local Highway Authority prior to the commencement of operation. The DSMP will comprise a brief report detailing how deliveries and servicing will be undertaken at the site, focussing on HGVs. The DSMP can be secured as a condition of the planning consent, prior to operation. The DSMP will follow the relevant principles of the CTMP.

5.4 The implementation of measures set out within the DSMP will assist in minimising the number of trips made by freight and delivering during off-peak periods.

5.5 The DSMP would include the following information:

- routes that HGVs will take to access the site;
- delivery and servicing schedule (daily/weekly/monthly;
- measure to reduce the number of deliveries undertaken daily/weekly/monthly (including, for example, loading out HGVs delivering waste, with products and residues; and
- liaison with other users of the Lostock Works site.

Pedestrian Crossing Facility

5.6 The foregoing assessment has found that the overall development traffic impact in terms of total vehicle flows is forecast to be negligible (no more than 2% increase) on all public highway links with the exception of Link 3, Griffiths Road south of the site access (2.9% increase). Notwithstanding this, regard has been had for the local resident concerns associated with pedestrian delay and severance on King Street (A530 between Middlewich Road and the A556).

5.7 Studies undertaken by and on behalf of the Institute of Environmental Management and Assessment (IEMA) have shown that pedestrian delay is perceptible or considered significant beyond a lower delay threshold of 10 seconds, for a link with no crossing facilities. A 10 second pedestrian delay in crossing a road is likely to be associated with a two-way link flow of approximately 1,400 vehicles per hour.

5.8 IEMA recognises that severance can result from difficulty in crossing a heavily trafficked road. Studies on behalf of IEMA indicate that severance effects are considered ‘slight’, ‘moderate’ and ‘substantial’ where changes in traffic flows of 30%, 60% and 90% occur, respectively. The potential increase in traffic flows on King Street is found to be substantially less than 30% at 1%. It is therefore considered that pedestrian delay should be the focus of any mitigation schemes and not severance.

5.9 The weekday average traffic flows on Link 3 (A530 north of the A556) indicate peak hourly traffic flows of 1,388 vehicles (17:00 – 18:00). Following the addition of background traffic growth, committed development and the proposed development, this increases to 1,693 vehicles per hour (17:00 – 18:00). While the increase in traffic flows as a result of the proposed development does not impact upon highway capacity, nor result in severance, it is possible that some pedestrian delay could be experienced on this link.

5.10 A pedestrian crossing and junction improvement schemes have previously been identified on the A530 and Middlewich Road/A530 junction respectively as part of the Lostock SEP planning application.

5.11 The provision of a formal signalised crossing point would afford a safe and convenient location for pedestrian movements across the A530. The road safety analysis of the Middlewich Road/A530 junction in section 2, above, found that accidents in the last five years have resulted from driver error. Notwithstanding this, the introduction of traffic signals at this junction would introduce vehicle control whilst also providing the added benefit of facilitating pedestrian movements across the A530 at this location.

5.12 Contributions towards the maintenance of such schemes have previously been sought from the consented Lostock SEP development. It is therefore proposed to provide a proportional contribution relative to the scale of proposed development towards one or both of these schemes, to be agreed with CWCC.

Associated Development

5.13 Associated works may be undertaken by the applicant or third parties to improve the existing shared private access road through Lostock Works, within the planning application boundary. This may involve widening at certain points to ease passing and turning of HGVs. This widening would be limited (anticipated to be <3m) as the access road is constrained by the industrial facilities through which it runs. Re-surfacing some sections may also be undertaken if necessary. Any works undertaken would be in agreement with the land owner and other road users.

5.14 Improving the shared access road as part of the associated development works would have the wider benefit of improving access for other users of the Lostock Works site.

6 Summary of Effects

6.1 A summary of the effects including enhancement measures is set out below, focussing on the most sensitive part of the highway, i.e. the A530 Griffiths Road and King Street south of the site access.

6.2 Various elements have been assessed with regard to increases in traffic (including highway capacity, severance and pedestrian amenity), all of which have been considered when defining the overall effect of increased traffic on each road link, together with the sensitivity of receptors at those road links.

Table 6.1: Summary of Effects (Including Enhancement Measures)

Impact	Receptor	Effect
Impact of development traffic	A530 south of the site access	Negligible / small
Impact of development traffic	A530 north of the A556 (south of Middlewich road)	Negligible / small

Mitigation

6.3 Given the above conclusions, there is no requirement for any additional mitigation for traffic and transport from an environmental impact perspective, and hence nothing over and above the CTMP, DSMP and a contribution towards local pedestrian safety schemes is proposed.

Cumulative Effects

6.4 The foregoing assessment has taken into consideration the background traffic growth to 2017 and the committed development traffic flows. This is considered to provide the future traffic growth for the local highway network, agreed with CWCC, for the operation period of the development. As such no additional cumulative effects, further to those assessed, are anticipated.

References

Guidelines for the Environmental Assessment of Road Traffic (Guidance Note 1), Institute of Environmental Assessment, 1993 (now the Institute of Environmental Management and Assessment)

National Planning Policy Framework (2012)

Planning Practice Guidance (2014)

Cheshire West and Chester Council - Local Transport Plan: Integrated Transport Strategy 2011 - 2026 (2014)

Cheshire Council - Cheshire Replacement Waste Local Plan (Policies saved after 29 Jan 2015)

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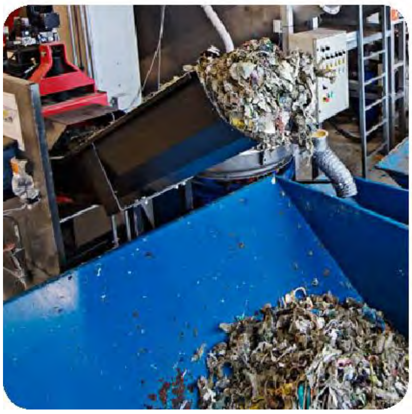
Chapter 7: Ecology and Nature Conservation

REnescience Northwich



Quality Management

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Revision History				
Rev	**Date**	**Status**	**Reason for revision**	**Additional comments**
0	20/08/15	Draft	-	-
1	10/09/15	Draft	Initial internal review	TAD
2	21/09/15	Draft	Draft for client review	-
3	02/10/15	Final	Finalise	-

Executive Summary

This chapter of the Environmental Statement (ES) considers the biodiversity and nature conservation interest of the site on land at the Lostock Works, near Lostock Gralam, Cheshire. This includes consideration of both the habitats and species present on the site.

The likely effects of the proposed development during construction and operation on those interests are described. Measures to maintain and enhance specific features, and to reduce, mitigate and compensate for any adverse effects, are identified.

Desk-based and site-based surveys were undertaken to determine the ecological value of the site and to identify any sensitive receptors nearby.

A desk study identified four statutory designated sites within 5 km of the site, with the nearest, Witton Lime Beds Site of Special Scientific Interest (SSSI), being 1.5 km from the development site. The other three sites were designated as SSSIs and a Local Nature Reserve.

Four non-statutory designated sites were identified within 2 km of the development site, with the nearest, Ashton's and Neumann's Flashes Local Wildlife Site, being 900 m from the development site.

No statutory or non-statutory designations fall within the site boundary and the site is considered to be sufficiently far from the designated sites identified that there would be no effects on them during the construction of operation of the project. An air quality assessment was undertaken which found that the designated sites would not be affected by emissions from the project once it was operational. This is detailed in paragraph 6.57 in Chapter 10 and in Appendix 10.B.

The desk study also identified records of otter and at least eight species of bat within 5 km of the site. Five other species of mammal, 73 birds, two amphibians, six invertebrates and five plants were recorded within 2 km of the site. A total of four invasive plants were recorded within 2 km of the site.

A Phase 1 Habitat Survey (Appendix 7.C) identified that the site has the potential to support some of these species and other protected or notable species. The site was found to predominantly comprise areas of bare ground and ephemeral/short perennial vegetation with smaller areas of trees and scrub, grassland, tall ruderals and bracken. Two small areas of standing water were also present, which were ephemeral in nature.

The Phase 1 Habitat Survey identified a very low number of fragrant orchids on the site, which is listed on The Vascular Plant Red Data List for Great Britain (2006) as a species of 'Least Concern'. Ragwort was also identified in low numbers; this is the food plant for the cinnabar moth caterpillar, which had been recorded on the site previously and is listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 as a Species of Principal Importance in England.

The landscape proposals for the site (shown in Appendix 4.C and Figure 4.Q) include the retention/recreation of a small area of ephemeral/short perennial vegetation to ensure this habitat type is retained on the site. Fragrant orchids found in other parts of the site would be moved into this area. This

area would also be suitable for ragwort. Tree and shrub planting would also be undertaken along parts of the site boundary and would more than compensate for the loss of existing trees and shrubs on the site. The existing trees and shrubs are young and scattered around the periphery of the site. Therefore the new planting would quickly provide a more mature structure and improve habitat connectivity around the site boundaries. The tree and shrub planting would enhance the site by introducing a greater variety of native species than currently present, which in turn would provide suitable habitat for a range of animals.

The tree and shrub planting would compensate for the loss of breeding bird habitat resulting from the clearance of existing trees and scrub. To compensate for the period between the existing vegetation being cleared and new planting taking place, bird boxes will be erected on the site to ensure there are nesting opportunities present.

The landscaping proposals would also include the creation of an area of wildflower grassland along the northern boundary which would introduce a new habitat onto the site.

A bat roost assessment undertaken on a disused gatehouse building to the south-east of the site, immediately outside the application boundary, found it contained a small common pipistrelle roost (detailed in Appendix 7.D). The building will not be disturbed by the proposals and will be protected from any potential damage that could occur during the construction and operational phases of the development.

Surveys were undertaken within the site or within adjoining habitats for badger, water vole and otter but none were found to be present. These are reported in Appendices 7.E and 7.F respectively.

Wade Brook is located to the south of the site. Measures would be taken to ensure that the river and its bank-side vegetation are protected during the construction and operation of the project. These include appropriate drainage design to ensure that the river is not adversely affected by runoff or potential pollutant discharges (detailed in Appendix 8.B) and maintaining the buffer between Wade Brook, construction activities and the proposed built development afforded by the development site boundary and southern-most built elements being set back from the river bank (as shown in Figure 2.C).

The lighting scheme for the project will be designed to be sensitive to ecological receptors that can be affected by artificial light at night, such as otters and bats. The measures would ensure the river corridor and the gatehouse building that was found to support a bat roost would not be affected by light spill from the project. Lighting design principles are set out in Chapter 2.

Contents

Tables, Figures and Appendices

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Appendices

1 Introduction and Assessment Methodology

1.1 This chapter of the Environmental Statement (ES) considers the biodiversity and nature conservation interest of the site on land at the Lostock Works, near Lostock Gralam, Cheshire. This includes consideration of both the habitats and species present on the site.

1.2 The likely effects of the proposed development during construction and operation on those interests are described. Measures to maintain and enhance specific features, and to reduce, mitigate and compensate for any adverse effects are identified.

Relevant Guidance

1.3 The identification of existing baseline conditions in relation to ecology and nature conservation has been undertaken in two stages, including both a desk top review and site survey. Both stages have focused primarily on areas designated for nature conservation, recorded species (including protected species) and, where appropriate, valued undesignated habitat.

1.4 This information has been used to inform the assessment of likely effects, taking into account the following guidance, where relevant:

- British Standards Institute (2013) Biodiversity – Code of Practice for Planning and Development: BS 42020:2013;
- Department for Communities and Local Government (2014) Planning Practice Guidance: Natural Environment – Biodiversity, Ecosystems and Green Infrastructure;
- Chartered Institute of Ecology and Environmental Management (2006) Guidelines for Ecological Impact Assessment in the United Kingdom; and
- Institute of Environmental Assessment (1995) Guidelines for Baseline Ecological Assessment.

1.5 Guidance relevant to specific species groups has also been considered and is set out in the relevant sections of this chapter below.

Study Area

1.6 The study area for the desk study extended up to 2 km from the boundary of the development site. This study area covered statutory and non-statutory designated sites and most protected and notable species. For internationally designated sites and bats and otter, the search was extended based on available online sources of data to up to 5 km.

Baseline Methodology

Desk Study

1.7 Ecological data was requested from the following statutory and non-statutory consultees:

- RECORD (Biodiversity Information System for Cheshire, Halton, Warrington and Wirral);
- Cheshire West and Chester Council;
- Environment Agency;
- Natural England;
- Cheshire Wildlife Trust;
- Cheshire and Wirral Ornithological Society; and
- Cheshire Butterfly County Recorder.

1.8 In addition to the above data request, the following websites were consulted:

- Natural England, Multi Agency Geographic Information for the Countryside (MAGIC); and
- the Joint Nature Conservation Committee (JNCC).

1.9 The legal or conservation status of the species for which records were received was determined using the 'Spreadsheet of Conservation Designations for UK Taxa' (JNCC, 2014).

Site Survey

1.10 The scope and methodology of the surveys undertaken for the project was determined following assessment of site conditions and the results of the desk study. The following specific surveys were conducted and are described below:

- Phase 1 habitat survey;
- Bat Roost assessment;
- Badger survey; and
- Water vole and otter survey.

Phase 1 Habitat Survey

1.11 The Phase 1 habitat survey (Appendix 7.C) was carried out on the 9th of June 2015 to map all habitats present within the site boundary and to identify any potential for protected species to be present. The survey took account of the standard Phase 1 habitat survey methodology as set out by the JNCC in the Handbook for Phase 1 Habitat Survey; a technique for environmental audit (JNCC, 2010).

Bat roost assessment

1.12 An external and internal inspection of a gatehouse building located to the south-east of the site was carried on the 18th of June 2015 to identify whether the building had potential to support a bat roost and to search for any signs of bat roost being present.

1.13 Two evening emergence and one dawn swarming survey were subsequently carried out on the gatehouse building on the 18th June, 9th of July and 31st of July 2015 to ascertain whether bats were emerging or returning to the building and if so, to identify the number and species of bat present.

1.14 The surveys were undertaken in accordance with the *Bat Surveys: Good Practice Guidelines* (BCT, 2012) and are detailed in Appendix 7.D.

Badger survey

1.15 The badger survey (Appendix 7.E) was carried on the 18th June 2015. The survey covered all features within the site boundary and boundary features up to 30 m outside of it. In particular, any woodland areas, banks, lines of trees and streams were concentrated upon. The survey sought to identify and record all signs of badger activity.

Water vole and otter survey

1.16 The water vole and otter survey (Appendix 7.F) was carried on the 18th of June 2015. The survey covered the section of the Wade Brook which runs parallel with the southern site boundary.

1.17 The brook was walked and examined in detail for evidence of the presence of water voles and otter in the form of characteristic field signs. Wherever possible, the banks were inspected from the water's edge to the top of the bank.

1.18 The survey was carried out in accordance with guidelines of best practice set out in the *Water Vole Conservation Handbook – Third Edition* (Strachan *et al*., 2011) and using survey methods adapted from Monitoring the Otter *Lutra lutra* (Chanin, 2003).

Consultation

1.19 A Scoping Request was submitted to Cheshire West and Cheshire Council (CWCC) in July 2015 and a Scoping Opinion was provided in August 2015. The Scoping Opinion and associated consultee responses are detailed in Chapter 3 of the ES. Responses relevant to the ecology and nature conservation assessment were received from the following individuals and organisations:

- Biodiversity Officer, CWCC;
- Natural England; and
- Environment Agency.

1.20 Details of the consultation responses received in relation to ecology and nature conservation are set out in Table 1.1.

Table 1.1: Consultation responses relevant to ecology and nature conservation

Consultee	Issues raised	How and where issues have been addressed
Biodiversity Officer, CWCC	Provided distances to nearby statutory sites and advised that an assessment on whether air or water emissions from the site would impact upon them. Advised that ecology surveys are undertaken, including Phase 1 habitat survey and relevant protected species surveys and advice protected on relevant mitigation measures. Asked that measures to protect the Wade Brook should be demonstrated	Effects on designated sites are considered in the 'Assessment of Effects' section (from page 27) of this chapter. This ES chapter presents the findings of the surveys undertaken. Effects on protected species and the Wade Brook are considered in the 'Assessment of Effects' section and mitigation measures adopted as part of the project to protect such species are set out in the 'Embedded Mitigation' section (from page 24).
Natural England	Advised that the potential impact of the proposal upon features of nature conservation interest and opportunities for habitat creation/enhancement should be included within the ES in accordance with appropriate guidance on such matters. This should include a thorough assessment of the potential for the project to affect designated sites, protected species and Habitats and Species of Principal Importance.	This ES chapter addresses the potential impact of the proposal upon features of nature conservation interest and identifies opportunities for habitat creation and/or enhancement. The 'Assessment of Effects' section of this chapter (from page 27) provides a thorough assessment of any potential affects to features of nature conservation interest.
Natural England (Discretionary Advice Service)	Natural England (NE) was also specifically consulted on the need for a Habitats Regulation Assessment. NE confirmed that there were no European sites that needed to be considered in respect of the development as there were none within 500 m. The same criteria were used for SSSIs and therefore as there were none within 500 m no assessment was needed. NE supported the intention to produce an 'Assessment of Air Quality Impacts on Nature Conservation Sites' as it would provide the LPA with sufficient information on which to base their decision. A copy of NE's response is included in Appendix 7.B.	An assessment of air quality impacts on nature conservation sites is at paragraph 6.57 in Chapter 10 and in Appendix 10.B
Environment Agency	Advised that they would expect to see any appropriate ecological surveys undertaken at the appropriate time of year by a suitably qualified ecologist and that appropriate mitigation and compensation would be proposed. Indicated that the ES must assess the impact on Wade Brook and suggest appropriate mitigation, where needed. An 'appropriate buffer strip' of undeveloped land is expected adjacent to the Wade Brook.	This ES chapter presents the findings of the surveys undertaken. Effects on protected species and the Wade Brook are considered in the 'Assessment of Effects' section (from page 27) and mitigation measures adopted as part of the project to protect such species are set out in the 'Embedded Mitigation' section (from page 24).

Assessment Criteria and Assignment of Significance

Identification of Valued Ecological Receptors (VER)

1.21 Sites, habitats, species populations and species assemblages within the study area have been evaluated with reference to their importance in terms of 'biodiversity conservation' and the need to conserve representative areas of habitats and genetic diversity of species populations.

1.22 Valued Ecological Receptors (VERs) are habitats or species that are of conservation concern and that could be affected by the proposed development.

1.23 For the purpose of this assessment, sites, habitats, species populations and species assemblages have been valued using the following scale.

- International: an internationally designated site or candidate site (Special Protection Area (SPA), Special Area of Conservation (SAC) or Ramsar site) or an area that Natural England has determined meets the published selection criteria for such designation, irrespective of whether or not it has yet been notified.
- National: a nationally designated site (e.g. Site of Special Scientific Interest (SSSI)) or a discrete area which Natural England has determined meets the published selection criteria for national designation (e.g. SSSI selection guidelines) irrespective of whether or not it has yet been notified;
- County: viable areas of habitat identified in a County Biodiversity Action Plan (BAP) or designated as a Local Wildlife Site (LWS), or a locally significant population of a species identified as important on a county basis, such as the County BAP.
- Local: diverse and/or ecologically valuable habitats not of county importance.
- Site: features of value to the immediate area only.

1.24 Criteria taken into account for the valuation of habitats and plant communities include Annex III of the EC Habitats Directive, guidelines for the selection of biological SSSIs and criteria used by the local authority and Wildlife Trust for the selection of sites for local designation.

1.25 Species populations are valued on the basis of their size, recognised status (such as through published lists of species of conservation concern (e.g. RSPB Red and Amber lists) or designation of BAP status) and legal protection. For example, bird populations exceeding 1% of published information on the size of biogeographic[1] populations are considered to be of international importance, those exceeding 1% of published data for the size of national populations are considered to be of national importance, and so on.

[1] A biogeographical population refers to the total distribution of a population over a given area whereas the national population refers to the part of the population within the UK. The distribution of most species is wider than the UK and therefore a biogeographical population is typically larger than a national population. However, a biogeographical population of endemic species is contained within the UK.

1.26 In assigning values to species populations, it is important to take into account the status of the species in terms of any legal protection. However, it is also important to consider other factors such as its distribution, rarity, population trends and the size of the population that would be affected. For example, whilst the Great Crested Newt is protected under European law and therefore conservation of the species is of significance at the international level, this does not mean that every population of Great Crested Newt is internationally important. It is important to consider the particular population in its context. Therefore, in assigning values to species, the geographic scale at which they are important has been considered. The assessments of value rely on the professional opinion and judgement of experienced ecologists.

1.27 Due regard has also been paid to the legal protection afforded to species during the development of mitigation and compensation measures to be implemented during the proposed development. For European protected species, there is a requirement that the project should not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

1.28 Assessing the value of features requires consideration of both existing and future predicted baseline conditions. Therefore, the description and valuation of ecological features takes account of any likely changes, including, for example, trends in the population size or distribution of species, likely changes to the extent of habitats and the effects of other proposed developments or land use changes.

Magnitude of Impact

1.29 The assessment of the likely impacts of the proposed development has taken into account the:

- value and sensitivity of the habitats and species that would be affected on a local, regional and national scale (see above);
- type of impact (whether the proposed development would result in a beneficial or adverse impact on the identified VERs); and
- magnitude of the impact (size or intensity measured in relevant terms, e.g. numbers of individuals lost or gained, area of habitat lost or created).

1.30 The magnitude of the impact takes into account the:

- extent or spatial scope of the impact;
- likely duration of the impact;
- reversibility of the impact – whether the effect is naturally reversible or reversible through mitigation action; and
- timing and frequency of the impact, in relation to ecological changes.

1.31 Table 1.2 sets out the levels of magnitude used within this assessment:

Table 1.2: Definitions of magnitude

Magnitude	Typical descriptors
High	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements (adverse).
	Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality (beneficial).
Medium	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements (adverse).
	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality (beneficial).
Low	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements (adverse).
	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring (beneficial).
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements (adverse).
	Very minor benefit to or positive addition of one or more characteristics, features or elements (beneficial).
No change	No loss or alteration of characteristics, features or elements; no observable impact in either direction.

1.32 Insofar as there may be effects on the conservation status of habitats or species, this is described by the Institute of Ecology and Environmental Management (2006) as follows:

Habitats – *'… the sum of the influences acting on the habitat and its typical species, that may affect its long-term distribution, structure and functions as well as the long-term survival of its typical species within a given geographical area';*

Species – *'… the sum of influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within a given geographical area'.*

1.33 For the purpose of the assessment, the following timeframes are referred to:

- short term: less than 1 year;
- medium term: 1 to 5 years; and
- long term: more than 5 years.

1.34 Where adverse impacts or opportunities for beneficial impacts measures have been identified, mitigation or enhancement methods have been incorporated into the proposed development, where practicable, at the design stage. The assessment takes into account any mitigation that forms part of the project and to which a commitment is made. Such measures are set out in the 'measures adopted as part of the project' section of this chapter and in some cases (if there is predicted to be a significant adverse residual impact), further mitigation or compensation may be recommended.

1.35 The decision as to whether the favourable conservation status of a VER is likely to be compromised is made using professional judgement based on an analysis of the likely impact of the proposed development (including consideration of the specific parameters outlined above). For designated sites that are affected by the project, the focus is on the impacts that may affect the features of the site for which it was designated, or for which it is of interest.

Significance of Effects

1.36 The assessment of the significance of ecological effects on a VER takes into account its value and the magnitude of impact (including the geographical scale of the impact, seasonality and frequency and duration and reversibility). Ecological effects may be adverse or beneficial. The significance levels of the effects used in the assessment are shown in Table 1.3.

Table 1.3: Assessment matrix

Value of VER	**Magnitude of impact**				
	No change	**Negligible**	**Low**	**Medium**	**High**
Site	Neutral	Negligible	Negligible or minor	Negligible or minor	Minor
Local	Neutral	Negligible or minor	Negligible or minor	Minor	Minor or moderate
County	Neutral	Negligible or minor	Minor	Moderate	Moderate or major
National	Neutral	Minor	Minor or moderate	Moderate or major	Major or substantial
International	Neutral	Minor	Moderate or major	Major or substantial	Substantial

1.37 The assessment is based on the following definitions.

- Substantial: only adverse effects are normally assigned this level of significance. They represent key factors in the decision-making process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance that are likely to suffer a most damaging impact and loss of resource integrity. However, a major change in a site or feature of local importance may also enter this category.
- Major: these beneficial or adverse effects are considered to be very important considerations and are likely to be material in the decision-making process.
- Moderate: these beneficial or adverse effects may be important, but are not likely to be key decision-making factors. The cumulative effects of such factors may influence decision-making if they lead to an increase in the overall adverse effect on a particular resource or receptor.

- Minor: these beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process, but are important in enhancing the design of the project.
- Negligible: no effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

1.38 Moderate, major and substantial effects are considered to be significant in EIA terms for this assessment.

Planning and Legislative Context

Legislative Context

1.39 A range of legislation provides protection to habitats and species at an international, national and local level. Details of the legislation relevant to the project are set out in Appendix A.

Planning Policy Context

National Planning Policy Framework (NPPF) (2012)

1.40 The NPPF sets out the Government's policies on all aspects of planning, based on the principle that the purpose of planning is to help achieve sustainable development. A core principle of the NPPF is the presumption in favour of sustainable development, but in replacing Planning Policy Statement 9 (PPS9), it also incorporates measures to conserve and enhance the natural and local environment, including 'Biodiversity and Geological Conservation'.

1.41 Paragraph 118 of the NPPF requires that in determining planning applications the following principles are applied to conserve and enhance biodiversity:

- significant harm resulting from a development should be avoided, adequately mitigated, or, as a last resort compensated for; and
- opportunities to incorporate biodiversity in and around developments should be encouraged.

Planning Practice Guidance

1.42 On 6 March 2014 the Department for Communities and Local Government (DCLG) launched planning practice guidance as a web-based resource. This includes a section on biodiversity. The policy guidance sets out relevant legislation and refers to the NPPF. In relation to applications for development, the guidance states that:

'Information on biodiversity impacts and opportunities should inform all stages of development (including, for instance, site selection and design as well as the application itself). An ecological survey will be necessary in advance of a planning application of the type and location of development are such that the impact on biodiversity may be significant and existing information

is lacking or inadequate. Pre-application discussion can help scope whether this is the case and, if so, the survey work required.'

Cheshire West and Chester Local Plan

1.43 Policy *ENV 3 Green Infrastructure* states:

"The Local Plan will support the creation, enhancement, protection and management of a network of high quality multi-functional Green Infrastructure. This will be achieved by:

- *Development incorporating new and/or enhanced Green Infrastructure of an appropriate type, standard and size or contributing to alternative provision elsewhere.*
- *Increased planting of trees and woodlands, particularly in urban areas and the urban fringe."*

1.44 Policy *ENV 4 Biodiversity and Geodiversity* states:

"The Local Plan will safeguard and enhance biodiversity and geodiversity through the identification and protection of sites and/or features of international, national and local importance.

Sites will be protected from loss or damage taking account of:

- *The hierarchy of designations of international, national and local importance*
- *The irreplaceability of habitats, sites and/or features and contribution to the borough's ecological network of sites and features*
- *Impact on priority habitats and protected/priority species*

Development should not result in any net loss of natural assets, and should seek to provide net gains. Where there is unavoidable loss or damage to habitats, sites or features because of exceptional overriding circumstances, mitigation and compensation will be required to ensure there is no net loss of environmental value."

Vale Royal Borough Local Plan – policies saved after 29 Jan 2015

1.45 Many of the policies of the Vale Royal Borough local Plan were superseded by the adoption of the Cheshire West and Chester Local Plan (Part One) Strategic Policies on 29 January 2015. Those policies that remain in force and are relevant to the proposed development (from Chapter 3 of the Plan, addressing the natural environment) are noted below.

1.46 Policy *NE1 Protection Of The Nature Conservation Resource* states:

"In determining planning applications for development and when considering its own development schemes the council will take into full account the effect on wildlife, vegetation and geological/geomorphological features. The council will require the following, where it is known or suspected that the site is important for nature conservation:

(i) a site investigation to identify any features of nature conservation importance, including geological/geomorphological features;

(ii) proposals for the protection and management of features of nature conservation importance identified for retention during and after development;

(iii) proposals for compensating for any nature conservation features unavoidably damaged or destroyed during the development process;

and will negotiate with developers to secure an agreement to safeguard the nature conservation resource if the council would otherwise have been minded to refuse permission, including measures of mitigation such as habitat creation or improvement on, or in the locality of the development site.

Such development proposals may require to be accompanied by an environmental assessment."

1.47 Policy *NE2 Designated Sites Of International And National Nature Conservation Importance* states:

"Development proposals will not be allowed which would damage or destroy any of the following sites, shown on the proposals maps:

(i) any site of international importance including Ramsar sites, existing or proposed candidate special protection areas (spas), potential special areas of conservation (SACS);

(ii) any existing or proposed site of special scientific interest (SSSI) not included in (i) including the surrounding catchment of wetland SSSIs;

(iii) geological conservation review sites (GCRS)."

2 Baseline Conditions

2.1 A summary of the findings of the surveys undertaken to establish baseline conditions is provided in this section of the chapter. Full details of the approach and results of each survey are provided in the following appendices and figures:

- Appendix 7.C – Ecology Appraisal (desk study and Phase 1 habitat survey);
- Appendix 7.D – Bat Roost Assessment;
- Appendix 7.E – Badger Survey Report;
- Appendix 7.F – Water Vole and Otter Survey Report;
- Figure 7.A: Designated sites within 5 km of the site
- Figure 7.B: Non-statutory designated sites within 2 km of the site
- Figure 7.C: Bat and otter records within 5 km of the site
- Figure 7.D: Other protected and notable mammals within 2 km of the site
- Figure 7.E: Protected and notable birds within 2 km of the site
- Figure 7.F: Protected and notable herpetofauna within 2 km of the site
- Figure 7.G: Protected and notable invertebrates within 2 km of the site
- Figure 7.H: Protected and notable flora within 2 km of the site
- Figure 7.I: Invasive flora within 2 km of the site
- Figure 7.J: Phase 1 Habitat Plan
- Figure 7.K: Bat dusk emergence and dawn swarming survey
- Figure 7.L: Badger survey area
- Figure 7.M: Water vole and otter survey area

Desk Study Information

Statutory Designated Sites

2.2 The following statutory sites have been recorded within the area of search for the desk study (see Figure 7.A).

Sites of Special Scientific Interest (SSSI)

2.3 There are three SSSIs within the 5 km search area. Witton Lime Beds SSSI is located approximately 1.5 km from the development site and comprises lowland calcareous grassland on lime beds, semi-improved grassland and mature woodland. A range of calcareous plants occur.

2.4 Plumley Lime Beds SSSI is located 2.5 km from the development site. The lime has washed out of the beds into the surrounding area, creating variable soil conditions. Woodland, a pool and marshland also occur.

2.5 Tablet Mere SSSI is located 4.7 km from the development site and forms part of the Meres and Mosses of the north-west Midlands. They form a nationally important series of open water and peatland sites. Associated fringing habitats such as reedswamp, fen, carr and damp pasture add to the value of the meres.

Local Nature Reserve (LNR)

2.6 There is one LNR within the 5 km search area, Marshall’s Arm, Hartford, located 3 km from the development site. It comprises three main habitats: woodland, grassland/meadows and wetland/open water.

Non-Statutory Designated Sites

2.7 A total of five non-statutory sites designated as Local Wildlife Sites (LWS) have been recorded within the 2 km search area for the desk study (see Figure 7.B). These are listed below and their distances from the development site are shown in brackets:

- Ashton’s and Neumann’s Flashes (900 m);
- Wincham Brook Valley (1.2 km);
- Marston Flashes (1.3 km);
- Marbury Lime Bed and Forge Pool (1.8 km); and
- Marston Meadows (2 km).

2.8 All five of the LWS comprise grasslands, fens, swamps, bogs and reedbeds. They provide wildlife corridors across the landscape and form buffers.

Protected, Notable and Invasive Species Records

2.9 A number of protected or notable flora and fauna were recorded within the 2 km and 5 km search areas. Otter and at least eight species of bat were recorded within 5 km of the development site. Some bat records were not identified to species level and could therefore have potentially been additional species. Five other species of mammal, 73 birds, two amphibians, six invertebrates and five plants were recorded within 2 km of the site. Four invasive plants were recorded within 2 km of the site.

Previous surveys

2.10 Previous ecology surveys were undertaken by Wardell Armstrong on the site in 2009 and 2010 to inform a previous planning application. Since those surveys were undertaken, the site has not been in use, but demolition of buildings present at the time of the surveys has been undertaken (in 2013). A summary of the findings of those surveys is provided below.

Extended Phase 1 Habitat Survey – Update (Wardell Armstrong, 2010)

2.11 The survey found the development site to comprise buildings and industrial structures, areas of hard-standing/inert gravel, disused rail sidings and relatively few undisturbed areas of semi-natural habitat. The habitats identified on the site were:

- hard-standing and buildings;
- scrub;
- disturbed ground;
- wet grassland;
- water bodies (outside site boundary);
- ditches/drains (concrete channels beneath the main building); and
- invasive species (Japanese knotweed).

2.12 An assessment for protected species was undertaken and the findings were as follows.

- Badger – no signs of badger being present within 30 m of the site.
- Bats – foraging and commuting opportunities due to the presence of scrub and roosting opportunities within some buildings. The presence of pipistrelle *Pipistrellus sp.* was recorded in 2009 (see below).
- Amphibians – water bodies with potential to support amphibians, including great crested newt were identified within 500 m of the site but the site itself was found to support no suitable waterbodies and to have poor value terrestrial habitat, although smooth newts were recorded in drainage channels in 2009 (see below). In addition, barriers such as Wade Brook, railways, roads and heavy industrial uses were present between the ponds and the site.
- Terrestrial invertebrates – the site was found to be relatively poor in semi-natural habitats although cinnabar *Tyria jacobaeae* moth caterpillars were identified on ragwort on the site. Cinnabar is a UKBAP Priority Species.
- Nesting birds – the buildings and scrub on the site were found to provide suitable nesting sites for breeding birds.
- Reptiles – the site was not considered suitable habitat for reptiles.
- Water vole – Wade Brook was found to provide suitable habitat for water vole but no signs of them were found to be present.
- Otter – no signs of otter were found to be present.
- Flora – fragrant orchid and marsh orchid sp. were identified within scrub in the south of the site.

Bat Survey Report – (Wardell Armstrong, 2009)

2.13 Emergence and activity surveys, comprising four visits, were carried out around the buildings present on the development site. No bats were observed emerging from the buildings and activity levels were very low with only one bat being recorded during three of four survey visits and two bats being recorded on the remaining survey visit. All records were from pipistrelle *Pipistrellus sp.* bats.

Great Crested Newt Survey Report – (Wardell Armstrong, 2009)

2.14 A survey was undertaken on six concrete drainage channels/concrete bays within the site boundary and on four of five waterbodies within 500 m of the site (the fifth being inaccessible). Three of the four ponds were found to be ephemeral and were dry at the time of the survey.

2.15 Smooth newts were identified within all six concrete drainage channels and bays within the site boundary. No newts were identified in the pond holding water within 500 m of the site or during terrestrial searches around the dry ephemeral ponds.

2.16 Great crested newts were considered absent as they were not identified during the survey and because the habitats present were considered to be poor value for them.

Phase 1 Habitat Survey

2.17 The proposed development site was formerly the site of a chlorine plant (until 2001), as part of the wider Lostock Works chemical industry complex. The development site has palisade fencing along all boundaries with a gated access along the eastern boundary. The site is generally flat, with the exception of steep declines along the western and southern boundaries. All of the buildings associated with the former works had been demolished at the time of the survey and the majority of the site comprises the bases of the former buildings surrounded by existing access roads and areas of gravel hard-standing.

2.18 Vegetation is largely absent from these areas accept for early colonisation of the gravel areas. Several young trees and areas of scrub, tall ruderals, grassland and bracken occur around the development site boundaries.

2.19 The development site is bordered to the east by the active Lostock Works site comprising large industrial buildings, other structures and associated roads, with the Solvay works being immediately adjacent. The area to the west of the site was historically used for stockpiling of coal and limestone but has been cleared for re-development since 2007 or earlier. At the time of the survey it comprised a large gravel area with varying levels of plant colonisation. An access track to this area lies immediately north of the proposed development site and rail tracks lie beyond it. The southern boundary of the proposed development site is defined by the river corridor of Wade Brook and a 132kV substation at the south-eastern corner.

2.20 The locations of habitats identified in the survey within the development site, and associated target notes, are shown on the Phase 1 Habitat Plan (Figure 7.J). In summary, the habitats identified comprised:

- broadleaved trees;
- scrub;
- poor semi-improved grassland;
- continuous bracken;
- tall ruderals;
- standing water;
- ephemeral/short perennial;
- other habitat (log/brash pile and stand of dead Japanese knotweed); and
- buildings (security hut at the gate immediately outside the application boundary).

2.21 An assessment of whether protected species could potentially be present was made following the Phase 1 habitat survey. Further surveys were undertaken to assess whether the development site could or did support water vole, otter, bat roosts and badger. The findings of these are summarised from page 17 to page 20.

2.22 The following protected species were deemed unlikely to be present on the site following the assessment of the habitats present.

Great crested newt

2.23 The two areas of standing water on the development site do not provide suitable habitat for amphibians, including great crested newts. They contain no natural substrate, support no aquatic vegetation and are not surrounded or near to any suitable terrestrial habitat. They are also likely to be ephemeral in nature.

2.24 The site does provide some areas of suitable terrestrial habitat in the south of the site within areas of scrub and tall ruderals. However, these areas are small and quite isolated from larger areas of suitable habitat off site.

2.25 Ponds are present within 500 m north and west of the development site which could potentially provide suitable habitat for great crested newts. However, previous surveys of these waterbodies did not find great crested newts to be present and found their habitat suitability to be low as most were ephemeral. The site is also separated from the ponds by rail tracks and a gravel access track which do not provide suitable habitat for newts and are likely to discourage newt dispersal towards the development site.

2.26 The areas of suitable terrestrial habitat on the development site are located near to the southern boundary, so should newts reach the site from the north, they would have a large area of open, exposed ground to cross to reach an area of relatively low value habitats. Aerial photography suggests that the ponds are surrounded by grassland, trees and scrub which would be considered higher value terrestrial habitat than that found on site and would suggest newts are unlikely to leave this area and cross large areas of unsuitable habitat to inhabit the small areas of suitable habitat on the development site.

2.27 Therefore, great crested newts are not considered further in this assessment

Reptiles

2.28 The development site is largely unsuitable habitat for any of the four common reptiles (adder, grass snake, common lizard and slow worm). Small, isolated patches of tall ruderals and scrub provided limited opportunities but are isolated from areas of higher value habitat off-site such as the bracken, scrub and trees along the Wade Brook river corridor.

2.29 No records of reptiles were provided from within 2 km of the site in the desk study. Reptiles are considered unlikely to be present on the development site. Therefore, reptiles are not considered further in this assessment.

Bat Roost Assessment

2.30 The disused gatehouse building is located to the south-east of the development site boundary. The building is surrounded by buildings and areas of hard standing associated with the Lostock Works, including the disused proposed development site, an active industrial building and an electricity substation, all of which provide low value foraging habitat for bats.

2.31 The Wade Brook river corridor lies approximately 30 m south of the gatehouse building. It comprises a stream lined by trees, scrub, tall ruderals and bracken and provides good foraging and commuting opportunities for bats.

External Inspection

2.32 The building is single storey, brick built, with a pitched, slate tiled roof and gable ends at the northern and southern sides of the building. Sheets of wooden cladding line the upper sections of wall at the gable ends and soffit boxes are present around the entire building at the base of the roof. Windows are present along the northern side of the building and along the majority of the eastern and western sides.

2.33 The brickwork and windows are intact, presenting no potential access points into the building and show no features suitable as a bat roost. The roof was found to be in a poor state of repair and contains a number of features that provide suitable roosting locations for bats or opportunities for bats to access the interior of the building.

2.34 The building was found to have a number of features in the roof that provided access to suitable roosting sites between the roof tiles and roof lining and may have potentially lead to further suitable roosting sites within the roof space, cavity wall and soffit boxes.

2.35 The potential access points were inspected for signs of bat use, such as scratching and staining around entry points and bat droppings around or below them, but no signs were found.

Interior Inspection

Ground level

2.36 The building comprises one main room at ground level, which is well lit by the windows along the northern, eastern and western sides. The southern end of the building is divided into three smaller rooms comprising a kitchen, toilet and store room. The kitchen in the southwest corner had a window and a vent entering it. A loft hatch is present in the kitchen leading to the roof space and was firmly sealed. The toilet and store room have no windows and the toilet has a vent.

2.37 The only potential access for bats into the building is via the uncovered vent into the kitchen. From here, bats could access the main room but the doors to the toilet and store room were closed, preventing bats from reaching them. The main room and the kitchen are well lit and the walls and ceilings are intact, providing no cracks or crevices for bats to roost in. An inspection of all surfaces found no bat droppings, feeding remains or other signs of use by bats.

Roof space

2.38 The roof is of trussed rafter construction comprising two long trusses extending from the ridge diagonally outwards to the floor and two smaller trusses returning back the rafters. Under felt is present between the rafters and the tiles and it was found to be intact and well fitted throughout, providing no potential access points into the roof space from the gaps under tiles identified in the external inspection.

2.39 Insulation is present on the floor between the beams and extends beyond the wall plate to the base of the rafters in places. A thin gap is present along the entire length of the building at the base of the tiles and rafters. In places this was covered by the insulation and in other places a metal grill is present, which would prevent bats from using it to access the roof space. However, in some locations the gap is open and could potentially provide an access point.

2.40 An intact breeze block wall is present at the northern gable end. A cavity may be present between this wall and the external brickwork wall which could potentially be accessed from the gaps in the roof at the northern end of the building. The southern gable end wall is covered in thin wooden boarding. There is potential for there to also be a small cavity between the boarding and external brickwork which could be accessed from the gaps in the roof at the southern end of the building.

2.41 An inspection of the roof space found no bats or bat corpses to be present and opportunities for bats to roost within the main roof space was limited due to the absence of damaged or hanging roofing felt or gaps between rafters and trusses. All flat surfaces, including insulation and beams, were inspected for signs of bat use such as droppings and feeding remains, but none were found.

2.42 Overall, the areas with greatest potential for bat roosts are the gaps between the roof tiles and roofing felt, spaces within soffit boxes and wall cavities. These areas could not be fully accessed to determine whether bats were present and therefore dusk emergence and dawn swarming surveys were undertaken.

Dusk Emergence and Dawn Swarming Survey

2.43 The result of the dusk emergence and dawn swarming survey is provided below and shown on Figure 7.K.

2.44 During all three survey visits, the exterior of the northern and eastern sides of the building were found to be well lit by artificial lighting from the industrial building to the northeast.

2.45 During the two dusk emergence surveys, one common pipistrelle bat was observed emerging from the building from the top of the gable end on the northern side of the building.

2.46 During the dawn survey, one common pipistrelle was observed flying briefly around and in close proximity to the building and approaching the point where one bat had been observed emerging. However, the bat did not enter the building and flew northwards away from the building.

2.47 Levels of bat activity were otherwise very low, with only three distant bat contacts recorded during the second dusk survey which were believed to be from a Myotis bat located south or east of the building.

Badger Survey

2.48 The habitats within the development site boundary are of relatively low value to badger. The majority of the site comprises bare ground or areas of ephemeral/short perennial vegetation, which are of limited value to badger for foraging.

2.49 A bank runs parallel to the western and southern boundaries, where the ground slopes downwards from the main part of the site towards the boundaries. The bank could potentially provide an area suitable for badgers to build setts and areas of scrub on the bank provide additional seclusion and shelter.

2.50 A palisade fence lines the entire development site boundary, which may restrict badger movement onto the site, particularly where hard standing is present at the base preventing badgers from digging under it.

2.51 The area to the east of the site contains the active Lostock Works, comprising industrial buildings and structures and areas of hard standing. This area is not considered suitable habitat for badger.

2.52 The area to the east of the development site comprises a large area of disused ground with gravel and ephemeral/short perennial vegetation similar to that on the development site and therefore of limited value to badger for foraging. The area was level and therefore of limited value to badger for sett building.

2.53 The area north of the site comprises a gravel track and rail tracks that do not provide suitable habitat for badger. However, some areas of scrub and scattered young trees are present, which may provide suitable sett building locations at their bases.

2.54 The area to the south of the site is occupied by the Wade Brook river corridor, which comprises high, steep banks of tall ruderals, scrub and trees, including a small area of woodland. This area provides the greatest potential for badger to be present due to the presence of higher value foraging opportunities and suitable locations for setts.

2.55 No badger setts or signs of badger activity were found within the development site boundary or within 30 m of it. Badger is therefore not considered further in this assessment.

Water Vole and Otter Survey

2.56 The section of Wade Brook running parallel with the proposed development site was surveyed, as shown on Figure 7.M. The survey was undertaken on the northern bank from the point of a bridge crossing eastwards. The channel could not be safely accessed during the survey due to its depth and flow rate.

2.57 The channel measures approximately 3 m wide and has steep earth cliffs on each side measuring 30 cm to 70 cm high. The water was approximately 1 m at its deepest. The flow rate was moderate and the direction of flow was from east to west.

2.58 High banks measuring approximately 20 m long (within the survey area) are present on each side. They are typically steep but the northern bank is stepped and the southern bank has a wide, level plateau before rising steeply where dense common reed occurs.

2.59 The steeper banks typically comprise a mosaic of tall ruderals, such as willowherb *Epilobium sp.* and stinging nettle *Urtica dioica,* and scrub including bramble *Rubus fruticosus* and willow *Salix sp*. Scattered willow and alder trees were present and a clump of willow, alder and ash form a small area of woodland on the northern bank. The vegetation is typically sparse underneath and extends up to the river bank in places. At the top of the banks bracken occurs and forms dense stands.

2.60 Wade Brook provides suitable habitat for water vole. The bankside vegetation provides an adequate food source and a good level of shelter and protection. However, no signs of water vole were identified.

2.61 Wade Brook also provides suitable habitat for otter. The brook is of a size that is was likely to support fish for otters to prey upon. The steep sided banks mean that the brook is very secluded and although close to industrial buildings, is unlikely to be disturbed. The presence of scrub and trees provides potential locations for otters to find holts and couches. However, no signs of otter were identified.

2.62 Water vole and otter are therefore not considered further in this assessment.

Nesting birds

2.63 The habitats present within the development site boundary provide limited opportunities for nesting birds. Many of the trees and areas of scrub are too young to support nests. However, some of the taller stands of dense scrub and taller trees (TN2, TN4, TN5, TN9 on Figure 7.J) provide suitable nesting sites. The large pile of logs and brash (TN8 on Figure 7.J) also provides suitable nesting habitat.

Plants

2.64 Fragrant orchid was recorded on the development site and is listed on The Vascular Plant Red Data List for Great Britain (2006) as a species of 'Least Concern'. Species of least concern are those that are neither threatened nor near threatened.

2.65 A few remaining ragwort plants are present but are not prevalent in vegetation on the site. Ragwort is not a protected or notable plant but it is the food source of a notable species, the cinnabar moth (see paragraph 2.69).

2.66 No protected plants were recorded within the site. It is considered unlikely that protected plants would be present based on the habitats present, which are typically recent in origin and have been subject to high levels of disturbance.

2.67 The protected and notable plants recorded in the desk study were not identified on the site and are typical of habitats not found on the site.

Terrestrial Invertebrates

2.68 The habitats on site are considered to be poor for terrestrial invertebrates due to the lack of floral diversity and large areas of bare ground/hard-standing resulting in a lack of foraging opportunities. Records of six notable species were provided in the desk study but the habitats required by these species are largely absent on the site.

2.69 Cinnabar caterpillars were identified on ragwort during a previous survey of the site. Ragwort was not found to be prevalent within the vegetation on the site and may have been largely lost during site clearance woks undertaken since the previous survey. No cinnabar caterpillars were identified but there is potential for low numbers to be present on the remaining plants.

Invasive Plants

2.70 The stand of Japanese knotweed found on the development site was completely dead and had no signs of fresh growth. No other invasive species were recorded on the site.

Summary of Nature Conservation Interest and Identification of Valued Ecological Receptors

2.71 The development site comprises common and widespread habitats that are not protected.

2.72 A bat roost was identified near to the site boundary and although the majority of the development site is hardstanding and gravel, some limited and scattered areas of habitats suitable for nesting birds and one notable invertebrate, the cinnabar moth, were identified. Fragrant orchid was found at a small number of locations on the site.

2.73 VERs comprising designated sites, habitats and species that could be affected by the project and which are of particular nature conservation interest or concern are identified in Table 2.1, below.

2.74 Some of the habitat types found on the site have not been included due to their small size and isolated positions which results in them being of low ecological value.

2.75 Plant communities are assessed both in terms of their intrinsic value, as habitat for protected species whose habitat is also specifically protected, and for species of nature conservation concern that are particularly associated with them.

Table 2.1: Summary of VERs

VER	Value of VER	Comments
Designated sites		
Statutory designated sites: Witton Lime Beds SSSI, Plumley Lime Beds SSSI, Tabley Mere SSSI and Marshall's Arm, Hartford LNR	National	The development site does not include these designations but they are present within the study area
Non-statutory designated sites: Ashton's and Neumann's Flashes LWS, Wincham Brook Valley LWS, Marbury Lime Bed and Forge Pool LWS and Marston Meadows LWS	County	
Habitats		
Wade Brook	Local	Not within the development site but adjoining the southern boundary
Ephemeral/short perennial	Local	Areas of ephemeral/short perennial vegetation occur frequently on areas of bare ground/gravel. Ragwort and fragrant orchid were found in some of these areas
Scrub and trees	Site	Small areas of scrub and scattered trees occur around the periphery of the site. Some are mature enough to support nesting birds
Species		
Common pipistrelle	Local	A gatehouse building to the south-east of the site supports a small common pipistrelle bat roost
Fragrant orchid	Local	Low numbers of fragrant orchid were recorded in ephemeral/short perennial vegetation
Cinnabar moth/ragwort	Local	Low numbers of ragwort were recorded in ephemeral/short perennial vegetation which is the food plant for cinnabar moth caterpillars
Breeding birds	Site	Some of the trees and scrub on the site provide suitable nesting sites for breeding birds

Data Limitations

2.76 All surveys were undertaken by suitably experienced and qualified ecologists at appropriate times of year and during suitable weather conditions. The surveys followed relevant guidance. No limitations have been identified during the collection of baseline data.

3 Embedded Mitigation

3.1 The proposed development includes a range of measures designed to reduce or avoid adverse effects as well as to provide beneficial effects through enhancement measures where appropriate. Those relevant to the ecology and nature conservation assessment are summarised below.

Pollution Control

3.2 The nearest statutory designated site is 1.5 km from the site and the nearest non-statutory designated site is 900 m from the site. An air quality assessment (see paragraph 6.57 in Chapter 10 and in Appendix 10.B) identified that emissions from the operation of the development (emissions during construction would be lower) would not have an adverse effect on designated sites. This was the view also of Natural England expressed in consultation (see Appendix 7.B).

3.3 Measures for the appropriate storage of materials and fuels and the management of runoff will be implemented to avoid the pollution of Wade Brook during construction and operation. Measures that will be adopted for the construction phase are detailed and would be managed under the Construction Environmental Management Plan (CEMP) at Appendix 2.C. The Drainage Strategy at Appendix 8.A details measures that will be implemented in the operational phase, managed under the facility's Environmental Management System (EMS) in accordance with the requirements of the facility's Environmental Permit and applicable legislation.

Habitat Retention, Creation and Protection

3.4 The proposed development has been designed to retain the areas of habitat identified as being of greatest value or to create new areas of habitat to compensate for those due to be lost.

Bat Roost

3.5 The gatehouse building to the south-east of the site (immediately outside the application boundary), which was found to support a common pipistrelle roost, will be retained and protected. Lighting during both construction and operation will be designed in order to avoid disturbance to the bat roost, as detailed in the CEMP at Appendix 2.C and the operational lighting design principals in Chapter 2.

Ephemeral/Short Perennials

3.6 The majority of the ephemeral/short perennial vegetation (occupying around 25% of the site) would be lost to the development. However, it is proposed (subject to further site investigation and a detailed ground conditions risk assessment) to retain a small area at the eastern boundary that currently contains suitable habitat, along with some concrete that may be removed and replaced with habitat from adjoining areas that are not retained. This would provide suitable habitat for the plant species found on the site.

Fragrant Orchid and Ragwort

3.7 The retained area of ephemeral/short perennials would provide suitable habitat for ragwort and fragrant orchid. The area is near to where existing fragrant orchids were recorded and any fragrant orchid falling outside of the retained area will be translocated into it. The receptor area has been chosen as it provides the same habitat as that found in the areas where orchids are present. A translocation scheme has been devised to sensitively move the orchids to the new location and a five year management plan has been devised to ensure orchids are conserved on the site. Details of the translocation and management are included in the Landscape Management Plan at Appendix 4.C

3.8 Ragwort is likely to be within the retained habitat or in the substrate from the area due to be translocated into the retained area of habitat, but it is also likely to naturally colonise the area.

Scrub and Trees

3.9 There are currently few trees or areas of scrub on the site and some would be lost to the development. However, wherever practicable, existing trees and scrub will be retained and incorporated into the landscaping plans for the site. It is expected that this will be possible for the trees along the northern boundary and some scrub along the western and southern boundaries (TN 3, 4, 9 and 14 on Figure 7.J).

3.10 The landscaping proposals for the site include new tree and shrub planting along the southern, eastern and western boundaries, which would provide a continuous green corridor along these boundaries incorporating the areas of retained scrub. This would more than compensate for the loss of the existing trees and scrub and would improve connectivity around the site. The new planting would comprise native species of local provenance such as goat willow *Salix caprea*, alder, silver birch, hornbeam *Carpinus betulus,* hawthorn, field maple *Acer campestre*, guelder rose *Viburnum opulus* and blackthorn *Prunus spinosa*.

Habitat Protection

3.11 Measures would be put in place to ensure the bat roost building, retained area of ephemeral/short perennial vegetation and any retained trees or scrub were adequately protected from damage or destruction during the construction phase of the development. Sufficiently sturdy protective fencing will be erected around them to prevent access by people, materials or machinery. This would reduce the risk of accidental damage during construction activities. This is specified in the CEMP at Appendix 2.C.

3.12 As well as the pollution prevention measures outlined above, Wade Brook would also be protected during construction and operation by retention of the existing site boundary palisade fence, demarcating the site ownership and construction works boundary. This will prevent any materials, people or machinery from entering the river corridor habitat, and retains the existing buffer zone between the site boundary and Wade Brook. In addition, the southern-most elements of the built development are set back around 5 m to 15 m from the site boundary, providing a further buffer zone within the site. During construction, temporary hoarding will be erected within the boundary, following the line of these build elements (with appropriate working space) to maintain this internal buffer zone. During operation, this area will be planted with trees and shrubs and will see minimal access (principally for limited ongoing landscape management). The trees and scrub will screen the river corridor from the development and improve habitat connectivity between the river corridor and habitats to the north of the site.

3.13 A Landscape Management Plan (Appendix 4.C) sets out ongoing management to ensure the long-term presence of the habitats retained and created on site.

Wildflower Grassland

3.14 An area of wildflower grassland would be created along the northern boundary of the site using an Emorsgate EM2 – Standard General Purpose Meadow Mixture. This meadow mixture contains species that are characteristic of traditional meadows across a wide range of soil types. This would introduce a new habitat onto the site which would support a variety of grasses and forbs (herbaceous flowering plants) and provide suitable habitat for a variety of invertebrates. The invertebrates in turn would provide prey for a variety of other fauna including bats and birds.

Breeding Birds

3.15 Trees, scrub and debris/log piles identified as providing suitable nesting sites for breeding birds will be cleared outside of the bird breeding season which runs from mid-February to September inclusive.

3.16 Should any suitable nesting features need to be removed during the bird breeding period, they would be checked for the presence of active nests in advance by an ecologist. Any active nests and a 5 m buffer round them would be retained and protected until an ecologist could confirm that the young had fledged and the nest was no longer in use.

3.17 New tree and shrub planting would more than compensate for the loss of some existing trees and shrubs by providing new nesting opportunities, once mature enough. There would, however, be a medium-term loss of nesting opportunities for birds until the vegetation has matured and therefore a variety of bird boxes will be provided on the site at the start of construction to compensate for this.

4 Assessment of Effects

4.1 The following paragraphs consider the impacts and effects on each individual VER during construction and operation, taking into account the measures adopted as part of the development that were discussed in section 3.

Designated Sites

4.2 The following statutory designated sites have been considered:

- Witton Lime Beds SSSI;
- Plumley Lime Beds SSSI;
- Tabley Mere SSSI; and
- Marshall's Arm, Hartford LNR.

4.3 At its closest point, the construction site would be located approximately 1.5 km from Witton Lime Beds, 2.5 km from Plumley Lime Beds, 3 km from Marshall's Arm, Hertford LNR and 4.7 km from Tabley Mere SSSI.

4.4 The following non-statutory designated sites have been considered:

- Ashton's and Neumann's Flashes;
- Wincham Brook Valley;
- Marston Flashes;
- Marbury Lime Bed and Forge Pool; and
- Marston Meadows.

4.5 At its closest point, the construction site would be located approximately 900 m from Ashton's and Neumann's Flashes LNR, 1.2 km from Wincham Brook Valley LNR, 1.3 km from Marston Flashes LNR, 1.8 km from Marbury Lime Bed and Forge Pool LNR and 2 km from Marston Meadows LNR

4.6 There would therefore be no direct habitat loss at the designated sites as a result of the construction phase of the development. Appropriate mitigation measures (noted in section 3 and detailed in the CEMP at Appendix 2.C) will be taken to ensure no airborne or waterborne pollution events would affect the sites. Therefore, the development would have no impact on the designated sites during construction

4.7 There are no designated sites within 500 m of the development site, indicating that any potential impacts during operation are unlikely to occur. An assessment of air quality impacts on nature conservation sites (see paragraph 6.57 in Chapter 10 and in Appendix 10.B) focused on the nearest designated site, Ashton's and Neumann's Flashes LWS. The assessment found that there would be no significant air quality impact from the project once operational.

4.8 Overall, no loss or alteration of characteristics or features is considered likely, resulting in no change or impact on these sites of national and county value during construction and operation. This would result in a neutral effect.

Wade Brook

4.9 Wade Brook is also located outside of the development site boundary, but the river corridor and banks adjoin the site to the south. Measures will be implemented to ensure the river and its banks are protected from any potential mechanical damage and pollution events during construction through the provision of the pollution prevention and control measures outlined above and by maintaining the protective fencing and existing buffer distance between the construction site and the river corridor. This will ensure a protective buffer is maintained, as shown in Figure 2.E.

4.10 During operation, the buffer zone within and outside the site boundary will ensure the river and its associated bank side vegetation is retained and protected. The buffer will include existing habitat at the top of the banks, comprising tall ruderals, bracken and scrub. The section of the buffer that falls within the site boundary will remain fenced and will comprise a mixture of tree and shrub planting and areas of bare ground left to colonise naturally, which over time are also likely to develop into scrub. This will ensure the secluded nature of the river corridor and its suitability for protected species, such as otter and water vole, is retained.

4.11 Any lighting required during the construction phase will be directed away from the river corridor and measures will be taken to ensure no light spill occurs. To achieve this the lighting design for the site will be designed following guidance provided in the Bat Conservation Trust 'Bats and Lighting in the UK' 2008 guidelines. This will ensure fauna using the river corridor, such as foraging and commuting bats, would not be affected. No signs of otter were identified along the river corridor but there is potential for otter to use the corridor occasionally and therefore these measures will also serve to reduce any potential effects on their behaviour, should they be present.

4.12 Overall, these measures will ensure there is no loss or alteration of the characteristics or features of the Wade Brook. There would be no change or impact on this feature of county value during construction and operation. This would result in a neutral effect.

Ephemeral/Short Perennial Vegetation

4.13 Ephemeral/short perennial vegetation covers approximately 25% of the site and comprises scattered vegetation over bare ground. The majority of this ephemeral/short perennial vegetation would be lost to the development footprint. However, an area would be retained along the eastern boundary ensuring that the habitat and the floral species associated with it remain on site.

4.14 Ephemeral/short perennial vegetation is characteristic of early succession of bare ground and if left unmanaged over time, would develop into scrub habitat. Therefore the lifespan of this habitat type on the site would be limited if left undisturbed. The retention and management of a small area as part of the development will therefore extend the amount of time this habitat would be present.

4.15 The development will therefore result in the long-term loss of the majority of the ephemeral/short perennial vegetation but will also ensure a small amount continues to be present for longer than it would have been if left unmanaged.

4.16 The retained area will be appropriately managed during the operation of the site. The overall level of intervention would be low and will allow a certain amount of natural colonisation. However, infrequent management will be required to remove any plant species that is becoming dominant to the detriment of the other species present and to ensure areas of open ground remain. This is detailed in the Landscape Management Plan at Appendix 4.C. This would prevent natural succession which would result in the area becoming dominated by scrub.

4.17 The premature loss of most of the ephemeral/short perennial vegetation during the construction phase will have a moderate adverse impact on a feature of local value. This will give rise to a minor adverse construction-phase effect. The retention of an area of ephemeral/short perennial vegetation in the long term during the operational phase will mean that it will be present for longer than it would have been if left un-managed, resulting in a minor beneficial impact on a feature of local value. This will give rise to a negligible effect during operation.

Scrub and Trees

4.18 The scrub and trees on the site are immature and currently represent a small amount of the total area of the site. There would be a short-term loss of trees and scrub on the site between site clearance and new tree and shrub planting at the end of the construction period. However, in the long-term, the new tree and shrub planting would compensate for any loss by providing new trees and shrubs and by introducing new native species onto the site.

4.19 New tree and shrub planting would mature during the operational phase of the project and develop into suitable habitat for a range of invertebrates which in turn would provide prey for a variety of other fauna, including bats and birds. They would also provide nesting opportunities for birds.

4.20 The new tree and shrub planting will be located around parts of the site boundary and would provide a more or less continuous line around the southern, eastern and western boundaries. This would provide a wildlife corridor along the boundaries that are currently relatively open and improve habitat connectivity across the site from north to south.

4.21 On-going management during the operational phase (see the Landscape Management Plan at Appendix 4.C) will increase the survival rate of the trees and shrubs and replace any which do not survive. This will ensure the habitat remains present on the site in the long-term. The scrub and trees will be managed sensitively with respect to protected species.

4.22 There would be a short-term loss of trees and scrub on the site between site clearance operations at the beginning of the development and landscaping works being fully implemented.

This will have a minor, short-term impact on a feature of site value giving rise to a negligible effect during construction. However, in the long-term, and from the end of the construction phase, there will be an overall increase in the amount of trees and shrubs and this will have a minor beneficial impact on a feature of site value during the operational phase.

Common Pipistrelle

4.23 The gatehouse building that was found to support a common pipistrelle bat roost will be retained and protected during the construction and operational phases of the development.

4.24 There would be an increase in the amount of activity near to the roost due to construction activities and both construction and operational traffic, but this is unlikely to affect any roosting bats, which are already subject to high levels of activity and noise from the operational parts of the Lostock Works.

4.25 Lighting during the construction and operational phases will be positioned and directed away from the building to prevent an increase in artificial lighting around the building. Lighting around the bat roost will be designed to the specifications set out in the Bat Conservation Trust 'Bats and Lighting in the UK' 2008 guidelines. The northern side of the building and the entry point into the roost was already well lit but the bats emerging were observed flying along the western side of the building southwards which was much darker. Therefore, the lighting scheme will put particular emphasis on ensuring the western and southern sides of the building remain unlit.

4.26 The landscaping proposals for the site include tree and scrub planting, areas of natural colonisation around the southern site boundary and the creation of an area of wildflower grassland along the northern boundary. This will provide new foraging opportunities for bats, including common pipistrelle, by providing additional habitats for the invertebrates that bats feed upon.

4.27 The new lines of trees and shrubs will also improve connectivity around the site, particularly along the eastern boundary which will connect the bat roost in the gatehouse to habitats to the north of the site.

4.28 Overall, there will be no change or impact on a feature of local value resulting in a neutral effect during construction. During operation, as the landscape planting matures, this would have minor beneficial impact on a feature of local value, giving rise to a negligible effect.

Fragrant Orchid

4.29 An area of ephemeral/short perennial vegetation will be retained along the eastern boundary to the north of the area where fragrant orchid has been recorded. A translocation exercise will be undertaken to move the plants into the retained habitat. This will ensure that suitable habitat for fragrant orchid remains present. The area is sufficiently large to accommodate the low number of orchids found on the site.

4.30 There is a risk that not all plants would survive the translocation but the stresses put on the plants by moving them will be minimised by moving them within their existing substrate, by undertaking the translocation at a suitable time of year (autumn) and by minimising the amount of time between the plant being removed from the ground and being placed in the new habitat area.

4.31 Management will ensure the area remains open by controlling the amount of scrub able to develop and by preventing any species from becoming too abundant to the detriment of the other plants present.

4.32 This would have a temporary minor adverse impact on a feature of local value during construction, giving rise to a negligible effect. During operation, ensuring suitable habitat is retained would have a minor beneficial impact on fragrant orchid, a feature of local value, as without appropriate management this habitat would disappear as scrub became dominant. This would give rise to a negligible effect.

Cinnabar Moth

4.33 The area of ephemeral/short perennial vegetation retained at the eastern boundary will provide suitable habitat for ragwort, the food plant of the cinnabar moth caterpillar. Some existing ephemeral/short perennial habitat may be translocated into the new area and if so, this would be taken from a location where ragwort had been recorded on the site. However, ragwort is likely to naturally colonise areas of suitable habitat such as this area.

4.34 There would, however, be an overall decrease in the amount of suitable habitat on the site during the construction phase, which would have a minor adverse impact on a feature of local value. This would give rise to a negligible effect. During the operational phase, the retained habitat and natural re-colonisation will result in an overall negligible magnitude impact on a feature of local value, with a negligible effect.

Breeding Birds

4.35 The trees and scrub on the site currently provide some opportunities for nesting birds. However, some trees and shrubs are currently too young to support them. The majority of the trees and scrub would be cleared at the start of construction so there would be medium-term loss of available nesting habitat on the site until proposed new tree and shrub planting had matured sufficiently to support birds' nests. To compensate for this, bird boxes will be installed at suitable locations on the site.

4.36 The trees and shrubs on the site will mature during the operational phase of the development into suitable nest sites for nesting birds. The trees and shrubs will be sensitively managed to ensure nesting birds are not disturbed during the nesting season, which runs from mid-February to September inclusive. This will ensure the long-term availability of nesting sites on the site for birds.

4.37 There will be a negligible impact on a feature of site value, giving rise to a negligible effect during construction. During operation, there will be a minor beneficial impact on a feature of site value. This would give rise to a negligible effect.

Associated Development

4.38 Associated works may also be undertaken by the applicant or third parties to improve the existing shared private access road through Lostock Works, within the planning application boundary. This may involve widening at certain points to ease passing and turning of HGVs. This widening would be limited (anticipated to be <3 m) as the access road is constrained by the industrial facilities through which it runs. Re-surfacing some sections may also be undertaken if necessary. Any works undertaken would be in agreement with the land owner and other road users.

4.39 Due to their location and nature within the Lostock Works industrial site, these works would have no impact and therefore no effect on biodiversity and nature conservation assets.

5 Assessment of Cumulative Effects

5.1 The significance of cumulative effects on ecology and nature conservation of the proposed development and other identified developments awaiting construction or formally within the planning system has been assessed. The relevant local developments are shown in Table 5.1.

Table 5.1: Relevant local developments

Reference	Planning reference	Applicant	Description
A	14/03017/DIS	Broadthorn Construction Ltd	Discharge of condition 33 on 09/10799/CPO (see below)
	09/10799/CPO	Broadthorn Construction Ltd	Use of site as a non-hazardous household, commercial and industrial waste recycling centre with the erection of a mixed waste transfer building and ancillary works.
B	15/00935/FUL	GF Energy Ltd	Gas-fired peaking power plant using containerised generators, total 48.4 MW_{th}, 20.9 MW_{e}.
C	13/05070/DEM	SABIC UK Petrochemicals Ltd	Demolition of redundant ethylene blowing plant with associated control room
D	14/05128/S73	Edelchemie Ltd	Variation on 07-3384-FZ5 (see below). Variation of condition 16 to increase the maximum permitted tonnages of materials. Variation of condition 6 to allow an increase in HGV traffic.
	07-3384-FZ5	Edelchemie Ltd	Precious and semi-precious metal recovery plants with fertiliser manufacturer
E	11/01968/OUT	Gladedale Estates Ltd & Russell Homes (UK) Ltd & Witton Albion Football Club & Wincham Village	Outline planning for 950 unit residential plus 2,500 m^2 commercial
F	14/04654/OUT	WR Roberts and Sons	Outline planning for 105 unit residential. Forms one part of E, above.
G	15/00067/FUL	DSJ Electra	"Canalside Farm", full planning for 24 unit residential. Change of layout to existing approved and implemented (first slab built) permission for 20 units on this site
H	13/02449/OUT	Hollins Strategic Land LLP	Cookes Lane, outline planning for 74 unit residential
I	12/03652/OUT	Mr and Mrs Lees	Griffiths road, outline planning for 13 unit residential
J	12/03653/OUT	INEOS Enterprises Ltd	Outline planning for 48 unit residential.
K	13/01652/FUL	Making Space	Full planning for demolition of building and construction of 14 sheltered apartments with communal facilities
L	DECC	Tata Chemicals Europe (formerly Brunner Mond) and E.ON Energy from Waste Limited	Lostock Sustainable Energy Plant
M	08-0034-FZ5	Organic Waste Management Ltd	'Bedminster' technology bio-energy plant. Permission has been implemented to the extent that ground has been broken, but the plant has not

Reference	Planning reference	Applicant	Description
			been constructed.
N	13/01134/FUL	British Salt	Development of pipeline corridor of 3 pipes between the brinefield at Warmingham and the salt factory at Middlewich and 4 pipes and fibre optic cable link between the salt factory at Middlewich and the chemical works at Lostock, erection of buffer tank at Warmingham brine field, buffer tank pumping station and 4 settlement tanks at the salt factory, Middlewich, a pipe bridge crossing at the River Dane, pumping station at Blue Slates Farm, 2 buffer tanks and pumping station at the chemical factory, Lostock and other associated ancillary development.
O	08-0020-OUM	NPL Estates Ltd	Outline planning for 306 unit residential development with associated infrastructure.
	08-0021-OUM		Outline planning for a continuing care retirement home with 96 bedroom care home, 170 unit retirement village, 8 other residential units, health facility, retail units and services.

5.2 A number of the proposed developments are located near to the development site within the area of Lostock Works, and three of these were associated with change of use of existing buildings or demolition and redevelopment on sites dominated by buildings and hard standing (refs. A, B and C in Table 5.1). No ecology assessments were undertaken as the sites were of low ecological value and the developments had no potential for off-site ecology impacts, and therefore no cumulative effects with the proposed development would occur.

5.3 Two sites within Lostock Works were subject to ecology assessments and were found to comprise habitats similar to those found on the proposed development site (refs. D and M in Table 5.1). They contained large areas of ephemeral/short perennial vegetation and one contained a small amount of scrub. One also bordered the Wade Brook river corridor.

5.4 These two other developments would have similar potential effects to those identified on the proposed development site and as a result they proposed mitigation measures to ensure features such as nesting birds are not significantly affected and to ensure the Wade Brook is protected. The combined effect of all three proposals would result in the loss of a greater overall area of ephemeral/short perennial vegetation. However, the overall ecological value of this habitat on the other sites was considered low and the increased loss is therefore not considered to have a significant effect. Neither orchids nor cinnabar moth were identified on the other two sites.

5.5 One other proposed development is located within Lostock Works on the site of a disused power station. The Lostock Sustainable Energy Plant (ref. L in Table 5.1) would be located on land largely comprising different habitats to those found on the proposed development site, including disused buildings, hard standing and grassland, but a small amount of ephemeral/short perennial vegetation was also present which was also found to be of low ecological value.

5.6 Two disused buildings on the disused power station site were found to support pipistrelle roosts. The evidence suggested they would be summer satellite roosts or feeding stations. They could potentially be associated with the common pipistrelle bat roost identified in the gatehouse building near the proposed development site. New roosting opportunities would be provided as part of the SEP development to compensate for the loss of the roost sites. As part of the proposed REnescience development, the gatehouse building will be retained and protected, resulting in no cumulative negative effects on roosting bats.

5.7 The majority of the remaining proposals are for residential developments of varying size located on farmland, and one includes farm buildings (refs. E to K and O in Table 5.1). The typical habitat types are therefore largely different to those found on the development site. However, the majority of the sites contain hedgerows, trees and scrub which provide suitable habitat for supporting breeding birds and the loss of some of these habitats along with those on the proposed development site could have a cumulative negative impact on breeding birds. All of the proposals included measures that would protect breeding birds from such negative effects, such as by retaining suitable habitat where practicable, removing vegetation outside of the breeding season or by providing an ecology watching brief to identify and protect nests before vegetation was cleared. The measures would ensure that breeding birds would be protected on all of the sites resulting in no negative cumulative effects.

5.8 The last relevant development (ref. N in Table 5.1) is for a pipeline, buffer tanks and pumping stations between industrial sites, including the Lostock Works. The proposals predominantly affect grassland habitats but hedgerows and trees would also be affected. The proposals include measures to protected breeding birds, so there would be no significant negative effects and no cumulative effects with the proposed development.

6 Summary of Impacts and Effects

6.1 The proposed development would result in the loss of areas of predominantly bare ground and ephemeral/short perennial vegetation from the site, along with smaller areas of trees and shrubs, poor semi-improved grassland, tall ruderals and bracken. This would result in the loss of or disturbance to habitats suitable for fragrant orchid, cinnabar moth and breeding birds.

6.2 The landscaping plans for the site (see Appendix 4.C and Figure 4.Q) will retain/recreate an area of ephemeral/short perennial vegetation to ensure suitable habitat for fragrant orchid and ragwort (the food plant for cinnabar moth) are retained on the site. Existing fragrant orchid plants will be translocated into this area.

6.3 The landscaping plans also provide new tree and shrub planting, which will compensate for the loss of existing trees and shrubs and also enhance the site by introducing a greater variety of native species than currently present. The new trees and shrubs will provide nesting opportunities for birds and foraging opportunities for a variety of fauna, including invertebrates, birds and bats. The planting will also improve habitat connections around the site boundaries, particularly along the eastern and western boundaries, which are currently open.

6.4 A gatehouse building outside of the site boundary, which was found to support a common pipistrelle bat roost, will be retained and protected in the proposals.

6.5 The development site is located next to Wade Brook and measures will be put in place to ensure the river corridor is not affected during the construction or operation of the development. These will include retention of the existing site fence and buffer area between the development site and the river corridor, creation of an additional buffer zone within the site boundary which will be planted with trees and shrubs, and have appropriate drainage design.

6.6 Lighting for the site will be designed to be sensitive to ecological receptors and will avoid artificial lighting of the river corridor or the gatehouse building that contains a bat roost.

6.7 The development site is considered to be sufficiently far from designated sites to ensure no effects would occur during the construction or operation. Appropriate airborne and waterborne pollution prevention and control measures will be in place, detailed in Chapters 8 and 10. No adverse impact on designated sites is predicted.

6.8 Overall, the proposed development will have no significant effects on ecology and nature conservation.

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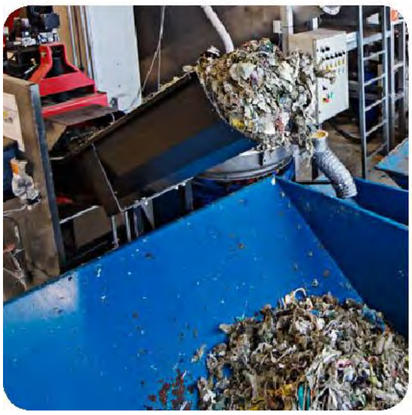
Chapter 8: Hydrology and Flood Risk

REnescience Northwich

REnescience







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Executive Summary

The hydrology and flood risk assessment has considered potential flood risk (including increased rainfall due to climate change) to the site from other sources, how changes in runoff from the site may affect flood risk, and how drainage should be managed to avoid adverse impacts on Wade Brook or other downstream watercourses. It is supported by a Drainage Strategy (Appendix 8.A), drainage design (Figure 8.C) and Flood Risk Assessment (Appendix 8.B).

The Environment Agency's flood risk maps indicate that the application site is located within Flood Zone 1, defined as having low vulnerability to flooding.

Surface water runoff from the site has historically been discharged to Wade Brook via a network of underground surface water drains to a single outfall. This outfall will continue to be used for clean surface water drainage, and the drainage strategy will provide runoff attenuation from new buildings and hardstanding to limit water discharge to a rate no greater than the pre-development site characteristics. There will therefore be no increase in flood risk off-site due to the proposed development.

During construction, a temporary drainage system with appropriate runoff attenuation and settling areas will be provided, to avoid harmful impacts due to sediment loading on Wade Brook.

There will be no contaminated runoff or water discharges from the waste treatment process to Wade Brook, other surface water or to the sewer network. The REnescience process is water-efficient, designed to re-circulate water within the enzymatic and anaerobic digestion treatment stages.

Containment bunds will be constructed around the AD tanks and bioreactors to capture liquid in the event of a leak. They are large enough to contain 110% of the capacity of the largest tank or 25% of the capacity of all the tanks, depending on which is the larger. Manually operated valves that default to a closed position will be used to drain clean rainwater accumulating in these areas after inspection for any contamination from leakage. Any liquid leakage captured in these bunded areas and from other drained waste treatment areas around the site will be pumped back into the REnescience process or, if not appropriate, will be tankered off-site for treatment elsewhere, and not allowed to mix with clean surface water runoff.

Appropriate hardstanding and containment bunds will also be provided for areas of fuel storage and other areas of possible water contamination (e.g. gas engines and substation transformers) during construction and operation.

Water management and discharges will be regulated by the Environment Agency under the facility's Environmental Permit. Overall, no significant effects on hydrology and no increase in flood risk is predicted as a result of the proposed development. No significant cumulative effects are predicted.

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1 Introduction

Purpose of this Chapter

1.1 This chapter presents the results of the hydrology and flood risk assessment for the proposed REnescience Northwich development during its construction, operation and decommissioning. This Environmental Statement (ES) chapter will:

- present the existing environmental baseline established from desk studies, dedicated site surveys and consultation;
- present the potential environmental effects on hydrology and flood risk arising from the proposed development, based on the information gathered and the analysis and assessments undertaken to date;
- identify any assumptions and limitations encountered in compiling the environmental information; and
- highlight any necessary monitoring and/or mitigation measures which could prevent, minimise, reduce or offset for the possible environmental effects identified at the relevant stage in the EIA process.

1.2 The effects considered in this chapter are those on hydrology and surface water resources. Effects on ground conditions and geology are considered in Chapter 9: Geology and Ground Conditions.

1.3 The following types of effects are assessed in this chapter:

- effects on flood risk and flood defences;
- effects on surface water resources; and
- effects on drainage infrastructure.

Study Area

1.4 The application site encompasses an irregularly shaped c.3.37 hectares parcel of land located off the A530 Griffiths Road, near Northwich and Lostock Gralam, Cheshire. The National Grid reference of approximately the centre of the site is 367920, 374201. The site is accessed from the south via an existing private road serving the cluster of chemical industry facilities on the Lostock Works site, from a junction with the A530 around 0.5 km south of the application site boundary.

1.5 A full description of the proposed development and site setting is given in Chapter 2: Site Context and Project Description.

1.6 In defining the study area for baseline data collection, a 1 km buffer around the application site was selected primarily to identify any existing assets or infrastructure that might affect or be affected by the proposed development.

1.7 The data supplier provided additional data for some datasets outside the 1 km buffer zone as follows:

- surface water abstractions and discharges within 2,000 m; and
- pollution incidents within 1,500 m.

2 Planning Policy and Legislative Context

National

National Planning Policy Framework 2012

2.1 The National Planning Policy Framework (NPPF) sets out Government planning policies for England and how these are expected to be applied. The framework acts as guidance for local planning authorities and decision-takers, both in drawing up plans and making decisions about planning applications.

2.2 Paragraphs 99–104 set out the need for an appropriate assessment of flood risk. Guidance on the minimum requirements for such as assessment is contained in PPG ID7.

2.3 The NPPF requires the application of a sequential risk-based approach to determining the suitability of land for development in flood risk areas, and that a Flood Risk Assessment (FRA) should be carried out to the appropriate degree, at all levels of the planning process.

Planning Practice Guidance ID7, online

2.4 PPG ID7 Flood Risk and Coastal Change provides guidance to ensure the effective implementation of the NPPF planning policy for development in areas at risk of flooding.

2.5 PPG ID7 states that a site specific FRA is required for all proposals for new development in Flood Zones 2 and 3 and for any proposal of 1 hectare or greater in Flood Zone 1. An FRA should consider vulnerability to flooding from other sources as well as from river and sea flooding, and also the potential for any increased risk of flooding elsewhere resulting from a proposed development.

Land Drainage Act 1991

2.6 Under Section 23 of the Land Drainage Act 1991 (LDA 1991), consent is required from the relevant Lead Local Flood Authority for any works likely to obstruct or affect the flow of a watercourse. Section 66 of the LDA 1991 makes provisions for the creation of byelaws considered necessary for securing the efficient working of the drainage system. Under the byelaws, consent is required from the relevant drainage authority for any development within a particular distance of a drainage work. This distance varies between drainage authorities but is generally between seven and nine metres.

Water Resources Act 1991

2.7 Section 109 of the Water Resources Act 1991 (WRA 1991) requires the consent of the Environment Agency (EA) to erect structures and carry out works in, over or under a watercourse. In addition, the WRA 1991 makes provision for the creation of byelaws by the EA. Paragraph 5 of Schedule 25 allows for the EA to create byelaws for flood defence and drainage purpose.

Local

Cheshire West & Chester Council, Local Plan (Part One) Strategic Policies

2.8 The Local Plan states that it will seek to reduce flood risk, promote water efficiency measures, and protect and enhance water quality through the following mechanisms. The Local Plan reiterates the flood risk and water management policy (ENV1) of the saved Vale Royal Plan, summarised below.

2.9 In addition, the Local Plan includes Strategic Policy SO14, which notes that developments should:

- Mitigate and adapt to the effects of climate change by addressing flood risk and water management and support the development of new buildings and infrastructure that are resilient, resistant and adapted to the effects of climate change.

Vale Royal Borough Local Plan, policies saved after 29 Jan 2015

2.10 The document contains detailed planning policies and proposals for the former Vale Royal Borough Council including policies setting out the criteria to be taken into account in determining proposals for development and the use of land and buildings. The policies relevant to hydrology and flood risk are outlined below.

Policy ENV1 – Flood risk and water management

2.11 The Local Plan will seek to reduce flood risk, promote water efficiency measures, and protect and enhance water quality through the following mechanisms.

- All development must follow the sequential approach to determining the suitability of land for development, directing new development to areas at the lowest risk of flooding and where necessary apply the exception test, as outlined in national planning policy.
- Developers will be required to demonstrate, where necessary, through an appropriate Flood Risk Assessment (FRA) at the planning application stage, that development proposals will not increase flood risk on site or elsewhere, and should seek to reduce the risk of flooding. New development will be required to include or contribute to flood mitigation, compensation and/or protection measures, where necessary, to manage flood risk associated with or caused by the development.
- Development proposals should comply with the Water Framework Directive by contributing to the North West River Basin Management Plan and Dee River Basin Management Plan objectives, unless it can be demonstrated that this would not be technically feasible.
- The drainage of new development shall be designed to reduce surface water run-off rates to include the implementation of Sustainable Drainage Systems (SUDS) unless it can be demonstrated that it is not technically feasible or viable.

- Proposals within areas of infrastructure capacity and/or water supply constraint should demonstrate that there is adequate wastewater infrastructure and water supply capacity to serve the development or adequate provision can be made available.

Consultation

2.12 An EIA Scoping Note for the proposed development was submitted to Cheshire West and Chester Council (CWCC) on 08 July 2015. CWCC provided its Scoping Opinion, with input from the statutory consultees Network Rail, the Health & Safety Executive, Natural England, the Environment Agency and Historic England, on 13 August 2015. Points raised in the Scoping Opinion are summarised in Chapter 3: Scoping and Consultation. One specific point was raised concerning hydrology and flood risk:

"The site is within Flood Zone 1 (low risk from fluvial and tidal flood sources) the primary function of the EIA will be to consider flood risk form other (local) sources and also to consider the issue of surface water management."

2.13 In addition, both CWCC and the EA raised the need to ensure that Wade Brook (a watercourse to the south of the application site boundary) is protected from pollution or changes in the hydrological regime that could affect its value as a habitat for protected species. This is assessed further in Chapter 7: Ecology and Nature Conservation.

2.14 The Environment Agency and CWCC also responded to environmental data requests made in May 2015 for any publicly available hydrological and/or flood risk records held for the application site and immediate area.

3 Baseline Environment

Methodology to Inform Baseline

3.1 Baseline data have been collated to inform the assessment of the likely significant effects for the proposed development. Current site conditions were ascertained through a site visit undertaken on the 9th June 2015. This provided an insight into surface water features and the existing land use via a visual inspection of the hydrological features within the immediate vicinity of the application site.

3.2 General information regarding the site setting and baseline conditions of the area has been obtained from the following:

- British Geological Survey (BGS), 1:50,000 Series Geology Plan Sheets 109 'Chester and 110 'Macclesfield' Solid and Drift;
- the Centre for Ecology and Hydrology (CEH) (2012) (www.ceh.ac.uk);
- Envirocheck Report, 676338641_1_1, May 2015;
- EA Website (2015) (www.environment-agency.gov.uk);
- EA Flood Hazard Mapping;
- Met Office: Climate data (2015) (www.metoffice.gov.uk);
- Ordnance Survey Landranger 1:50,000 Map 118 Stoke-on-Trent & Macclesfield, 2012; and
- Ordnance Survey 1:10,000 Scale Electronic Data Mapping for assessment area.

Characterisation of the Baseline Environment

3.3 The application site is set in a predominantly industrial area of existing and former chemical industry works.

3.4 The site is generally flat lying, encompassing a large central plateau level of around 25.50 m AOD. Site levels around the northern, western and southern boundaries are approximately 2m to 3 m lower than the main plateau. The wider site topography in terms of overland drainage flow paths generally trend in a southerly direction towards the Wade Brook, which runs east-west just beyond the southern boundary of the application site.

3.5 The existing site topography is shown in Figure 2.S in Volume 4 of the ES.

3.6 Detailed descriptions of hydrological receptors within the study area for the proposed development are presented below.

Surface watercourses

3.7 Wade Brook, an EA designated 'Main River', flows east to west immediately to the south of the application site boundary.

3.8 The brook is sourced c.5 km to the east of the application site by a series of field drains and unnamed watercourse and flows beneath the A556 and Birches Lane. The channel is then culverted beneath the A530, Trent and Mersey Canal and the main Tata Chemicals complex before emerging in an open channel section c.150 m to the west of the application site. At this point, along the southern boundary of the application site, Wade Brook flows within a steeply sloping channel in an east-west direction. The water level in Wade Brook was recorded to be approximately 17.50 m – 18.00 m AOD (7.50 m to 8.00 m below existing general site levels) at the time of survey.

Surface water abstraction

3.9 Envirocheck data indicate that there are no abstraction licenses within 250 m of the application site.

Discharge consents

3.10 Envirocheck records indicate that there are 14 active or unrevoked discharge consent within 1 km of the application site, summarised in Table 3.1.

Table 3.1: Discharge consents within 1 km

Operator	Licence Reference	Discharge type	Receiving water	Distance from site
Griffiths Park Land Limited	016890251	Surface water	Tributary of Wade Brook	270 m southwest
Ineos Enterprises Limited	016890186	Process water	Wade Brook	346 m east
Ineos Enterprises Limited	016890186	Ground water	Wade Brook	346 m east
Tata Chemicals Europe	016890185	Process water	Wade Brook	344 m east
United utilities	016881506	Sewerage discharge	Wade Brook	568 m west
United utilities	016810279	Sewerage discharge	Wade Brook	585 m west
United utilities	016881505	Sewerage discharge	Wade Brook	568 m west
United utilities	016810415	Surface water	Wincham Brook	569m northwest
United utilities	01vry0093	Sewerage overflow	Wade Brook	603 m southwest
United utilities	01vry0092	Sewerage overflow	Wade Brook	603 m southwest
United utilities	016892222	Sewerage overflow	Un-named tributary of Wade Brook	703 m southwest
United utilities	01vry0116	Sewerage overflow	Not supplied	720 m northeast
United utilities	016881516	Storm overflow	Wincham Brook	838 m northwest
United utilities	01vry0041	Sewerage overflow	Wade Brook	840 m northwest

Pollution incidents

3.11 Records indicate that there has been three *Category 2 – significant pollution incidents* reported to the EA within 1 km of the application site. The closest relates to the release of oil/fuel oil into Wade brook c.211 m northwest of the application site, the second to the release of oil/fuel oil into Wincham Brook c.227 m west, and the third to the discharge of lubricating oils into Wincham Brook following a fire c.508 m northwest of the application site in 1997.

Surface water quality

3.12 The EA indicates that there is no surface water quality data available for any streams or water channels in close proximity of the application site.

3.13 Water samples were retrieved from Wade Brook upstream and downstream of the site on 6 occasions as part of the EIA undertaken by Wardell Armstrong for the previous Viridor planning application on this site (submitted in 2010), and compared against Environmental Quality Standards (EQS). The results recorded exceedances in chlorine, arsenic, mercury, chromium and copper. A comparison was then undertaken between the level fluctuations upstream and downstream. In general the chemical nature of Wade Brook passing the site remains stable, although fluctuations between monitoring periods were identified.

3.14 The report concluded that *"The site does not appear to be having a significant impact on surface water quality and therefore is not considered to pose a significant risk to Wade Brook. However, it is concluded that there appears to be a source of contamination upstream of the site."* (Wardell Armstrong, 2010, Volume 2, Chapter 9, paragraph 9.54.)

3.15 Since the time of the Wardell Armstrong EIA, buildings on the application site have been demolished down to foundation level, and the site has remained disused. Adjacent land-uses upstream, notably the Solvay and Tata Chemicals works, have remained the same. The water quality monitoring information published in the Wardell Armstrong ES is therefore considered appropriate to use in this assessment, in the absence of any surface water data available from the EA.

Flooding

3.16 The EA has confirmed that the application site is located within Flood Zone 1 (SO/2015/115118/01-L01), defined by PPG ID7 as a 'less vulnerable' development. Table 1 of the PPG indicates that the development proposals are suitable for all Flood Zones.

3.17 EA surface water mapping indicates that the application site is at 'very low' risk, with less than 1 in 1,000 chance of flooding in each year.

3.18 The application site is shown to be at located within the extremity of flood extents associated with a complete failure in reservoir infrastructure at Shakerley Mere, NGR 373179, 37318. The EA acknowledges that the reservoir flooding maps indicate the worst case extents, which is very unlikely to happen as this would require total loss of all water from the affected reservoir(s). Generally the safety of the reservoir is the responsibility of the owners or operators, who are required to maintain an adequate degree of protection. This is achieved by carrying out regular inspections, risk assessments and through the production and maintenance of Reservoir Flood Plans. Therefore, the risk of flooding to the application site from a reservoir failure is considered to be low.

Sequential Test

3.19 The Sequential Test is designed to steer new developments to areas of lowest probability of flooding (Flood Zone 1) or demonstrate that there are no reasonably available sites in areas with a lower probability of flooding (Flood Zone 2 or 3(a)) that would be appropriate for the type of development or land use proposed.

3.20 In areas at risk of river or sea flooding, preference should be given to locating new development in Flood Zone 1. If there is no reasonably available site in Flood Zone 1, the flood vulnerability of the proposed development can be taken into account in locating development in Flood Zone 2 and then Flood Zone 3. Within each Flood Zone, new development should be directed to sites at the lowest probability of flooding from all sources as indicated by the Strategic Flood Risk Assessment (SFRA).

3.21 The Sequential Test therefore seeks the allocation of land for development in flood areas of least risk where practicable (i.e. preferentially steer towards Flood Zone 1).

3.22 EA Flood Zone mapping indicates that the application site is located within Flood Zone 1, and therefore is deemed appropriate and should pass the Sequential Test.

3.23 As the proposed built development has passed the Sequential Test, there is no need to undertake the next stage in the flood risk assessment process (i.e. the Exceptions Test).

3.24 Following the construction of the proposed development, there will be an increase in the amount of low permeability cover and surface run-off will need to be controlled at a rate to be agreed with the EA and CWCC.

3.25 The attenuation requirement for the proposed development is summarised in paragraphs 4.13 - 4.14.

Existing drainage

3.26 The site is currently served by privately owned and maintained surface water drains associated with the former chlorine production plant on the site. In addition, there are also a number of separate trade effluent drains which collected acid/ alkali and other miscellaneous effluents arising from the various former industrial processes undertaken on the site.

3.27 Surface water runoff from the site has historically been discharged to Wade Brook via a network of underground surface water drains. A small section of the site along the northern boundary, which is lower that the main plateau area and is covered with stone ballast associated with the former railway sidings serving the site, drains via infiltration and/or overland flows within the larger area of railway land beyond the northern boundary of the site.

Private water supply

3.28 The EA and CWCC have confirmed that there are no private water supplies within 250 m of the application site.

Hydrogeology

3.29 British Geological Survey online geological mapping indicates that the underlying superficial deposits comprise Devensian Till, normally silty clays with subordinate silts, sands, gravels. The bedrock is Anisian Age Northwich Halite Member comprising Halite with partings of mudstone.

3.30 The superficial deposits are classified under the Water Framework Directive as Secondary Undifferentiated Strata. These strata have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.

3.31 The bedrock is classified under the Water Framework Directive as Unproductive Strata. These strata contain insignificant sources of groundwater.

3.32 Based on the cohesive nature of the underlying Till it is considered that groundwater flooding does not pose any significant flood risk to the application site.

Medium and Long Term Temporal Change

3.33 In the UK, the effects of climate change over the next few decades are predicted to result in milder, wetter winters and hotter, drier summers. An increasing frequency of heavy, intense precipitation leading to increased peak river flows in combination with rising sea levels will have a major impact on the potential for future flooding. The UK Climate Change Predictions Report (UKCP09) (2010) and Defra Guidance on Climate Change Impacts (October 2006) gives advice with regard to indicative sensitivity ranges for the predicted impacts of climate change. If the effects of climate change are taken into account, the amount of surface water run-off and the risk of flooding to the application site could increase in the future.

3.34 Peak rainfall intensity could be up to 30% higher than current levels and peak river flow could be 20% higher than current levels, all of which would result in the water depths being higher.

3.35 Based on an assumed asset lifespan of up to 50 years from 2015 (to be conservative and allow for a potentially longer working lifespan than the 25 years anticipated) the following allowances for climate change are made:

3.36 An allowance for climate change of 20% for a development life up to 2085 (Climate change allowances for planners, 2013) has been added to flood risk calculations.

Data Limitations

3.37 The assessment is primarily based on publicly available data obtained from the EA, local authority, drainage board and commercial data supply companies, as well as additional information supplied from stakeholders during the scoping and consultation stages.

3.38 However, the assessment is limited by a lack of:

- flow data for water courses and drainage channels;
- water quality data for specific locations; and
- details on any temporary constructions within the study area.

3.39 Overall a moderate to high level of certainty has been applied to the study.

3.40 Nevertheless, taking into account the nature of the development, its potential pathways for hydrology and flood risk impacts, and the sensitivity of receptors, it is considered that the data used is sufficient to underpin this assessment of the likely significant effects of and on the proposed development.

4 Impact Assessment

Key Parameters for Assessment

4.1 The assessment scenarios listed in Table 4.1 have been selected as those having the potential to result in the greatest effect on the identified receptors. These scenarios have been selected from the details provided in the project description (Chapter 2). Effects of greater adverse significance are unlikely to arise should any other development scenario based on details within the project design envelope to that assessed here be taken forward in the final design scheme.

4.2 For the purpose of this ES, flood risk is defined as the permanent removal or increase in low permeability surfacing leading to an alteration in pre-development surface water run-off rates or a derogation of floodplain storage. 'Temporary' flood risk is the temporary removal or alteration in permeable surfacing leading to a temporary increase in surface water run-off or derogation of floodplain storage (for example during construction).

Table 4.1: Design envelope scenario considered within assessment of potential impacts on hydrology and flood risk

Potential impact	Direct/ indirect	Maximum adverse scenario	Justification
Construction phase			
The impact of construction may affect flood risk.	Direct	Total impermeable areas of 2.4 ha, increase in runoff.	The maximum dimensions of the built footprint would result in the largest possible area of disturbance and flood storage and therefore, the greatest potential impact on flood risk due to installation works in flood risk areas.
The impact of construction may affect Wade Brook.	Direct	Total impermeable areas of 2.4 ha.	Construction works of the proposed development may involve the use of oils, greases and other substances with associated potential for accidental spillages. Oils/chemical spills to ground are worst case condition. Infrastructure maintains lateral pathways for water flow.
Operation phase			
The impacts of operation may affect Wade Brook.	Indirect	Total impermeable areas of 2.4 ha.	Routine maintenance of the proposed development may involve the use of oils, greases and other substances with associated potential for accidental spillages. Oils/chemical spills to ground are worst case condition. Infrastructure maintains lateral pathways for water flow.
The impacts of operation on flood risk.	Direct	Total impermeable areas of 2.4 ha.	The maximum dimensions of the built footprint resulting in the largest area of disturbance.

Potential impact	Direct/ indirect	Maximum adverse scenario	Justification
Decommissioning phase			
The impacts of decommissioning may affect Wade Brook.	Direct	Total impermeable areas of 2.4 ha.	The worst case scenario condition assumed is removal and backfilling.
The impacts of decommissioning may affect temporary flood risk.	Direct	Total impermeable areas of 2.4 ha.	The decommissioning of the facility may impact upon the flood risk on the surrounding environment given the potential removal of hardstanding and attenuation storage. The removal of all infrastructure associated with the project could affect flood risk as it would take the natural environment a period of time to re-establish itself and regenerate to providing natural attenuation.

Assessment Criteria and Impact Assessment Methodology

4.3 The baseline characterisation set out above enables the identification of the nature and likely significance of effects. The assessment considers the potential impacts to environmental receptors and the pathways by which the receptors may be affected. The following terms have the following meanings in this section.

- Source: potential contaminant sources, ground/channel disturbance.
- Pathway: the mechanism by which the source may affect a receptor.
- Receptor: identified features that may be affected, based on the sensitivity of the site.

4.4 This includes consideration of the probability of harm occurring, taking into account potential sources of contamination and receptors that may be affected by such contamination.

4.5 The significance of predicted impacts likely to occur during construction, operation and decommissioning of the development has been determined by consideration of the sensitivity of the key attributes of the hydrology and flood risk that may be affected and the magnitude of the predicted impact.

Determining the sensitivity of the receptor

4.6 The sensitivity or value of a hydrological receptor or attribute is largely determined by its quality, rarity and scale.

4.7 The determination of value or sensitivity takes into account the scale at which the attribute is important. This can be defined as being at a local level (e.g. on development site or immediately adjacent); district level (beyond development boundary but within the district); county level (e.g.

Cheshire); regional level (e.g. North West England); national (e.g. England) or international level (e.g. United Kingdom).

4.8 The definitions set out in Table 4.2, below, have been followed in the consideration of sensitivity for this project. This table takes into account relevant guidance outlined in Section 2 and A4.3 of the Design Manual for Roads and Bridges (DMRB) (Highways Agency et al., 2009) and the author's professional judgement.

Table 4.2: Definition of terms relating to the sensitivity of hydrological receptors

Sensitivity	Definition
Negligible	Receptor is of negligible value with no contribution to local, regional or national economy. Receptor is not vulnerable to impacts that may arise from the project and/or has high recoverability. Surface water: WFD Current Overall Status of Bad. Flood risk: area outside flood plain or flood plain with very low probability of flooding industrial properties.
Low	Receptor is of low value with little contribution to local, regional or national economy. Receptor is not generally vulnerable to impacts that may arise from the project and/or has high recoverability. Surface water: WFD Current Overall Status of Poor Flood risk: flood plain with limited constraints and a low probability of flooding of residential and industrial properties.
Medium	Receptor is of minor value with small levels of contribution to local, regional or national economy. Receptor is somewhat vulnerable to impacts that may arise from the project and has moderate to high levels of recoverability. Surface water: WFD Current Overall Status of Moderate Flood risk: flood plain with limited constraints and a low probability of flooding of residential and industrial properties.
High	Receptor is of moderate value with reasonable contribution to local, regional or national economy. Receptor is generally vulnerable to impacts that may arise from the project and recoverability is slow and/or costly. Surface water: WFD Current Overall Status of Good Flood risk: flood plain or defence protecting between one and one hundred residential properties or industrial premises from flooding.
Very high	Receptor is high value or critical importance to local, regional or national economy. Receptor is highly vulnerable to impacts that may arise from the project and recoverability is long term or not possible. Surface water: WFD Current Overall Status of High Flood risk: flood plain or defence protecting more than one hundred residential properties from flooding.

Magnitude of impacts

4.9 The magnitude of any predicted impact is dependent on its size, duration, timing (e.g. seasonality) and frequency (permanent, seasonal, etc). A qualitative appraisal of the likely magnitude of the predicted impact is provided within this assessment, taking into account the measures proposed to be adopted as part of the development to control such impacts. The magnitude of the predicted impact has been described using the criteria outlined in Table 4.3, below. This table takes into account guidance provided in Table 4.2 and Table A4.4 of the DMRB (Highways Agency et al., 2009) and the author's professional judgement.

Table 4.3: Definition of terms relating to the magnitude of an impact upon hydrology and flood risk

Magnitude	Definition
No change	No change from baseline conditions.
Negligible	Very slight change from baseline condition. Physical extent of impact is negligible and of short term duration (i.e. less than 2 years).
Low	Minor shift away from baseline, leading to a reduction in level of activity that may be undertaken. Impact is of limited temporal or physical extent and of short term duration (i.e. less than 2 years).
Medium	Loss or alteration to significant portions of key components of current activity. Impact is of moderate temporal or physical extent and of medium term duration (i.e. less than 20 years).
High	Total loss of ability to carry on activities. Impact is of extended temporal or physical extent and of long term duration (i.e. approximately 50 years duration).

Significance of effects

4.10 The significance of predicted effects has been determined using publically available environmental data to take into account the sensitivity of the receptor and the magnitude of each impact. Table 4.4, below, is used to inform the evaluation of the significance of effects. This table is based on guidance provided for linear schemes within the DMRB (Highways Agency et al., 2008).

4.11 For the purposes of this assessment, any effect that is moderate, major or substantial is considered to be significant in EIA terms. Any effect that is minor or below is not significant.

Table 4.4: Matrix for determining significance of effect from magnitude of impact and sensitivity

Sensitivity of receptor	Magnitude of impact				
	No change	**Negligible**	**Low**	**Medium**	**High**
Negligible	Negligible	Negligible	Negligible or minor	Negligible or minor	Minor
Low	Negligible	Negligible or minor	Negligible or minor	Minor	Minor or moderate
Medium	Negligible	Negligible or minor	Minor	Moderate	Moderate or major
High	Negligible	Minor	Minor or moderate	Moderate or major	Major or substantial
Very high	Negligible	Minor	Moderate or major	Major or substantial	Substantial

Assessment of significance

Designed-in mitigation measures adopted as part of the project

4.12 As part of the project design process a number of designed-in mitigation measures have been proposed to reduce the potential for impacts on hydrology and flood risk, summarised in Table 4.5. These measures are considered standard industry practice for this type of development.

Table 4.5: Designed in mitigation measures adopted as part of the project with respect to hydrology and flood risk

Designed in mitigation measures adopted as part of the project	Justification
Drainage Strategy The proposed development would result in the construction of low permeability surfacing, potentially increasing the rate of surface water run-off from the site. The proposed Drainage Strategy (Appendix 8.A) and drainage design (Figure 8.C) ensure that the current mean annual run-off rate is maintained at the current greenfield run-off rate in line with the EA's Scoping response, and include containment and runoff management measures to avoid contaminated water discharge to Wade Brook.	To address the requirements of the NPPF, Planning Practice Guidance ID7, EA and Cheshire West and Chester Council surface water run-off requirements.
Construction drainage management Temporary construction phase drainage and management measures including runoff attenuation, materials storage (including bunded areas and spill kits) and staff training will be applied, as detailed in the Construction Environmental Management Plan (CEMP) in Appendix 2.C.	To prevent pollution of Wade Brook and address stakeholder concerns for the construction of the development.
Decommissioning drainage management During decommissioning, appropriate drainage management (making use of the retained surface water drainage) will be implemented to ensure that surface runoff does not exceed rates during operation and equivalent protection measures, as necessary, to the construction phase are implemented. See Appendix 2.B.	To prevent pollution of Wade Brook and address stakeholder concerns for the decommissioning of the development.

Flood Risk Assessment

4.13 An FRA has been undertaken for the proposed development (shown at Appendix 8.B) in accordance the FRA good practice guidance on flood risk assessment in the NPPF and PPG ID7. The proposed development is defined as 'Less Vulnerable' in Table 2 of PPG ID7 and is suitable for the location.

4.14 The proposed development would result in a small increase in the total amount of low permeability cover (from 2.19 Ha pre-development to 2.36 Ha with development), but due to the provided runoff attenuation (storage in bunded areas and in below-ground pipework and cisterns) there would be a decrease in maximum surface run-off flows to Wade Brook.

4.15 Calculations from the Drainage Strategy indicate that the overall maximum run-off rate during a 1 in 100 year rainfall event from the proposed development would reduce from 502.9 $l.s^{-1}$ for the to 462.9 $l.s^{-1}$ for the c.1.4 ha of impermeable surfacing outside bunded areas. The bunded areas (remaining 0.96 Ha) are sized to contain the 1 in 100 year event rain falling within them, allowing for subsequent controlled discharge.

4.16 The surface water drainage assessment and strategy Appendix 8.A) indicates that in the 'worst case' storm water from c.1.4 ha of impermeable ground can be discharged directly into Wade Brook utilising the existing 450 mm diameter outfall. The proposed measures incorporate a Class 1 bypass oil separator (with integral high level alarms) to ensure compliance with BS EN 858-1:2002, in accordance with Pollution Prevention Guideline document PPG3 'Use and design of Oil Separators in Surface Water Drainage Systems'.

4.17 External vehicle fuelling station area will be isolated by way of a perimeter surface water drainage channel around the fuelling point to intercept potentially contaminated surface water runoff arising from re-fuelling activities. Runoff from this area shall be passed through a Class 1 Forecourt oil separator (with integral high level alarms) to ensure compliance with BS EN 858-1:2002, in accordance with Pollution Prevention Guideline document PPG3 'Use and design of Oil Separators in Surface Water Drainage Systems'.

Construction phase

4.18 The effects of the construction of development have been assessed on hydrology and flood risk in the study area. The environmental impacts arising from the construction of the development are listed in Table 4.1 along with the design envelope parameters against which each potential construction phase impact has been assessed.

4.19 A description of the significance of impacts upon hydrology and flood risk receptors caused by each identified impact is given below.

The impact of construction may affect flood risk

Sensitivity of receptor

4.20 The proposed development area has been assessed as not directly at risk of flooding, but increased low permeability surfacing could directly impact flood risk on adjoining land. The land adjoining the proposed development is of low vulnerability, high recoverability. The sensitivity of the receptors is therefore considered to be low.

Magnitude of impacts

4.21 The construction methodologies selected will ensure that there is no change in the risk of flooding during construction and runoff is managed to existing flow rates.

Significance of effect

4.22 The overall significance of the effect on flood risk based on the situation which includes the integration of measures adopted in Table 4.5 is assessed as negligible.

The impact of construction may affect Wade Brook.

Sensitivity of receptor

4.23 The main watercourses in the study area are deemed to be of moderate vulnerability, moderate to high recoverability and minor value. The sensitivity of the receptor is therefore, considered to be medium.

Magnitude of impact

4.24 The impact is predicted to be of local spatial extent, short term duration, intermittent and reversible. It is predicted that the impact will affect the receptor directly. The magnitude is therefore considered to be low at most.

4.25 The proposed Drainage Strategy and measures in the CEMP are designed to ensure that there is no change in the rate or quality of water discharged to Wade Brook.

Significance of effect

4.26 Taking into account the measures integrated as part of the project outlined in Table 4.5, the effects are considered to be negligible.

Operational and maintenance phase

4.27 The effects of the operation and maintenance of development have been assessed on hydrology and flood risk in the study area. The environmental impacts arising from the operation and maintenance of development are listed in Table 4.1 along with the design envelope parameters against which each potential operation and maintenance phase impact has been assessed.

4.28 A description of the significance of impacts upon hydrology and flood risk receptors caused by each identified impact is given below.

The impact of operation may affect flood risk

Sensitivity of receptor

4.29 The proposed development area has been assessed as not directly at risk of flooding, but increased low permeability surfacing could directly increase surface water flow rates to adjoining land. The land adjoining the proposed development is of low vulnerability and high recoverability. The sensitivity of the receptors is therefore considered to be low.

Magnitude of impacts

4.30 The incorporation of the proposed Drainage Strategy will ensure that there is no change in the rate of flow from the application site to the surrounding land.

Significance of effect

4.31 The overall significance of the effect on flood risk, based on the situation which includes the integration of measures adopted in Table 4.5, is assessed as negligible.

The impact of operation may affect Wade Brook

Sensitivity of receptor

4.32 The main watercourse to the south is assessed to be of moderate vulnerability, moderate to high recoverability and minor value based on the EA's WFD classification. The sensitivity of the receptor is therefore considered to be medium

Magnitude of impact

4.33 The impact is predicted to be of local spatial extent, short term duration, intermittent and reversible. It is predicted that the impact will affect the receptor directly.

4.34 The proposed Drainage Strategy will ensure that there is no change in the rate or quality of water discharged to Wade Brook.

Significance of effect

4.35 Taking into account the measures integrated as part of the project outlined in Table 4.5, the effects are considered to be negligible.

Decommissioning phase

4.36 The effects of the decommissioning of the development have been assessed on hydrology and flood risk in the study area. The environmental impacts arising from the decommissioning of the development are listed in Table 4.1 along with the design envelope parameters against which each decommissioning phase impact has been assessed.

The impact of decommissioning may affect flood risk

Sensitivity of receptor

4.37 The decommissioning and removal of the development may alter the amount low permeability surfacing, which could directly impact on surface water flow rates to adjoining land. The land adjoining the proposed development is of low vulnerability and high recoverability. The sensitivity of the receptors is therefore considered to be low.

Magnitude of impacts

4.38 With appropriate management measures during decommissioning, site drainage can be managed such that there is no change in the rate of flow from the application site to the surrounding land.

Significance of effect

4.39 The overall significance of the effect on flood risk, based on the situation which includes the measures in Table 4.5, is predicted to be negligible.

The impact of decommissioning may affect Wade Brook.

Sensitivity of receptor

4.40 The main watercourse to the south is assessed to be of moderate vulnerability, moderate to high recoverability and minor value. The sensitivity of the receptor is therefore considered to be medium.

Magnitude of impact

4.41 The impact is predicted to be of local spatial extent, short term duration, intermittent and reversible. It is predicted that the impact will affect the receptor directly.

4.42 Implementation of appropriate management measures during decommissioning would ensure that there is no change in the rate or quality of water discharged to Wade Brook.

Significance of effect

4.43 Taking into account the measures outlined in Table 4.5, the effects are predicted to be negligible.

Water Framework Directive (WFD)

4.44 The proposed development includes runoff management and potential contamination mitigation measures to avoid adverse impacts on the Wade Brook, as detailed in the Drainage Strategy at Appendix 8.A. No contaminated or process water discharges to Wade Brook are proposed. This will be regulated by the EA using the proposed development’s Environmental Permit.

4.45 Therefore, is has been determined that the development would not cause a deterioration of the current Wade Brook WFD status or the hinder ability of the watercourse to achieve future WFD status targets.

Associated development

4.46 Associated works may also be undertaken by the applicant or third parties to improve the existing shared private access road through Lostock Works, within the planning application boundary. This may involve widening at certain points to ease passing and turning of HGVs. This widening would be limited (anticipated to be <3m) as the access road is constrained by the industrial facilities through which it runs. Re-surfacing some sections may also be undertaken if necessary. Any works undertaken would be in agreement with the land owner and other road users.

4.47 Runoff from the access road is managed by its existing drainage. The increase in hardstanding due to minor widening works in short sections would be negligible and hence there will be no significant effect due to increased surface runoff.

Cumulative effects

4.48 No cumulative effects on water resources and flood risk receptors are likely, as other proposed applications would incorporate their own drainage, pollution and flood risk abatement techniques.

It is assumed that the other developments will be constructed in line with the requirements for the NPPF, Planning Practice Guidance ID7 and Pollution Prevention Guidance, requiring that new developments attenuate surface water run-off to pre development run-off rate.

Conclusion

4.49 The impacts on hydrology and flood risk for the proposed development f have been assessed in line with the relevant NPPF, Planning Practice Guidance ID7 and the Cheshire West and Chester Council Local Plan and all other relevant legislation, guidance, planning policy and technical documentation.

4.50 The assessment has indicated that there are no significant effects arising from the proposed development once the proposed mitigation measures are put in place.

Glossary

Term	Definition
Drainage Board (DB)	Drainage Boards are an integral part of water level management in the UK. Each DB is a local public authority established in areas of special drainage need in England and Wales. They have permissive powers to manage water levels within their respective drainage districts. They undertake works to reduce flood risk to people and property and manage water levels to meet local needs.
Exceptions Test	The Exceptions Test ensures that development is permitted in flood risk areas only in exceptional circumstances and when strict qualifying conditions have been met. It is carried out if the Sequential Test demonstrates that a development cannot be located in areas of low flood risk.
Flood Zone 1	This zone comprises land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%).
Flood Zone 2	This zone comprises land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river (1%-0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% - 0.1%) in any year.
Flood Zone 3	This zone comprises land assessed as having between a 1 in 100 or greater annual probability of river (>1%), or a 1 in 200 or greater annual probability of sea flooding (>0.5%).
Geology	The scientific study of the origin, history and structure of the earth.
Ground conditions	An assessment of the history and chemical and physical characteristics of the soil conditions at a site.
Groundwater	All water which is below the surface of the ground in the saturated zone and in direct contact with the ground or subsoil.
Groundwater Directive	Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration.
Hydrology	The study of the movement, distribution, and quality of water.
Hydrogeology	The branch of geology dealing with the waters below the earth’s surface and with the geological aspects of surface waters.
Lead Local Flood Authority	Lead Local Flood Authorities have responsibility for developing a Local Flood Risk Management Strategy for their area covering local sources of flooding. The local strategy produced must be consistent with the national strategy. It will set out the local organisations with responsibility for flood risk in the area, partnership arrangements to ensure co-ordination between these, an assessment of the flood risk and plans and actions for managing the risk.
Main Drain	The name of a water course owned and operated by Environment Agency.
Minor Drain	The name of a water course owned and operated by either the local Drainage Board or Lead Local Flood Authority or private land owners.
Sequential Test	A Sequential Test aims to steer new development to areas with the lowest probability of flooding by recommending that development is not allocated if there are reasonably available sites appropriate to the proposed development in areas with a lower probability of flooding.
Treated Effluent	Water that has received primary, secondary or advanced treatment to reduce its pollution or health hazards and is subsequently released from a wastewater facility after treatment.
Undefended Flood Zone	Environmental Agency mapped river and sea flood water extents ignoring the presence of flood defences.
Water Framework Directive (WFD)	Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy.

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Chapter 9: Geology and Ground Conditions

REnescience Northwich

Quality Management

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Executive Summary

The Phase 1 Environmental Review has concluded that previous use of the site had the potential to have generated soil or groundwater contamination. These uses included the former bleach works, former brine pumping station, former chlorine plant and any Made Ground relating to a former tip, embankments and previous construction/demolition work.

Further to this, a number of off-site land uses have the potential to have had a localised impact on soil and groundwater quality. These were identified to include Made Ground associated with railway lines adjacent to the site, saltworks, a chemical works adjacent to the east of the site, associated infrastructure including substations and railway lines, landfills including waste lime reservoirs (now Griffiths Park), a former brick and tile works and a former gasometer.

A previous site investigation (Phase II Factual Report Lostock Works Cheshire. Van Elle (2009) Ref: G900000) has identified contamination at the site in the form of metals and trichloromethane. Based on present information, it is therefore considered that there is potential for existing contamination associated with soil and groundwater on the site to impact receptors.

Prior to development of the site, a further site investigation will be undertaken, which will investigate soil and groundwater contamination and the presence of ground gas. If further contamination is identified, a detailed risk assessment will be undertaken to confirm whether there is the potential for an impact to human health or the environment. If a risk is identified, then an appropriate remediation strategy will be developed and remediation or mitigation action will be undertaken as necessary.

A Construction Environment Management Plan (CEMP) has been developed (see Appendix 2.C in Volume 3 of the ES). It sets out appropriate measures to control dust and contamination of the environment during the development, including procedures to be followed if any contamination is identified during site work.

In summary, adverse environmental impacts relating to soil and groundwater during construction and operation would be prevented by measures incorporated into the development scheme. The effects of the proposed development are assessed to be neutral, or potentially beneficial if contamination is identified and remediated.

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Appendices

1 Introduction

Background and Study Area

1.1 The purpose of the assessment is to describe the existing baseline ground conditions of the application site and its immediate surrounding area, including an initial appraisal of the contamination risk to soils and groundwater and the potential impact on sensitive receptors (controlled waters and human health). The assessment will identify any key potential effects of the proposed development on identified receptors. Baseline data from a range of sources has been collated, including published data sources, an Envirocheck Report (Landmark, 2015, reproduced in Annex 9.A.4) and the Phase 1 Environmental Review (Appendix 9.A). The Phase 1 Review includes a summarised account of factual intrusive site investigation report undertaken by Van Elle (2009) (Appendix 9.B). This report includes soil and groundwater analytical data.

1.2 The potential effects of the proposed development on soils and groundwater (and the associated risk to sensitive receptors in the form of controlled waters and human health) during construction and on completion of the development have been assessed. Due to the links with groundwater quality issues in this chapter, hydrogeological baseline conditions and potential effects on controlled waters receptors (groundwater and surface water) have also been considered.

1.3 The study area for this assessment encompasses both the application site and its wider surroundings. An appropriate radius from the study area is considered to be 500m from the site boundary, on the basis that no significant impacts are anticipated beyond this distance from the site due to the effects of dilution / dispersion.

Legislation, Policy and Guidance

1.4 This section outlines the key international, national and local environmental legislation, policies and guidance that relate to ground conditions and contaminated land.

European Legislation

1.5 The Water Framework Directive (2000/60/EC) aims to protect and enhance the quality of:

- surface freshwater (including lakes, streams and rivers);
- groundwater bodies;
- groundwater dependent ecosystems;
- estuaries; and
- coastal waters to one mile from low-water.

1.6 The Groundwater Directive (2006/118/EC) expands upon Article 17 of the European Water Framework Directive. The Directive includes provisions for assessing groundwater chemical status and criteria for groundwater pollution trend identification.

1.7 The Environmental Liability Directive (2004/35/EC) establishes a framework of environmental liability with regard to the prevention and remedying of environmental damage based on the 'polluter pays principle', according to which the polluter pays for the prevention and remediation of environmental damage. The Directive's objective is to prevent and remedy 'environmental damage', which is damage to protected species and habitats (nature), damage to water and damage to soil.

National Legislation

1.8 The Environmental Protection Act (1990) includes contaminated land legislation, which is principally contained within Part IIA of the Act. This sets out a scheme for the identification of contaminated land and for the enforcement of remediation.

1.9 The Environment Act 1995 (Section 57) amends the Environmental Protection Act (1990) and makes provisions for a risk based framework for the identification, assessment and management of contaminated land within the UK. The provisions of the Act came into effect in April 2000 and are aimed at ensuring that actions taken with respect to contaminated land are directed by a technically well-founded assessment of risk that considers the 'source–pathway–receptor' (pollutant linkage) scenario. Under the legislation, contaminated land is defined in Part IIA, article 78A(2) as:

"…any land which appears to the Local Authority in whose area it is situated to be in such a condition that:

- *'Significant harm' is being caused or there is a significant possibility of such harm being caused; or*
- *Pollution of controlled waters is being, or is likely to be, caused."*

1.10 'Significant harm' is defined in the guidance according to risk-based criteria and must be the result of 'pollutant linkages'. Such pollutant linkages can be assessed using a qualitative risk assessment that addresses the following:

- potential sources of contamination;
- sensitive receptors; and
- migration pathways linking the potential sources to the sensitive receptors.

1.11 All three of the above factors must be present for an environmental risk to exist. The presence of contamination alone does not necessarily indicate a need for remedial action and a site can only be considered 'contaminated' when a risk to the environment or human health exists due to the presence of a full 'source–receptor–pathway' linkage. In such circumstances, and where there is a significant risk posed to human health and / or the environment, the above Acts state that Local Planning Authorities (LPAs) must adopt a 'suitable for use' approach. This means that the degree of remediation is dictated by the site's proposed end use.

1.12 The Contaminated Land (England) Regulations (amended 2012) set out provisions relating to the identification and remediation of contaminated land. These regulations also determine sites that require regulation as 'special sites' and add land contaminated by radioactive substances to this classification.

1.13 The Water Resources Act 1991 (Amendment) (England and Wales) Regulations (2009) introduced the definition of controlled waters and outlined measures that should be undertaken to protect water resources. The Act also details the responsibilities of the Environment Agency (EA) in relation to water pollution, resource management and flood defence.

1.14 The Groundwater (England and Wales) Regulations (2009) implement Article 6 of Directive 2006/118/EC on the protection of groundwater against pollution and deterioration. They create an offence of discharge of a hazardous substance or non-hazardous pollutant without a permit and give the Environment Agency powers to require information and to serve notices prohibiting activities.

1.15 The Water Environment (Water Framework Directive) (England and Wales) Regulations (2003) implement the European Water Framework Directive. The Regulations require a new strategic planning process to be established for the purposes of managing, protecting and improving the quality of water resources and apply to river basins in England and Wales.

1.16 Other relevant legislation, which has implications for the consideration of pollution risks and contamination, includes the following relating to waste and asbestos.

1.17 The Environmental Protection (Duty of Care) Regulations (1991), which ensures that waste is disposed of legally and in an appropriate manner. Under these regulations, any organisation disposing of waste should be able to account for all of the waste and demonstrate that disposal was carried out legally.

1.18 New definitions for hazardous waste and non-hazardous waste are given by the Hazardous Waste (England and Wales) Regulations 2005 (SI 2005 894). Overall, the regulations aim to track and control hazardous waste movements, including the requirement for a consignment note prior to the removal of any waste.

1.19 The Landfill (England and Wales) Regulations (2002) implement the regulatory and technical aspects of the EU Landfill Directive in England and Wales.

1.20 The Control of Asbestos Regulations 2006 prohibits the importation, supply and use of all forms of asbestos and includes regulations regarding the duty to manage asbestos and the removal of asbestos.

National Planning Policy

1.21 The National Planning Policy Framework (NPPF) (2012) sets out the government's national planning policy regarding land that may be affected by contamination. This policy is risk-based and follows former guidance presented in Planning Policy Statement Number 23 (PPS23) which was formally withdrawn on the 27th March 2012. The risk assessment methods adopted by PPS23 reflected those contained in Part IIA of the Environmental Protection Act (1990), as detailed above. The Environment Agency has also created Pollution Prevention Guidance (PPGs), which provide industry and the public with information about their legal responsibilities and give guidance on how to avoid pollution and comply with the law.

Local Policy

1.22 The Cheshire West and Chester (CWCC) Local Plan Part One is the main planning policy document for the area, providing the planning policy framework to deliver sustainable growth up to the year 2030 and beyond. The following policies relate to contaminated land and the development of waste treatment plants.

- STRAT 1: protect, enhance and improve the natural and historic environment whilst enhancing and restoring degrading and despoiled land, seeking opportunities for habitat creation; and encourage the use and redevelopment of previously developed land and buildings in sustainable locations that are not of high environmental value.
- ENV 8 – 8.71: the locational strategy for waste facilities is based on the use of existing operational sites within the borough and three locations at Ince Park near Ellesmere Port, Lostock Works, Northwich and Kinderton Lodge near Middlewich. These all benefit from planning consent for waste uses, and although at the current time are not operational, are located in proximity to the largest conurbations in the borough and have the potential for co-location of waste management facilities.

Guidance

1.23 Defra Environmental Protection Act 1990: Part 2A - Contaminated Land Statutory Guidance (2012) replaces previous statutory guidance, which was published as Annex 3 of Defra Circular 01/2006. The guidance details the responsibilities of the Local Authority in prioritising the inspection of sites under Part 2A of the Environmental Protection Act and sets out a revised framework for assessing risk associated with land contamination. Guidance on remediation is also presented and the document introduces the necessity for cost-benefit analysis when assessing appropriate remedial techniques.

1.24 British Standard BS 10175 (2011) ‘Investigation of Potentially Contaminated Sites’ forms the basis for assessing the necessary extent of site investigations.

1.25 EA Pollution Prevention Guidelines (PPGs), most notably *PPG8 Safe Storage and Disposal of Fuel Oils* (EA, 2004), *PPG5 Works or Maintenance in or Near Water* (EA, 2007), and PPG6 *Working at Construction and Demolition Sites* (EA, 2010) provide further guidance on pollution prevention.

1.26 Model procedures for the management of land contamination have been developed by the EA and are presented in Contaminated Land Report 11 (CLR 11, 2004). These provide the technical framework for applying a risk management process when dealing with land affected by contamination. The framework presented in CLR 11 forms the basis of the risk assessment approach adopted in this ES Chapter.

1.27 Groundwater Protection: Principles and Practice (GP3, 2012) is a document published by the EA that sets out the Agency's approach to the management and protection of groundwater. The document includes details of the risk-based approach used for permitted activities and land contamination issues.

1.28 Contaminated Land: Applications in Real Environments (CL:AIRE) is an independent, non-profit organisation that aims to encourage the sustainable remediation of contaminated land and groundwater throughout the UK for effective social and economic use. This is achieved by increasing awareness and confidence in practical, sustainable remedial solutions.

2 Assessment Methodology and Significance Criteria

Impact Assessment Methodology

2.1 The baseline characterisation enables the development of a Conceptual Site Model (CSM) which allows the pre-existing ground conditions to be determined on the basis of source–pathway–receptor pollutant linkages, in line with the standard methodology used under Part 2A of the Environmental Protection Act (1990). The pollutant linkage adopted by the CSM is summarised as follows:

- source: potential contaminant sources;
- pathway: the mechanism by which the source may affect a receptor; and
- receptor: identified features that may be affected, based on the sensitivity of the site.

2.2 The assessment considers the potential risk to environmental receptors and provides an evaluation of the probability of harm occurring, taking into account potential sources of contamination and potentially active migration/exposure pathways.

2.3 The significance of predicted effects on the receptors identified as part of the baseline assessment that are likely to occur during construction and post development is determined by consideration of the sensitivity of the receptor that may be affected and the magnitude of the predicted impact.

Consultation

2.4 An EIA Scoping Note for the proposed development was submitted to Cheshire West and Chester Council (CWCC) on 08 July 2015. CWCC provided its Scoping Opinion, with input from the statutory consultees Network Rail, The Health & Safety Executive, Natural England, the Environment Agency and Historic England on 13 August 2015. Points raised in the Scoping Opinion are summarised in Chapter 3: Scoping and Consultation. Specific points concerning geology and ground conditions are as follows.

2.5 The response sent to CWCC from Dawn Hewitt of the Environment Agency regarding the geology and ground conditions states that:

"Given the known and suspected conditions of the land at the current time we would on application for planning permission look to recommend conditions regarding land contamination and risks to controlled waters.

This may alter depending on the information provided in support of the full EIA submission (as we have noted that a ground conditions chapter is included in the proposed EIA document) but fundamentally where a positive, significant pollutant linkage is identified we would look for assessment, and where necessary, remediation."

2.6 The Phase I report (Appendix 9.A) includes a full review of historical potentially contaminative activities at the site and the previous contaminated land site investigation. This historical review identified the potential for land contamination and risks to controlled waters as referenced in the EA response. The previous site investigation undertaken by Van Elle in 2009 (Appendix 9.B) identified contamination in the form of metals and trichloromethane. A further Phase II Site Investigation is proposed to be undertaken at the site to establish the current ground conditions prior to redevelopment. Upon completion of the Phase II Site Investigation, recommendations will be made including, if necessary, a remedial strategy as advised in the EA response.

2.7 Further correspondence between CWCC and RPS was undertaken. In an email dated 8th September 2015 RPS requested by email on 8 September 2015 any further comments from CWCC (Martin Wright) regarding geology and ground conditions, in relation to the Scoping Opinion, which did not contain a response on these matters.

Martin advised that *“on contamination there are potentially legacy issues (which we recognize the development may resolve if present and would become a positive benefit) the planning requirement is as a minimum site not determinable as part IIA and safe development with acceptable risks from remediation. Whilst the development proposed is not particularly sensitive to contamination we would want to be confident in the mitigation of the site as a legacy source of contamination particularly for off-site risks.”*

A more detailed risk assessment method than is usually undertaken for EIA, with a CLR11 compliant general approach, was recommended. The Phase I and Phase II reports being produced by RPS have been and will be undertaken using the standard CLR11 compliant method, including consideration of the risks associated with soil/groundwater contamination and ground gas to the development site and off-site receptors. In further correspondence with CWCC, it was agreed that this method is likely to satisfy the planning requirements in relation to geology and ground conditions.

Receptor Sensitivity Definition

2.8 Two main receptor types are relevant to this chapter. These are human health and controlled waters (i.e. rivers and groundwater aquifers). The sensitivity of a controlled water body is largely determined by its quality and scale (i.e. local, national and international). The sensitivity for humans is determined by proximity to the source of contamination, age of the people and duration of residence/presence in proximity to contamination. The sensitivity of receptors relevant to this chapter has been informed by professional judgement and the criteria outlined in Table 2.1.

Table 2.1: Sensitivity Definitions

Sensitivity	Typical descriptors
Very high	Controlled waters – attribute with a very high quality and rarity on a regional to international scale with very limited potential for substitution. Examples include: Principal Aquifer providing potable water to a large population. Humans – schools, hospitals and care institutions.
High	Controlled waters – attribute with a high quality and rarity on a local scale with limited potential for substitution, or attribute with a medium quality or rarity on a regional to national scale with limited potential for substitution. Examples include: aquifer providing potable water to a small population and/or large resource potential. Humans – residential areas, recreational areas, construction workers.
Medium	Controlled waters – attribute with a medium quality and rarity on a local scale with limited potential for substitution, or attribute with a low quality and rarity on a regional to national scale with limited potential for substitution. Examples include: Secondary Aquifer unit supporting abstraction for agricultural or industrial use and/or moderate resource potential or non-designated geological exposures important at a regional or local scale. Humans – commercial, retail or industrial employment areas.
Low	Controlled waters – attribute with a low quality and rarity on a local scale with limited potential for substitution. Examples include: previously disturbed land or non-designated geological exposures important at a very local scale; abandoned quarries and mining activities. Humans – none (human health receptors are all considered to be of medium or greater sensitivity).
Negligible	Controlled waters – attribute with very low importance and rarity at the local scale. Examples include Unproductive Strata unit that does not afford protection to underlying water bearing units or non-designated geological exposures common at a regional or local scale. Humans – none (human health receptors are all considered to be of medium or greater sensitivity).

Existing Baseline Conditions

2.9 RPS has undertaken a detailed desk based assessment for the site (Phase 1 Environmental Review, RPS report reference RCEI35418-001R, dated June 2015), which is presented in full as Appendix 9.A.

2.10 The assessment includes a review of information held by an environmental information service provider, including information provided by the following bodies:

- Cheshire and Chester West Council;
- Environment Agency;
- British Geological Survey;
- Coal Authority;
- Health Protection Agency; and
- Natural England.

2.11 The information collected as part of this study has been used to inform the baseline conditions, which are summarised in the following sections.

Published Geological Mapping

2.12 British Geological Survey mapping indicates that the site is underlain by bedrock of the Northwich Halite Member which is generally described as interbedded halite and mudstone. The Northwich Halite Member is indicated to be dipping east at approximately 4° and is up to 286m thick in the vicinity of the site; the Northwich Halite Member is underlain at depth by the Bollin Mudstone Member.

2.13 The eastern boundary of the site is underlain by the Sidmouth Mudstone Formation which is generally described as interbedded mudstone and siltstone; it is indicated to be dipping east at approximately 5°.

2.14 The majority of the site is underlain by superficial deposits of Glacial Till – Diamicton which is described as poorly sorted gravels in a clay matrix.

2.15 The southern boundary of the site is indicated to be underlain by Alluvium deposits (relating to Wade Brook) which is described as clay, silt, sand and gravel.

2.16 Mapping indicates that extensive Made Ground is likely to be present at the site associated with historical land use and the presence of a filled ground in the form of a tip.

2.17 The King Street Fault is indicated to transect the eastern boundary of the site in a north/south orientation: this is the boundary of the Northwich Halite Member and the Sidmouth Mudstone.

2.18 No other faults or mass movement deposits are indicated to be present on site or in the vicinity of the site.

Hydrogeology

2.19 The Glacial Till – Diamicton is classified as Unproductive Strata and the Alluvium Deposits are classified as a Secondary A Aquifer. The underlying Northwich Halite Member is classified as Unproductive Strata and the Sidmouth Mudstone is classified as a Secondary B Aquifer. Unproductive Strata is described as formations that have a low permeability and have negligible significance for water supply or base flow. Secondary B Aquifers are formations that are generally formed of lower permeability layers that may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering.

2.20 There are no records of licensed groundwater abstractions within 1km of the site. The sensitivity of the hydrogeological setting is reduced by the absence of any statutory designations (e.g. Source Protection Zones, SPZs) within 2km of the application site.

Hydrology

2.21 There are no on-site watercourses. Wade Brook is located approximately 15m to the south, which approaches the site from the east and flows to the west of the site.

2.22 Wincham Brook is located approximately 334m north of the site and flows in an east/west orientation in an easterly direction. Wincham Brook flows into Wade Brook approximately 730m to the northwest of the site; Wade Brook then discharges to the River Weaver approximately 2.1km to the northwest of the site. No other main rivers are located within 1km of the site. However, a small pond is located 131m to the north of the site.

2.23 There are records of three surface water abstractions within 1km of the site: one associated with Wade Brook (approximately 350m east of the site) and one associated with Wincham Brook (situated approximately 380m northwest of the site). Neither are situated directly downstream of the site from Wade Brook. The third is associated with the Trent & Mersey Canal.

Site History

2.24 Information regarding the history of the site and surrounding area presented within the Phase 1 Assessment (Appendix 9.A) is summarised below.

2.25 Information provided to RPS indicates that the site is located in an area that has been used for industry and chemical manufacture for nearly 200 years. The Trent and Mersey Canal was constructed in 1777, maps of the area from the early 19th century indicate likely marl or salt pits among rural land-uses, and the Manchester to Northwich railway was completed in 1863. Soda ash and bleaching powder production commenced in the Lostock Works area in the late 18th century and much of the surrounding land, particularly to the south west and east, has been used for lime waste disposal associated with soda ash manufacture. During the First World War it is understood that ammonium nitrate production for use in explosives was undertaken at the soda works. Later, during the Second World War, a range of products were made on the Lostock Works site at the request of the Ministry of Supply, including chlorine, mono chloro-benzene and carbon tetrachloride.

2.26 Historical maps indicate that the initial major development of the site and surrounding area occurred between 1880 and 1898. The map dated 1898 indicates that the eastern area of the site was occupied by Lostock Bleach Works which extended off-site to the east. The western area of the site is indicated to have been occupied by a brine pumping station. A mineral railway is shown adjacent to the western boundary with a brine cistern beyond. Several areas of disturbed ground are shown in the south and west of the site (the western area of the site is understood to have been operated as a waste tip).

2.27 The map dated 1938 suggests that the Bleach Works was demolished and the site appears to have been vacant. It is shown to have been cleared and in 1954 is indicated to be occupied by railway lines with an area of disturbed ground west of the centre of the site. A chemical works is indicated to be located immediately adjacent to the east of the site and the railway lines appear to be associated with this works.

2.28 The map dated 1976 shows that the site was developed and labelled ‘Works’. This is understood to be the chlorine plant with associated asbestos handling area that was commissioned in 1977. The 1993 map indicates the presence of a small electricity substation location to the north east of the site, as well as the large electricity substation adjacent to the south east of the site which remains until the present. The site has not been in use since 2001 and all buildings were demolished to slab level in 2013.

Soil and Groundwater Quality

2.29 The site is located in an area that has been dominated by industrial land uses for a long period of time. The site itself has been occupied by a Bleach Works (circa 1898 to 1938) and a Chlorine Plant (circa 1977 to 2014) with associated infrastructure including tanks farms, electricity substations and railway lines. Tipping is understood to have occurred in the western half of the site during the site's use as a Bleach Works.

2.30 Made Ground is likely to be present across the site as a result of historical land uses and associated earthworks including the former tip. A 2009 site investigation undertaken by Van Elle (Appendix 9.B) encountered Made Ground to a maximum depth of 5m.bgl in the west of the site in the area indicated to have been a former tip.

2.31 Historic landfills (former lime beds) are indicated to have been located approximately 80m to the south of the site on the opposite bank of Wade Brook. These occupy an area that is now known as Griffiths Park.

2.32 Railway lines are located adjacent to the site; there is potential for contamination associated with any Made Ground used for the construction of railway embankments.

2.33 Potential contaminants associated with historical use of the site and surrounding land uses may include, but are not limited to: sulphates, sulphides, organometallics, polyaromatic hydrocarbons (PAHs), cresols, phenols, chlorinated organic compounds, halogenated organics, solvents (non-chlorinated), dioxins, surfactants, inorganic metals and metalloids, other inorganic ions including chlorides, chlorates, fluorides and ammonium bisulphate, and acids including hydrochloric, nitric, phosphoric and sulphuric and alkalis including sodium hydroxide. Other potential contaminants include asbestos, polychlorinated biphenyls (PCBs) and fuels (e.g. coke).

2.34 The site investigation undertaken by Van Elle, referenced above, identified elevated concentrations of metals in soils across the site. It also identified localised soil contamination in the form of PAHs and volatile organic compounds (VOCs, trichloromethane and trimethylbenzene). Groundwater samples contained elevated concentrations of a range of metals and localised elevated concentrations of hydrocarbons, PAHs and VOCs (chloroethane, dichloroethane and trichloroethane). Carbazole and dibenzofuran was identified at sporadic locations in soil and groundwater.

2.35 Surface water samples collected from Wade Brook were found to contain elevated concentrations of metals and VOCs (trichloromethane and bromochloromethane).

2.36 Ground gas monitoring undertaken by Van Elle during 2009 identified methane and carbon dioxide in several boreholes across the site, which is likely to be associated with the former tip.

Land Subsidence

2.37 According to the Coal Authority interactive mapping system the site is not located in a Development High Risk Area or a Coal Mining Reporting Area. The Coal Mining Reporting Area is the known extent of coal mining activity and is used to determine whether a coal mining report is required for property transactions and the conveyance process. Therefore the potential for subsidence associated with coal mining is considered to be low.

2.38 A Coal Authority Ground Stability Report dated April 2009 indicates that the site is located within the Brine Compensation Area but is not within any consultation area prescribed by the Cheshire Brine Pumping Act 1950. It states that a notice of damage has not been filed in respect of the property and there has been no commutation of claims in connection therewith.

2.39 According to BGS data, the nearest brine cavity is located approximately 650m west of the site. There are a further five brine cavities within 1km of the site.

2.40 Whilst the site is not indicated to be located above an area of past or current Halite mining, much of the previous extraction was undertaken prior to accurate records being kept. In addition a number of brine shafts and wells are located in the surrounding area. As a result there is potential for unrecorded mine workings to be encountered at the site. As the site has been developed previously without any obvious effects of mining or brine related subsidence it is considered that the risk is reduced.

Existing or Historical Potential Contamination Sources

2.41 The site is currently derelict and all buildings having been demolished to slab level; there are no primary point sources of contamination on the site at present (e.g. tanks). There is, however, the potential for secondary soil-based contamination sources associated with historical use of the site. There is also the potential for contamination to be present within underground structures such as the drainage system and associated sumps that remain present on site. The Phase I Environmental Review identified the following potential contamination sources associated with historical land uses:

- former bleach works with associated infrastructure including mineral railway;
- former brine pumping station;
- former chlorine plant with asbestos handling area and associated infrastructure;
- railway lines adjacent to the site;
- Made Ground relating to groundworks former tip, embankments, and construction/demolition; and
- it is understood that asbestos-laden process effluent was discharged via the drainage system. There is the potential for asbestos contamination within the drainage system.

Primary off-site potential sources of contamination include the following:

- salt works (from c.1899);
- chemical works currently occupied by Solway Speciality Chemicals Ltd (c.1977 – present);
- associated infrastructure including substations and railways (pre-1882 – present);
- landfills including waste lime reservoirs (80m – 240m south of the site, on opposite side of Wade Brook);
- former brick & tile works, 1898 - 1911 (100m NE); and
- former gasometer, 1989 – 1910 (120m E).

2.42 There is potential for the presence of soil and groundwater contamination across the area associated with the industrial historical land uses. Historical use of the site, primarily as a bleach works and a chlorine works, has the potential to have contributed to soil and groundwater contamination, particularly within the site boundary. There is also the potential for contamination and the generation of ground gas associated with land raising and infilled ground on site and associated with the landfills to the south of the site. The former tip located in the western area of the site is of particular note with regard to the likelihood of Made Ground. There is potential for soil/groundwater contamination in relation to former substations that were present on the site.

2.43 Contaminants associated with historical use of the site and surrounding area which may include, but are not limited to metals, asbestos, inorganic ions including ammonium, sodium, chlorides, chlorates, nitrate sulphate, fluorides, acids and alkalis (sodium hypochlorite - bleach). Potential organic contaminants include PAHs, PCBs, phenols, petroleum hydrocarbons, chlorinated organic compounds, halogenated organics, solvents (non-chlorinated), dioxins and furans.

Identified Receptors and Sensitivity

2.44 The following table summarises the identified receptors and the sensitivity of each receptor.

Table 2.2: Sensitivity of Receptors

Sensitivity	Identified receptors
Very high	None – there is not considered to be a risk to Principal Aquifers or human health receptors in the form of schools, hospitals or care institutions.
High	Human health Post-development site users, the workers at the site and other workers/residents at properties located within 500m of the site and construction workers are considered to represent highly sensitive receptors.
Moderate	Controlled Waters Wade Brook flows to the west and is located approximately 15m to the south of the site. Wincham Brook is located approximately 334m north of the site and flows in an east/west orientation in an easterly direction. Wincham Brook flows into Wade Brook approximately 730m to the northwest of the site; Wade Brook then discharges to the River Weaver approximately 2.1km to the northwest of the site. These surface water courses are considered to represent moderately sensitive receptors.
Low	Secondary Aquifer The Secondary Aquifers associated with the superficial Alluvium deposits and the Bollin Mudstone Formation do not support any licensed abstractions within 1 km of the site and therefore represent a low sensitivity receptor.
Negligible	Unproductive Strata Unproductive Strata associated with the Glacial Till and Northwich Halite Formation are considered to represent negligible sensitivity receptors.

Existing Source – Pathway – Receptor Linkages (Conceptual Site Model)

2.45 A preliminary Conceptual Site Model (CSM) was developed as art of the Phase 1 Assessment to identify the principal sources, pathways and receptors (i.e. potential pollutant Linkages).

2.46 At present the site is vacant and access to the site is strictly controlled. Soils are not subject to disturbance and therefore the risk to human health receptors associated with soil contamination is limited. The Phase I review concluded that based on the information available, at present the risk to human health receptors is considered to be low. If the site were easily accessible, then the risk would be considered higher due to the potential for exposure of shallow soils contaminants to site users.

2.47 There is the potential for the leaching of mobile contaminants present in Made Ground and shallow soils to shallow groundwater associated with the Made Ground and Alluvium. There is the potential for the lateral migration of such contamination in shallow groundwater to bodies of surface water in the vicinity of the site including Wade Brook. Analysis of samples taken from Wade Brook by Van Elle during 2009 identified contamination in the form of metals and trichloromethane; this may, however, be associated with other industrial sites in the area.

2.48 The low permeability Glacial Till which underlies the entire site is typically of low permeability and is likely to limit the migration of shallow groundwater and associated contamination to underlying strata. Due to the presence of the low permeability Glacial Till, lateral migration is likely to be limited to shallow Made Ground and the Alluvium only. The likelihood of contamination impacting the bedrock aquifer is therefore considered to be low.

2.49 In summary, based on the available information, at present soil and groundwater contamination could theoretically have an impact on human health receptors (if the site were easily accessible and soils were subject to disturbance) and controlled waters (primarily Wade Brook).

Mitigation Measures Adopted as Part of the Development

Construction Environmental Management Plan

2.50 A Construction Environment Management Plan (CEMP) has been developed and is at Appendix 2.C in Volume 3 of the ES. The purpose of this is to set out the measures that will be adopted by the applicant and its construction contractors to control environmental effects during the construction phase (including removal of the existing foundation slabs), and ensure appropriate mitigation is provided where necessary. Contractors will be required to prepare detailed method statements for implementing the mitigation measures and best practice procedures in the CEMP. By these means, temporary impacts of construction will be avoided or minimised.

2.51 The CEMP includes measures to address the following issues relevant to geology, hydrogeology and ground conditions:

- prevention of the mobilisation of soil and soil contaminants through the generation of dust and surface water runoff;
- protection of watercourses (i.e. Wade Brook);
- appropriate storage of fuel and other potential contaminants that are temporarily held on site during the construction phase;
- containment and disposal of any leaks or spillages of potentially polluting substances ;
- details of how any unexpected contamination identified during the construction phase would be assessed and treated;
- maintenance of a ‘clean/dirty area’ regime, if contamination is identified;
- risk assessments to ensure the safety of construction personnel associated with exposure to exposed soils (and any associated contaminants);
- details of how soil as a resource will be protected during the development phase;
- details of how the contractor will ensure that any materials imported to site (e.g. aggregates/soils) are suitable for use.

2.52 Any areas for the storage of bulk materials including oils, fuel and chemicals will be designed and managed according to current best practice and in compliance with prevailing legislation and Environment Agency guidance. Construction laydown areas will be demarcated, with hardstanding and bunded storage areas (or use of self-bunded tanks) for fuel or other liquids required. Internal gravelled roadways will be laid out for construction traffic. A wheel-washing station will be set up at the site entrance to minimise track-out of mud onto the access road and consequent dust generation. Where required (e.g. in areas of car parking), the construction site drainage surface water system will be fitted with oil interceptors. These measures are detailed in the Drainage Strategy at Appendix 8.A in Volume 3 of the ES.

2.53 Procedures will be in place to ensure that any leaks or spills are contained, collected, then removed from site in an appropriate manner (e.g. through the use of absorbent material, bunding or booms). An emergency action plan will be formulated which all site personnel will have read and understood.

2.54 Should any previously unidentified contamination be detected at the site during the construction phase, or a risk of ground gas ingress into future site buildings be identified, then such risks would be mitigated through measures that would be designed through an options appraisal process. A formal Remediation Strategy would be submitted to the Local Planning Authority for acceptance prior to any remediation works being undertaken.

Phase 2 Site Investigation and Geo-Environmental Risk Assessment

2.55 Prior to development of the site, a further Phase 2 Site Investigation will be undertaken. The objectives of this assessment will be to further characterise ground conditions and investigate the potential presence of contamination and ground gas across the site associated with identified potential sources.

2.56 On completion of the site investigation, a risk assessment will be undertaken based on the proposed end use of the site. Any unacceptable risk to human health receptors and controlled waters will be considered, and where unacceptable risk exists, appropriate mitigation will be provided. This would be undertaken through a formal Remediation Strategy, with remediation work being subject to validation on completion where appropriate.

2.57 It is anticipated that this Phase 2 Site Investigation will be undertaken after submission of the planning application, in order that the findings, risk assessment and if required the Remediation Strategy will be available to satisfy any pre-commencement condition at the time of planning consent, should that be granted.

3 Assessment

Construction Effects

3.1 The purpose of the aforementioned CEMP is to control and mitigate potential environmental effects during the construction phase. With effective implementation of the CEMP, no significant construction phase effects associated with ground conditions are anticipated. The magnitude of impacts potentially arising during the construction phase associated with ground conditions is therefore considered to be negligible and consequently the significance of the effect is likely to be **neutral**.

Associated development

3.2 Associated works may also be undertaken by the applicant or third parties to improve the existing shared private access road through Lostock Works, within the planning application boundary. This may involve widening at certain points to ease passing and turning of HGVs. This widening would be limited (anticipated to be <3m) as the access road is constrained by the industrial facilities through which it runs. Re-surfacing some sections may also be undertaken if necessary. Any works undertaken would be in agreement with the land owner and other road users.

3.3 Given the access road will be low permeability hardstanding, it is likely to decrease surface water infiltration and therefore decrease mobilisation of potential contamination. The hardstanding will also provide a physical barrier between soil contamination and human health receptors. It is therefore considered that the impacts to soil and groundwater from this associated development during the construction phase is likely to be **neutral.**

Operational Effects

3.4 The facility operator will implement an ISO14001 or equivalent Environmental Management System (EMS), which among other measures will define good housekeeping practices for the site to control the potential for leaks and spills and to ensure leaks and spills are prevented from impacting soils and groundwater. Waste will only be unloaded in the waste reception hall, where any spillage can be easily cleaned into the waste bunker. Hoses for washing down this area and a separate washing station for HGVs are provided in the site design.

3.5 Environmental management of the site will be regulated by the Environment Agency using the facility’s environmental permit, which will specify operating techniques and will include a regular schedule of audits. The permit will also regulate discharges and emissions from the facility, specifying limits, monitoring and reporting of these. This process will ensure that any potential emissions to soil or groundwater are controlled appropriately.

3.6 For areas of landscape planting, a clean cover system of suitable growth medium (approximately 300mm in thickness) should be provided to establish a barrier between any potential current contamination and future site users.

3.7 It is proposed that an area of the site to the north of the car park (shown in Figure 4.Q in Volume 4 of the ES), which is currently scrub land, will be retained if possible in its existing condition (but with any large concrete items broken up) in order to retain the existing habitat type that supports the fragrant orchid found on site. Shallow soils in this area will be subject to analysis and risk assessment. If necessary, suitable site-won materials would be used to form a clean cover system in this area; this will be subject to validation to the same standard as clean cover growth medium that will be introduced elsewhere on the site. If the existing site-won materials are not suitable due to contamination, alternative suitable materials (i.e. imported calcareous gravel) will be used as required.

3.8 The proposed use of the site will result in extensive areas of the site being covered with hardstanding and building cover. This will limit the volume of surface water that is allowed to infiltrate to ground, thereby limiting the volume of contamination that is leached from shallow soils to shallow groundwater. It also have the benefit of providing a physical barrier between existing shallow soil contamination and human health receptors thereby breaking physical contact pathways which include dermal contact, ingestion and dust inhalation. The presence of extensive areas of hardstanding and building cover is therefore likely to limit the risk to human health receptors and controlled water receptors.

3.9 The presence of hardstanding will also limit the potential for spills/leaks to enter ground and will prevent contaminants emitted to air from being deposited in soils.

3.10 It is therefore considered that the impact to soil and groundwater during the operational phase will be **neutral** (or **beneficial** if any identified existing contamination is subject to remediation and/or specific mitigation).

Further Mitigation

3.11 If any significant contamination is encountered during the construction phase, this will be fully investigated, a risk assessment will be undertaken and, if necessary, remediation will be undertaken/mitigation provided in consultation with the Local Planning Authority.

Future Monitoring

3.12 Further to the soil assessment and groundwater/ground gas monitoring that will be undertaken as part of the Phase 2 Site Investigation, a requirement for additional future monitoring is not likely to be necessary from a ground conditions perspective. There will be no discharges to soil or groundwater discharges from the proposed development.

Cumulative Effects

3.13 Effects relating to soil and ground conditions are site-specific and planned developments in proximity to the proposed development are unlikely to adversely impact shallow soils beneath the site. With regard to groundwater receptors, it is assumed that any development schemes in the surrounding area would have sufficient mitigation measures in place during ground works to prevent adverse effects in accordance with the NPPF and relevant legislation.

3.14 A cumulative impact would be reliant on a number of factors including construction phases coinciding and industry standard mitigation measures being ineffective at more than one site at a time. The requirements of the Local Planning Authority under the NPPF (i.e. Phase 1 and Phase 2 contamination assessments and CEMPs) should effectively mitigate the effects associated with each of the sites, thereby ensuring there is not a significant cumulative effect.

Residual Effects

3.15 A summary of the potential effects of the proposed development and appropriate mitigation measures is presented in the table below:

Table 3.1: Summary of Effects

Issue	**Potential effect**	**Mitigation**	**Residual effect**
Construction effects			
Human health			
Exposure of construction workers, workers on adjacent sites and local residents to existing contamination in the soil/groundwater.	Adverse	Control and mitigation measures provided by implementation of the CEMP	**Neutral**
Controlled waters			
Existing contamination in the soils and/or groundwater impacting controlled waters receptors as a result of mobilisation caused by construction phase. Contamination introduced during the construction phase e.g. from diesel leakages from plant machinery.	Adverse	Control and mitigation measures provided by implementation of the CEMP	**Neutral**
Operational effects			
Human health			
Existing contamination in the soils and/or groundwater mobilising and contaminating a larger area and impacting human health receptors	Adverse	Contamination encountered during the Site Investigation or development process will be appropriately assessed and, if necessary, remediated prior to operation of the site. In addition, the proposed development will result in the extensive areas being covered in building cover or hardstanding, which will break physical contact pathways between future site	**Neutral** **(or beneficial)**

		users and any soil contaminants.	
Controlled waters			
Existing contamination in the soils and/or groundwater impacting controlled waters receptors as a result of mobilisation.	Adverse	Contamination encountered during the site investigation or development process will be appropriately assessed and, if necessary, remediated prior to operation of the site. In addition, the proposed development will result in the extensive areas being covered in building cover or hardstanding. This will limit the infiltration of surface water and the potential for mobilisation of any contaminants in Made Ground that may leach to groundwater.	**Neutral** **(or beneficial)**
Contamination to be introduced as a result of operational activities	Adverse	An ISO14001 or equivalent Environmental Management System (EMS) will be implemented, which will include measures to minimise the potential for spills and leaks to impact soil and groundwater. The site will operate under an environmental permit regulated by the Environment Agency. This will specify operating techniques and will include a regular schedule of audits. The permit will also regulate discharges and emissions from the facility, specifying limits, monitoring and reporting of these. This process will ensure that any potential emissions to soil or groundwater are acceptable.	**Neutral**

4 Conclusions

4.1 The site and surrounding area have been occupied by industrial land uses, primarily associated with chemical manufacture, since the 19^{th} century. The site itself has historically been occupied by a bleach works and chlorine plant. The western area of the site has been subject to waste tipping and Made Ground is known to be present on the site to a depth of up to 5.0m bgl.

4.2 A site investigation undertaken during 2009 identified elevated concentrations of metals in soils across the site. It also identified localised contamination in the form of PAHs and VOCs (trichloromethane and trimethylbenzene). Groundwater samples contained elevated concentrations of a range of metals and localised elevated concentrations of hydrocarbons, PAHs and VOCs (chloroethane, dichloroethane and trichloroethane). Carbazole and dibenzofuran were identified at sporadic locations in soil and groundwater. Surface water samples collected from Wade Brook were found to contain elevated concentrations of metals and VOCs (trichloromethane and bromochloromethane). Ground gas monitoring identified methane and carbon dioxide in several boreholes across the site.

4.3 At present there the potential for existing contamination associated with soil and groundwater to impact receptors.

4.4 Prior to development of the site a Phase 2 Site Investigation will be undertaken and the risk assessment will be updated. Any unacceptable risk to human health receptors and controlled waters will be considered and where unacceptable risk exists, appropriate mitigation would be provided. This would be undertaken through a formal Remediation Strategy and remediation, once implemented, would be subject to validation where appropriate. It is anticipated that this Phase 2 Site Investigation will be undertaken after submission of the planning application, in order that the findings, risk assessment and if required the Remediation Strategy will be available to satisfy any pre-commencement condition at the time of planning consent, should that be granted.

4.5 Construction phase effects would be controlled and mitigated through the implementation of a CEMP, with measures detailed at Appendix 2.C.

4.6 Operational phase effects would be controlled by an ISO14001 or equivalent EMS and the installations environmental permit that would be regulated by the Environment Agency.

4.7 In summary, adverse environmental impacts relating to soil and groundwater during construction and operation would be prevented by measures incorporated into the development scheme. The effects of the proposed development are assessed to be neutral or potentially beneficial if contamination is identified and remediated.

Glossary

ES – Environmental Statement

EQS – Environmental Quality Standards

FOC – Fraction of Organic Carbon

OS – Ordnance Survey

PAH – Polycyclic Aromatic Hydrocarbons

PCB – Polychlorinated Biphenyls

S4UL – Suitable for all use

SVOC – Semi Volatile Organic Carbon

TPH-CWG – Total Petroleum Hydrocarbons Criteria Working Group

VOC – Volatile Organic Carbon

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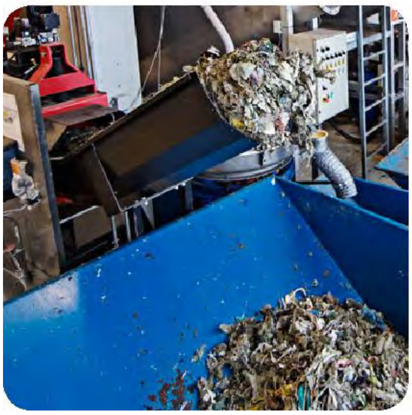
Chapter 10: Air Quality Assessment

REnescience Northwich





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Quality Management

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Executive Summary

This Air Quality Assessment has been undertaken to support the planning application for the proposed REnescience Northwich development off the A530 Griffiths Road, near Northwich and Lostock Gralam, Cheshire.

The proposed development is located within the administrative area of Cheshire West and Chester Council (CWCC). CWCC has designated two Air Quality Management Areas (AQMAs), due to high levels of nitrogen dioxide (NO_2) attributable to road traffic emissions. Both AQMAs are more than 25 km away from the proposed development. The closest AQMA to the proposed development, declared by Cheshire East, is the Chester Road AQMA, approximately 6.5 km to the north-east.

The assessment has considered effects of nuisance dust during the construction phase of the development; and traffic, point-source and fugitive emissions to air during the operation of the proposed facility.

A draft Dust Management Plan (DMP) has been produced, which is based on the recommended IAQM measures to mitigate air quality impacts during the construction phase. Provided this is implemented, the residual construction-phase effect is expected to be "*not significant*".

In terms of the operation of the proposed facility, the assessment predicts that impacts from stack emissions, development traffic emissions, and fugitive emissions will be within acceptable levels at sensitive receptors and will not give rise to any significant adverse effects based on the criteria in Environment Agency guidance.

No significant cumulative effects are predicted, taking account of other consented but not yet operational schemes, including the Tata SEP and Organic Waste Management Bio-Energy Plant at Lostock Works.

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Tables

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Appendices

1 Introduction

1.1 RPS has undertaken an air quality assessment to support the planning application for the proposed REnescience Northwich development off the A530 Griffiths Road, near Northwich and Lostock Gralam, Cheshire. Cheshire West and Chester Council (CWCC) has designated two Air Quality Management Areas (AQMAs), due to high levels of nitrogen dioxide (NO_2) attributable to road traffic emissions. Both AQMAs are more than 25 km away from the proposed development. The closest AQMA to the proposed development is the Chester Road AQMA, declared by Cheshire East, located approximately 6.5 km to the north-east.

Key Emission Sources

1.2 During the construction phase, there would be the potential for dust emissions from construction activities and emissions from construction vehicles.

1.3 During the operational phase of the facility, the principal sources of releases to atmosphere would be point source emissions associated with:

- the exhaust stack for the five reciprocating gas engines which burn biogas generated by the anaerobic digestion (AD) process to produce renewable heat and electricity; and
- the enclosed back-up gas flare which is provided to burn off biogas, avoiding uncontrolled releases, should the gas engines be unavailable (e.g. due to breakdown).

1.4 Other potential operational-stage emission sources are: fugitive emissions of dust, odour and bioaerosols associated with the process; and vehicle exhaust emissions from traffic movements associated with the operation of the facility.

Scope

1.5 This air quality assessment considers the air quality effects of:

- construction traffic and construction dust emissions;
- point and fugitive emissions to air during the operation of the proposed development; and
- exhaust emissions from vehicles movements generated during the operation of the proposed development.

1.6 This chapter describes: a summary of the assessment methodology; the baseline conditions currently existing at the application site and surroundings; the likely significant environmental impacts; the mitigation required to prevent, reduce or offset any significant adverse impacts; and the likely residual effects after these mitigation measures have been employed.

1.7 The policy and legislative context for the assessment is contained within Appendix 10.A and the assessment methodology detail is contained within Appendix 10.B.

2 Summary of Key Pollutants Considered

2.1 For the operational phase of the proposed development, the main pollutants from road traffic with potential local air quality impacts are nitrogen oxides (NO_x) and particulate matter (PM_{10}). Emissions of total NO_x from combustion sources comprise nitric oxide (NO) and NO_2. The NO oxidises in the atmosphere to form NO_2. The assessment of operational impacts due to traffic emissions therefore focuses on changes in NO_2 and PM_{10} concentrations. The impact from fine particulate matter, known as $PM_{2.5}$ (a subset of PM_{10}) concentrations has also been considered.

2.2 Regarding the stack emissions, the main pollutants from the biogas engines and biogas flare with potential for local impacts are $NO_{x,}$ CO, volatile organic compounds (VOCs) and unburned hydrocarbons. Regarding emissions of VOCs, Annex F of the Environment Agency Horizontal Guidance (H1) recommends that where the VOC composition has not been characterised then as a precaution it should be assumed that the VOCs are composed of 100% benzene (a VOC with significant health effects). A similar approach has been adopted for unburned hydrocarbons, whereby it is assumed that they are composed of 100% benzene. This approach is considered to be extremely conservative.

2.3 There is some potential for fugitive dust and odour emissions associated with the AD process. These would be controlled by applying good management practices.

2.4 For the construction phase of the proposed development, the key pollutant is dust, covering both the PM_{10} fraction that is suspended in the air and can be breathed, and the deposited dust that has fallen out of the air onto surfaces and which can potentially cause temporary annoyance effects.

3 Assessment Methodology Summary

3.1 This section provides an overview of the approach to the air quality assessment. The detailed assessment methodology is provided in Appendix 10.B.

3.1 Neither the NPPF nor the nPPG is prescriptive on the methodology for assessing air quality effects or describing significance; practitioners continue to use guidance provided by Defra and non-governmental organisations, including Environmental Protection UK and the Institute of Air Quality Management. However, the nPPG does advise that *"Assessments should be proportionate to the nature and scale of development proposed and the level of concern about air quality, and because of this are likely to be locationally specific. The scope and content of supporting information is therefore best discussed and agreed between the local planning authority and applicant before it is commissioned."* It lists a number of areas that might be usefully agreed at the outset.

3.2 This air quality assessment covers the elements recommended in the nPPG. The approach has been informed by the following guidance:

- Environmental Protection UK (EPUK)/Institute of Air Quality Management (IAQM) Land-Use Planning & Development Control: Planning For Air Quality [1];
- IAQM Guidance on the assessment of dust from demolition and construction [2]
- Local Air Quality Management - Technical Guidance LAQM.TG(09), Defra, 2009 [3];
- Environment Agency (2011) Environmental Permitting Regulations (EPR) – H1 Environmental Risk Assessment, Annex F;
- Environment Agency (2010) Environmental Permitting Regulations (EPR) – H4 Odour Management; and
- IAQM Guidance on the Assessment of Odour for Planning [4].

3.3 The air quality assessment has addressed the following key elements:

- During site preparation and construction:
  - emissions from construction vehicles; and
  - dust from construction activity.
- During operation:
  - emissions from biogas engines' stack;
  - emissions from biogas flare stack;
  - fugitive releases of dust, odour and bioaerosols associated with the storage and handling of waste;
  - emissions from operational vehicles; and

- cumulative effects associated with other consented facilities in the vicinity of the proposed development.

3.4 In line with the guidance set out in the nPPG, the Environmental Health Department at CWCC was consulted to agree the scope and methodology for this assessment. Kate Davis, Senior Regulatory Services Officer for Environmental Protection at CWCC, confirmed that the approach to the air quality assessment was appropriate, including the choice of receptor locations [5].

3.5 Air quality guidance advises that the organisation engaged in assessing the overall risks should hold relevant qualifications and/or extensive experience in undertaking air quality assessments. The RPS air quality team members involved at various stages of this assessment have professional affiliations that include Member of the Institute of Air Quality Management, Chartered Chemist, Chartered Scientist, Chartered Environmentalist and Member of the Royal Society of Chemistry and have the required academic qualifications for these professional bodies. In addition, the Director responsible for authorising all deliverables has over 20 years' experience.

4 Baseline Air Quality Conditions

Overview

4.1 Information on background air quality in the UK is usually available from two public sources:

- Each local authority has published results of its Review and Assessment (R&A) of air quality, with reference to local monitoring and modelling studies.
- Defra maps [6], which show estimated pollutant concentrations for each 1 km grid square in the UK.

4.2 This information can be supplemented by the results of any historical monitoring campaigns undertaken in the study area or by any study-specific monitoring campaign that has been undertaken. In the case of this assessment, sufficient data are available from public sources to gain an indication of background air quality.

CWCC Review and Assessment Process

4.3 There are no AQMAs in the vicinity of the proposed development site. CWCC currently has two AQMAs declared due to high levels of NO_2 attributable to road traffic emissions, both of which are located at distances greater than 25 km from the proposed development. The closest AQMA to the proposed development is the Chester Road AQMA, declared by Cheshire East, located approximately 6.5 km to the north-east. Given the distances from the proposed development, it is considered unlikely that there would be any significant impact on air quality in any AQMA.

Background Pollution Concentrations

4.4 The receptors around the proposed development are located mainly in rural or residential suburban areas. Monitors at urban background locations measure concentrations away from the local influence of emission sources and are therefore broadly representative of residential areas within large conurbations. Monitoring at urban background locations is considered an appropriate source of data for the purposes of describing baseline air quality at the sensitive receptors.

4.5 There are no monitoring sites at urban background locations within the vicinity of the proposed development. There are no automatic monitoring sites at any location within 19 km of the proposed development.

4.6 CWCC operates a network of NO_2 diffusion tubes throughout the borough. There are no urban background diffusion tube monitoring sites, although there are several roadside monitoring sites within 5 km of the proposed development site. The most recent available data for these sites are presented in Table 4.1.

Table 4.1 Passively Monitored Roadside Annual-Mean NO_2 Concentrations

Site Code	Site Name	Approx. Distance to Site (Km)	Concentration ($\mu g.m^{-3}$)		
			2011	2012	2013
CA	Castle St (114)	3	33.7	35.4	35.7
CC	Cottage Close	1	25.8	24.2	22.9
CN	62 Chesterway	2	31.0	30.6	29.4
CP	Castle (Post Office)	3	32.9	37.0	33.5
GR	Griffiths Rd	1	24.5	26.6	26.0
KR	King St. Rudheath	1	34.9	34.5	31.8
LN	London Rd (160)	2	-	30.2	31.0
M15	Manchester Rd (15)	1	-	34.3	30.4
M55	Manchester Rd (55)	1	-	26.9	25.4
MN	Manchester Rd (178)	1	30.4	32.6	33.4
NA	Naylor Ct, London Rd	2	-	37.0	27.3
QS	Queen / Chesterway	2	-	32.5	29.3
SB	Station Birkdale	1	-	36.9	34.1
TG	The Green	5	-	-	27.4

4.7 As shown above, measured NO_2 concentrations at roadside locations within the vicinity of the proposed development site range from 22.9 to 37.0 $\mu g.m^{-3}$, all falling below the AQS annual-mean objective of 40 $\mu g.m^{-3}$. So as to avoid double-counting the road-traffic contribution to ambient pollution levels, monitored roadside concentrations have not been used to establish baseline conditions for the majority of receptors modelled; the exception being receptors along Manchester Road, where the highest monitored NO_2 concentration of 33.4 $\mu g.m^{-3}$ from 2013 was used as the ambient NO_2 concentration.

Defra Mapped Concentrations

4.8 The Defra maps provide estimates of pollution concentrations across the UK at a spatial resolution of 1 km^2.

4.9 Total annual-mean NO_2, PM_{10}, $PM_{2.5}$, benzene, and CO concentrations have been collected for the grid square of the proposed development site (367500, 374500). The background Defra mapped NO_2 concentrations are provided in Table 4.2.

Table 4.2: Defra Mapped Annual-Mean Background Concentrations

Pollutant	Annual-Mean Concentration Estimate ($\mu g.m^{-3}$)
NO_2	14.7
PM_{10}	14.8
$PM_{2.5}$	10.3
Benzene	0.5
CO	321

Discussion of Background Concentrations

4.10 The requirement for this assessment is to set the background concentration at a realistic and conservative level.

4.11 In the absence of monitoring at any urban background location within the vicinity of the proposed development site, the background pollutant concentrations have been informed by the Defra mapped concentration estimates.

4.12 To ensure a conservative assessment, no reduction has been applied to pollutant concentrations for future years.

4.13 Table 4.3 summarises the background concentrations for NO_2, PM_{10}, $PM_{2.5,}$ benzene and CO used in this assessment. These have been used for the assessment of effects across the study area, except along Manchester Road, where a more detailed consideration of effects near to the road has been undertaken.

Table 4.3: Summary of Background Long-term and Short-term Concentrations used in the Assessment

Pollutant	Long term Concentration ($\mu g.m^{-3}$)	Short term Concentration ($\mu g.m^{-3}$) [(a)]
NO_2	14.7	29.4
PM_{10}	14.8	(b)
$PM_{2.5}$	10.3	(b)
CO	-	642
Benzene	0.5	-

(a) Short-term background data approximately equate to the 90th percentile, which is approximately equivalent to 2 x the annual mean.
(b) No short-term background concentration is required for PM_{10} or $PM_{2.5}$ as the shortest averaging period required for consideration is daily average.

5 Assessment of Construction Impacts

5.1 Based on the size of the proposed development, and the duration of construction activities, it has been assumed that the air quality impacts during the construction phase (including potential associated development to widen the access road within Lostock Works) are likely to be in the high risk category as defined in the IAQM dust guidance. The mitigation measures based on this level of risk are described in the IAQM dust guidance and have been listed in this chapter. The guidance states that provided the mitigation measures are successfully implemented, the resultant effects of the dust exposure will normally be "*not significant*".

5.2 One of the listed mitigation measures is to develop and implement a Dust Management Plan (DMP). A DMP for the proposed development has been produced and is provided in Annex 2.C.1.

6 Assessment of Operational Impacts

6.1 Modelling of point source impacts has been undertaken using a grid of 10 km by 10 km with a grid spacing of 50 m.

6.2 In addition, the effects of the proposed development have been assessed at the façades of local existing receptors. Receptors have been selected at representative locations where changes in pollutant concentrations are anticipated to be greatest as a result of the proposed development. All human receptors have been modelled at a height of 1.5 m, representative of typical head height. The receptor locations are listed in Table 6.1 and illustrated in Figure 10.B.

6.3 The proposed development site is located within a predominantly industrial area at the existing 'Lostock Works' site allocated for waste management in the CWCC Local Plan. The closest sensitive residential receptors are located along Manchester Road, approximately 180 m north of the proposed development site boundary and some 240 m from the stack.

Table 6.1: Modelled Sensitive Human Receptors

ID	Description	National Grid Reference	
		X (m)	Y (m)
Roads and Point Source Impacts			
1	1 Griffiths Road	368621	374688
2	1 Cottage Close	368303	373519
3	Cottage Close/Griffiths Road	368292	373468
4	Brittania Drive/King Street	368420	373049
5	School Road North/King Street	368432	372891
6	2 Tudor Close	368468	372739
7	Rudheath Community Primary School	368014	372719
8	Cooke's Lane	369046	373217
9	Village Close	369323	373594
10	High House Farm	368739	372479
Point Source Impacts Only			
11	Proposed Farm Road Residential Development	368138	373690
12	Proposed Griffiths Road Residential Development	368269	373591
13	Proposed Making Space Sheltered Residential Development	367443	373845
14	Proposed Gladedale Residential Development	367553	374712
15	Manchester Road	368149	374574
16	Station Road	369033	374904
17	Lostock Green	369084	374205

Note: Receptors have been modelled at 1.5m above ground level, representative of typical head height
m = metres.

6.4 Receptors 1 to 10 in Table 6.1 have been selected to consider the combined effects of traffic emissions, along roads affected by HGV traffic associated with the proposal. Receptors 11 to 17 have been selected to consider emissions from point source emissions only, primarily the gas engines, in addition to the 10 km by 10 km grid.

6.5 All of the AQS objectives apply at the façades of all residential properties and schools.

6.6 Natural England (NE) and Cheshire West and Chester Council (CWCC) were consulted to agree the scope to assessing air quality impacts at designated habitat sites. NE confirmed that since all European sites and Sites of Special Scientific Interest (SSSIs) lie beyond 500 m of the proposed development, no impacts are expected at the sites and they do not need to be assessed [7]. Laura Hughes, Natural Environment Officer at CWCC, confirmed that a qualitative description of expected air quality impacts on the 'Ashton's and Neumann's Flashes' Local Wildlife Site would be sufficient for assessing air quality impacts at ecological sites [8].

6.7 The following sections present the assessment of air quality impacts associated with the operational-phase of the proposed development.

6.8 Firstly, the maximum predicted concentrations associated with the gas engines and flare stacks, both across the modelled domain and at local receptors around the application site, are presented. The predicted road pollutant concentrations associated with traffic emissions are then presented. Cumulative impacts are subsequently discussed, looking at cumulative industrial emissions taking into account potential impacts from consented but not yet operational schemes, including a closer study into impacts at residential dwellings along Manchester Road. Combined stack and traffic effects are also reported. Fugitive dust, odour and bioaerosol releases are then discussed. Finally, effects on ecology are discussed.

Results of Stack Emissions Modelling

6.9 The maximum predicted ground-level concentration associated with the gas engines and flare stacks in the modelled domain has been derived for each of the five years of meteorological data. Table 6.2 summarises the predicted Process Contributions (PC) for all pollutants while Table 6.3 summarises the resulting Predicted Environmental Concentrations (PEC), which is the PC plus the background. These results have been derived based on the very conservative assumption that the gas engines and flare all operate continuously (in practice this is not possible but it allows an additional margin to be built into the assessment). It has also been assumed that VOCs and unburned hydrocarbons associated with the proposed facility's stack emissions are composed of 100% benzene in line with EA guidance for screening impacts; therefore, the results for benzene presented below are considered to be extremely conservative.

6.10 Figures 10.C and 10.D show the contour plots of NO_2 process contribution, as annual-mean and 99.79^{th} percentile hourly-mean respectively. The plots show the PCs modelled using the 2013 meteorological dataset, which gave the highest results out of the five separate modelled years.

As shown in Figure 10.C, the maximum impacts are predicted to occur approximately 140 m south-east of the stack and flare, within the wider Lostock Works site.

Table 6.2: Predicted Maximum Process Contributions

Long-term or Short-term	Averaging period (Pollutant)	EQS ($\mu g.m^{-3}$)	Max PC ($\mu g.m^{-3}$)	Max PC as % of EQS
Long term	Annual mean (NO_2)	40	5.9	**14.7**
	Annual mean (Benzene)	5	0.8	**16.6**
Short term	8 hour running maximum (CO)	10000	12.7	0.1
	1 hour 99.79th percentile (NO_2)	200	63.7	**31.9**

Note: Values in **bold** are in excess of 1% or 10% (as appropriate) of the relevant EQS.

6.11 The results summarised in Table 6.2 show that the maximum long-term and short-term PCs as a percentage are greater than 1% and 10% of the relevant Environmental Quality Standard (EQS) for NO_2 and benzene. Therefore, a more detailed assessment of NO_2 and benzene is needed that takes into account their background ambient concentrations (AC). The resulting PECs are summarised in Table 6.3.

Table 6.3: Maximum Predicted Environmental Concentrations

Long-term or Short-term	Averaging period (Pollutant)	EQS ($\mu g.m^{-3}$)	AC ($\mu g.m^{-3}$)	Max PEC ($\mu g.m^{-3}$)	Max PEC as % of EQS
Long term	Annual mean (NO_2)	40	14.7	20.6	51.4
	Annual mean (Benzene)	5	0.5	1.4	27.3
Short term	8 hour running maximum (CO)	10000	642.0	654.7	6.5
	1 hour 99.79th percentile (NO_2)	200	29.4	93.1	46.6

Note: AC = ambient concentration, or background

6.12 It can be seen from Table 6.3 that the PECs, which take the background levels into account, are all comfortably below 100% of the EQS. Based on the EA H1 screening methodology, the overall effect is not therefore considered to be significant.

6.13 Dispersion modelling was also undertaken to predict the contributions from the proposed facility at local receptors around the application site as shown on Figure 10.B. The PC and maximum PEC predicted from the proposed gas engines and flare stacks are presented in Table 6.4. These results have been derived based on the very conservative assumption that the gas engines and flare all operate continuously, which cannot happen in practice.

Table 6.4: Predicted Concentrations (µg.m^{-3}) at Sensitive Receptors

	NO_2		**CO**	**Benzene**
	1 h	**Annual**	**8 hour**	**Annual**
Receptor ID	**99.79%'ile**			
11	17.0	0.6	1.9	0.1
12	14.4	0.5	1.8	0.1
13	8.6	0.7	2.2	0.1
14	11.3	1.1	3.2	0.2
15	11.6	2.4	7.1	0.5
16	4.0	0.4	1.4	0.1
17	5.1	0.6	1.9	0.1
EQS	**200**	**40**	**10000**	**5**
Max PC	**17.0**	**2.4**	**7.1**	**0.5**
Max PC as % EQS	**8.5**	**6.0**	**0.1**	**9.3**
AC	**29.4**	**14.7**	**642.0**	**0.5**
Max PEC	**46.4**	**17.1**	**649.1**	**1.0**
Max PEC as % EQS	**23.2**	**42.7**	**6.5**	**20.0**

6.14 It can be seen from Table 6.4 that all predicted concentrations are well below the relevant EQS.

Results of Road Traffic Emissions Modelling

6.15 This section of the chapter summarises the future operational-phase air quality impacts of the key pollutants associated with the development traffic of the proposed scheme.

Nitrogen Dioxide

6.16 Table 6.5 summarises the annual-mean NO_2 concentrations predicted at the façades of existing receptors in the first year in which the development is expected to be operational, 2017.

Table 6.5 Predicted Annual-Mean NO_2 Impacts at Existing Receptors

Receptor	Concentration ($\mu g.m^{-3}$)		With - Without Dev as % of the AQS Objective	Impact Descriptor
	Without Development	With Development		
1	19.7	19.7	0	Negligible
2	19.7	20.0	1	Negligible
3	19.4	19.6	1	Negligible
4	28.0	28.3	1	Negligible
5	23.1	23.3	0	Negligible
6	23.0	23.0	0	Negligible
7	24.6	24.6	0	Negligible
8	23.5	23.6	0	Negligible
9	22.4	22.4	0	Negligible
10	15.9	16.0	0	Negligible
Maximum	**28.0**	**28.3**	**1**	**-**
Minimum	**15.9**	**16.0**	**0**	**-**

6.17 Predicted annual-mean NO_2 concentrations in the opening year at the façades of the existing receptors are well below the AQS objective for NO_2. When the magnitude of change is considered in the context of the absolute concentrations, the impact descriptor is 'negligible' at all receptors.

6.18 Overall, the impact on the surrounding area from NO_2 is considered to be 'negligible', using the criteria adopted for this assessment and based on professional judgement.

6.19 As all predicted annual-mean NO_2 concentrations are below 60 $\mu g.m^{-3}$, the hourly-mean objective for NO_2 is unlikely to be exceeded and is not considered further within this assessment.

Particulate Matter

6.20 Table 6.6 summarises the annual-mean PM_{10} concentrations predicted at the façades of existing receptors.

Table 6.6 Predicted Annual-Mean PM_{10} Impacts at Existing Receptors

Receptor	Concentration (µg.m^{-3})		With - Without Dev as % of the AQS Objective	Impact Descriptor
	Without Development	With Development		
1	15.9	15.9	0	Negligible
2	15.9	15.9	0	Negligible
3	15.8	15.8	0	Negligible
4	17.6	17.6	0	Negligible
5	16.5	16.5	0	Negligible
6	16.5	16.5	0	Negligible
7	17.0	17.0	0	Negligible
8	16.7	16.8	0	Negligible
9	16.5	16.5	0	Negligible
10	15.1	15.1	0	Negligible
Maximum	**17.6**	**17.6**	**0**	**-**
Minimum	**15.1**	**15.1**	**0**	**-**

6.21 Predicted annual-mean PM_{10} concentrations in the opening year at the façades of the existing receptors are well below the AQS objective for PM_{10}. When the magnitude of change is considered in the context of the absolute concentrations, the impact descriptor at all receptors is 'negligible'.

6.22 Overall, the impact on the surrounding area from PM_{10} is considered to be 'negligible', using the criteria adopted for this assessment and based on professional judgement.

6.23 As all predicted annual mean PM_{10} concentrations are below 31.5 µg.m^{-3}, the daily-mean PM_{10} objective is expected to be met and is not considered further within this assessment.

Fine Particulate Matter

6.24 Table 6.7 summarises the annual-mean $PM_{2.5}$ concentrations predicted at the façades of existing receptors.

Table 6.7 Predicted Annual-Mean $PM_{2.5}$ Impacts at Existing Receptors

Receptor	Concentration (µg.m^{-3})		With - Without Dev as % of the AQS Objective	Impact Descriptor
	Without Development	With Development		
1	10.9	10.9	0	Negligible
2	10.9	10.9	0	Negligible
3	10.8	10.8	0	Negligible
4	11.9	11.9	0	Negligible
5	11.2	11.3	0	Negligible
6	11.2	11.2	0	Negligible
7	11.5	11.5	0	Negligible
8	11.4	11.4	0	Negligible
9	11.2	11.2	0	Negligible
10	10.4	10.4	0	Negligible
Maximum	**11.9**	**11.9**	**0**	-
Minimum	**10.4**	**10.4**	**0**	-

AQS objective = 25 µg.m^{-3}

6.25 Predicted annual-mean $PM_{2.5}$ concentrations in the opening year at the façades of the existing receptors are well below the AQS objective for $PM_{2.5}$ at all receptors. When the magnitude of change is considered in the context of the absolute concentrations, the impact descriptor at all receptors is ‘negligible’.

6.26 Overall, the impact on the surrounding area from $PM_{2.5}$ is considered to be ‘negligible’, using the criteria adopted for this assessment and based on professional judgement.

6.27 As the maximum predicted annual-mean $PM_{2.5}$ concentration is below 25 µg.m^{-3} in the opening year, and concentrations of $PM_{2.5}$ are expected to decrease in future years, the AQS objective for $PM_{2.5}$ is expected to be met by a wide margin by its target date of 2020.

Cumulative Impacts

Cumulative Industrial Emissions

6.28 The following facilities which are consented but are not operational have the potential for cumulative air quality impacts:

- Organic Waste Management Ltd bio-energy plant at Lostock Works; and
- Tata Chemicals Europe and E.ON Energy from Waste Ltd Sustainable Energy Plant (SEP) off Griffiths Road, Lostock (also within Lostock Works).

6.29 Predicted contributions for the key pollutants from the two facilities for which cumulative effects are expected are provided below in Table 6.8. The concentration reported in each case is the maximum that was predicted across their relative modelled domains.

Table 6.8: Cumulative Pollutant Concentrations (μg.m^{-3}) Data used in Assessment

Pollutant	Bio-Energy Plant, Lostock Works [a]		SEP, Griffiths Road [b]	
	Long-Term	Short-Term	Long-Term	Short-Term
CO	-	21.4	-	9.1
NO_2	3.23 (approx. 1 at receptors along Manchester Road)	19.3	2.6 (approx.1.76 at receptors along Manchester Road)	12.1
PM_{10}	0.8	2.12	0.6	0.2
$PM_{2.5}$ *	0.8	2.12	0.6	0.2
Benzene	0.804	-	-	-

[a] Data extracted from Appendix 6 of the Environmental Statement, 2007
[b] Data extracted from Chapter 7 of the Environmental Statement, 2010
* to ensure a conservative approach, it is assumed that the predicted $PM_{2.5}$ concentration is equal to the predicted PM_{10} concentration

6.30 The maximum predicted ground-level concentration associated with the gas engines and flare stacks in the modelled domain has been derived for each of the five years of meteorological data. In practice, the maximum PCs for each of the proposals would not occur at the same locations and so the cumulative impacts presented by simply adding these together are highly conservative. Typically, the maximum PC for each facility is higher than the highest combined effect. Notwithstanding this, Table 6.9 summarises the predicted Process Contributions (PC) for all pollutants and the resulting Predicted Environmental Concentrations (PEC), i.e. the PC + background, derived by adding each of the maxima.

Table 6.9: Predicted Maximum Process Contributions and Predicted Environmental Concentrations

Averaging period (Pollutant)	EQS (μg.m^{-3})	AC (μg.m^{-3})	Proposed Development PC (μg.m^{-3})	Total PC (Proposed Development + Bio-Energy Plant + SEP) (μg.m^{-3})	Max PEC (μg.m^{-3})	Max PEC as % of EQS
Annual mean (NO_2)	40	14.7	5.9	11.7	26.4	66.0
Annual mean (Benzene)	5	0.5	0.8	1.6	2.1	42.7
8 hour running maximum (CO)	10000	642.0	12.7	43.2	685.2	6.9
1 hour 99.79th percentile (NO_2)	200	29.4	63.7	95.1	124.5	62.3

6.31 Notwithstanding the conservative assumptions discussed above, Table 6.9 shows that the PECs remain below their relevant EQS.

Cumulative Impacts – Manchester Road

6.32 The closest sensitive residential receptors are located along Manchester Road, approximately 180 m north of the proposed development site. Since these receptors are adjacent to a major road, the urban background NO_2 concentration used as the background ambient concentration (AC) in the results tables above may not be representative at these locations. Instead, the most recent and closest roadside monitored NO_2 concentration of 33.4 µg.m^{-3} has been used as the AC at these receptors.

6.33 Figure 10.E shows the contour plot for the total annual-mean NO_2 stack emission Process Contribution, including the estimated contributions from the SEP and Bio-Energy Plant, shown in Table 6.8. The majority of the Manchester Road receptors fall between the 4 and 5 µg.m^{-3} contours.

6.34 Table 6.10 summarises the highest predicted cumulative annual-mean NO_2 PC and PEC for the residential receptors along Manchester Road.

Table 6.10: Predicted Maximum Process Contributions and Predicted Environmental NO_2 Concentrations along Manchester Road

Averaging period (Pollutant)	EQS (µg.m^{-3})	AC (µg.m^{-3})	Proposed Development PC (µg.m^{-3})	Total PC (Proposed Development + Bio-Energy Plant + SEP) (µg.m^{-3})	Max PEC (µg.m^{-3})	Max PEC as % of EQS
Annual mean (NO_2)	40	33.4	2.5	5.3	38.7	96.7

6.35 It can be seen from Table 6.10 that the PEC for annual-mean NO_2 remains below the EQS.

Combined Stack and Traffic Effects

6.36 The combined effects of the stacks associated with the proposed development, the stacks associated with committed developments in the area, and the proposed development traffic for NO_2 in the opening year (2017) are presented in Table 6.11.

Table 6.11 Predicted Annual-Mean NO_2 Concentrations

Receptor	Concentration (µg.m^{-3})						
	Without Development	**Traffic Contribution**	**Biogas Engines Stack Contribution**	**Biogas Flare Contribution**	**Bio-Energy Plant Stack Contribution**	**SEP Stack Contribution**	**PEC**
1	19.7	<0.05	0.8	0.1	3.2	2.6	26.3
2	19.7	0.3	0.4	<0.05	3.2	2.6	26.3
3	19.4	0.2	0.4	<0.05	3.2	2.6	25.8
4	28.0	0.3	0.2	<0.05	3.2	2.6	34.3
5	23.1	0.2	0.2	<0.05	3.2	2.6	29.3
6	22.7	0.1	0.1	<0.05	3.2	2.6	29.0
7	24.3	0.1	0.1	<0.05	3.2	2.6	30.6
8	23.2	0.1	0.3	<0.05	3.2	2.6	29.7
9	22.1	0.1	0.4	<0.05	3.2	2.6	28.7
10	15.9	<0.05	0.1	<0.05	3.2	2.6	21.9
Maximum	**28.0**	**0.3**	**0.8**	**0.1**	**3.2**	**2.6**	**34.3**
Minimum	**15.9**	**<0.05**	**0.1**	**<0.05**	**3.2**	**2.6**	**21.9**

6.37 Table 6.11 shows that the combined annual-mean NO_2 concentrations at sensitive receptors affected by both development traffic and stack emissions are below the AQS objective of 40 µg.m^{-3}.

Significance of Effects of Combined Emissions

6.38 The results above, which take into account both the proposed development's traffic and stack emissions, and cumulative emissions from the committed SEP Plant and Bio-Energy Plant, indicate that with the development, the predicted annual-mean NO_2 concentrations at existing receptors are below the relevant AQS objective.

6.39 Using professional judgement, the resulting air quality effect is considered to be not significant overall.

Assessment of Fugitive Dust and Odour Releases

6.40 The proposed development will treat municipal solid waste (MSW), fines supplied from existing intermediary waste transfer and treatment sites, and similar commercial and industrial wastes.

6.41 The waste will be delivered to site in HGVs with enclosed containers. All doors to the waste reception hall and loading hall will remain closed except when vehicles/people exit/ingress and will be automatically closing. The waste reception hall is located on the southern side of the building structure, which is compartmentalised. Air from the waste reception hall and waste bunker will be kept under slight negative pressure.

6.42 The waste reception building will be fully enclosed and the enzymatic process will take place in fully enclosed vessels (‘bioreactors’). Sorting of recovered materials for recycling will take place within the enclosed loading hall. All recyclable materials will be washed using clean water. Secondary odour control will be provided for these areas.

6.43 AD tanks will be fully enclosed to provide a gas seal with pressure drop and gas flow rate monitoring. Digestate will be pumped for dewatering to produce a compost-like output, with water returned to the process loop in a closed system.

6.44 Overflow materials (e.g. clean recyclables) will be baled and stored in an open area but are not expected to be odorous.

6.45 An external store will contain the compost-like output material of low odour potential, which will be roofed and housed within push walls or in containers.

6.46 Aside from bag-opening and the separation of oversized material, no up-front waste shredding or crushing is required on-site.

6.47 There will be an external washing area for HGVs and loaders. A wheel-washing station will be set up at the site entrance to minimise track-out mud onto the access road and consequent dust generation during construction.

Fugitive Odour

6.48 With reference to Table 4.1 in Appendix 10.B, the compounds involved in the proposed facility’s process are moderately to very odorous, which implies a ‘medium’ or ‘large’ Source Odour Potential. However, mitigation is incorporated into the design of the proposed development as described above and within the Odour Management Plan (OMP) and Appendix 10.E, and few residual emissions are expected. Therefore, the Source Odour Potential from the facility is taken to be ‘medium’.

6.49 There are low sensitivity receptors within 20 m of the site boundary, i.e. neighbouring industrial uses. Using the terminology described in Appendix 10.B, the pathway to these receptors is highly effective. The Risk of Odour Exposure for a medium Source Odour Potential and a highly effective pathway is ‘medium’.

6.50 The likely magnitude of odour effect for a medium Risk of Odour Exposure and low Receptor Sensitivity is ‘negligible’. This is summarised in Table 6.12.

Table 6.12 Likely Odour Effects at the Proposed Development Site

Receptor	Source Odour Potential	Pathway Effectiveness	Risk Odour Exposure	Receptor Sensitivity	Likely Odour Effect
Industrial and business users within 20 m of site boundary	Medium	Highly effective	Medium risk	Low	Negligible

Fugitive Dust

6.51 Dust emissions are best mitigated at source and enclosure is a key means of controlling dust emissions. Compost-like material will have a relatively high moisture content and will be covered and protected from the wind or enclosed. Given the level of mitigation control incorporated into the design of the facility the Dust Emission Magnitude is expected to be ‘small’.

6.52 The receptors surrounding the site are industrial and are considered to be ‘low’ sensitivity. On that basis, the sensitivity of the area is considered to be ‘low’.

6.53 For a small Dust Emission Magnitude and a low Area Sensitivity, the risk of dust impacts is ‘negligible’.

Summary

6.54 Based on the results of the risk assessments undertaken, the residual effects from fugitive emissions of dust and odours from the proposed development are not likely to be significant.

Assessment of Bioaerosol Effects

6.55 The proposed development is not expected to result in releases of bioaerosols, given that there will be no shredding or crushing, activities will take place within enclosed buildings, and the waste received is not likely to be in an advanced state of decomposition.

6.56 For the reasons set out above, the probability of harm from bioaerosols is expected to be negligible, given the absence of a source-generation mechanism or any effective pathway to the receptors. The overall risk of bioaerosol impacts is therefore considered to be negligible and no significant effects should result.

Effects on Ecology

6.57 As discussed in Appendix 10.B, a detailed assessment of air quality impacts on nature conservation sites has not been undertaken. ‘Ashton’s and Neumann’s Flashes’ Local Wildlife Site is the closest Local Wildlife Site to the proposed development site. As shown in the contour plot in Figure 10.C, the maximum annual-mean NO_2 PC at this ecological designation is between 0.3 and 0.4 $\mu g.m^{-3}$. Since it has been assumed that 70% of NO_X is converted to NO_2, this implies a maximum annual-mean NO_X PC of 0.6 $\mu g.m^{-3}$ (0.4/0.7 = 0.6). The most recent 3-year average baseline NO_X concentration at this site is 15.82 $\mu g.m^{-3}$, as obtained from the Air Pollution Information System (APIS) for grid reference 366680,374960 [9]. Based on this, a maximum annual-mean NO_X PEC of 16.22 $\mu g.m^{-3}$ is predicted, which is well below the relevant Environmental Assessment Level of 30 $\mu g.m^{-3}$.

Summary of Effects

6.58 As set out in Appendix 10.B, it is generally considered good practice that, where possible, an assessment should communicate effects both numerically and descriptively. Professional judgement by a competent, suitably qualified professional is required to establish the significance associated with the consequence of the impacts.

6.59 Taking into account the predictions for all pollutants, the effects are generally deemed to be not significant, with no predicted exceedences of any objectives or standards at the point of maximum impact or at modelled discrete receptors, alone or in combination. This is based on a highly conservative (worse case) assessment.

6.60 Fugitive emissions of dust, odours and bioaerosols from the process are not anticipated to be significant, given the level of mitigation and control incorporated within the design.

Sensitivity and Uncertainty

6.61 Appendix 10.B provides an analysis of the sources of uncertainty in the results of the assessment. The conclusion of that analysis is that, overall, the predicted total concentration is likely to be towards the top of the uncertainty range rather than being a central estimate. The flare and gas engines were modelled as continuous sources, which is an extremely conservative assumption.

6.62 The impacts at existing receptors are shown to be not significant even for this extremely conservative scenario. Consequently, further sensitivity analysis has not been undertaken and, in practice, the impacts at sensitive receptors are likely to be lower than those reported in this conservative assessment.

7 Mitigation

Construction Phase

7.1 The IAQM dust guidance lists mitigation measures for low, medium and high dust risks. Without mitigation, the air quality impacts during the construction phase of the proposed development are likely to be in the high risk category. A Dust Management Plan (DMP) has been produced and is provided in Annex 2.C.1. The DMP draws on the mitigation measures described as 'highly recommended' for high Dust Impact Risk.

7.2 The IAQM dust guidance states that with the recommended dust mitigation measures in place, the residual effect will normally be "*not significant*". The DMP will be implemented during the construction phase, which can be secured by a planning condition.

Operational Phase

7.3 Predicted concentrations of pollutants from the operational phase of the proposed facility have been demonstrated by the assessment to meet all relevant air quality standards and objectives. No further mitigation is required in addition to that incorporated into the design of the scheme.

7.4 The level of mitigation already incorporated within the design of the proposed facility should ensure no significant fugitive emissions of dust, odours and bioaerosols.

8 Conclusions

8.1 This Air Quality Assessment has been undertaken to support the planning application for the proposed REnescience Northwich development off the A530 Griffiths Road, near Northwich and Lostock Gralam, Cheshire.

8.2 The assessment has considered effects of nuisance dust during the construction phase of the development; and traffic, point and fugitive emissions to air during the operation of the proposed facility.

8.3 The IAQM dust guidance lists mitigation measures for low, medium and high dust risks. Without any mitigation, the air quality impacts during the construction phase of the proposed development are likely to be in the high risk category. A Dust Management Plan (DMP) has been produced and is provided in Annex 2.C.1. With the recommended dust mitigation measures in place, the residual effect will be "*not significant*".

8.4 The effects of emissions from the facility's biogas engines stack and flare stack have been predicted using best practice approaches. The assessment has been undertaken based on a number of worst-case assumptions, including using the worst-case meteorological conditions and modelling the stacks and the flare as continuous emissions sources, which cannot happen in practice. The results show that the Predicted Environmental Concentrations are below the relevant air quality standards and no significant impact is predicted.

8.5 No significant cumulative effects are predicted, taking account of other consented but not yet operational schemes, including the Tata SEP and Organic Waste Management Bio-Energy Plant at Lostock Works.

8.6 Regarding the operational impact of the development traffic on the surrounding area, detailed atmospheric dispersion modelling has been undertaken for the first year in which the development is expected to be fully operational, 2017. The operational impact of the development on existing receptors in the local area due to road traffic emissions is predicted to be 'negligible', taking into account the changes in pollutant concentrations and absolute levels. Using the significance criteria adopted for this assessment together with professional judgement, the overall impact on the area as a whole is considered to be 'negligible'.

8.7 The level of mitigation already incorporated within the design of the proposed facility should ensure no significant fugitive emissions of dust, odours and bioaerosols. An Odour Management Plan (OMP) has been produced and is provided in Appendix 10.E. This will form one of the management plans for the Environmental Permit.

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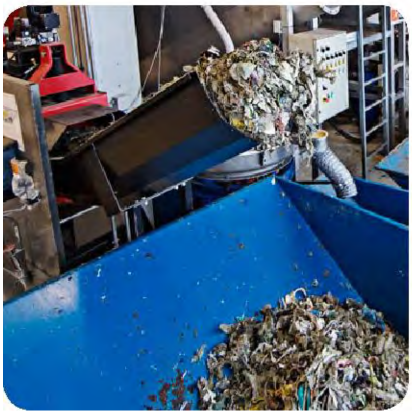
Chapter 11: Noise and Vibration

REnescience Northwich








Quality Management

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Executive Summary

A noise and vibration assessment has been completed as part of the formal Environmental Impact Assessment (EIA) required for the planning application for the proposed REnescience Northwich development, which is located off the A530 Griffiths Road, near Northwich and Lostock Gralam, Cheshire.

Mitigation for noise and vibration from construction activities is provided within the Construction Environmental Management Plan (Appendix 2.C) for the site. Construction works will follow Best Practicable Means to minimise noise and vibration effects. A qualitative assessment of construction noise and vibration effects has been carried out with reference to national Planning Practice Guidance for Noise (PPGN). The assessment indicates that, with suitable mitigation measures, there is likely to be a direct, temporary, medium-term noise effect on noise-sensitive receptors of minor adverse significance. There will be no change due to vibration and the significance of effects will therefore be neutral. With reference to the PPGN, construction noise effects might be above the Lowest Observed Adverse Effect Level (LOAEL) but will be below the Significant Observed Adverse Effect Level (SOAEL) and vibration effects will be below the No Observed Effect Level (NOEL).

In order to comply with the Environmental Permitting Regulations (EPR), the development will incorporate Best Available Techniques (BAT) to minimise noise emissions during operation. The gas engines will be located within containers which provide significant sound attenuation. The gas engines' stack will be fitted with a silencer. The drive gear of the bioreactors, the ballistic separator and other plant associated with waste sorting will be located in buildings. Other external plant, including pumps, dewatering plant etc will be located within enclosures. HGVs will follow the approved access routes to and from site.

An assessment of the operational noise effects, with the above measures in place has been carried out in accordance with the PPGN and BS 4142:2014. The assessment indicates that at the majority of locations the rating level does not exceed the background sound level, which is an indication of the specific sound source having a low impact, depending on the context. With consideration for the context, it is possible that noise from site activities will be noticeable on occasions at the closest noise-sensitive to the site but it will not cause any changes in behaviour or attitude or a perceived change in quality of life. Therefore, with respect to national planning guidance in the PPGN, the level of noise will be at or below the LOAEL. With respect to EIA, the impact of noise from activities on site is expected to be low. The sensitivity of receptors is medium so there will be a direct, minor adverse effect due to noise from the operation of the facility.

The effects of change in noise levels due to road traffic on the local road network have also been considered. The assessment indicates that the significance of effects due to operational road traffic noise is negligible.

Cumulative operational noise effects with other consented developments that have the potential to generate cumulative operational noise effects at receptors within the vicinity of the site. Although there is potential for cumulative effects to occur, these are likely to be negligible to minor, and there is also potential that other developments will reduce the noise effects from that facility. On this basis, the significance of cumulative effects would be, in the worst case, of minor adverse significance.

Cumulative effects of change in noise levels due to road traffic on the local road network have also been considered. The assessment indicates that the significance of effects due to operational road traffic noise from the development is negligible. The significance of cumulative effects due to road traffic noise with the development and other consented developments is in the worst-case minor to moderate adverse. However, where minor to moderate adverse effects occur due to noise from road traffic these are not attributable to this development, but rather to the contribution from other developments.

In summary, there is the potential for effects of minor adverse significance to occur due to noise during the construction of the development and during the operation of the development. Construction noise will be controlled using best practicable means and operational noise will be controlled using best available technology. The effects due to construction vibration and road traffic noise are negligible.

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Tables

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Appendices

1 Introduction

1.1 This chapter provides an assessment of the airborne noise and ground-borne vibration effects (on people, buildings and areas used by people) that may arise from the construction and operation of the proposed REnescience Northwich development, that will recover recyclable materials from waste and generate renewable electricity. This chapter of the ES is supported by Figures 11.A to 11.D and Appendices 11.A to 11.D.

Scope of Study

1.2 This chapter sets out the approach to the assessment; provides a description of the baseline noise environment; identifies those aspects of the proposed development that may cause significant noise and/or vibration effects; provides predictions of noise and/or vibration immissions at the nearest noise and vibration sensitive receptors (NSRs); and provides an assessment of the significance of potential residual noise and/or vibration effects. Mitigation measures are identified where necessary. Cumulative noise and/or vibration effects with other proposed developments that may also affect the same NSRs as the project are also considered, as are the limitations of the assessment.

1.3 Significant noise exposure can cause annoyance and sleep disturbance, both of which can impact on the quality of life. Significant ground-borne vibration can reduce the quality of life and working efficiency of building occupants and, for very high levels, has the potential to cause cosmetic or structural damage to buildings and structures.

Study Area

1.4 The study area for this assessment includes the nearest existing and consented noise sensitive receptors (NSRs) to each boundary of the site that are within 1 km of the site boundary. The following are the sensitive receptors/areas which have been identified and considered in this assessment:

- existing and consented residential properties on Manchester Road – approximately 200 to 600 m to the north-east and 250 to 450 m to the north-west of the site;
- consented residential properties on James Street between 320 and 620 m to the south-west of the site (planning application ref: 4/08/0020/OUM/CCC - Demolition of existing structures and redevelopment of land for the residential use for up to 306 dwellings, associated infrastructure and open space - Phase 1. Land at Hargreaves Road Northwich Cheshire);
- consented residential properties at Farm Road between 430 and 570 m to the south-east of the site (planning application ref: 12/03653/OUT - Residential development of 48 dwellings including means of access (outline). Land At End Of Farm Road Rudheath Northwich Cheshire);

- consented residential properties at Cottage Close between 580 and 650 m to the south-east of the site (planning application ref: 12/03652/OUT - Residential development of 13 dwellings including means of access (outline). Land Adjacent to Cottage Close Rudheath Northwich Cheshire);
- existing residential properties on James Street, Birkenhead Street, Liverpool Street, Edward Street, Stanley Street and Verdin Street – between 600 m and 760 m to the south-west of the site; and
- existing residential properties on St John's Close, Farm Road, Cottage Close and Wentworth Close – between 580 m and 900 m to the south-east of the site.

1.5 For the assessment of effects from road traffic noise, the study area comprises roads included in the transport assessment provided in Chapter 6: Traffic and Transport of this ES.

2 Legislation and Policy Context

2.1 A detailed review of the development plan documents and planning context in relation to the proposed development proposals is provided in the Planning Statement accompanying the planning submission. This section summarises those policies that are directly relevant to noise and vibration.

National Policy and Legislation

National Planning Policy Framework

2.2 The National Planning Policy Framework (NPPF)[1], published in March 2012, sets out the government's planning policies for England.

2.3 The document does not contain any specific noise policy or noise limits, but it provides a framework for local people and local authorities to produce their own local and neighbourhood plans, which reflect the needs and priorities of their communities.

2.4 In Section 11, 'Conserving and enhancing the natural environment', paragraph 123 relates to noise and states:

'123. Planning policies and decisions should aim to:

- *avoid noise from giving rise to significant adverse impacts[27] on health and quality of life as a result of new development;*
- *mitigate and reduce to a minimum other adverse impact[28] on health and quality of life arising from noise from new development, including through the use of conditions;*
- *recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established;[28] and*
- *identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.'*

27 See Explanatory Note to the Noise Policy Statement for England (Department for the Environment, Food and Rural Affairs).

28 Subject to the provisions of the Environmental Protection Act 1990 and other relevant law.'

2.5 In addition to the NPPF and the Noise Policy Statement for England (NPSE) described below, the Department for Communities & Local Government released Planning Practice Guidance (PPG) on noise in March 2014. The PPG provides guidance on determining the significance of noise effects to support the requirements of the NPPF.

Noise Policy Statement for England

2.6 The Noise Policy Statement for England (NPSE) [2], published in March 2010 by Defra, aims to provide clarity regarding current policies and practices to enable noise management decisions to be made within the wider context, at the most appropriate level, in a cost-effective manner and in a timely fashion.

2.7 Paragraph 1.6 of the NPSE sets out the long-term vision and aims of government noise policy:

<u>"Noise Policy Vision</u>

Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development."

<u>"Noise Policy Aims</u>

Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- *avoid significant adverse impacts on health and quality of life;*
- *mitigate and minimise adverse impacts on health and quality of life; and*
- *where possible, contribute to the improvement of health and quality of life."*

2.8 The aims require that all reasonable steps should be taken to avoid, mitigate and minimise adverse effects on health and quality of life whilst also taking into account the guiding principles of sustainable development, which include social, economic, environmental and health considerations.

2.9 With regard to the terms 'significant adverse' and 'adverse' included in the 'Noise Policy Aims', these are explained further in the 'Explanatory Note' as relating to established concepts from toxicology that are currently being applied to noise impacts, for example, by the World Health Organisation which are:

<u>'NOEL – No Observed Effect Level'</u>

This is the level below which no effect can be detected. In simple terms, below this level, there is no detectable effect on human health and quality of life due to noise.

<u>'LOAEL – Lowest Observed Adverse Effect Level'</u>

This is the level above which adverse effects on health and quality of life can be detected.'

Defra has then extended these concepts for the purpose of the NPSE to introduce the concept of:

<u>'SOAEL – Significant Observed Adverse Effect Level'</u>

2.10 This is the level above which significant adverse effects on health and quality of life occur. The accompanying explanation states:

'It is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times. It is acknowledged that further research is required to increase our understanding of what may constitute a significant adverse impact on health and quality of life from noise. However, not having specific SOAEL values in the NPSE provides the necessary policy flexibility until further evidence and suitable guidance is available'.

2.11 With regard to 'further evidence', Defra has commissioned research to try and identify the levels at which the above effects occur but this is not yet in the public domain. However, early indications are that this research has been largely inconclusive. On this basis, and until further guidance becomes available, and given that there is no specific guidance in the NPPF on noise, there is no justification to vary assessment methods and criteria from those previously adopted from British Standards etc.

Planning Practice Guidance for Noise (PPGN)

2.12 The government has published Planning Practice Guidance on a range of subjects including noise (paragraph Reference ID: 30-001-20140306) [3]. The guidance provides advice on how to deliver its policies. The PPG reiterates general guidance on noise policy and assessment methods provided in the NPPF, NPSE and British Standards (BSs) and contains examples of acoustic environments commensurate with various effect levels.

2.13 The PPGN describes noise that is not noticeable to be at levels below the NOEL. It describes a range of noise exposure that is noticeable but not to the extent there is a perceived change in quality of life. Noise exposures in this range are below the LOAEL and need no mitigation. On this basis, the audibility of noise from a development is not, in itself, a criterion to judge noise effects that is commensurate with national planning policy.

2.14 The PPGN suggests that noise exposures above the LOAEL cause small changes in behaviour. An example of noise exposures above the LOAEL provided in the PPG is having to turn up the volume on the television; needing to speak more loudly to be heard; or, where there is no alternative ventilation, closing windows for some of the time because of the noise. In line with the NPPF and NPSE, the PPGN states that consideration needs to be given to mitigating and minimising effects above the LOAEL but taking account of the economic and social benefits being derived from the activity causing the noise.

2.15 The PPG suggests that noise exposures above the SOAEL cause material changes in behaviour. An example of noise exposures above the SOAEL provided in the PPGN are, where there is no alternative ventilation, keeping windows closed for most of the time or avoiding certain activities during periods when the noise is present. In line with the NPPF and NPSE, the PPGN states that effects above the SOAEL should be avoided and that whilst the economic and social benefits being derived from the activity causing the noise must be taken into account, such exposures are undesirable.

Local Policy

2.16 Strategic Policy ENV 7 'Alternative Energy Supplies' of CWCC's Local Plan[4] states that:

'The Local Plan will support renewable and low carbon energy proposals where there are no unacceptable impacts on: …'

and then lists several areas including *'noise'.*

2.17 CWCC's Replacement Waste Local Plan (RWLP) [5] provides policies saved after 29th January 2015. Chapter 4 'Site Search, Assessment and Selection' of the RWLP, indicates how sites for waste management will be selected. Paragraph 4.8 of Chapter 4 states the following:

'The assessment process considered the following site specific issues to identify the site's suitability for a range of potential uses:'

and

'B Residential and General Amenity Issues

Consideration was given to whether the site is close to residential properties or other sensitive uses which could be adversely affected by the proposals (i.e. through noise, dust, odour, gulls/vermin, visual impact or heavy vehicles). The impact of the proposals on the general character of the area was assessed, for example through increasing the volume of HGV traffic or noise levels in an otherwise quiet rural area.'

2.18 Policy 12 'Impact of Development Proposals' of the RWLP expands on the above:

'An application to develop a waste management facility, or to alter or amend an existing facility, must be accompanied by an evaluation of the proposed development and its likely direct, indirect and cumulative impacts. Where unacceptable impacts are identified the measures proposed to avoid, reduce or remedy these should be provided at the application stage. The planning application should also set out, where appropriate, the arrangements for the management and monitoring of the waste management facility.

For evaluation and mitigation purposes the application should address any relevant environmental issues, including: …

and then lists several areas including *'noise levels'.*

2.19 It concludes with:

'When issuing planning permissions the Waste Planning Authority will, where appropriate, use planning conditions and/or planning obligations to secure implementation and compliance in respect of the above matters.'

3 Assessment Methodology

Consultation

3.1 Prior to undertaking any work in connection with the noise and vibration assessment, RPS initially consulted with the Environmental Protection Team (EPT) at CWCC by e-mail on 11th June 2015 and then in subsequent telephone conversations between 16th June 2015 and 3rd July 2015. In these discussions, agreements were made between RPS and CWCC's EPT regarding the NSRs to be considered within the assessment; the baseline monitoring locations, and the assessment methodology.

Methodology

Baseline Characterisation

Desk Study

3.2 Existing noise sources for consideration within and around the site are: road traffic on the A559 Manchester Road, the A530 Griffiths Road and other local roads; trains on the railway line to the north of the site; noise from other existing industrial uses in the area including the Solvay facility immediately to the east of the site, industrial units on the opposite side of the railway line to the north and other commercial/industrial developments beyond the A530 Griffiths Road; and aircraft noise overhead.

3.3 Significant levels of vibration within the vicinity of the site are unlikely; the only potential source being freight trains running on the railway line to the north which, from RPS' experience, will produce very low vibration emissions. On this basis, vibration has been scoped out of the baseline study.

Site Visit / Other Assessment

3.4 The baseline sound climate has been determined at the locations of existing and potential future NSRs in the vicinity through baseline sound monitoring carried out by RPS at five locations in July 2015. Table 3.1 contains a summary of the baseline noise monitoring locations and the NSRs that they represent.

Table 3.1: Baseline Noise Monitoring Locations

Ref	Location	NSRs
L1	273 Manchester Road	Existing and consented residential properties on Manchester Road to the north-east of the site.
L2	38 James Street	Existing residential properties on James Street, Birkenhead Street, Liverpool Street, Edward Street, Stanley Street and Verdin Street.
L3	Manchester Road opposite Brickfield Business Centre	Existing residential properties on Manchester Road to the north-west of the site.

Ref	Location	NSRs
L4	On footpath north of Farm Road	Existing and consented residential properties on St John's Close, Farm Road, Cottage Close and Wentworth Close.
L5	North of James Street	Consented residential properties on James Street.

3.5 Long-term sound monitors were installed by RPS at two of the locations, L1 and L2, on the 9th July 2015 and collected on the 16th July 2015. Data were logged of the Fast, A-weighted sound pressure level in 100 ms periods for the entire period of the surveys.

3.6 At the remaining three locations, L3, L4 and L5, short-term measurements were undertaken by RPS. In each location, two or three 15-minute surveys were undertaken during daytime hours (07:00 – 23:00 hrs) and two 15-minute surveys were undertaken in night-time hours (23:00 – 07:00 hrs).

3.7 The sound monitoring locations are identified on Figure 11.A of this chapter. Specific details of survey locations and principal sound sources are provided under Section 4 of this chapter 'Baseline Conditions'.

3.8 Measurements at L1 and L2 were carried out using Rion NL 52 Sound Level Meter (SLM) and measurements at L3, L4 and L5 were carried out using a B&K 2250 SLM. Both types of SLM used are Type 1 with high performance environmental windshields. BS 7445-2:1991 recommends that sound level meters used for the acquisition of data pertinent to land use be preferably Type 1.

3.9 All instrumentation was checked for calibration prior to and following the measurements using a Rion NC 74 calibrator and there was no significant drift within the survey period. All equipment was within the two year BS 4142:2014 advisory calibration period at the time of the measurements. Calibration certificates are available on request.

3.10 Wind conditions during the survey period were recorded using a local meteorological recording station. Checks were made of the monitored data to see if wind speed, direction and rainfall had any considerable influence on the recorded sound levels.

Assessment of Construction Effects

3.11 A qualitative assessment of noise and vibration effects has been undertaken based on the typical construction equipment and plant that would be required for this type of development. The significance of effects have been determined on the basis of professional judgement, baseline sound levels determined from surveys and the semantic scale described in Table 3.2, which refers to guidance contained within the PPGN. Table 3.2 provides the corresponding effect levels in the terminology of the PPGN for the significance of effects for residential NSRs.

Table 3.2: Methodology for Determining Significance of Effect for Construction (and Industrial) Noise and Vibration at Residential NSRs

Magnitude of Impact	Threshold Effect Level for Residential NSRs (PPGN)	Criteria for Assessing Effect Significance
High	UAEL[1]	The noise/vibration causes a material change in behaviour and/or attitude. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.
Medium	SOAEL	Noise/vibration can be heard/felt and causes small changes in behaviour and/or attitude. Affects the acoustic character of the area such that there is a perceived change in the quality of life.
Low	LOAEL	A minor shift away from baseline conditions. Noise/vibration can be heard/felt, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.
Negligible	NOEL	Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation.

Note 1: The PPGN indicates that an unacceptable adverse effect (level) occurs above SOAEL; the term UAEL (Upper Adverse Effect Level) has therefore been used to describe effects at this level although it is not a term referred to in the NPSE or elsewhere in the PPGN except in the table of effects.

Assessment of Operational Effects

Operation of the Proposed Facility

3.12 Noise effects due to the operation of the proposed facility have been assessed according to the guidance in BS 4142:2014 ‘Methods for rating and assessing industrial and commercial sound’ [6] and the PPGN as presented in Table 3.2 above. The foreword to BS 4142:2014 provides the following introduction for the assessment of human response to sound:

“Response to sound can be subjective and is affected by many factors, both acoustic and non-acoustic. The significance of its impact, for example, can depend on such factors as the margin by which a sound exceeds the background sound level, its absolute level, time of day and change in the acoustic environment, as well as local attitudes to the source of the sound and the character of the neighbourhood.”

3.13 BS 4142:2014 primarily provides a numerical method by which to determine the significance of sound of an industrial nature (i.e. the ‘specific sound’ from the proposed development) at residential NSRs. The specific sound level may then be corrected for the character of the sound (e.g. perceptibility of tones and/or impulses), if appropriate, and it is then termed the ‘rating level’, whether or not a rating penalty is applied. The ‘residual sound’ is defined as the ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound.

3.14 The specific sound levels have been determined separately in terms of the $L_{Aeq,T}$ index over a period of T = 1-hour during the daytime and T = 15-minutes during the night-time. For the purposes of the Standard, daytime is typically between 07:00 and 23:00 hours and night-time is typically between 23:00 and 07:00 hours.

3.15 From Chapter 2 ‘Site Context and Project Description’, the standard operating hours for the site will be 07:00 to 19:30 Monday to Friday and 08:00 to 13:00 on Saturday. Deliveries and exports will only take place during these hours, and waste sorting activities will normally only take place within these hours. For the purposes of this assessment in accordance with BS 4142:2014, it has been assumed that full site operations will take place during the daytime assessment period, i.e. 1-hour assessment period between 07:00 and 23:00 hrs, and that the gas engines and stack will be fully operational during the night-time assessment period, i.e. 15-minute assessment period between 23:00 and 07:00 hours.

3.16 Specific sound immissions from the site have been predicted at the NSRs in paragraph 1.4 using SoundPLAN Version 7.2 sound modelling software utilising the propagation method contained in ISO 9613-2:1996 'Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation' [7]. Source data for the gas engines has been supplied by the technology providers for the site. For other key plant and processes within the facility, source data have been derived from measurements undertaken by RPS of similar operations on other sites. Details of the source data used for the assessment are provided in Appendix 11.A and a plan indicating the location of the plant is provided in Figure 11.B. Specifications for the sound insulation of the facades of building has also been determined based upon the construction information provided by the project architects. These are also provided in Appendix 11.A.

3.17 For the sound model, standard meteorological conditions and a ground factor of 0.5 (mixed ground) have been used in the model. For each group of NSRs, a single location has been modelled, which is representative of the closest NSRs to the site within that group. Predictions have been made at ground and first floor level, and the maximum predicted sound level for each NSR has been used to determine the specific sound level at that NSR.

3.18 At each NSR, the rating level has been determined from the predicted specific sound level. Where RPS has considered it to be appropriate, a rating penalty has been applied for tonality, impulsivity and/or intermittent specific sounds as described in the commentary to paragraph 9.2 of BS 4142:2014. This has been applied with consideration for the main sound sources from site that contribute to the level of specific sound at the NSR location.

3.19 BS 4142:2014 requires that the background sound levels adopted for the assessment be representative for the period being assessed. The Standard recommends that the background sound level should be derived from continuous measurements of normally not less than 15-minute intervals, which can be contiguous or disaggregated. However, the Standard states that there is no ‘single’ background sound level that can be derived from such measurements. It is particularly difficult to determine what is ‘representative’ of the night-time period is because it can be subject to a wide variation in background sound level between the shoulder night periods. The accompanying note to paragraph 8.1.4 states that:

"A representative level ought to account for the range of background sounds levels and ought not automatically to be assumed to be either the minimum or modal value."

3.20 The approach that has been adopted for this project is based on a combination of long-term and attended short-term surveys to obtain values of the background (L_{A90}) and residual (L_{Aeq}) sound levels at five locations. For the long-term surveys, background and residual sound levels for the daytime and night-time periods have been determined for each full period (i.e. 07:00 to 23:00 hrs and 23:00 to 07:00 hrs) and an average of the levels determined has been used for the assessment. For the short-term measurements, the lowest of the monitored levels has been used for the assessment. This is a more conservative approach, accounting for the limitations of the use of short-term data. Further information regarding the determination of background sound levels is provided within Section 4 'Baseline Conditions'.

3.21 An initial estimate of the impact of the specific sound has been obtained by subtracting the measured background sound level from the rating level of the specific sound. In the context of the Standard, adverse impacts include, but are not limited to, annoyance and sleep disturbance. Typically, the greater this difference, the greater is the magnitude of the impact:

- A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
- The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.

3.22 Whilst there is a relationship between the significance of impacts determined by the method contained within BS 4142:2014 and the significance of effects described in the PPGN, there is not a direct link. It is not appropriate to ascribe numerical rating / background level differences to LOAEL and SOAEL because this fails to consider the context of the sound, which is a key requirement of the Standard.

3.23 The significance of the effect of the noise in question (i.e. whether above or below SOAEL and LOAEL) should be determined on the basis of the initial estimate of impact significance from the BS 4142:2014 assessment with reference to the examples of outcomes described within the PPGN and after having considered the context of the sound. It is necessary to consider all pertinent factors, including:

- the absolute level of the sound;
- the character and level of the residual sound compared to the character and level of the specific sound; and

- the sensitivity of the receptor and whether dwellings or other premises used for residential purposes will already incorporate design measures that secure good internal and/or outdoor acoustic conditions.

3.24 In addition to the above the quanta of affected NSRs is considered within the overall significance of effects due to the proposed development.

Off-Site Road Traffic Noise

3.25 The assessment of changes in road traffic noise levels on local roads as a result of the operation of the proposed development is based on the methods contained within Calculation of Road Traffic Noise (CRTN)[8] and the Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 7: Noise and Vibration[9], which is a method designed for the assessment of new construction, improvements and maintenance of trunk roads. Therefore, the method described in DMRB is considered as informative but not definitive for the assessment of the traffic effects of the proposed development.

3.26 The calculations are based on traffic flow data contained with Chapter 6 'Traffic and Transport', and consider the difference in flows, comparing 'with' and 'without' the proposed development, expected for the initial year of operation (2017). Both scenarios 'with' and 'without' the proposals include measured 2015 baseline flows, anticipated traffic growth to 2017 and anticipated traffic due to other consented developments. In order to assess cumulative effects, a comparison has also been made between the scenario 'with' the proposals and a scenario 'without' the proposals and 'without' other consented developments. Traffic data have been provided for 7 links, of which Links 1 and Links 3 to 7 have been included in this assessment. There are no NSRs adjacent to Link 2 'Site Access,' and data are sufficiently low that noise from road traffic on this link would not contribute to the noise climate at NSRs further afield.

3.27 Paragraph 3.5 of DMRB HD 213/11 states that:

'The threshold criteria used for traffic noise assessment during the day is a permanent change in magnitude of 1 dB $L_{A10,18h}$ in the short term (i.e. on opening) or a 3 dB $L_{A10,18h}$ change in the long term (typically 15 years after project opening). For night time noise impacts, the threshold criterion of a 3 dB $L_{night,outside}$ noise change in the long term should also apply but only where the $L_{night,outside}$ is predicted to be greater than 55 dB for any scenario.'

3.28 Furthermore, (paragraph 3.37):

'A change in road traffic noise of 1 dB $L_{A10,18h}$ in the short term (e.g. when a project is opened) is the smallest that is considered perceptible. In the long term (typically 15 years after project opening), a 3 dB $L_{A10,18h}$ change is considered perceptible.'

3.29 On the basis of the above, changes in road traffic sound emissions will only have the potential to cause or contribute to some harmful or otherwise unwanted effect, like annoyance or sleep disturbance, (i.e. for the change to be an impact) if they are 1 dB $L_{A10,18h}$ or more. Changes in road traffic sound emissions that are less than 1 dB $L_{A10,18h}$ do not give rise to an impact. Consequently, no adverse effect, significant or otherwise, can occur from such changes.

3.30 Where impacts are predicted (i.e. where changes in road traffic sound emissions are predicted to be 1 dB $L_{A10,18h}$ or more), the magnitude of the impact is classified using the semantic scale provided in the table below, which is adapted from the scale contained within DMRB HD 213/11.

Table 3.3: Magnitude of Impact for Road Traffic Noise

Magnitude of Impact	Change in Traffic Sound Emission $L_{A10,18hr}$ dB
High	5.0 to 9.9
Medium	3.0 to 4.9
Low	1.0 to 2.9
Negligible	0.1 to 0.9
No Change	<0.1

3.31 Impacts may not give rise to adverse effects if road traffic sound immissions at NSRs are low such they do not have the potential to cause or contribute to some harmful or otherwise unwanted effect, like annoyance or sleep disturbance. Consequently, where an impact is predicted to occur, the absolute levels of road traffic sound immission are considered in terms of guidance contained within BS 8233:2014[10], NIR[11] and DMRB HD 213/11. This provides quantitative information that is combined with qualitative information such as the type of NSR (e.g. home, school, hospital etc.) and the acoustic character of the immission in the context of the baseline soundscape to assign a level of 'receptor sensitivity'.

3.32 BS 8233:2014 provides guideline values for desirable internal ambient noise levels in rooms used for resting, dining and sleeping when they are unoccupied. Impacts are increasingly likely to give rise to adverse effects the greater the road traffic noise immission exceeds the guideline levels contained within BS 8233:2014.

3.33 On this basis, the guideline internal noise levels contained within BS 8233:2014 have been converted to equivalent external noise levels on the basis that windows are sufficiently open (partially) to provide background ventilation. An external to internal sound level difference of 15 dB has been adopted based on the guidance contained within the Defra Report NANR 116 ‘Open/Closed Window Research – Sound Insulation through Ventilated Domestic open Windows’[12]. These levels are commensurate with the requirements for schools contained within BB93.

3.34 The NIR provides $L_{A10,18h}$ levels above which insulation would be offered, assuming other factors are satisfied. As quoted above, paragraph 3.5 of DMRB HD 213/11 provides a threshold $L_{night,outside}$ criterion below which impacts are not considered. Impacts are increasingly likely to give rise to significant adverse effects the greater the road traffic noise immission exceeds the threshold levels contained within NIR and DMRB HD 213/11.

3.35 The methodology described above does not transpose readily to a four-point scale of receptor sensitivity that has been adopted for the EIA. Nevertheless, the methodology has been summarised in Table 3.4 below so that this assessment is consistent with the rest of the EIA. However, the table is not used prescriptively; the ultimate determination of receptor sensitivity is based on professional judgment with consideration for the context of the site and NSRs being assessed albeit informed by quantitative assessment.

Table 3.4: Quantitative Indicators of Receptor Sensitivity

Sensitivity	Typical Descriptors (Residential NSRs)
Medium or High	External road traffic noise immissions exceed 68 dB $L_{A10,18h}$ 06:00 to 24:00 hours (nominally daytime) or 55 dB $L_{night,outside}$ during the night-time
Low or Medium	External road traffic noise immissions exceed 50 dB $L_{Aeq,16h}$ 07:00 to 23:00 hours (which is approximately equivalent to 52 dB $L_{A10,18h}$ for trunk roads) during the daytime or 45 dB $L_{Aeq,8h}$ during the night-time
Negligible	External road traffic noise immissions are less than 50 dB $L_{Aeq,16h}$ 07:00 to 23:00 hours (which is approximately equivalent to 52 dB $L_{A10,18h}$ for trunk roads) during the daytime or 45 dB $L_{Aeq,8h}$ during the night-time

3.36 On the basis of the above:

- significant adverse effects are increasingly likely to occur at NSRs where external road traffic noise immissions exceed 68 dB $L_{A10,18h}$ 06:00 to 24:00 hours (nominally daytime) or 55 dB $L_{night,outside}$ during the night-time, depending on the impact magnitude (typically a noise change of +1 dB or more) and the context of the immissions;
- adverse effects are increasingly likely to occur at NSRs where external road traffic noise immissions exceed 50 dB $L_{Aeq,16h}$ 07:00 to 23:00 hours (which is approximately equivalent to 52 dB $L_{A10,18h}$ for trunk roads) during the daytime or 45 dB $L_{Aeq,8h}$ during the night-time, depending on the impact magnitude (typically a noise change of +3 dB or more) and the context of the immissions; and
- changes in road traffic sound emission that are less than 1 dB $L_{A10,18h}$ or $L_{night,outside}$ do not give rise to an adverse effect at any absolute level of immission.

Limitations of the Assessment

3.37 In all assessments, it is good practice to consider uncertainty, which can arise from a number of different aspects of an assessment. There is a degree of uncertainty associated with: the instrumentation itself; the use of instrumentation, i.e. the measurements; the source terms used; the sound propagation model; and the subjective response of residents to the sound sources.

3.38 With regard to subjective response, the acoustics standards and guidance adopted for the assessments within this chapter are based on the subjective response of the majority of the population. This is considered to be the best that can be achieved in a population of varying subjective responses, which are dependent upon a wide range of factors.

3.39 On the basis of the above, whilst the magnitude of uncertainty has not been quantitatively defined, measures have been taken to minimise this aspect in accordance with best practice.

Baseline Characterisation

3.40 Uncertainty due to instrumentation error has been significantly reduced with the introduction of modern instrumentation and is reduced further by ensuring that all instrumentation is calibrated before and after each measurement period and is within accepted calibration intervals.

3.41 Uncertainty in the baseline data has been reduced significantly by carrying out baseline sound monitoring over a period of seven days in some locations, allowing analysis of how representative the baseline data is given the naturally varying sound level at NSRs within the vicinity of the site.

Operation of the Proposed Facility

3.42 Operational sound emissions for the gas engines have been determined from sound power data provided by the technology providers. Other operational noise emissions have been obtained from data within the RPS Source Term Library of similar plant and facilities. Therefore, these data are estimates of realistically achievable sound levels although, with the exception of the gas engines, the final plant servicing the facility may vary from that which has been modelled. However, any plant included in the facility will need to comply with the Environmental Permitting Regulations[13] (EPR), and therefore demonstrate that the techniques used represent Best Available Techniques (BAT), which will include minimising noise immissions at NSRs, among other requirements.

3.43 Sound immissions at NSRs have been calculated using the prediction methodology in ISO 9613-2:1996. For source heights up to 30 m and prediction distances between 100 and 1000 m, ISO 9613-2:1996 claims accuracy of +/-3 dB. ISO 9613-2 is widely used for the prediction of industrial noise and is recommended in paragraph 1.5.3.2 of EA's Horizontal Guidance - H3 Part 2 Noise Assessment and Control and referred to in BS 4142:2014.

3.44 On the basis of the above, it is considered that limitations to the assessment have been minimised and that the results provide a robust estimate of the likely noise effects of the development.

Road Traffic Noise Assessment

3.45 The assessment of noise from road traffic is limited to the traffic data provided. Further details of the assumptions used in deriving the traffic data are provided in Chapter 6: 'Traffic and Transport'.

3.46 The CRTN prediction method is based on free-flowing traffic on main roads and typical noise levels from cars and HGVs within 1988. Vehicles have changed since the time that the guidance was drafted and typically it is expected that HGVs in particular will be quieter. Therefore the predictions of absolute noise levels produced by road traffic have potential to be higher than road traffic noise levels will be in practice. Predictions of changes in noise levels are likely to be fairly robust.

4 Baseline Conditions

4.1 Summaries of the locations of the baseline sound surveys and principal sound sources are provided in Table 4.1, and a summary of typical sound levels is provided in Table 4.2. Full tabulated baseline survey data and graphical plots of data at the locations of long-term surveys (L1 and L2) is provided in Appendix 11.B. The graphical plots in Appendix 11.B for locations L1 and L2 provide an indication of the weather conditions during the monitoring. There was no significant correlation between unfavourable weather and monitored sound levels; therefore, data have not been removed from the dataset due to unfavourable weather.

Table 4.1: Baseline Sound Monitoring Locations and Details

Ref	Location	Position	Principal Sound Sources
L1	273 Manchester Road	The microphone was installed at a facade[1] location in the front garden of the property mounted on a pole approximately 1.5 m above local ground level, at approximately 5 m from the edge of Manchester Road. The ground surface between the monitoring location and the site was a mixture of hard and soft ground.	Road traffic on Manchester Road. Undefined industrial activity. Aircraft.
L2	38 James Street	The microphone was installed in a free-field[2] location in the rear garden of the property mounted on a pole approximately 1.5 m above local ground level. The ground surface between the monitoring location and the site was soft.	Distant road traffic. Aircraft. Railway trains. Undefined industrial / construction activity. Wind in trees.
L3	Manchester Road opposite Brickfield Business Centre	The microphone was installed in a free-field[2] location on the pavement approx. 2 m north of Manchester Road and 1 m south of a hedgerow, mounted on a tripod approximately 1.5 m above local ground level. The ground surface between the monitoring location and the site was a mixture of hard and soft ground.	Road traffic on Manchester Road and other local roads (continuous during daytime, intermittent during night-time). Aircraft. Pedestrians passing by on pavement (daytime only). Low level plant sound (night-time only).
L4	On footpath north of Farm Road	The microphone was installed in a free-field[2] location on the footpath approx. 170 m north of Farm Road and 230 m west of A530 Griffith's Road, mounted on a tripod approximately 1.5 m above local ground level. The ground surface between the monitoring location and the site was soft.	Industrial sound from chemical works to north and unidentified site to the south-east including impulsive sounds from materials moving and alarms, and steady continuous sounds. Distant road traffic. Dog barking (daytime only).
L5	North of James Street	The microphone was installed in a free-field[2] location at the north end of James Street approx. 220 m from the railway line and 330 m from the	Wind in trees. Birdsong. Aircraft.

Ref	Location	Position	Principal Sound Sources
		application site, mounted on a tripod approximately 1.5 m above local ground level. The ground surface between the monitoring location and the site was mainly soft, with hard ground in the immediate vicinity of the monitoring location.	Distant road traffic. Railway trains. Insects. Distant industrial sound. Pedestrians passing by (daytime only).

1 A facade location is 1 m from the wall of the building
2 A free-field location is at least 3.5 m from any reflecting surfaces, excluding the ground

Table 4.2: Summary of Typical Baseline Sound Levels

Ref	Period	Typical Baseline Sound Levels dB		
		L_{Aeq}	L_{A10}	L_{A90}
L1	Daytime (07:00 – 23:00)	69[1]	72[1]	51[1]
	Night-time (23:00 – 07:00)	61[1]	61[1]	45[1]
L2	Daytime (07:00 – 23:00)	46	47	36
	Night-time (23:00 – 07:00)	41	42	30
L3	Daytime (07:00 – 23:00)	73	78	56
	Night-time (23:00 – 07:00)	62	57	40
L4	Daytime (07:00 – 23:00)	44	46	40
	Night-time (23:00 – 07:00)	42	44	39
L5	Daytime (07:00 – 23:00)	47	49	40
	Night-time (23:00 – 07:00)	39	40	37

1 Corrected to free-field sound level by applying -3 dB

4.2 From Table 4.2, sound levels at L1 and L3 are significantly higher during the daytime than at other locations. This is due to the influence of high levels of road traffic on the A559 Manchester Road. During the night-time, levels monitored at L1 were slightly higher than those monitored at the short-term locations but levels at L3 were similar to those monitored at other short-term locations. Higher levels at L1 during the night-time may be attributed to the proximity of the chemical works. Therefore, for the assessment of operational noise from the facility, baseline sound levels at L1 have been considered representative of all locations on Manchester Road during the daytime and the specific siting of L1 and L3 have been considered for the night-time assessment.

4.3 Levels monitored at L2 were significantly lower than at other locations, including L5 which was located at the top of James Street. This is likely to be due to the increased distance from significant sources of traffic sound on the A559 Manchester Road and the railway line. This may also have been due to the situation of the sound monitor within the garden of a residential property, where screening afforded by fences and other buildings within the vicinity reduces the level of sound experienced. The sound levels at L2 are likely a worst-case estimate of sound levels at existing properties on James Street, as the assessment includes predictions at first floor level, where screening effects will be lower and existing sound levels are therefore likely to be greater.

4.4 Baseline measurements at L5 have been taken as representative of those at the closest part of the consented residential development on James Street. In practice, with the consented residential development in place, baseline sound levels could be lower due to screening affects afforded by buildings.

4.5 The measured sound levels at L4 were affected by sound from industrial activities, which likely accounts for the similarity in background sound levels that occurred in the daytime and night-time periods.

5 Embedded Mitigation and Enhancement

Construction Phase

5.1 Construction works would follow Best Practicable Means (BPM) outlined in Section 72 of the Control of Pollution Act 1974 (as amended) (HMSO 1974) to minimise noise and vibration effects. Such details are be required by the Construction Environmental management Plan (CEMP, see Appendix 2.C) to be submitted to and agreed in writing with CWCC prior to commencement of construction activities and following the appointment of a contractor. The following mitigation measures for noise and vibration are provided within the CEMP. These are based upon the guidance contained in BS 5228:2009+A1:2014 ‘Code of practice for noise and vibration control on construction and open sites – Part 1: Noise’[14] and ‘Part 2: Vibration’ [15]:

- **Communication:** A Local Liaison Committee will be established, and occupiers of residential and business properties that are likely to be affected by the works will be notified in advance of the works. A named individual will be appointed to take primary responsibility for the day-to-day implementation of the CEMP during the construction phase and to act as the first point of contact on environmental matters for CWCC, other external bodies and the general public. Information regarding the nature and duration of the works, and named contact details for key members of staff will be displayed on a noticeboard near to the site.
- **Standard construction hours:** From Chapter 2 Project Description, core working hours would be 07:00 to 19:00 hours Monday to Friday, 07:00 to 13:00 hours on Saturday and at no time on Sundays or on public or bank holidays, with some non-intrusive and internal activities such as fit out and commissioning to be undertaken outside these hours. During the summer construction, hours may be extended up to 21:00 hours on Monday to Friday. However, significant noise generating works will normally be restricted to 08:00 to 18:00 Monday to Friday and would be strictly managed on Saturdays. In the event that noise generating works are required outside of core working hours, this would be agreed with CWCC prior to commencement of the activity. In such instances the contractor would apply to CWCC for written consent prior to work commencing by submitting either a Section 61 consent application or an agreed method statement in line with the Control of Pollution Act.
- **Access routes:** The sole access point to the site would be from the existing private road through Lostock Works off Griffiths Road. Construction traffic routes on the public highway will be controlled through the Construction Traffic Management Plan, which is at Annex 2.C.2.
- **Equipment:** Quieter alternative methods, plant and equipment will be used, where reasonably practicable, as required by the CEMP.
- **Worksite:** Plant, equipment, site offices, storage areas and worksites will be positioned away from existing NSRs, where reasonably practicable.

- **Screening:** Portable acoustic enclosures/screens will be used, as required.
- **Maintenance:** All vehicles, plant and equipment will be maintained and operated in an appropriate manner, to ensure that extraneous noise from mechanical vibration, creaking and squeaking is kept to a minimum.

Operational Phase

5.2 As discussed in paragraph 3.42 of this chapter, in order to comply with EPR, the site will need to use BAT, which will include limiting noise generation by the plant where practicable. Of the plant within the facility, due to their 24-hour operation, the gas engines and stack are likely to result in the most significant effects at NSRs. The gas engines will be located within containers which provide a significant reduction in sound. The gas stack will be fitted with a silencer of a similar specification to that provided within the model input data in Appendix 11.A.

5.3 Although the bioreactors are external, the main noise generating elements including the engines will be located internally. The ballistic separator and other plant associated with waste sorting will also be located within buildings.

5.4 HGVs will follow the approved access routes to and from site, which will be detailed in a Delivery and Servicing Management Plan.

5.5 Other external plant, including pumps, dewatering plant etc will be located within enclosures.

6 Identification and Evaluation of Key Impacts

Construction Effects

Noise and Vibration from On-site Construction Activities

6.1 Details of the construction of the site are provided in Chapter 2: Project Description.

6.2 Noise emissions are likely to be highest at the early stages of works i.e. during site preparation and civil works, and decrease during the plant erection and fit-out stages. Noise emissions during the fit-out as buildings are completed would be very low as work is undertaken mostly with hand-tools within the completed structures.

6.3 For the majority of the construction period, plant on-site would comprise various diesel mechanised construction plant including excavators (with various tool attachments depending upon the task being undertaken), dump trucks, fork-lift trucks, concrete wagons and pumps, mobile cranes and delivery lorries.

6.4 It is anticipated that vibro-stone column ground improvement or driven precast concrete piling will be required where building foundation loadings are likely to be very high, and/or the depth of ground fill is excessive. In general, other methods of piling are likely to produce the same level of noise or lower, so the above methods would produce the worst case piling noise emissions from the site. As building foundation loadings are not high for the majority of the development, the need for driven piling is expected to be limited and alternative methods will be employed where possible.

6.5 As construction works are likely to begin shortly following a successful planning application, only existing NSRs need to be considered within the construction assessment. With reference to paragraph 1.4 of this chapter, the closest existing NSRs to the site are residential properties on Manchester Road to the north of the site. From Section 4 of this chapter, NSRs on Manchester Road are already subject to high levels of noise from road traffic. Therefore, noise from construction activities may be noticeable at times, but is unlikely to be above existing ambient sound levels and thus would not be intrusive at NSRs on Manchester Road.

6.6 Existing NSRs to the south, south-east and south-west are at further propagation distances, the closest being at 580 m from the site, but are subject to lower levels of ambient sound. In these locations it is likely that noise from on-site construction activities would exceed existing ambient sound levels at times and is likely to be noticeable. However noise immissions would be below levels that are likely to result in a change in behaviour or attitude of the recipients.

6.7 Driven precast concrete piling has the potential to cause vibration that would be noticeable on-site. However, the propagation of ground-borne vibration is subject to significant losses due to the distances between the site and NSRs and the varying densities of the subsurface geology.

Therefore vibration effects are unlikely to be noticeable at the closest NSRs, which are 200 m from the site construction activity.

6.8 In summary, it is unlikely that construction works will generate noise levels at NSRs that are disturbing or that affect activities commonly occurring in residential areas. Noise levels may be noticeable for limited and short durations when significant works such as piling are being undertaken. Vibration is likely to be imperceptible at the closest NSRs to the site. Construction activities will take place to a predetermined schedule following the BPM measures stated within Section 5 above. There would be very little change to the evening, night-time and weekend baseline noise conditions as most construction activities will be outside of these more sensitive periods.

6.9 With reference to Table 3.2 the magnitude of noise impacts, prior to mitigation, is negligible to low and the sensitivity of receptor is medium. Therefore there is likely to be a direct, temporary, medium-term noise effect on NSRs of minor adverse significance prior to the implementation of mitigation measures. There will be no change due to vibration and the significance of effects will therefore be neutral. With reference to the PPGN, construction noise effects might be above the LOAEL but will be below the SOAEL and vibration effects will be below the NOEL.

Off-site Construction Traffic Noise

6.10 It is anticipated that construction-phase HGV traffic will be similar to the operational-phase traffic, which is assessed below, and the magnitude of impact would be negligible. With respect to noise from off-site traffic movements on the local road network, the quanta of vehicles is not sufficient to warrant a full assessment.

Associated Development

6.11 Associated works may also be undertaken by the applicant or third parties to improve the existing shared private access road through Lostock Works, within the planning application boundary. This may involve widening at certain points to ease passing and turning of HGVs. This widening would be limited (anticipated to be <3 m) as the access road is constrained by the industrial facilities through which it runs. Re-surfacing some sections may also be undertaken if necessary. Any works undertaken would be in agreement with the land owner and other road users.

6.12 Noise and vibration from these works would be minor, not closer to high-sensitivity receptors than the construction activity on the main site, and would not give rise to any significant impacts or effects.

Additional Mitigation

6.13 Reasonable mitigation for noise and vibration from construction activities has been provided by applying BPM as outlined within Section 5 of this chapter ‘Embedded Mitigation and Enhancement’. With this mitigation in place, construction noise and vibration effects are expected to be minor adverse at worst, and of a temporary nature. On this basis, in our opinion, it is not expected that there will be a need for further mitigation measures to be employed.

Residual Effects

6.14 The sensitivity of NSRs is medium and the magnitude of change, following mitigation, is low. Therefore, there is likely to be a direct, temporary residual effect on NSRs of minor adverse significance due to noise from on-site construction activities following the implementation of mitigation measures. Vibration effects will be neutral.

Operational Effects

Operation of the Proposed Facility

6.15 The predicted specific sound levels from the facility are provided in Appendix 11.C and Table 6.1 below. Noise contour plots for the daytime and night-time periods are provided in Figures 11.C and 11.D for a height of 4 m above datum, equivalent to first floor level of any dwellings or other receptors.

6.16 An assessment has been carried out at the closest NSRs to the site for both the daytime (07:00 to 23:00 hrs) and night-time (23:00 to 07:00 hrs) periods. The results of the BS 4142:2014 assessment for the daytime and night-time periods are provided in Table 6.1 and Table 6.2 below.

6.17 During the daytime period, the main contributions to predicted specific sound levels at L1 Manchester Road are loading shovels operating in the storage area. At Ann Street (off Manchester Road), Cottage Close, St John's Close and the consented residential developments at Cottage Close and Farm Road, loading shovels operating in the storage area are still the main sound source, although other activities on site also contribute to the specific sound level. At 38 James Street, and the consented residential development on James Street, the gas engines and stack are the main contributors to the specific sound level. During the night-time period, when external sources such as loading shovels and HGVs are not working, gas engines and the stack are the main contributors to the specific sound level at all locations.

6.18 BS 4142:2014 states that acoustic features including tonality, impulsivity, intermittency and features that are otherwise readily distinctive can increase the significance of impact over that expected from a basic comparison between the specific sound level and the background sound level. For planning purposes, a subjective assessment of the prominence of the character of a specific sound at the noise sensitive locations should be applied based on the expected characteristics of a similar source.

6.19 In the experience of RPS, noise emissions from modern well designed plant used in industrial facilities are generally broadband and not dissimilar in character to the sound from a domestic central heating system. Therefore, noise emissions from the proposed facility will generally not be tonal or impulsive by design. It is widely acknowledged that tonal and/or impulsive acoustic features can increase the likelihood of complaint. It is considered commensurate with BAT that these features will therefore be controlled. However, there are some exceptions to this, where processes are difficult to control and may, at times, produce sound that contains impulsive or other specific features. Movements of materials using front-end loading shovels would be included within these types of processes.

6.20 Front-end loading shovels will only operate during the daytime and only contribute significantly to sound levels above other sources on site at 217 Manchester Road. From Table 6.1 below, it is estimated that, at 217 Manchester Road, the specific sound level from all sources on site will be 2 dB below the background sound level during the daytime. It is therefore unlikely that the sound of front-end loading shovels in isolation will be sufficiently prominent to be perceptible above other sound sources audible at 217 Manchester Road.

6.21 On the basis of the subjective analysis above no character correction has been applied to derive the rating level for either the daytime or night-time period at any of the NSRs considered within this assessment.

Table 6.1: BS 4142 Assessment Daytime (07:00 – 23:00 hrs)

Location	Predicted Specific Sound Level L_S dB	Character Correction (dB)	Rating Level $L_{Ar,Tr}$ dB	Background Sound Level L_{A90} dB	Residual Sound Level L_{Aeq} dB	Difference between Rating and Background Sound Level dB	Total Sound Level Specific Plus Residual $L_{Aeq,T}$ dB
38 James Street	31	0	31	36	46	-5	46
217 Manchester Road	46	0	46	48	69	-2	69
Ann Street (Off Manchester Road)	42	0	42	48	69	-6	69
Consented Residential Cottage Close	36	0	36	42	44	-6	45
Consented Residential Farm Road	36	0	36	42	44	-6	45
Consented Residential James Street	35	0	35	44	47	-9	47
Cottage Close	36	0	36	42	44	-6	45
St John's Close	34	0	34	42	44	-8	45

Table 6.2: BS 4142 Assessment Night-time (23:00 – 07:00 hrs)

Location	Predicted Specific Sound Level L_S dB	Character Correction (dB)	Rating Level $L_{Ar,Tr}$ dB	Background Sound Level L_{A90} dB	Residual Sound Level L_{Aeq} dB	Difference between Rating and Background Sound Level dB	Total Sound Level Specific Plus Residual $L_{Aeq,T}$ dB
38 James Street	30	0	30	30	41	0	41
217 Manchester Road	40	0	40	44	61	-4	61
Ann Street (Off Manchester Road)	38	0	38	40	62	-2	62
Consented Residential Cottage Close	34	0	34	39	42	-5	43
Consented Residential Farm Road	33	0	33	39	42	-6	42
Consented Residential James Street	34	0	34	37	39	-3	40
Cottage Close	33	0	33	37	42	-4	42
St John's Close	31	0	31	37	42	-6	42

6.22 From Table 6.1, during the daytime period the difference between the rating and the background sound level ranges between -9 dB and -2 dB, with the highest level difference occurring at 217 Manchester Road. From Table 6.2, during the night-time period, the difference between the rating and background sound level ranges between -6 dB and 0 dB, with the highest level difference occurring at 38 James Street. At all locations for both the daytime and night-time periods, the rating level does not exceed the background sound level which, from BS 4142:2014, is an indication of the specific sound source having a low impact, depending on the context.

6.23 Paragraph 3.3 of this chapter states the factors that BS 4142:2014 requires to be taken into consideration when assessing the context of the sound, including the absolute level of sound. Table 4 of BS 8233:2014 ‘Guidance on sound insulation and noise reduction for buildings’ contains guidance values for indoor ambient noise levels within dwellings for resting during the daytime and sleeping during the night-time. The guidance levels are 35 dB $L_{Aeq,16hour}$ for daytime resting and 30 dB $L_{Aeq,8hr}$ for night-time sleeping. BS 8233:2014 also recommends that *‘for traditional areas that are used for amenity space, such as gardens and patios, it is desirable that the external noise level does not exceed 50 dB $L_{Aeq,T}$ with an upper guideline value of 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments’*.

6.24 The combined predicted specific sound level from the facility and the existing level of residual sound during the daytime are 69 dB $L_{Aeq,T}$ at 217 Manchester Road and Ann Street (off Manchester Road) and range between 44 dB $L_{Aeq,T}$ and 47 dB $L_{Aeq,T}$ at other locations. The predicted total sound levels combined from the specific sound level from the facility and existing level of residual sound during the night-time are 61 dB $L_{Aeq,T}$ and 62 dB $L_{Aeq,T}$ at 217 Manchester Road and Ann Street (off Manchester Road) respectively, and range between 37 dB $L_{Aeq,T}$ and 44 dB $L_{Aeq,T}$ at other locations.

6.25 Based on the guidance contained within the Napier University Report NANR 116 [16], a standard residential partially open window will provide a sound attenuation of around 15 dB. Therefore, at all locations with the exception of 217 Manchester Road and Ann Street (off Manchester Road), the resultant sound levels would be within internal guidance levels for resting during the daytime and sleeping during the night-time. Similarly, at all locations with the exception of 217 Manchester Road and Ann Street (off Manchester Road), total sound levels would be within the guidance levels for quiet enjoyment of gardens during the daytime.

6.26 Existing levels of residual sound at 217 Manchester Road and Ann Street (off Manchester Road) are 69 dB L_{Aeq} during the daytime and 61 to 62 dB L_{Aeq} during the night-time (i.e. 20 to 30 dB higher than the specific sound from the facility), and are mainly attributed to sound from road traffic on Manchester Road. Therefore, sound from the facility does not serve to increase the high levels of sound already experienced at 217 Manchester Road and Ann Street (off Manchester Road). Furthermore, it is unlikely that sound from the facility will significantly contribute to the sound environment to an extent that it would be intrusive to residents of Manchester Road and Ann Street.

6.27 The above assessment indicates that with the development, at the closest NSRs, there will be very little change from baseline conditions. In the event that noise from the site is audible, it will not cause any changes in behaviour or attitude or a perceived change in quality of life. Therefore, with respect to national planning guidance in the NPPF, NPSE and PPGN (Table 3.2), it is likely that the level of noise will be within the NOEL, and it would in the very worst case not exceed the LOAEL.

6.28 Therefore, with consideration for the context, the impact of noise from activities on site is expected to be negligible or low. The sensitivity of receptors is medium so there will be a direct, permanent negligible or minor adverse effect due to noise from the operation of the facility.

Additional Mitigation

6.29 Reasonable mitigation for noise from the operation of the facility has been provided as outlined within Section 5 of this chapter 'Embedded Mitigation and Enhancement'. With this mitigation in place, noise effects from the operation of the facility are expected to be minor adverse at worst. On this basis, it is not expected that there will be a need for further mitigation measures to be employed.

Residual Effects

6.30 The sensitivity of NSRs is medium and the magnitude of change, following mitigation, is negligible or low. Therefore, there is likely to be a direct, permanent residual effect on some

NSRs of negligible or minor adverse significance due to noise from the operation of the facility following the implementation of mitigation measures.

Off-Site Operational Traffic Noise

6.31 The magnitude of impacts during the daytime is determined from the predicted change in road traffic sound immissions at NSRs comparing the flows for the year 2017 'with' and 'without' the development using the methodology described in Section 3 of this chapter. The traffic data provided indicated that there would be seven, two-way vehicle trips on and off site on per night, none of which would be HGVs. On this basis, the magnitude of impacts during the night-time would be negligible and do not warrant numerical assessment. The magnitude of impacts during the daytime are summarised in Table 6.3, below. Full traffic calculations are provided in Appendix 11.D.

Table 6.3: Magnitude of Road Traffic Sound Impacts – Daytime

NSR	Road Traffic Sound Immission, $L_{A10,18h}$ (dB)		Change in Road Traffic Sound Immission $L_{A10,18h}$ (dB)	Magnitude of Impact
	Opening year Without Development (plus Committed Development)	Opening Year With Development (Plus Committed Development)		
Link 1: A530 Griffiths Road North (Site 1)	68.2	68.2	0.0	Negligible
Link 3: A530 Griffiths Road South (Site 3)	70.4	70.6	0.2	Negligible
Link 4: A530 North of A556 (Site 4)	70.5	70.6	0.1	Negligible
Link 5: A556 East (Sites 5 + 6)	75.4	75.5	0.1	Negligible
Link 6: A530 South of A556 (sites 7 + 8)	72.4	72.4	0.0	Negligible
Link 7: A556 West (Sites 9 + 10)	74.7	74.7	0.0	Negligible

6.32 From Table 6.3, the change in traffic sound immission is less than 1 dB and therefore the magnitude of impact is negligible. Therefore, with reference to paragraph 3.36, the significance of effects due to operational road traffic noise is negligible.

Additional Mitigation

6.33 As noise effects from road traffic are negligible, additional mitigation measures will not need to be employed.

Residual Effects

6.34 Residual effects on NSRs will be of negligible significance due to noise from road traffic associated with the facility following the implementation of mitigation measures.

7 Cumulative Effects

Cumulative Operational Noise Effects

7.1 There are five other consented developments to the south of the site that have the potential to generate cumulative operational noise effects at NSRs within the vicinity of the site. The assessment of the cumulative effects has been undertaken on the basis of the specific sound levels permitted by their respective planning conditions, noting that the majority of these facilities have not been constructed and are not operational.

Sustainable Energy Plant (SEP)

7.2 The project is an energy from waste-fuelled generating station at land formerly occupied by the Lostock Power Station at Griffiths Road, Lostock (Ref: 10/00691/DECC), adjacent to the west of the site. The planning consent does not impose specific numerical noise limits. Condition 28 requires the maximum permissible specific sound levels to be agreed with the Council prior to the commissioning of the SEP. Therefore, specific sound levels have been adopted relative to the background sound levels contained within this ES that are approximately commensurate with the LOAEL; i.e. 5 dB above the background sound level at the nearest NSRs.

Bio Energy Plant (BEP)

7.3 The project is a bio energy plant at Lostock Works, Griffiths Road (Ref: 08/0034/FZ5), to the south-east of the site. Planning condition 19 requires that the night-time rating level not exceed 42 dB $L_{Ar,Tr}$ at Anne Street and 40 dB $L_{Ar,Tr}$ at Bowden Drive or St Johns Close. These limits are 2 to 10 dB above the background sound levels; 1 to 2 dB below the residual sound levels at NSRs to the south of Manchester Road; and 20 dB below the residual sound levels at NSRs to the north of Manchester Road; relative to the baseline survey data adopted in this ES. The noise report that accompanied the planning application [17] provides no discussion on the likely acoustic character of the specific sound.

7.4 For the purposes of this assessment, a rating penalty of 0 and 3 dB has been adopted for NSRs to the north and south of Manchester Road, respectively. This corresponds to a specific sound that either contains perceptible tones or does not contain tones but is otherwise readily distinctive against the residual sound at NSRs to the south of Manchester Road; and a specific sound that is not readily distinctive against the residual sound at NSRs to the north of Manchester Road

Waste Recycling Centre and Waste Transfer Building (WRC/WTB)

7.5 The project includes use of the site as a non-hazardous household, commercial and industrial waste recycling centre with the erection of a mixed waste transfer building and ancillary works on Land To The South West Of Lostock Works, Griffiths Road, Lostock Gralam (Ref: 09/10799/CPO), to the south-east of the site. Planning condition 9 limits the hours of operation to between 07.30 and 18.00 hours Monday to Friday and between 07.30 and 13.00 hours on Saturday. Planning condition 14 requires that the rating level does not exceed the background sound level at the nearest residential NSRs. For the purposes of this assessment, the nearest residential NSRs have been taken as the consented residential development at Farm Road and a rating penalty of 3 dB has been applied, which corresponds to a specific sound that either contains perceptible tones or impulses; or does not contain tones or impulses but is otherwise readily distinctive against the residual sound.

Peaking Power Plant (PPP)

7.6 The project is a gas-fired peaking power plant using containerised generators, total 48.4 MWth, 20.9 MWe on Land To The South West Of Lostock Works, Griffiths Road, Lostock Gralam (Ref: 15/00935/FUL), to the south-east of the site. The planning consent does not impose any noise limits on the project. The Design and Access Statement for the project [18] refers to housing the plant within purpose built sound attenuation enclosures; surrounding the compound with 3 m high acoustics fences; and states that the '*noise impact of the plant when generating is very low'*. On this basis, the assessment has assumed that the specific sound from the peaking plant does not materially affect the baseline residual and background sound levels at NSRs.

Metal Recovery Plant and Fertiliser Manufacturer (MRP)

7.7 The project comprises precious and semi-precious metal recovery plants with fertiliser manufacturer at Eco House Griffiths Road, Lostock Gralam, Northwich (Ref: 07-3384-FZ5 & 14/05128/S73), to the south of the site. The planning consent does not impose specific numerical noise limits. Condition 11 requires a noise assessment to be carried out prior to the commencement of the development. Therefore, specific sound levels have been adopted relative to the background sound levels contained within this ES that are approximately commensurate with the LOAEL; i.e. 5 dB above the background sound level at the nearest NSRs.

Assessment

7.8 The above-listed sites all occupy land that is between the proposed facility and the nearest NSRs to the south, south-east and south-west so it is likely that the already consented sites will have greater constraints upon them with respect to sound immissions at NSRs than the proposed development. There is also the potential that the structures contained therein will provide additional screening to sound from the proposed facility at the nearest NSRs to the south, south-east and south-west. However, no adjustments have been made to account for screening of sound from buildings and structures provided by other developments. On this basis, the levels of cumulative specific sound may be over-estimated, thereby providing a robust assessment of cumulative effects.

7.9 The commentary to clause 8.1 of BS 4142:2014 states:

"Since the intention is to determine a background sound level in the absence of the specific sound that is under consideration, it is necessary to understand that the background sound level can in some circumstances legitimately include industrial and/or commercial sounds that are present as separate to the specific sound."

7.10 In the context of this cumulative assessment, the specific sound that is under consideration is the specific sound from the proposed development and the specific sound levels from the consented developments contribute to the future residual and background sound levels against which this is compared. The increases in total specific sound level (consented plus proposed developments) and in total ambient sound level (consented plus proposed developments plus baseline residual sound level) are relevant to the consideration of the context of the initial estimate of impacts, determined in accordance with BS 4142:2014; and of the likely change in the acoustic character of the area, in accordance with the PPGN.

7.11 The sound emissions from the consented developments are nominally continuous sound sources. Therefore, the specific sound levels permitted by their respective planning consents has been added to the baseline background sound level to determine the future background sound levels at NSRs that has been consented. The results of the cumulative operational noise assessment in accordance with BS 4142:2104 are provided in Appendix 11.E.

7.12 The specific sound levels from the proposed development are predicted to be approximately 6 to 17 dB below the future background sound levels; and 13 to 27 dB below the future residual sound levels; at NSRs during the daytime and night-time.

Cumulative Traffic Noise

7.13 The magnitude of impacts during the daytime is determined from the predicted change in road traffic sound immissions at NSRs comparing the flows for the year 2017 'with' and 'without' the proposals and other committed development using the methodology described in Section 3 of this chapter. As for the assessment of operational traffic noise, a specific assessment of night-time effects has not been carried out. The magnitude of impacts during the daytime is summarised in Table 7.1.

Table 7.1: Magnitude of Cumulative Road Traffic Sound Impacts – Daytime

NSR	Road Traffic Sound Immission, $L_{A10,18h}$ (dB)		Change in Road Traffic Sound Immission $L_{A10,18h}$ (dB)	Magnitude of Impact
	Opening year Without Development (plus Committed Development)	Opening Year With Development (Plus Committed Development)		
Link 1: A530 Griffiths Road North (Site 1)	67.8	68.2	0.4	Negligible
Link 3: A530 Griffiths Road South (Site 3)	69.1	70.6	1.5	Low
Link 4: A530 North of A556 (Site 4)	69.3	70.6	1.3	Low
Link 5: A556 East (Sites 5 + 6)	75.2	75.5	0.3	Negligible
Link 6: A530 South of A556 (sites 7 + 8)	72.1	72.4	0.3	Negligible
Link 7: A556 West (Sites 9 + 10)	74.5	74.7	0.2	Negligible

7.14 From Table 7.1, on Links 3 and 4, the change in road traffic sound immissions are 1.5 dB and 1.3 dB; therefore the magnitude of impact is low. On all other links, the change in road traffic sound immissions is below 1 dB; therefore the magnitude of impact is negligible. The predicted level of sound immissions from road traffic is 70.5 dB $L_{A10,18hr}$ on both Links 3 and 4. With reference to Table 3.3 and paragraph 3.36, the sensitivity of receptors on Links 3 and 4 is medium to high. Therefore the overall significance of cumulative effects due to road traffic is minor to moderate adverse. However, with reference to Table 6.3, the majority of this increase in traffic noise levels is not attributable to this development.

8 Summary and Conclusions

8.1 A noise and vibration assessment has been completed as part of the formal Environmental Impact Assessment (EIA) required for the planning application for the proposed REnescience Northwich development, which is located off the A530 Griffiths Road, near Northwich and Lostock Gralam, Cheshire.

8.2 Mitigation for noise and vibration from construction activities is provided within the Construction Environmental Management Plan (CEMP, see Appendix 2.C) for the site based upon the guidance in BS 5228-1:2009+A1:2014 and BS 5228-2:2009+A1:2014. Construction works will follow Best Practicable Means (BPM) outlined in Section 72 of the Control of Pollution Act 1974 (as amended) (HMSO 1974) to minimise noise and vibration effects.

8.3 A qualitative assessment of construction noise and vibration effects has been carried out with reference to national Planning Practice Guidance for Noise (PPGN). The assessment indicates that, with suitable mitigation measures, there is likely to be a direct, temporary, medium-term noise effect on noise-sensitive receptors (NSRs) of minor adverse significance. There will be no change due to vibration and the significance of effects will therefore be neutral. With reference to the PPGN, construction noise effects might be above the Lowest Observed Adverse Effect Level (LOAEL) but will be below the Significant Observed Adverse Effect Level (SOAEL) and vibration effects will be below the No Observed Effect Level (NOEL).

8.4 In order to comply with the Environmental Permitting Regulations (EPR), the development will incorporate Best Available Techniques (BAT) to minimise noise emissions. The gas engines will be located within containers which provide significant sound attenuation. The gas engines' stack will be fitted with a silencer. The drive gear of the bioreactors, the ballistic separator and other plant associated with waste sorting will be located in buildings. Other external plant, including pumps, dewatering plant etc will be located within enclosures. HGVs will follow the approved access routes to and from site.

8.5 An assessment of the operational noise effects, with the above measures in place has been carried out in accordance with the PPGN and BS 4142:2014. The assessment indicates that at the majority of locations the rating level does not exceed the background sound level which, from BS 4142:2014, is an indication of the specific sound source having a low impact, depending on the context. With consideration for the context, it is possible that noise from site activities will be noticeable on occasions at the closest NSRs to the site but it will not cause any changes in behaviour or attitude or a perceived change in quality of life. Therefore, with respect to national planning guidance in the PPGN, the level of noise will be at or below the LOAEL. With respect to EIA, the impact of noise from activities on site is expected to be low. The sensitivity of receptors is medium so there will be a direct, minor adverse effect due to noise from the operation of the facility.

8.6 The effects of change in noise levels due to road traffic on the local road network have also been considered with reference to the guidance in Volume 11, Section 3, Part 7: Noise and Vibration of the Design Manual for Roads and Bridges (DMRB). The assessment indicates that the significance of effects due to operational road traffic noise is negligible.

8.7 Cumulative operational noise effects with other consented developments that have the potential to generate cumulative operational noise effects at receptors within the vicinity of the site. Although there is potential for cumulative effects to occur, these are likely to be negligible to minor, and there is also potential that other developments will reduce the noise effects from that facility. On this basis, the significance of cumulative effects would be, in the worst case, of minor adverse significance.

8.8 Cumulative effects of change in noise levels due to road traffic on the local road network have also been considered with reference to the guidance on noise contained in the DMRB. The assessment indicates that the significance of effects due to operational road traffic noise from the development is negligible. The significance of cumulative effects due to road traffic noise with the development and other consented developments is in the worst-case minor to moderate adverse. However, where minor to moderate adverse effects occur due to noise from road traffic these are not attributable to this development, but to the contribution from other developments.

8.9 In summary, there is the potential for effects of minor adverse significance to occur due to noise during the construction of the development and during the operation of the development. Construction noise will be controlled using best practicable means and operational noise will be controlled using best available technology. The effects due to construction vibration and road traffic noise are negligible.

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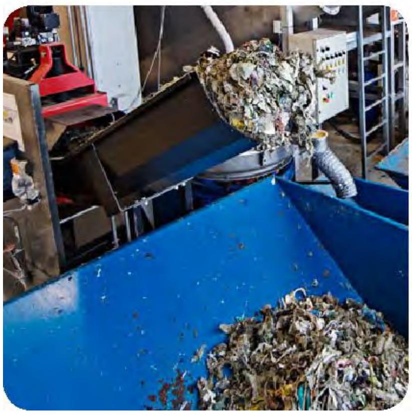
Chapter 12: Impacts, Mitigation, Cumulative Impacts and Residual Effects

REnescience Northwich







Quality Management

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Contents

Tables

Tables

1 Introduction

1.1 This chapter summarises the environmental impact pathways, embedded mitigation measures (those included as part of the proposed development design and operation) and predicted significance of environmental effects for each topic area in the EIA.

1.2 After taking into account the embedded mitigation, no significant adverse effects are predicted as a result of any of the environmental impacts. Therefore, no additional mitigation is required and the residual effects are as shown in Table 2.1.

1.3 Although no additional mitigation is required, regard has been had for the local resident concerns regarding pedestrian delay and severance on Kings Street (A530 between Middlewich Road and the A556). It is therefore proposed that the development would provide a financial contribution towards the provision of traffic signals and/or a pedestrian crossing on the A530 at the Middlewich Road/A530 junction, which offers an opportunity to further improve the safety record at this junction and facilitate safe pedestrian movements.

1.4 These proposed additional enhancement measures have not formed part of the EIA and hence are not included in the summary of effects, below, but would be expected to have a beneficial effect on Griffiths Road.

1.5 Table 3.1 summarises the potential cumulative impacts with the other consented and proposed developments in the local area that were identified in Chapter 2 (see Table 2.1 in that chapter). No significant adverse effects are predicted as a result of cumulative environmental impacts with these other development schemes.

2 Impacts, Embedded Mitigation and Effects

Table 2.1: Summary of impact pathways, embedded mitigation measures and predicted effects

Topic	Impact	Embedded Mitigation	Effect
Landscape and Visual Impact	Landscape and townscape character impacts The proposed development would affect the local landscape and townscape character areas of Lostock Plain, Stublach Plain, the Northwich Salt Heritage Landscape and the urban townscape of Northwich. These are within the national character areas of the Shropshire, Cheshire and Staffordshire Plain and the Cheshire Sandstone Ridge. The character areas are of **local** importance and are in **poor** to **ordinary** condition. During construction and operation, activities would be not uncharacteristic of these character areas. The short-term construction impact would be adverse, but redevelopment of the disused industrial site and landscape treatment would have a long-term beneficial impact on the urban/industrial character areas. The sensitivity of the receptors is **low** to **medium** and the magnitude of change would be **negligible** to **medium**.	Landscape planting scheme and management plan, detailed in Appendix 4.C and Figure 4.Q. Appropriate lighting design to minimise light pollution. Modern architectural design and site layout integrated with the landscape proposals to ensure that the site will function well and add to the overall character and quality of the area.	**Neutral** to **minor adverse** during construction. **Minor adverse** to **minor beneficial** during operation.
	Visual impacts Construction of the stack, building and tanks would potentially be visible above adjoining landform and vegetation, which currently screens the existing site particularly from the north and south. Construction activities would appear as new elements in views. During operation, the tops of buildings, tanks and the stack would likewise appear as new elements in views, set in the context of existing industrial buildings on the Lostock Works site. The sensitivity of visual receptors ranges from **low** to **high** and the magnitude of change would be **no change** to **medium**.		**Neutral** to **moderate adverse** during construction. **Neutral** to **minor adverse** during operation.
Archaeology and Cultural Heritage	Views of the proposed development would affect built heritage and the historic landscape, including designated assets such as the Lion Salt Works, seen in the context of the area's industrial history of which those assets form a part. It is also possible that archaeological remains of a Roman road and the former Lostock Bleach Works may survive on the site and be affected by the proposed development. The designated heritage assets have **high** to **highest** significance (sensitivity) and the magnitude of change would be **negligible**. The potential Roman road and Lostock Bleach Works remains are of **medium** and **low** significance (sensitivity), respectively, and the magnitude of change would be **low** and **high** respectively. The historic landscape is of **low** significance (sensitivity) and the magnitude of change would be **minor**.	Archaeological watching brief during the demolition/ construction phase.	At most, **minor adverse** effects on any assets.

Topic	Impact	Embedded Mitigation	Effect
Traffic and Transport	The proposed development will generate 38 staff trips and 96 HGV trips per day when operational, on local road links with **low** to **medium** sensitivity (based on the sensitivity of receptors exposed to traffic on these road links). Traffic during the construction phase is likely to be similar. Increases in total traffic flows over all time periods on all public highway links are not predicted to exceed 3% on weekdays, or 5% at weekends (when the existing flows are lower), including peak times. On the A530 south of the site and the A530 north of the A556, there would be a greater percentage increase in HGV traffic (due to the relatively low number of HGVs in the traffic mix at the moment). The impacts on driver and pedestrian delay, pedestrian amenity and intimidation, severance and road accidents would be **negligible**.	Construction Traffic Management Plan (Annex 2.C.2) and Delivery and Servicing Management Plan, setting out viable strategic routes and delivery schedules to minimise total traffic movements, movements in peak periods, and impacts on the local highway network.	**Negligible** to **minor adverse**.
Ecology and Nature Conservation	The proposed development would result in the loss of areas of predominantly bare ground and ephemeral/short perennial vegetation from the site, along with smaller areas of trees and shrubs, poor semi-improved grassland, tall ruderals and bracken. This would result in the loss of or disturbance to habitats suitable for fragrant orchid, cinnabar moth and breeding birds. There will be a short-term, **negligible** to **moderate adverse** impact on receptors of **site** and **local value**. The landscaping plans provide new tree and shrub planting, which will compensate for the loss of existing trees and shrubs and also enhance the site by introducing a greater variety of native species than currently present. The new trees and shrubs will provide nesting opportunities for birds and foraging opportunities for a variety of fauna, including invertebrates, birds and bats. The planting will also improve habitat connections around the site boundaries, particularly along the eastern and western boundaries, which are currently open. This will be a **minor beneficial** long-term impact during operation. There will be **no change** due to the proposed development at designated sites in the area of the proposed development. There will be **no change** or impact to Wade Brook, a feature of **county value**. No protected species save common pipistrelle bats were identified in surveys of the site and adjacent habitats and there would therefore be **no impact** on protected species. With the proposed embedded mitigation measures, there will be **no change** or impact on common pipistrelle bats (of **local value**) during construction and a **minor beneficial** impact during operation due to foraging habitat creation.	Landscape planting scheme with habitat creation and retention of existing habitat, detailed in Appendix 4.C. Non-disturbance of building with bat roost and appropriate lighting design during construction and operation. Provision of bird boxes as temporary compensation for nesting habitat lost during construction. Non-disturbance of Wade Brook habitat, retaining buffer zone from construction works and built development elements. Mitigation of emissions to air, water, and appropriate drainage design. Non-disturbance of bird nesting habitats during breeding season.	**Neutral** to **negligible.**
Hydrology and Flood Risk	Changes to impermeable ground and the built development could affect flood risk (on the site and at off-site receptors) and surface watercourses, principally Wade Brook. The site is in Flood Zone 1 (**low flood risk**) and incorporates runoff attenuation such that there will be **no change** in flood risk at off-site receptors, which are of **low** sensitivity.	Drainage Strategy and design (Appendix 8.A) to limit clean surface water discharge to Wade Brook to no greater than existing, provide sufficient runoff	**Negligible**

Topic	Impact	Embedded Mitigation	Effect
	Wade Brook has **medium** sensitivity and the magnitude of change will be **negligible** to **low**.	attenuation to manage flood events (including climate change risk), and provide appropriate bunded areas with separate contaminated water management. Temporary construction period drainage detailed in the CEMP (Appendix 2.C) and Drainage Strategy.	
Geology and Ground Conditions	The industrial history of the site and existing ground conditions information indicates a theoretical potential for soil and groundwater contamination to have an impact on human health receptors and controlled waters, should it be disturbed. However, taking into account the mitigation measures that will be adopted, there would be a neutral impact during construction and a **neutral** or potentially **beneficial** impact during operation if remediation is found to be necessary and therefore undertaken as part of the development.	Control and mitigation measures during construction, specified in the CEMP at Appendix 2.C. Phase 2 intrusive site investigation and detailed risk assessment prior to construction. Potentially remediation work, if identified as necessary following the detailed risk assessment, under a Remediation Strategy agreed with CWCC.	**Neutral** or **beneficial**.
Air Quality and Odour	There will be controlled emissions to air from the gas engines' stack, biogas flare, start-up boiler (if installed) and odour control system. There will also be emissions from traffic associated with the development and potential fugitive odour, construction dust and bioaerosol releases. These may affect human receptors of varying sensitivity (e.g. residential properties, schools, workplaces and industrial areas) or protected habitats. There is also potential for nuisance dust impacts during construction. The results of air pollutant dispersion modelling indicate that predicted pollutant concentrations at all modelled receptors of **high** sensitivity would be well below the relevant air quality standards. The magnitude of change would be **small** and the impact **negligible**. Potential fugitive dust, odour and bioaerosols could affect nearby industrial receptors with **low** sensitivity. With the proposed control and management measures in place, the risk of impacts is **negligible**. Nationally-designated nature conservation sites are too distant to be impacted by emissions to air, and there would be **no change**. The impact at Local Wildlife Sites would be **negligible**.	Odour Management Plan (Appendix 10.E) and odour control mechanisms incorporated into the building ventilation design. 33 m stack height for sufficient dispersion (see stack height determination in Appendix 10.D). Dust Management Plan for the construction phase (Annex 2.C.1). Use of Best Available Techniques (BAT) regulated by the Environmental Permit.	**Negligible**

Topic	Impact	Embedded Mitigation	Effect
Noise and Vibration	Construction activity, including use of mechanical plant and piling, and operation of the proposed development including the gas engines and movement of vehicles/plant on site, have the potential to cause noise and vibration impacts at sensitive receptors. Due to the distance to sensitive receptors, there would be **no impact** noticeable from vibration. Construction noise from works on-site would affect receptors of **medium** sensitivity (given the existing baseline setting) and have a **negligible** to **low** impact. Operational noise from the proposed development on-site would likewise affect receptors of **medium** sensitivity and have a **negligible** to **low** impact. Construction and operational road traffic noise would have a **negligible** impact.	Limited working hours and use of modern, well-maintained plant (employing Best Practicable Means) as detailed in the CEMP (Appendix 2.C). Sound power levels, internal reverberant sound levels and cladding specification detailed in Appendix 11.A. Use of Best Available Techniques (BAT) regulated by the Environmental Permit.	**Minor adverse** from on-site noise during construction and operation. **Negligible** from road traffic noise during construction and operation. **Neutral** vibration effects.

3 Cumulative Impacts

Table 3.1: Summary of cumulative impacts

Topic	Cumulative impact	Cumulative effect
Landscape and Visual Impact	The approved developments within the Lostock Works site would intensify the industrial character of the site within an already influenced industrial landscape. It is possible that the construction phases of these projects could overlap, resulting in temporary cumulative effects on the townscape character. Permanent effects on this landscape of a minor nature would occur as a result of the cumulative effect of these developments, although the land use and character of this part of Northwich would remain intact as industrial fringe. There may be a minor adverse cumulative visual effect on sequential low-sensitivity, close views. For more distant transient visual receptors the cumulative effect would likely to be unnoticed by the casual viewer. Other cumulative developments are large in scale and particularly the consented Lostock SEP would be visually prominent in the landscape/townscape in its own right. Cumulative residential development would introduce some new visual receptors of no greater sensitivity than those already existing, but at locations closer to Lostock Works.	**Not significant**
Archaeology and Cultural Heritage	The ‘Bedminster’ bio energy plant adjacent to the west, were it to be constructed, could have a minor adverse cumulative impact on below-ground remains ancillary to the Lostock Bleach Works. No other cumulative impacts are predicted.	**Not significant**
Traffic and Transport	Cumulative traffic impacts (background growth and contribution from other developments have been accounted for in the assessment of effects detailed above.	**Not significant**
Ecology and Nature Conservation	Loss of habitat at other development sites nearby has the potential to increase the cumulative impact on breeding birds. However, all of the developments (including the REnescience Northwich development) include measures that would protect breeding birds from such negative effects. No other cumulative ecology and nature conservation impacts are predicted.	**Not significant**
Hydrology and Flood Risk	No cumulative impacts on water resources and flood risk receptors are likely, as other proposed applications would incorporate their own drainage, pollution and flood risk abatement techniques in line with the requirements for the NPPF, Planning Practice Guidance ID7 and Pollution Prevention Guidance, requiring that new developments attenuate surface water run-off to pre development run-off rate.	**No effect**
Geology and Ground Conditions	No cumulative impacts predicted.	**No effect**
Air Quality and Odour	Cumulative point-source air pollutant emissions and road traffic emissions associated with other cumulative developments would not cause concentrations to exceed the relevant Air Quality Strategy objectives.	**Not significant**
Noise and Vibration	No significant cumulative noise impacts are predicted with other developments (considering both cumulative industrial noise-generating developments and residential developments that introduce new sensitive receptors),	**Not significant**

Topic	Cumulative impact	Cumulative effect
	due to the noise controls and planning conditions applicable to those developments. The combined road traffic generation by all of the committed cumulative developments may lead to a minor or moderate adverse noise impact from traffic on Griffiths Road, were all of the developments to be constructed, but the proposed development would not make a significant contribution to road traffic noise in this scenario.	

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Appendix 2.A: Amenity

A.1 In addition to the odour, dust and noise issues, which are addressed in Chapters 10 and 11 respectively, during its operation a waste treatment facility also has the potential to cause environmental effects through the generation of litter, or through the attraction of vermin, birds and other pests onto the site.

A.2 The principal means of control over these issues during operation will be through the facility's Environmental Permit rather than the planning regime. However, for information purposes, the potential impacts and proposed mitigation are summarised in this appendix. As discussed in the body of the chapter, on page 2–24, DONG Energy's goal in operating REnescience Northwich will be for it to be a good neighbour and it will implement an ISO14001 or equivalent Environmental Management System (EMS).

A.3 Although the facility has the potential to generate litter, the likelihood of litter escaping is considered minimal due to the enclosed nature of the delivery vehicles and the location of the processing/storage facilities inside buildings.

A.4 Vermin and pests, including scavenging birds, can be attracted to waste management facilities as they represent a potential food source in the form of biodegradable and putrescible waste. Similarly, the storage and processing of biodegradable and putrescible wastes at the site has the potential to result in the incidence of flies and rodents at the site. In most cases, birds are attracted by those activities which involve the storage of waste in an open environment, for example landfill.

A.5 Fly infestations would only normally occur as a result of putrescible waste that has been stored for some time. Site management practices described in Chapter 2 will provide good environmental controls and ensure that the waste storage times are minimised.

A.6 In summary, the following control measures are inherently incorporated into the development proposals to reduce potential amenity impacts.

Litter

- All container vehicles delivering waste to or removing waste from the site will be required to ensure that loads or containers are secured to prevent items falling or being blown from the load. No open vehicles carrying waste will deliver to or leave the site.
- All waste handling and treatment operations that may be susceptible to problems from windblown litter will be conducted inside the enclosed building.
- During plant shutdown periods, up to 3 days' storage for waste will be provided in the enclosed waste bunker. Waste deliveries will be managed, temporarily ceasing if necessary, to ensure that this storage is not exceeded. No incoming waste will be stored outside the waste bunker building.

- The facility will maintain a high level of housekeeping, including daily site inspections for litter.
- Fast-acting roller shutter doors will be used to prevent litter escaping from the waste bunker building during unloading.

Vermin, pests and birds

- All waste reception and storage operations involving biodegradable waste will be undertaken within the enclosed waste bunker building.
- Regular inspections and where necessary treatment by pest control specialists including the use of pesticides, rodenticides, and traps, as appropriate, will be undertaken. This will include inspection of areas where rats could be likely to live such as drains and culverts.
- To minimise the potential amenity impacts from scavenging birds, all putrescible waste storage and handling operations will be undertaken within the enclosed storage and processing site buildings. No putrescible waste will be stored outside.

A.7 The potential adverse impacts on local amenity from litter, pests and vermin can be adequately mitigated using standard procedures associated with good waste management practices. During the operational phase these standard procedures will be required under the terms of the site's Environmental Permit and EMS.

A.8 In view of the mitigation measures that will be incorporated as part of the facility operation, it is considered that the development will not give rise to any unacceptable impacts in terms of litter, pests and vermin and birds.

Appendix 2.B: Decommissioning and Site Reinstatement Arrangements

Introduction

B.1 This appendix has been prepared to satisfy the requirements of the Cheshire West and Chester Local Plan (Part One) Strategic Policies in relation to decommissioning and re-instatement of the site at the end of its operational lifespan. Specifically, policy ENV 7 of the Local Plan requires:

"Proposals should be accompanied by arrangements for decommissioning and re-instatement of the site when its operational lifespan has ended."

B.2 It provides a general statement of the principles which will be adopted during decommissioning and re-instatement of the site.

Design and Build Stage Considerations

B.3 It is recognised that consideration of decommissioning at the design and build stage can assist in increasing the ease and security of decommissioning and dismantling. For the proposed development, the following measures have been included within the design:

- underground tanks and subsurface structures have been avoided as far as practicable. The design of the proposed development has limited subsurface structures to the incoming waste bunker, sumps, sections of the AD plant pipelines and surface water pipeline;
- all tanks and vessels have provisions for draining to provide a means of removing any residual material so it can be managed and disposed of appropriately;
- insulation will be specified which can be readily dismantled without giving rise to dust or hazard; and
- as far as practicable, materials of construction have been specified which are readily recyclable. For example the use of steel within the building structure columns, beams and trusses and selection of a steel stack allow for both ease of demolition as well as maximising material recovery opportunities.

General Principles for Decommissioning and Site Reinstatement

B.4 Any works relating to the decommissioning, dismantling and site re-instatement prior to vacating the site will be carried out by specialist contractors. All contractors undertaking such works will be subject to company safety and environmental procedures. Any works will need to be carried out in accordance with written method statements and risk assessments prepared by the specialist contractors in accordance with these site procedures.

B.5 These procedures should identify methods to avoid as far as practicable fugitive releases associated with dust, odour, noise and spillages. Appropriative preventative as well as reactive measures should an incident occur will need to be identified and put in place.

B.6 Decommissioning works will be detailed within a decommissioning plan, which will be scheduled to ensure activities occur in a safe and logical order which minimises residues requiring disposal by maximising opportunities for reuse/recycling. A materials risk assessment will be included within the decommissioning plan, which identifies materials that require special attention during the decommissioning works.

B.7 Following completion of the decommissioning works the appointed contractor will issue a 'Decommissioning Certificate'.

Site Security

B.8 During decommissioning and site re-instatement, similar security measures will remain in place. This will include keeping the perimeter security fence and access barriers in place; providing controlled access to the site either via the control room or at the entrance barrier; and CCTV cameras that feed back to the control room.

B.9 At the point that the control room operations cease, security staff may be employed until site activities are complete. Security arrangements will be reviewed during the site decommissioning and re-instatement works to ensure that they remain appropriate to the activities being carried out and any potential hazards present on site.

B.10 Following completion of all works and vacation of the site, it is expected that the perimeter fence and access barriers will be left in place, unless other alternative security arrangements are agreed.

Buildings and Access Roadways

Buildings

B.11 Plant buildings and offices will either be cleared and left in place for use by a subsequent occupier of the site or dismantled and removed from the site by and approved contractor.

B.12 In the event that buildings are demolished and removed, materials will be segregated as far as practicable and removed from site for re-use/recovery. Steel from the building structures and stack will be segregated to allow value to be recovered from this material. Any concrete requiring removal will be broken up and either processed on-site and sent for re-use as aggregate material or removed off site for re-processing and re-use.

Internal Roadways

B.13 It is anticipated that access roadways and vehicle parking will be left in place unless other arrangements are agreed with the new site occupant as part of the site re-instatement works.

B.14 In the event that sections of the road ways need to be removed, materials will be managed to maximise the opportunity for material recovery/re-use.

Mechanical Waste Processing Plant

B.15 Mechanical plant for processing of waste will be turned off and electrically isolated. Any residual waste materials/separated recyclables will be sent for recovery, or where this is not possible, for disposal at a suitably licensed facility.

Gas Engines and Biogas Handling System

B.16 Decommissioning activities will be scheduled to allow biogas from the AD plant to be burned as far as practicable within the gas engines prior to taking them out of service. Decommissioning of the gas engines and biogas flare will follow decommissioning of the AD plant to ensure there is a mechanism for safely handling any biogas.

B.17 The gas engines will be mechanically and electrically isolated and liquids such as oil will be drained. The units will be removed off-site and either sent for re-use or recycled.

B.18 The biogas flare will be similarly mechanically isolated and dismantled. The metal flare stack will be sent for recycling unless a suitable re-use can be identified.

Tanks, Vessels and Bunds

B.19 Prior to shutting down operations, deliveries of materials including waste, enzyme, fuel oil etc. will be scheduled to run down stocks such that following cessation of activities the quantities of residual materials remaining are minimised. Any remaining material will be drained out into road tankers/containers for off-site removal and where possible sent for re-use, otherwise disposed of at a suitable off-site facility.

B.20 The bioreactors will be operated to fully process material fed into this stage and therefore the reactors should be nominally empty. Any residual material will be flushed out during cleaning and disposed of as above.

B.21 The AD processes will contain the largest volumes of material to be removed. At the lead up to closure, where feasible, the AD plant will be rundown to minimise the number of AD tanks holding material at the point of final closure. Options for removal of this digestate to other operational AD plant will be explored; otherwise it will be disposed of to a suitably licensed facility.

B.22 All tanks (except the oil storage tank) and process vessels will be water flushed. Waste water from these cleaning activities will be disposed of off-site. The tanks and vessels will then be physically isolated and the tank/vessel dismantled. Options for reuse of tanks and vessels will be explored; otherwise, materials will be segregated and sent for off-site recovery. Where no potential re-use or recovery is identified then the tank or vessel will be disposed of to a suitably licensed facility.

B.23 Residual waste or separated recyclables removed during decommissioning will be sent off-site to an alternative waste processing site or waste recycling facility. In the event that further recovery of materials is not feasible, the waste will be disposed of.

B.24 The waste oil storage tanks will be drained and the oil sent for recovery. The oil tanks will then either be sold for re-use of disposed of to a licensed facility.

B.25 Following emptying, bunds will be inspected to identify any containing potentially contaminated material. If bund contents are or are suspected of being contaminated, any liquid will be removed for off-site disposal at a suitably licensed site. Clean rain water collecting in bunds will be discharged to surface water drains.

Pipework and Drainage

B.26 Pipework associated with the waste treatment activities including handling of the bioliquid stream and recycled process waters will be flushed with water prior to isolation. Above-ground pipe work will be dismantled and removed.

B.27 Surface water drains will be left in place. Appropriate measures will be taken (similar to those detailed in the CEMP regarding the construction phase, depending on requirements at the time) to ensure that no adverse impacts on Wade Brook due to run-off are caused during decommissioning.

Site Services

Electrical

B.28 Isolation of high voltage switchgear will be carried out at the terminal points agreed with the grid connection operator. High voltage cabling (including cable ducting, traywork, earthing connections, etc.) will be disconnected and removed, observing the necessary safety precautions.

B.29 Other electrical equipment isolation (including control instrumentation and systems) will be carried out in accordance with necessary safety precautions. Medium and low voltage cabling will be disconnected and removed only once the above isolations are complete.

B.30 Waste electrical and electronic equipment (WEEE) will be re-used/recycled where possible or where this is not possible, disposed of in accordance with the WEEE regulations.

Water

B.31 The mains supply will be isolated. It is expected that water services to the site will be left in place for future site users.

Site Closure Plan

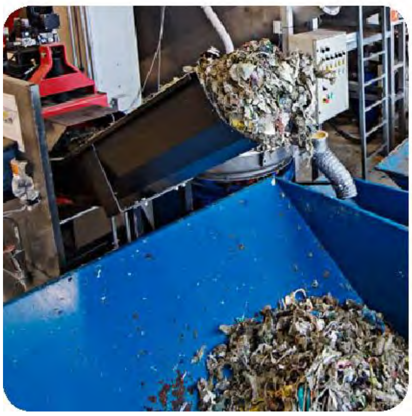
B.32 The decommissioning and site reinstatement principles as outlined in the sections above will be further developed within a site closure plan, which will need to be developed under the site's environmental permit. The site closure plan will subsequently be maintained and updated throughout the operational life of the facility and specifically amended prior to final closure to address requirements relevant to the proposed subsequent use of the site, where this is known.

B.33 To inform the baseline site condition prior to operational activities commencing, soil and groundwater data has been collected. As part of the site closure plan, further sampling will be undertaken in accordance with permitting requirements at that time, to demonstrate that activities have not given rise to deterioration of land. In the event that contamination associated with the operational activities is identified, a suitable program of remediation will be agreed with the Environment Agency and this work carried out prior to vacating the site.

Appendix 2.C: Code of Construction Practice and Construction Environmental Management Plan

Appendix 2.C: Code of Construction Practice and Construction Environmental Management Plan

REnescience Northwich



Quality Management

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0	24/09/15	Draft	-	-
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2	05/10/15	Final	Finalise	

Contents

Annexes

1 Introduction

1.1 This document comprises the Code of Construction Practice (CoCP), under which DONG Energy will construct the REnescience Northwich facility, and the Construction Environmental Management Plan (CEMP) setting out the measures that will be used to achieve the principles of the CoCP. It is being submitted to the planning authority, Cheshire West and Chester Council (CWCC), for approval prior to construction works commencing.

1.2 DONG Energy is committed to ensuring that REnescience Northwich is constructed in accordance with current best practice, where feasible, for minimising the adverse effects of construction on the environment and the local community. DONG Energy is similarly committed to ensuring the health, safety and welfare of its employees and those who may be affected by the conduct of their undertakings. DONG Energy will apply appropriate industry standards for health and safety and will seek continuous improvement in safety performance and will require the same commitment from its construction contractors.

1.3 The purpose of the CoCP, in Section 2 of this document, is to define the strategy and principles for managing the potential environmental impact of constructing REnescience Northwich and limiting disturbance from construction activities so far as reasonably practicable. It covers the environmental and public health and safety aspects of the construction phase of the project that may affect the interests of local residents, businesses, the general public and other sensitive environmental receptors in the vicinity of the proposed construction site as well as persons employed to carry out work during the construction phase. The management and control measures that will be followed to implement the strategy and principles are then detailed in the CEMP in Section 3 of this document.

1.4 The term ‘construction’ in this document includes all site preparation, demolition, material delivery, excavated material disposal, waste removal and all related engineering and construction activities necessary to construct REnescience Northwich. The term ‘developer’ refers to both DONG Energy Ltd and its contractor(s), except where otherwise specified.

1.5 The purpose of the CEMP is to describe how construction activities will be undertaken and managed in accordance with the CoCP, with environmental commitments and requirements identified within the Environmental Statement (ES), with legal and contractual requirements and with construction industry best practice.

1.6 The CEMP contains a series of specific measures to reduce the potential for impacts and provide control procedures for all staff to use in dealing with environmental issues during the construction phase. These include all of the required construction mitigation measures identified in the ES. The CoCP and CEMP will form part of DONG Energy’s contract documentation when appointing construction contractor(s), who will provide method statements where necessary prior to work being undertaken specifying in greater detail how the measures in the CEMP will be implemented.

1.7 The CEMP is supported by three management plans giving further specific areas: the Dust Management Plan (DMP); the Construction Traffic Management Plan (CTMP), and the Waste and Materials Management Plan (WMMP) at annexes 2.C.1, 2.C.2 and 2.C.3 respectively.

2 Code of Construction Practice

General principles

2.1 REnescience Northwich will be constructed in an environmentally sensitive manner and in particular will:

- meet the requirements of all relevant legislation, codes of practice and standards as identified in the CEMP, the CTMP, the DMP and the WMMP; and
- address and minimise any adverse impacts on the local community and the environment, so far as is reasonably practicable, in line with mitigation measures set out in the ES.

2.2 The developer will also:

- implement a public information and complaints system including a public phone number;
- register the site on the Considerate Constructors Scheme and ensure that a Site Code of Considerate Practice is followed; and
- co-ordinate with other neighbouring developments as far as reasonably practicable to minimise the effects of combined activities.

Environmental principles

2.3 As noted above, the developer is committed to ensuring that the facility is constructed in accordance with all applicable legislation and with current best practice, where feasible, for minimising the adverse effects of construction on the environment and the local community.

2.4 As part of the tender selection process for appointing the main construction contractors, DONG Energy will review the environmental performance of the tenderers. Companies tendering for the main construction contract(s) will be required to provide evidence of an environmental management system (EMS), consistent with the principles of BS EN 14001 or equivalent international standards, as a pass/fail criterion.

2.5 The principles and measures in this CoCP and CEMP will form part of the tender requirements for contractor(s) and their contract(s) for work when appointed.

Health and safety principles

2.6 The developer is committed to ensuring the health, safety and welfare of its employees and those who may be affected by the conduct of its undertakings. The developer will apply appropriate industry standards for health and safety and will seek continuous improvement in safety performance.

2.7 The developer will ensure that adequate arrangements are in place for the discharge of all duties under the Construction (Design and Management) Regulations 2015.

2.8 A Health and Safety File will be prepared, which will set out how all health and safety matters on the site are to be managed and co-ordinated and how risks are to be identified and managed in accordance with current best practice and legal requirements. The H&S File will focus on the health and safety of construction workers; however, the developer will also be responsible for ensuring the health and safety of any visitors to the site and the general public.

Implementation

Responsibilities

2.9 Construction activities will be the ultimate responsibility of the developer's Engineering Project Manager (EPM). The EPM, assisted by an internal support team within the developer, will ensure that construction is managed and monitored appropriately.

2.10 A construction project such as this can be managed either directly by the developer or through letting an engineering, procurement and construction (EPC) package to a contractor. Day-to-day responsibility for the management of all construction activities and construction interfaces will be delegated by the EPM to a Construction Manager (CM) employed by either the developer or the EPC contractor. The EPM, in liaison with the CM, will ensure that construction is implemented in accordance with the CoCP, CEMP and supporting documents.

2.11 The CoCP, CEMP and supporting documents will be incorporated into the contract documents for the contractor(s). All staff will have a responsibility to minimise the risks to the environment and safety from the activities on the site. The CM will be responsible for making site staff aware of these duties and the environmental requirements of the CoCP, CEMP and supporting documents.

2.12 Compliance with the CoCP will not absolve the developer from compliance with legislative requirements applicable at the time of the construction activities. Wherever the CoCP makes reference to legislation, standards or codes it will be the developer's responsibility to ensure that the most recent version of any document is used.

Training

2.13 The developer will ensure that an appropriately qualified workforce is employed, which may include relevant employees holding a card from an appropriate competence scheme, such as the Construction Skill Certificate Scheme. The developer will operate an induction scheme for all personnel to ensure that they are aware of their individual responsibilities to comply with the CoCP, CEMP and supporting documents. The developer will be responsible for identifying the training needs of personnel to ensure that they are appropriately qualified.

Method statements

2.14 The developer will undertake risk assessments and produce method statements prior to commencement of construction activities, where relevant. These will include measures to implement the CEMP in respect of particular tasks and locations.

Emergency procedures

2.15 Emergency procedures for the work site will be developed and will be appropriate to the foreseeable hazards and the site layout. The emergency plan will include emergency pollution control measures that will take into account relevant UK guidelines. The procedures will contain emergency phone numbers and the method for notifying the relevant statutory authorities. Contact numbers for the key staff will also be included. The procedures will be displayed prominently at the development site and all site staff will be required to follow them.

Community liaison

2.16 The developer is committed to providing personnel who will engage with the local community to provide appropriate information and to be the first line of response to resolve issues of concern during the construction period.

2.17 A Local Liaison Committee (LLC) will be established. The LLC will provide a forum for representatives of the planning authority, local councils and other relevant interest groups to meet with the developer and exchange views and information on the project, including how to minimise intrusion within local communities.

2.18 The public will also be able to request information or make a complaint via the developer’s local office (in person or by letter), by email or via a dedicated telephone service. All calls will be logged, together with a record of the responses and action taken. A complaints register will be maintained and a copy will be provided for review to the EPM, CM and LLC at an agreed frequency.

2.19 The establishment of the LLC will occur in advance of construction works commencing on site and a display board will be mounted at the site access providing contact details for any communications in relation to the construction phase works.

Site operations overview

2.20 The general management of the site is important in controlling environmental impacts from all construction activities. This section sets out the requirements with respect to working hours, access, lighting and security, construction materials and waste.

Working hours

2.21 During the construction period, normal working hours will be those specified within the CEMP (unless agreed otherwise with the planning authority).

2.22 Some specific works (such as continuous concrete pouring for foundation elements) may have to be undertaken outside the normal working hours. Non-intrusive and internal activities may also be undertaken outside these hours in order to minimise overall construction time.

Laydown areas

2.23 The developer will clear all temporary laydown areas as work proceeds, when they are no longer required for the works. Construction laydown areas will be demarcated, with hardstanding and bunded storage areas (or use of self-bunded tanks) for fuel or other liquids required. Internal gravelled roadways will be laid out for construction traffic. A wheel-washing station will be set up near the site entrance to minimise track-out of mud onto the access road and consequent dust generation. Further dust control measures are specified in the DMP at Annex 2.C.1.

Site security and lighting

2.24 The site will be secured to protect the public and prevent unauthorised access. Access to the site will be limited to specified entry points as set out in the CTMP and entries/exits will be monitored for security and health and safety. Procedures will be put in place to ensure that working methods have regard to safety systems, including risk assessment and method statements, employed for similar activities for the neighbouring industrial complex, to avoid conflict with such systems. Systems will be agreed with neighbouring facilities to satisfy site access and security arrangements for the Lostock Works complex.

2.25 Site lighting will be positioned and directed to minimise nuisance to residents, to comply with the requirements of Network Rail concerning distraction, and to minimise spillage into surrounding habitats that could cause disturbance to wildlife, including bats. Lighting design principles are detailed in the CEMP.

Access

2.26 The site is accessed from the south via an existing private road serving the cluster of chemical industry facilities on the Lostock Works site, from a junction with the A530 around 0.5 km south (as the crow flies) of the proposed development site boundary. All construction related traffic will access the site via this existing route.

2.27 It is apparent that there is a pinch point at the end of this road adjacent to the site entrance, where there is currently insufficient width to allow two lorries to pass each other at the entrance to the site. With the above in mind, it is proposed that the access road will be widened adjacent to the site entrance. This widening will include alterations to extend the existing pedestrian footpath that is present along the access road and will further require alterations to the existing perimeter fence to allow for new larger entrance gates to be installed. Carrying out these works will mean that lorries entering the site will not have to wait for oncoming lorries to exit the site, therefore providing a safer site entrance for both vehicles and pedestrians. This would be undertaken at the outset of the construction programme, enabling improved access for construction vehicles as well as waste delivery vehicles once the facility is operational.

Construction materials and waste

2.28 The volume of waste generated will be minimised, and resource efficiency maximised, by applying the principles of the waste hierarchy throughout the construction period. Construction materials will be sourced locally where appropriate, to minimise the environmental impact of transportation.

2.29 Reasonable efforts will be made to utilise excavated materials within the site for construction purposes, with the aim of achieving a net balance in material cut and filled. Where there is excess material that cannot be accommodated on site, or this is otherwise not possible (e.g. due to the presence of contaminants), the spoil will be transported from the site by a registered waste carrier and disposed of at an appropriately licensed site, and the developer would register with the Environment Agency (EA) as a hazardous waste producer if necessary.

3 Construction Environmental Management Plan

Construction activities

Working hours

3.1 During the construction period, the normal hours of working will be (unless agreed otherwise with the planning authority):

- Monday to Friday: 07:00 to 19:00 (except during British Summer Time when 07:00 to 21:00);
- Saturday: 07:00 to 13:00; and
- Sunday and Bank Holidays: no working unless agreed in advance with the planning authority.

3.2 Shift start and end times will be staggered where feasible on the construction site (on weekdays, for example, civil employees may work between 07:30 – 18:30 (20:30 BST) and mechanical trades between 07:00 – 18:00 (20:00 BST)). Staggering in shift start and end times will enable a spread in construction traffic over peak times and facilitate access to the construction site. Further detail is given in the CTMP at Annex 2.C.2.

3.3 Non-intrusive and internal activities such as fit out and commissioning may be undertaken outside these normal working hours in order to minimise overall construction time. Intrusive (i.e. noisy) activities, will be scheduled, where practicable, to be undertaken between 08:00 and 18:00.

Site layout

3.4 Construction laydown areas, construction offices, construction personnel parking and construction access arrangements will all be located within the site boundary. Gravel or temporary hardstanding with appropriate drainage (including bunding and oil interceptors where necessary) will be provided where required in these areas.

3.5 The existing site perimeter fence will be retained and used to control access and site security. No construction activities, personnel or materials storage will be permitted outside the fence. Within the fence, additional temporary Heras-type fencing, will be erected in the southern part of the site, following the line of the southern-most built elements of the development (allowing for working space), establishing an additional buffer zone of at least 5 m (on top of the existing buffer outside the perimeter fence) between construction activity and Wade Brook.

Construction phases

3.6 The following will be the principal construction phases and activities covered by the CEMP. The construction phase works are expected to commence in the first quarter of 2016 and to take around 12 months, allowing for commissioning in Q1 2017 and operation by the end of March 2017. In order to prepare the site for construction works (enabling a rapid construction programme), DONG Energy may undertake initial works in Q4 2015 to complete the removal of foundation slabs from previous structures on site (under the prior notification approval for demolition of those structures given in 2013, with an updated method statement and ecology survey information submitted to CWCC) by excavating the remaining foundation slabs and crushing the concrete on-site ready for re-use. This would involve the following activities.

Phase 1 – initial site preparation:

- establishment of temporary fencing where required, internal site access control and signage, public highway signage, construction site car parking and temporary construction site office(s);
- demarcation of retained habitat area;
- installation of bird nesting boxes;
- limited vegetation clearance in central parts of site;
- operations to remove existing ground-level and below-ground structures on site, to be crushed for later use or transported off-site for recovery or disposal;
- construction of temporary site drainage with mitigation to prevent pollution or sediment loading impacts to Wade Brook;
- re-profiling of site to extend the level plateau for development construction using excavated material from earthworks;

3.7 Subject to consent being granted, the following sequence of activities is anticipated in early 2016.

Phase 2 – civil works:

- vegetation clearance;
- translocation of fragrant orchids to retained habitat area;
- demarcation of construction laydown areas, incorporating hardstanding and bunded storage areas;
- improvements to the site access road (off-site) and creation of gravelled roadways for construction traffic on site;
- creation of structure foundations with use of foundation excavations and driven precast concrete piled foundations for buildings with high foundation loadings (subject to the findings of the phase 2 site investigation and geo-technical study);
- formation of waste bunker, involving open cut excavation and slip-form construction of the bunker;
- installation of building floor slabs and external concrete bases;
- below-ground elements of final drainage system installed, to replace the temporary drainage system; and
- completion of roads, fencing, other civil works, landscaping and utilities.

<u>Phase 3 – plant erection and fit out:</u>

- erection of the steel frames for the main development buildings;
- installation and commissioning of some AD tanks, gas engines and associated elements of the development;
- installation and assembly of REnescience process, mechanical and electrical plant, including assembly of bioreactors and remaining AD tanks from the delivered components; and
- completion of building steelwork, wall cladding and roof installation, followed by completion of interior once a water-tight environment has been created.

Traffic and access

3.8 Construction works will be carried out so as to minimise disturbance, inconvenience and potential risk to the public arising from the increase in construction traffic from the development.

3.9 The Construction Traffic Management Plan (CTMP, Annex 2.C.2), which provides a detailed description of the mitigation methods to be employed to achieve the above aim, will be implemented. Below is a brief outline of the mitigation measures required.

3.10 Routing will be a contractual requirement, which will be enforced. Specifically HGVs will not be allowed to access the facility via Middlewich Road, nor Manchester Road through Northwich. Security and delivery programming will be agreed with neighbours at the Lostock Works, including internal access and control arrangements. This information will be confirmed through contract review, together with monitoring and management arrangements under contractors' contracts, as set out in the CTMP.

- No HGV traffic will be permitted on the A530 Griffiths Road north of the T junction with the site access road, due to the low rail bridge.
- Highway signage at the T junction warning of the restricted height and prohibiting left-turns for construction traffic on exit will be installed at the outset of the construction phase. Temporary signage at off site locations will be agreed with the Highway Authority.
- Start and end times for construction staff will be staggered to spread the flow at peak periods.
- As far as practicable, construction materials and waste will be stored onsite to maximise delivery/removal loads and minimise vehicle movements. See further details below on additional measures to control effects from material storage;
- A Construction Worker Travel Plan will be implemented to promote greener, cleaner travel choices and reducing reliance on the private car.

Lighting

3.11 Construction site lighting will be selected and positioned in order to minimise light pollution and energy use but also to ensure good working conditions, safety to the passing public and personnel, and worksite security.

3.12 General principles to be applied to construction site lighting are as follows:

- Energy efficient lighting (e.g. LEDs) will be used wherever possible;
- Lighting will be located or directed to avoid intrusion into local residences, adjacent buildings or areas identified as being sensitive;
- Lighting will be directed away from sensitive ecological receptors, such as bat roosts, habitat and flightpaths (see more detailed recommendations given in the following ecology section);
- Lights not required for security will be shut off outside working hours; and
- Security lighting will limited to high risk areas and floodlights to be operated by sensors.

Air quality and dust

3.13 The developer will ensure that motorised construction plant is in good repair and conforms to manufacturers' and legislative emission standards. Vehicles and plant will not be left running when not in use. Where possible, mains electricity or battery powered equipment will be used instead of diesel or petrol power generators.

3.14 The Dust Management Plan (DMP, Annex 2.C.1), which provides detailed mitigation methods to avoid or reduce emissions of dust, will be implemented. Below is a brief overview of measures to be applied.

- Provision of site demarcation and adequate water supplies and, where required for activities which are potentially more dusty, additional local dust containment measures.
- Operation of wheel washing facilities and facilities for cleaning of roadways to avoid mud trackout.
- Routine monitoring of dust and mud both on-site and along the site access road including the junction with Griffiths Road, with clear procedures for action in the event of a dust or mud incident and in response to any complaints.
- Use of wet cleaning methods, other than for small isolated areas.
- Management of stockpile heights and, where required, inclusion of measures to cover or similarly minimise dust from stockpiles, e.g. by damping down.

Ecology and nature conservation

3.15 In order to minimise disruption and disturbance to sensitive habitats and species, the following measures will be implemented.

3.16 The existing gate house building outside the site entrance will be left in situ and not disturbed by construction works. Subject to avoiding disturbance to the bat roost (following the advice of a qualified ecologist) it may be used as a temporary site office during the construction works.

3.17 An area of the site will be demarcated for translocation of fragrant orchids, in accordance with the Landscape Management Plan and Orchid Translocation Plan at Appendix 4.C and Annex 4.C.2. This area of the site will be protected from the construction works by sturdy fencing, preventing access by people, materials and machinery. Retention of existing site-won ground material in this area or provision of clean cover (calcareous gravel) will be subject to the contaminated land site investigation, and will be undertaken in accordance with the recommendations in the Phase 1 Geo-Environmental Risk Assessment (Appendix 9.A to the ES) and any further recommendations in the Phase II Detailed Risk Assessment once that has been undertaken.

3.18 Construction works involving the removal of existing habitats suitable for bird nesting (identified in Target notes to Figure 7.J in the ES) should be undertaken outside of the bird breeding season, which runs mid-February to September inclusive. Vegetation clearance work will be undertaken at the earliest opportunity in 2016 prior to the nesting season with vegetation around the site boundary being retained as shown on the landscape plan. In the event that works of this nature are required during the bird breeding period, a qualified ecologist will check for the presence of active nests prior to such works being carried out. Any active nests and a 5 m buffer round them would be retained and protected until the ecologist could confirm that the young had fledged and the nest was no longer in use.

3.19 Bird boxes will be provided to ensure there is a nesting habitat between vegetation being cleared and the landscape planting becoming established.

3.20 Landscape planting and habitat creation will be undertaken in accordance with the Landscape Management Plan at Appendix 4.C, with clean cover providing a suitable growing medium provided undertaken in accordance with the recommendations in the Phase 1 Geo-Environmental Risk Assessment (Appendix 9.A to the ES) and any further recommendations in the Phase II Detailed Risk Assessment once that has been undertaken. Following establishment of landscape planting, fencing will be provided to protect these areas of vegetation from any remaining construction works. Landscape planting is likely to be undertaken during autumn 2016, spring 2017 and autumn 2017.

3.21 The type, amount and location of site lighting during construction will be carefully considered to take into account potential impacts to wildlife. Lighting will be implemented to minimise disturbance to ecological receptors, in particular bats. The design and implementation of the lighting will be in accordance with current best practice ‘Institution of Lighting Professionals’

(2011), ‘Guidance Notes for Reduction of Intrusive Light GN01 (2011) and BCT (Version 3 2009) ‘Bats and Lighting in the UK: Bats and the Built Environment’.

3.22 Lighting will be avoided around bat roosts, along bat flight corridors and bat habitats. In particular, light will not be directed at the south and west facades of the gatehouse building or at the Wade Brook river corridor.

3.23 Luminaires will be designed to direct the light to the intended area only, with the use of hoods and shields to avoid light spillage. The height of the lighting columns will be as short as practicable to reduce the ecological impact. Light intensity will be determined by the specific need for each location, and minimised to that required.

Water management

3.24 All works will be carried out in line with good practice guidance within the relevant EA Pollution Prevention Guidance notes (PPGs) and CIRIA C692. These guidance notes provide advice on statutory responsibilities and good environmental practice with respect to pollution.

3.25 PPG05 ‘Works and maintenance in or near water’ provides guidance relating to construction and maintenance works near surface waters and groundwaters, specifically identifying measures to avoid incidents, or where this is not possible, to minimise effects on effect water receptors.

3.26 PPG06 ‘Works at Construction and Demolition Sites’ provides advice about on-site drainage, storage of oils and chemicals, waste management, silt, refuelling, concrete mixing and spillages which will help ensure pollution events do not affect any designated sites, off-site habitats or retained on-site habitats.

3.27 CIRIA C692, ‘Environmental good practice on site’ provides guidance on management of construction sites to minimise environmental impacts including impacts on water.

3.28 Measures will be put in place in order to protect surface and groundwater from pollution and other adverse effects including changes to water levels, flows and quality as a result of earthworks and other construction activities taking place on the site.

General

3.29 Construction activities carried out on the site will be controlled through best practice site management measures including provision of adequate containment of chemicals and oils, use of methods to remove oil and sediment produced as a result of construction (i.e. settling tanks and oil interceptors) and implementation of pollution prevention and response plans.

Surface water drainage and run-off

3.30 Surface run-off will be managed through a temporary site drainage system, which will be implemented with appropriate runoff attenuation/sediment settlement to avoid sediment loading impacts on Wade Brook.

3.31 A temporary land drainage system will be provided to the perimeter of the base of the waste bunker excavation to maintain a dry working environment at all times during construction of this element. Disposal of collected rainwater will be via sump pumping to Wade Brook outfall via the silt interception / removal device.

3.32 If a hard surface pavement is provided in the contractor laydown and other temporary construction areas, channel drainage (and potentially additional storage) will be provided and will discharge into the temporary site drainage. With gravel or similar construction surfaces provided for the contractor laydown and construction areas, the infiltration of rainfall run-off that will occur will be sufficient to reduce flood risk.

3.33 Temporary foul drainage to serve the contractor welfare facilities will be provided at the start of works on site. This is likely to comprise portaloo type arrangements, as well as facilities to serve the temporary site offices, which will be emptied as and when required.

3.34 Exposure of bare earth will be minimised wherever possible, and movement of plant and machinery over bare soils will be limited to avoid compaction and smearing. Where this cannot be avoided, suitable preparatory works will be implemented to minimise the effects on the surface water runoff regime.

3.35 Wheel washers and dust suppression measures as described above and further detailed within the DMP (Annex 2.C.1) will be employed to prevent the migration of pollutants. Wheel washers will have self-contained water collection systems, which will allow water to be disposed of appropriately.

3.36 Disturbance to Wade Brook banks will be avoided with the use of a buffer zone, as detailed in paragraph 3.5 above.

On-site plant maintenance

3.37 To reduce risk of oil and other pollutant spillages, only routine and minor maintenance of plant and machinery will be carried out on site. Major repairs, if required, will be carried out at an appropriate offsite facility.

3.38 Any maintenance and refuelling that does occur will be performed in appropriate designated areas of the site, which have the means to isolate and remove any potential pollution materials, for example hard standing areas with bunding or interceptors.

3.39 Drip pans and spill mats will be used at all times during maintenance activities to prevent run-off and infiltration into waterways.

Storage

3.40 Designated storage areas will be provided on site. Construction laydown areas will make use of bunded storage areas with hardstanding for storing fuel and other liquids, in order to minimise risk of run-off into the drainage system. Where possible, the bunded areas will be covered to prevent the collection of rainfall (which will otherwise reduce the capacity of the bund to contain a spillage). Where this is not possible, bunds will be routinely inspected for signs of pollution and where clean, rainwater that has collected will be manually discharged to surface waters. Where contamination is known or suspected, a means for emptying the bund and disposing of the material as waste will be arranged (e.g. pump into tanker vehicle for disposal at an appropriately licensed facility off-site).

3.41 Fuel and chemical storage will be located at least 20 m from watercourses and 10 m from soakaways, drains and excavations.

3.42 Storage areas will be inspected on a weekly basis for signs of leakage or damage and a record will be kept of the inspection. Should damage or a leak be detected, appropriate action will be taken to repair or replace the damage.

3.43 A spillage response plan will be developed and implemented. Spillage kits will be positioned across the site and staff will be trained in their use. The kits will be checked regularly and replaced after an event.

3.44 Stockpiles will be located away from drains and watercourses. Exposed stockpiles will be seeded or stabilised and silt fencing or other barriers placed at the edge of the stockpile slopes to prevent run-off.

Earthworks

3.45 For excavations required for the removal of existing structures and infrastructure, and for constructing new foundations, a de-watering strategy may be required to remove any ingress of groundwater from excavations. For the most part this may be avoided, owing to the nature of foundations but it is likely that dewatering will be necessary during construction of the waste bunker, as described above. Where required, a temporary water discharge consent will be obtained prior to commencement of these works.

3.46 Where required, a sediment settlement facility will be used to treat water pumped from excavations. This is likely to be in the form of tanks or a temporary settlement basin.

Soil and contaminated land

3.47 Control measures to be implemented to prevent risks from soil and contaminated land during the construction phase are proposed as follows.

3.48 Prior to commencing construction, further site investigation and detailed risk assessment is planned during Q4 2015, and a contamination remediation strategy will be developed as required. The remediation strategy will cover identification, removal and validation of contamination hotpots if found, in compliance with statutory requirements in relation to earthworks, including discharge consents and spoil generation handling.

3.49 Following the proposed detailed risk assessment, the preliminary measures set out below will be updated as necessary.

3.50 Construction workers will be provided with suitable personal protective equipment (PPE), which will be worn at all times during excavation and handling of excavated soils. Risk awareness training will also be provided regarding protection from potentially contaminated excavated materials.

3.51 Dust control measures (as detailed in the DMP at Annex 2.C.1) and disposal of any contaminated material to suitably licenced facilities will be implemented, thus protecting off-site receptors. Specific containment measures may be employed, such as local temporary enclosures, skips, etc, depending on the nature of the material.

3.52 Further control measures for preventing/reducing contamination as a result of construction activities including storage and use of materials and waste management are specified in the 'Raw materials and waste' section of this CEMP as well as overlapping with measures identified above for management of effects on the water environment.

3.53 Should unforeseen contamination occur during construction activities, appropriate specific investigations for affected areas will be undertaken as necessary, in liaison with the local authority with regard to any remediation requirements.

Archaeology

3.54 Based on desk study evidence of the probable alignment of a Roman road on the eastern side of the proposed development area and the site's historic use as a bleach works, there is potential for below-ground archaeological remains of limited value to exist, although it is probable that this will have been disturbed. A qualified archaeologist will provide a watching brief at appropriate times during the construction phase. If any features of archaeological interest are located during construction works, appropriate steps to record, remove or safeguard them if necessary will be undertaken.

Noise and vibration management

3.55 Noise and vibration levels will be controlled and limited, so far as is reasonably practicable, so that residential properties and all other noise sensitive receptors (NSRs) are protected from excessive noise and vibration levels arising from the works. Best Practicable Means (BPM), as defined in Section 72, Part III, of the Control of Pollution Act 1974, will be employed to minimise noise from construction activities.

3.56 No intrusive noisy works are to be carried out outside of the agreed construction hours of 07:00 to 19:00 hours Monday to Friday (21:00 BST) and 07:00 to 13:00 hours on Saturday and noisy activity will be limited, as far as practicable to 08:00 to 18:00 on weekdays only.

3.57 Measures required to implement BPM will be consistent with the recommendations contained within BS 5228-1:2009+A1:2014 and BS 5228-2:2009+A1:2014, and will include:

- **Access Routes**: The sole access point to the site will be from the existing private road from Griffiths Road. This is a minor road with no residential properties adjacent to it. Further details of the site access routes are provided within the CTMP, Annex 2.C.2.

- **Plant and Equipment**: Careful selection will be made of plant and equipment. Only plant conforming to relevant national and European noise emission standards and Directives will be used. Non-conforming plant will be removed from site.
- **Worksite**: Construction plant, equipment, site offices, storage areas and worksites will be positioned away from or screened from existing NSRs, where reasonably practicable.
- **Hoardings**: Given the location of the site, a full boundary hoarding is not proposed. Portable acoustic enclosures and/or temporary screens will be used, as required, which may include screening using site offices.
- **Maintenance**: All vehicles, plant and equipment will be maintained and operated to ensure that extraneous noise from mechanical vibration, creaking and squeaking is kept to a minimum.
- **Piling**: The method for any piling activities will be selected to minimise noise and vibration emissions, insofar as is practicable taking into account the ground conditions and other construction requirements. Percussive piling techniques are not anticipated, given the ground conditions.

Materials and waste management

3.58 The volume of waste generated will be minimised, and resource efficiency maximised, by applying the principles of the waste hierarchy throughout the construction period (in order to minimise waste for disposal by encouraging the avoidance or reduction of waste where possible, followed by the reuse, recycling or recovery of waste where waste material generation is inevitable) and making use of materials generated on site from site preparation work, where possible.

3.59 Further detail on proposed measures for management of waste and materials during construction is provided in the Waste and Materials Management Plan in Annex 2.C.3.

3.60 Measures for demarcation of construction laydown areas, with hardstanding and containment provisions for fuel or other liquids, will be carried out as detailed within paragraph 3.4 and the Water Management section above.

Materials efficiency

3.61 Locally-sourced materials for construction will be used where possible, to minimise the environmental impact of transportation. Materials and resources will be used efficiently in order to minimise waste production.

3.62 Materials derived from site excavation such as concrete slabs, roadways, bases, pits and foundations from former structures on the site will be broken out, crushed and then stored for later re-use as granular fill or capping material (subject to the recommendations of the contaminated land risk assessments). This will allow for increase resource efficiency and reduced quantities of materials for off-site disposal.

Storage of waste

3.63 Appropriate storage of construction waste will be provided, allowing segregation of wastes, for example with the use of separate skips or other suitable containers for recyclable materials. Skips will be covered to prevent litter and liquid wastes will be held in leak-free containers within a bunded hardstanding area pending off-site removal.

3.64 Storage areas will be located away from potential contaminant pathways, for example drains, soakaways and excavations. Waste storage areas will be clearly identified.

3.65 Any hazardous waste will be stored separately and suitably labelled to ensure identification. The site will be registered with the Environment Agency as a hazardous waste producer if over 500kg of hazardous waste per annum is to be produced and the relevant documentation will be completed prior to disposal.

Disposal of waste

3.66 Waste will be collected and disposed of by a registered licensed contractor to an appropriately licensed facility. Documentation on the transfer and disposal of waste will be retained, and in accordance with relevant regulations will provide details of the waste such as waste type, quantity, containment and location of disposal.

3.67 Waste will be removed from the site at frequent intervals and the site kept clean and tidy.

Contaminated materials

3.68 Excavation works will be monitored for potentially contaminated materials. Should contaminated materials be identified, the local authority will be informed and advice on disposal sought from the environmental engineer. Excavation operations will be paused (and will be covered if appropriate) to reduce the risk of further contamination or mobilisation of contaminants until an appropriate remediation strategy can be employed.

3.69 Stockpiling of material that is contaminated or suspected of being contaminated will be avoided where practicable. Where this is unavoidable, stockpiles will be located in areas of hardstanding or plastic sheeting to prevent contaminants infiltrating the underlying ground.

3.70 Where contaminated material is encountered, site workers will be given information on how to manage it. Site workers will be provided with appropriate PPE and given training on the use of this equipment.

Soil handling and storage

3.71 Soil mounds will be dampened down (subject to appropriate licensing) as and when weather conditions dictate.

3.72 If live Japanese Knotweed is discovered on the site, the transport of soil contaminated this plant should be avoided. The treatment and disposal of Japanese Knotweed will follow the EA's relevant code of practice.

Monitoring and reporting

3.73 All construction activities will be inspected regularly to ensure compliance with this CEMP and the legislative commitments, to minimise the risk of environmental damage. Inspections will follow an audit checklist, which will be updated and refined to take into account the changing nature of the construction programme and any corrective actions.

3.74 All non-conformances will be reported to the developer and an environmental non-conformance report form will be completed, including appropriate corrective actions. The recommended corrective actions will be recorded on a corrective actions log and progress in implementing the actions will be monitored.

3.75 This will inform a monthly assessment of the project's environmental performance in terms of environmental standards, relevant legislation and CEMP objectives, reported to the Developer and the Local Liaison Committee.

3.76 This CEMP will be reviewed and updated as necessary and will include information summarising its review and identifying any changes.

3.77 All complaints from members of the public or other local stakeholders will be logged and investigated at the earliest opportunity. Where possible, actions will be taken to monitor and control the cause of complaint or remediate the effect.

3.78 Systems will be in place to provide clear instructions of actions to take in the event of an incident or emergency, including relevant actions for the protection of the environment. Where required this will include notification to relevant statutory bodies, for example the EA. Systems will require that any such events are recorded and investigated (see for example procedures identified given in Dust Management Plan).

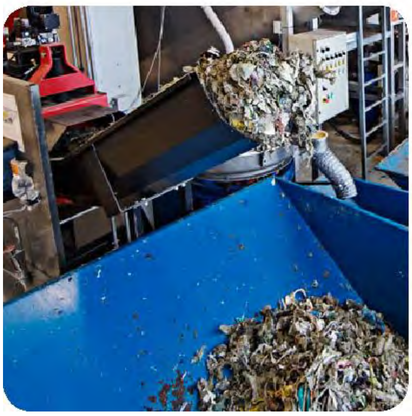
Annex 2.C.1: Dust Management Plan

Annex 2.C.1: Dust Management Plan

REnescience Northwich







Quality Management

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Rev	**Date**	**Status**	**Reason for revision**	**Additional comments**
0	02/10/15	Final	-	-

DISCLAIMER

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Contents

1 Introduction

1.1 This document forms the Dust Management Plan (DMP) to be employed during the construction phase of the REnescience Northwich development located off the A530 Griffiths Road in Cheshire.

1.2 This DMP describes the management and operational actions the site will use to deal with both anticipated (e.g. forecast) and actual high risk conditions (e.g. measured dry dust winds above moderate breeze). The DMP describes the conditions under which dust is most likely to pose a nuisance risk at sensitive receptors close to the site and set trigger levels which, when exceeded, would require further dust control measures to be implemented (i.e. over and above the routine measures).

1.3 The structure of this document is as follows:

- Identification of the sources of emissions;
- Identification of the sensitive receptors within the area of influence that could be impacted;
- A description of the routine mitigation/control measures that would be used day-to-day under normal operating conditions in the absence of any unusual risk factors;
- A description of the additional measures that will be applied during these periods to manage dust emissions should actual or forecast trigger levels be exceeded, other risk factors occur, or should routine visual observations show high dust emissions;
- A description of what would trigger the further action/additional measures;
- A description of procedures to check these further dust controls have been effective and, if necessary, escalate the level of additional control or modify or temporarily suspend site operations to prevent dust nuisance; and
- A description of procedures, to investigate and take appropriate action to prevent recurrence on receipt of complaints of dust nuisance or on any elevated dust levels being present from the aforementioned checks/inspections/surveys or monitoring.

2 Sources of Dust Emissions and Sensitive Receptors

2.1 The Institute of Air Quality Management (IAQM) *Guidance on the assessment of dust from demolition and construction* [1] (the IAQM dust guidance) aims to estimate the impacts of both PM_{10} and dust through a risk-based assessment procedure. The IAQM dust guidance document states: *"The impacts depend on the mitigation measures adopted. Therefore the emphasis in this document is on classifying the risk of dust impacts from a site, which will then allow mitigation measures commensurate with that risk to be identified."*

2.2 During the demolition phase and construction of the proposed development activities that could cause fugitive dust emissions will include: demolition of existing structures, slabs and hard-standings; earthworks; handling and, where required, disposal of spoil; wind-blown particulate material from stockpiles; handling of loose construction materials; and movement of vehicles, both on and off site.

2.3 The level and distribution of construction dust emissions will vary according to factors such as the type of dust, duration and location of dust-generating activity, weather conditions and the effectiveness of suppression methods.

2.4 The main effect of any dust emissions, if not mitigated, could be annoyance due to soiling of surfaces, particularly windows, cars and laundry. However, it is normally possible, by implementation of proper control, to ensure that dust deposition does not give rise to significant adverse effects, although short-term events may occur (for example, due to technical failure or exceptional weather conditions).

2.5 The IAQM dust guidance sets out 350 m as the distance from the site boundary and 50 m from the site traffic route(s) up to 500 m of the entrance, within which there could potentially be nuisance dust and PM_{10} effects on human receptors. Figure 1 illustrates the site boundary and the area up to 350 m from the site boundary. Receptors potentially sensitive to dust are identified in Figure 1. The area immediately around the site is industrial, with Chemical Works to the east and car showrooms to the north-west. The closest residential dwellings to the site are located along Manchester Road, approximately 180 m to the north.

2.6 Given the size of the proposed development site (approximately 3.37 ha), and the proximity of sensitive receptors, the highest level of dust impact risk has been assumed for demolition, earthworks, construction and trackout.

3 Routine Control/Mitigation Measures

3.1 As stated in Section 2, the predicted dust impact risk is assumed to be high for all construction activities. The mitigation measures that will be implemented on-site are consistent with good practice measures listed in the IAQM dust guidance and are listed below:

Communications
▪ A Local Liaison Committee (LLC) will be established at an early stage to provide a forum for exchange of views and information on the project. The LLC will invite representatives from Cheshire West and Chester Council (CWCC), local councils and other relevant interest groups. ▪ Display the name and contact details for any communications relating to the construction work.
Site Management
▪ All dust and air quality complaints will be recorded, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. ▪ The complaints log will be made available to CWCC when asked. ▪ Any exceptional incidents that cause dust and/or air emissions, either on- or off- site, and the action taken to resolve the situation will be recorded in the log book. ▪ Regular liaison meetings will be held with other construction sites within 500m of the site boundary, to ensure plans are co-ordinated and to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.
Monitoring
▪ Daily on-site and off-site inspection will be undertaken, including the access road and junction with Griffiths Road, to monitor dust, record inspection results, and make the log available to the local authority when asked.
Preparing and maintaining the site
▪ Plan construction site layout so that machinery and dust causing activities are located away from receptors, as far as is possible. ▪ Localised barriers or temporary covers may be used for specific dusty activities with damping down of stockpiles as required. ▪ Enclose or control specific operations where there is a high potential for dust production and the site is active for an extended period, e.g. concrete crushing. ▪ Avoid site runoff of water or mud. ▪ Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below. ▪ Cover or damp down stockpiles to prevent wind whipping if necessary, e.g. during very dry weather.
Operating vehicle/machinery and sustainable travel
▪ Ensure all vehicles switch off engines when stationary for extended periods – no idling vehicles. ▪ The use of diesel or petrol powered generators will be minimised and mains electricity or battery powered equipment will be used where practicable. ▪ Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas. ▪ A Construction Traffic Management Plan will be implemented (see Annex 2.C.2).

Operations
▪ Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems. ▪ Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation during dry weather, using non-potable water where possible and appropriate. ▪ Use enclosed chutes, conveyors and covered skips, where practicable. ▪ Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment, where appropriate. ▪ Ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
Waste management
▪ Bonfires and burning of waste materials onsite will not be carried out.
Measures Specific to Demolition
▪ Ensure effective water suppression is used during demolition operations where appropriate. Hand held sprays may be appropriate as the water can be directed to where it is needed. High volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground. ▪ No explosive blasting, using appropriate manual or mechanical alternatives e.g. peckers.
Measures Specific to Earthworks
▪ Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable. ▪ Use hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable. ▪ Only remove the cover in small areas during work and not all at once.
Measures Specific to Construction
▪ Avoid scabbling (roughening of concrete surfaces) if possible. ▪ Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place. ▪ Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.
Measures Specific to Trackout
▪ Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use. ▪ Avoid dry sweeping of large areas. ▪ Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. ▪ Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable. ▪ Record all inspections of haul routes and any subsequent action in a site log book. ▪ Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned. ▪ Implement a wheel washing system. ▪ Provide an area of hard surfaced road between the wheel wash facility and the site exit.

4 Triggers

4.1 Dry windy days have the highest risk of causing a nuisance. Trigger levels have been established for wind speed, wind direction and proximity to sensitive receptors, and also take into account the pattern of rainfall (e.g. periods of dry weather).

4.2 Trigger levels have been defined to reduce nuisance dust effects at the nearest receptors during high-risk conditions. The trigger levels established for the site include any of the following:

- winds that are, or are forecast (according to the Met Office) to be above a moderate breeze (Beaufort scale 4 – described as conditions under which dust and loose paper are raised) and are, or are forecast to be, from the south or south-west on days when there has been no rainfall;
- no rainfall is predicted on five consecutive days;
- routine checks/inspections/surveys on site have shown visual evidence of significant dust off-site;
- a verified dust complaint is received that is attributable to the site; or
- a failure in equipment or control is identified, or an abnormal/unintentional situation occurs, e.g. a spillage.

5 Additional Measures

5.1 The additional controls to be employed in the event that a trigger level is exceeded are as follows:

- increase frequency of use of the road sweeper, both on-site and on local roads, as required;
- use of additional dust suppression measures such as dampening of specific surfaces; and
- if necessary, temporary cessation of the activities responsible for causing the dust impact until trigger level is no longer exceeded.

6 Procedures to Check the Dust Controls/Mitigation Measures are Effective

6.1 The Construction Manager (CM) or deputised representative will make daily inspections at the site boundary to check if visible dust is leaving the site. The results of the inspections will be recorded in a site log. The prevailing weather conditions and the activities undertaken at the time of the inspection will also be recorded in the site log.

6.2 In the event that a trigger level is exceeded and additional measures are employed, the frequency of the visual site boundary inspections will increase to twice daily until such time as no dust is visible at the site boundary. If after two days, the results of visual inspections indicate that the additional control measures are not effective, the CM will instruct all site operatives that the operations likely to be resulting in the dust emissions will be curtailed until the issue can be resolved.

7 Complaints Action Procedure

Objective of the complaints procedure

7.1 The objective of the complaints procedure is to establish whether the nuisance dust complaint is attributable to the activities on-site and implement an appropriate resolution to reduce the likelihood of the event reoccurring. The procedure ensures that resolutions are found, implemented and documented.

7.2 The CM or nominated deputy will be responsible for managing dust complaints. The CM’s name and contact details will be clearly displayed at the site office, located at the entrance to the site and on the entrance to the site access road off the A530.

Complaint registration

7.3 A record of all complaints received will be maintained and the Engineering Project Manager, CM and LLC will review a copy on a regular frequency. In the event that the CM receives a complaint alleging dust nuisance from the site:

- the complaint will be registered; and
- complaints data will be recorded in a systematic way, enabling comparison with standard dust descriptors, with wind direction and with site work activities.

Responding to the complainant

7.4 In the case of answer phone message and complaints submitted by email or by letter, an acknowledgement and initial response will be given by telephone or by email within 48 hours, provided that telephone or email contact details have been given by the complainant. The Site Manager will respond as rapidly as possible to the complaint by undertaking a site inspection to maximise the opportunity for identifying the source of the nuisance dust. Where possible, the CM, or an appropriate representative of the CM, will inspect the nuisance dust location referred to in the complaint.

7.5 Where complaints cannot be resolved on initial contact and further investigation is required, a written response will be made within 10 working days of submission of the complaint.

7.6 The primary reasons for further investigation of complaints are to assess potential nuisance and identify the likely cause and source of the dust so that nuisance can be reduced or stopped. In the case of further investigation, the CM will communicate to the complainant the course of actions likely to be taken. In summary, the response will include:

- The reason for the nuisance dust event;
- The likely duration of the nuisance dust event;
- What plan is in place to end the nuisance dust event;

- What preventative plan will be implemented to prevent a re-occurrence; and
- What grievance procedure the aggrieved party can take.

Investigation of dust complaints

7.7 The investigation will aim to establish whether the nuisance dust identified is attributable to the site. The form is designed to capture sufficient information about the nuisance dust event to determine whether the source of the dust is the site.

7.8 If the source of the nuisance dust is deemed to be the site, the information recorded should also assist in identifying a failure in the existing mitigation/control measures or the need for a new mitigation/control measure. If a new mitigation/control measure is required, the CM will ensure that the DMP is updated.

Glossary

Deposited Dust	Dust that has settled out onto a surface after having been suspended in air.
DMP	Dust Management Plan
Dust	Solid particles suspended in air or settled out onto a surface after having been suspended in air
Effect	The consequences of an impact, experienced by a receptor
EPUK	Environmental Protection UK
HGV	Heavy Goods Vehicle
IAQM	Institute of Air Quality Management
Impact	The change in atmospheric pollutant concentration and/or dust deposition. A scheme can have an 'impact' on atmospheric pollutant concentration but no effect, for instance if there are no receptors to experience the impact.
Receptor	A person, their land or property and ecologically sensitive sites that may be affected by air quality.
Risk	The likelihood of an adverse event occurring
Trackout	The transport of dust and dirt from the construction/demolition site onto the public road network, where it may be deposited and then re-suspended by vehicle using the network

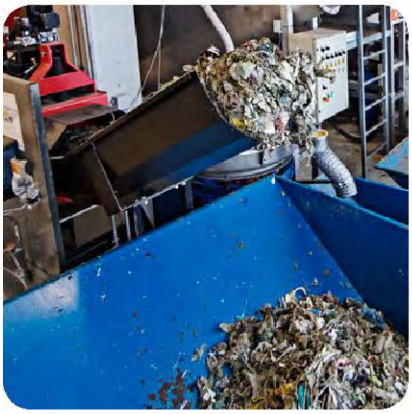
References

1 IAQM (2014) Guidance on the assessment of dust from demolition and construction

Annex 2.C.2: Construction Traffic Management Plan

Annex 2.C.2: Construction Traffic Management Plan

REnescience Northwich



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Quality Management

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Rev	**Date**	**Status**	**Reason for revision**	**Additional comments**
0	23/09/2015	Draft	For internal comment	-
1	28/09/2015	Draft	For client comment	-
2	01/10/2015	Draft	Internal review	DS & TAD
3	02/10/15	Final	-	-

Contents

Tables and Figures

Tables

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1 Introduction

Context and Scope

1.1 The principal aim of this Construction Traffic Management Plan (CTMP) is to ensure that the construction works are organised and delivered in a manner that safeguards the highway impact, highway safety and amenity of the area surrounding the application site.

1.2 It supports the Code of Construction Practice (CoCP) and Construction Environmental Management Plan (CEMP), which are at Appendix 2.C to the ES.

Report Structure

1.3 **Section 2** summarises the different phases of work and sets out the construction methodology and working hours.

1.4 **Section 3** outlines the anticipated composition and volume of traffic during the construction phase of the development along with the proposed routing of traffic.

1.5 **Section 4** provides an appraisal of the highway geometry of the identified construction route, having regard to current design guidance in combination with the volume and type of traffic generated by the development.

1.6 **Section 5** focuses on the proposals to ensure that a suitable management strategy and structure is in place to control activity on site and to ensure a suitable reporting procedure for local residents and stakeholders.

1.7 Travel Plan measures are outlined in **Section 6**. The findings of the CTMP are summarised in **Section 7**.

2 Construction Process

Development Schedule

2.1 The development schedule and phases of works are detailed in the CEMP at Appendix 2.C to the ES.

Delivery of Plant and Materials

2.2 Access to the site is proposed by way of the existing private road serving the Lostock Works site, linking with the A530 Griffiths Road south east of the development site (Figure 6.A refers). There is a low railway bridge to the north of the site which crosses the A530; this restricts HGV access from the north. As such all HGV routing is proposed to the south of the site via the A530 and A556.

2.3 Signage will be provided at the site entrance directing HGV traffic to the facility and at the junction with Griffiths Road requiring HGV traffic to turn right, to avoid the low bridge. Routing will be a contractual requirement, which will be enforced.

2.4 The M6 provides a strategic link to the wider North West and Midlands areas. For HGVs routing to/from the site from the M6, access to the site would be sought via the following routing strategy:

- M6 Junction 19/A556/A530
- M6 Junction 18/ A54/A530

2.5 HGVs will not be allowed to access the facility via Middlewich Road, nor Manchester Road through Northwich. This will be enforced by way of a contractual agreement and relevant signage.

2.6 The largest single elements of the proposed development will be the two REnescience bioreactors, which will be 45 m long and 4.5 m in diameter. These will be delivered in sections using standard low-loaders. Assuming each bioreactor comprises eight semi-circular sections 2.25m wide, 4.5m tall and 11.25m long, this will require 32 low loader deliveries for two bioreactors.

2.7 The access into the site via the existing access road has been assessed using swept path analysis. This analysis has demonstrated that limited road widening (<3m) would be required to facilitate two way HGV flow along the access road (see Figure 6.F). Passing places will be provided at convenient locations where the access road width is restricted. These works would be carried out in agreement with the existing site users.

Working Hours

2.8 During the construction period, the normal hours of working are proposed to be (unless agreed otherwise with the planning authority):

- Monday to Friday: 07:00 to 19:00, except during British Summer Time (BST) when: 07:00 to 21:00;
- Saturday: 07:00 to 13:00; and
- Sunday and Bank Holidays: no working unless agreed in advance with the planning authority.

2.9 It is proposed to stagger the various shift start and end times within the construction complex (on weekdays, for example, civil employees 07:30 – 18:30 and mechanical trades 07:00 – 18:00, plus two hours during BST). This small stagger in shift start and ending times will allow for a greater spread in traffic flow over the peak periods and facilitate access to the construction site.

2.10 Non-intrusive and internal activities such as fit out and commissioning may be undertaken outside these normal working hours in order to minimise overall construction time. Intrusive (i.e. noisy) activities will be scheduled to avoid the first and last hour of the working day and will be concentrated between 08:00 and 18:00 where practicable.

3 Construction Traffic Generation

Introduction

3.1 This section of the report sets out the estimated number and type of vehicles that will be generated throughout the construction phase of the development. This information has been used in subsequent sections that consider the geometry and safety of the adjoining highway networks, in order to inform the suite of management measures proposed.

3.2 It should be noted that the construction programme and corresponding construction traffic strategy may be subject to change following the appointment of construction contractors and prior to work commencing on site. Any substantial changes in the build program and / or number of vehicle movements will be communicated to Cheshire West and Cheshire Council (CWCC) in advance of construction.

Construction Vehicles

3.3 The trip generation potential of the construction phase of development has been informed though discussion with the applicant on the anticipated construction programme and is based on experience of delivering similar developments.

3.4 It is expected that the average number of HGV movements would be less than that of the operational period of the facility, but at times may be similar, i.e. during construction there would be up to around the 96 two way HGV movements daily, at an average rate of 8 two way movements per hour, that are anticipated during operation. Delivery schedules will be controlled by the site logistics manager.

3.5 Construction staff will comprise personnel based on-site and contractors. During the peak construction phase, on average 82 staff are anticipated to be on-site with the maximum limited to 150. Based on existing modal split data for the local area, this indicates that 77.7% could drive to the site. The average peak trip generation and modal split is set out in Table 3.1, below.

Table 3.1: Construction Personnel Daily Trip Generation

Method of Travel	Proportion of Trips	Construction Staff
Car (driver)	77.70%	64
Car (passenger)	6.90%	6
Public transport	3.20%	3
Walking	7.90%	6
Cycling	2.90%	2
Motorcycle	0.90%	1
Taxi	0.20%	0
Other	0.30%	0
Total	**100%**	**82**

3.6 Contractors typically operate minibuses from key public transport nodes or off-site car parking and encourage car sharing amongst staff. It is therefore anticipated that the car driver modal split would be less than that of the local ward census data. Increasing the proportion that travel as a car passengers to 20% and those travelling by public transport (minibus) to 20%, the following modal split and consequent trip generation is anticipated (Table 3.2).

Table 3.2: Construction Staff Adjusted Modal Split

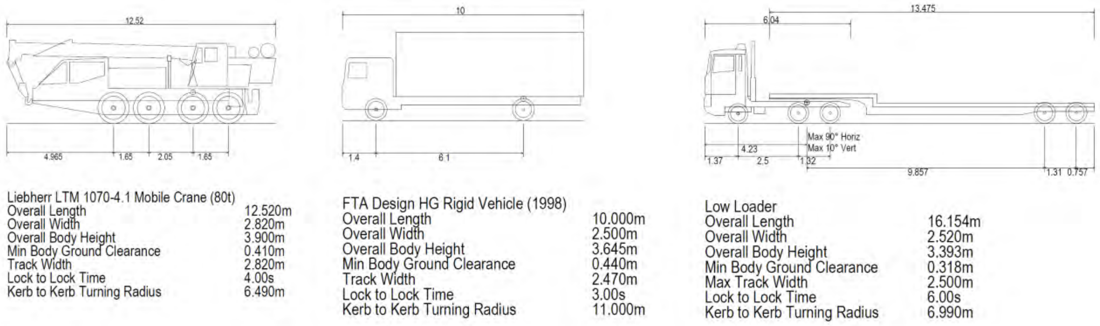
Method of Travel	Proportion of Trips	Construction Staff
Car (river)	47.8%	39
Car (passenger)	20.0%	17
Public transport	20.0%	17
Walking	7.9%	6
Cycling	2.9%	2
Motorcycle	0.9%	1
Taxi	0.2%	0
Other	0.3%	0
Total	**100.0%**	**82**

3.7 The total car and light vehicle movements associated with staff travelling to and from the site, during some phases of construction, will at some periods exceed the number of staff vehicles anticipated during the operational phase of the development. However, in accordance with standard construction practice these light vehicle movements will be largely outside of the typical commuter peak hours (0800-0900 &1700-1800), with working hours being 07:30-18:30 for civil employees and 07:00-18:00 for mechanical trades (plus up to two hours at the end of the day during British Summer Time).

3.8 The arrival and departure times of staff would therefore occur between 07:00-08:00 and 18:00-19:00/21:00 BST. These working hours would therefore reduce the potential impacts on queue lengths and/or driver delay during the morning and evening peak hours.

Construction Vehicle Types

3.9 It is noted that a variety of vehicles will need to access the application site during construction. These will typically include low loaders, rigid HGVs and cranes associated with delivering and erecting the requisite materials, plant and buildings. The dimensions of the typical vehicle types are shown below.



Construction Staff

3.10 During construction, there is a balance to be made between the intensity of on-site activity and the duration of that activity. In terms of employment generated by the site, the construction phase will generate on average approximately 82 full time jobs during its peak period, with no more than 150 on site during the busiest month. A proportion of these employees comprise drivers of construction vehicles delivering material to site. For construction personnel based on-site car sharing will be employed to minimise traffic, so far as is practically possible. Transfer by minibuses from local public transport interchanges or off site car park will be provided if appropriate.

4 Routes Appraisal

Introduction

4.1 This section of the report sets out an appraisal of highway geometry and considers the safety performance of the study area highway network to ensure that vehicles are able to travel safely and efficiently to the site, having due regard to the traffic volumes and vehicle types identified previously.

Route Appraisal

4.2 As described above, access to the site is proposed by way of the existing private road serving the Lostock Works site, linking with the A530 Griffiths Road south east of the development site (Figure 6.A refers). As a worst case, the swept paths of a maximum legal articulated vehicle have been checked along the access road, as shown in Figure 6.F.

4.3 There is a low railway bridge to the north of the site which crosses the A530; this restricts HGV access from the north. As such all HGV routing is proposed to the south of the site via the A530 and A556. There will be an HGV right turn only sign at the junction of the access road with Griffiths Road and temporary signage erected on the local highway network, to be agreed with CWCC as Highway Authority.

4.4 The A530, A556 and A54 are all high standard roads, with the A556 and A54 forming part of the Primary Route Network (PRN). The PRN designates roads between places of traffic importance across the UK, with the aim of providing easily identifiable routes to access the whole of the country.

Road Condition Survey

4.5 The identified routing strategy for HGV vehicles accessing the site uses classified A roads in the locality of the site currently used by HGV traffic. Given the low level of HGVs forecast for the construction of the proposed site, coupled with the existing HGV use of the construction routes it is not considered necessary to undertake Road Condition Surveys pre or post construction of the proposed development.

Highway Safety

4.6 Personal Injury Accident (PIA) data has been collected for the latest available five year period from Cheshire West and Chester Council for the local highway network surrounding the site. The search period includes the dates 1st July 2010 to 30th June 2015 and covers the A530 between the roundabout junction with the A556 and the priority ‘T’ junction with the A559.

4.7 The full data output is attached at Annex 6.A.2 with a plot of the PIAs illustrated on Figure 6.B.

4.8 The data indicates that a total of 22 collisions occurred during the search period, with two classified as serious and the remaining as slight. No fatal incidents took place.

4.9 A serious incident took place approximately 300 metres south of the 'T junction with the A559 Manchester Road, whereby a motorcyclist travelling north towards the junction collided with the rear of an HGV turning into a private driveway on the sweeping bend. In the other serious incident a pedal cyclist travelling from south to north at the A556/A530 roundabout was hit by a car driver approaching the junction from the western arm who failed to give way.

4.10 Ten of the slight incidents took place at the A556/A530 roundabout junction. These were due to shunting incidents, failing to look properly on approach or exit of the junction or a pedestrian crossing the A556 in an inappropriate location. The other PIA involving a pedal cyclist was also located at this roundabout as a car driver failed to give way to the cyclist as they were looking in the other direction.

4.11 Seven of the slight PIAs took place at the priority staggered crossroad junction between Penny's Lane/A530/B5082 Middlewich Road. One of these was due to a car driver colliding with the kerb and barrier whilst turning left from the B5082 as they were chased by a police car. Others were attributable to failing to slow down on approach from the B5082 to the junction, driving on the incorrect side of the carriageway, failing to negotiate the left-hand bend whilst travelling south on the A530 and colliding with a parked unattended vehicle.

4.12 The remaining slight incidents took place at the A559/A530 priority 'T' junction. One was attributable to a vehicle travelling over the brow of the hill in a north-east direction and the driver losing control, causing a collision with an oncoming vehicle. In another a vehicle crossed the path of an oncoming vehicle to enter a private driveway. The other incident had unknown factors.

4.13 The analysis has demonstrated that the incidents that took place over the five year period along the A530 were a result of driver error. The proposed development is unlikely to cause detriment to the road safety along this stretch of the highway. It should also be highlighted a relatively small number of incidents caused casualty to vulnerable road users (pedal cyclists and pedestrians).

4.14 It is not anticipated that the small number of additional vehicles associated with the development would have any undue effect on road safety. However, in order that the construction of the proposed development is as safe as possible, all drivers will be required to have sufficient training on the delivery routes and locations where additional caution should be taken.

Volumes of Traffic

4.15 A study area for transport was agreed as part of the Transport Assessment scoping consultation with CWCC. The study area is also reflective of that agreed with the Local Highways Authority (LHA) as part of the Transport Assessments submitted in support of the previous planning applications for the site. The study area has assessed the impact of the development traffic at the following links, as illustrated in Figure 6.D:

Link No.	Link Location
1	A530 (Griffiths Road) North of site access
2	Site access
3	A530 (Griffiths road) South of site access
4	A530 north of A556
5	A556 East of A530
6	A530 South of A556
7	A556 West of A530

4.16 Automated traffic count (ATC) surveys have been carried out by Axiom Traffic, for each link of the respective junctions for a 7 day period 24th June, 2015 to 30th June, 2015. The survey period did not coincide with any school holidays or bank holiday periods. The purpose of the survey was to provide the local network average 5 day weekday traffic flows, which are summarised in Table 4.1.

Table 4.1: Existing (2015) Local Highway Network Two Way Traffic Flows

	5 day weekday average						
	Link1	**Link 2**	**Link 3**	**Link 4**	**Link 5**	**Link 6**	**Link 7**
Time Period	**A530 (north of site access)**	**Site Access Road**	**A530 (south of site access)**	**A530 (north of A556)**	**A556 (east)**	**A530 (south of A556)**	**A556 (west)**
0000-0100	21	1	21	45	125	95	115
0100-0200	16	2	16	32	78	71	65
0200-0300	13	2	13	37	86	94	81
0300-0400	17	2	17	38	99	110	95
0400-0500	33	3	32	71	172	164	145
0500-0600	90	13	93	234	468	462	405
0600-0700	185	58	208	447	1246	662	967
0700-0800	459	91	501	977	2727	1350	2256
0800-0900	640	63	667	1196	2980	1287	2718
0900-1000	531	59	569	1009	2044	980	1903
1000-1100	485	57	502	916	1652	860	1421
1100-1200	474	67	496	918	1587	823	1386
1200-1300	562	58	576	1015	1675	959	1485
1300-1400	555	53	569	1014	1677	968	1409
1400-1500	552	52	569	1043	1876	1139	1536
1500-1600	645	72	660	1115	2202	1172	1832
1600-1700	735	71	760	1264	2757	1458	2347
1700-1800	802	26	812	1388	2978	1586	2561
1800-1900	582	39	599	1084	2384	1230	2055
1900-2000	362	10	361	697	1374	683	1237
2000-2100	193	13	196	426	828	413	760
2100-2200	142	2	143	311	612	332	592
2200-2300	107	3	108	225	511	268	468
2300-0000	41	4	44	106	328	165	276
24 H	8241	823	8532	15609	32469	17331	28113

Source: Axiom Traffic ATC Survey June 2015.

4.17 There are also existing DfT traffic count points in four locations: on the A530 Griffiths Road close to the site access; on the A556 to the north-east of the junction with the A530; on the A530 south of the A556 and on the A54 between the A530 and M6 junction 18. The traffic count information for these sites is set out in Table 4.2, below, for the latest available year – 2014.

4.18 Comparison of Table 4.1 and Table 4.2 indicates that on a typical weekday (Table 4.1) the local roads carry more traffic than on an average day (AADT) including weekends (Table 4.2). RPS has some doubt about the validity of the data for DfT count point 47279 'A530 south of A556' as the total number of vehicles recorded is considerably fewer than Link 6 recorded in the traffic surveys undertaken for RPS in June 2015.

Table 4.2: DfT Traffic Counts (two-way AADT) 2014

Location	DfT Ref.	AADT	HGVs	% HGV
A530 close to site access	17206	6911	124	1.8%
A556 north-east of A530	7265	23225	1500	6.5%
A530 south of A556	47279	9026	336	0.4%
A54 between A530 and M6 J18	81269	16844	1796	10.7%

Source: http://www.dft.gov.uk/traffic-counts/ obtained 28 August 2015

4.19 The potential construction traffic flows have been added to the existing AADT traffic flows. The potential traffic increase has subsequently been calculated, as presented in Table 4.3. This indicates a negligible increase in traffic flows during the construction period.

Table 4.3: AADT + Construction Traffic and % Increase

Location	AADT	AADT + Construction Traffic	% Increase
A530 close to site access	6911	7059	2.1%
A556 north-east of A530	23225	23273	0.2%
A530 south of A556	9026	9056	0.3%
A54 between A530 and M6 J18	16844	16874	0.2%

5 Measures, Management & Control Processes

Introduction

5.1 This section sets out the measures, management structure and control processes that will be put in place to implement, monitor and manage the CTMP. The site Construction Manager will ensure that the control processes are efficiently communicated and implemented.

Transport Co-Ordination

5.2 The developer will appoint a Construction Manager for the project, as detailed in the CEMP at Appendix 2.C to the ES, and the details will be provided to CWCC once confirmed. The Construction Manager for the project will undertake the transport co-ordination role for the site. In this respect, their main responsibilities will include:

- managing the implementation of the CTMP;
- vehicle scheduling;
- checking for scheduled road works on: http://livetravel.cheshirewestandchester.gov.uk/map.aspx;
- handling any complaints; and
- acting as a point of contact for employees, contractors and the general public.

5.3 The Construction Manager will ensure that there is adequate liaison between the following key stakeholders throughout the construction period:

- contractors;
- the developer;
- site neighbours;
- other local stakeholders such as emergency services or local transport providers; and
- CWCC.

5.4 Regular review meetings and telecommunication will be held between the Construction Manager and CWCC if requested. It is envisaged that update meetings / telecommunication will be held on an ad-hoc basis as required. Furthermore, the Construction Manager will provide any monitoring data, delivery schedules, complaints or breaches of agreements to CWCC if requested.

5.5 The Construction Manager will work with the other users of the site access road, the existing Lostock Works site occupiers, in order to co-ordinate deliveries, minimising potential for congestion on the access road and consequent risk of queuing on the public highway. Should construction for any of the other consented developments on Lostock Works overlap with that of the proposed development, the Construction Manager will likewise co-ordinate with his or her counterpart for those projects.

Booking System

5.6 On a weekly basis, the Construction Manager will evaluate details of the daily profile of deliveries proposed for the upcoming week. Through discussions with hauliers, the Construction Manager will, as far as practicable, ensure that the deliveries are spread out across the week and across the day to minimise any potential disruption.

5.7 The proposed deliveries will be checked against the weekly delivery schedule. This will be overseen by the Construction Manager to ensure that construction deliveries are managed in an efficient manner with minimal disruption and delays.

5.8 The proposed construction compound will provide an area for vehicles to wait and undertake deliveries off the highway. Hauliers will be required to contact the Construction Manager to give an indicative delivery time to ensure that the delivery space and banksmen (if required) are ready for their arrival on site.

5.9 Where possible, deliveries by goods vehicles (>3.5 tonnes) will be undertaken outside of the highway peaks of 08:00 to 09:00hrs and 17:00 to 18:00hrs. Where possible, sufficient time will be given between deliveries to allow for any delays as a result of the delivery vehicle getting stuck in traffic or the loading / unloading taking longer than expected and to avoid any vehicles waiting.

5.10 The developer will provide banksmen to assist with the manoeuvring of delivery vehicles in to and out of the construction compound, as well as internal movements throughout the main site.

Route Compliance

5.11 The use of the A350 south to/from the site and the A556 junction, avoiding Manchester Road, Middlewich Road and Penny's Lane, will be included as a contractual requirement of contractors and will be communicated to all drivers. This will include information on the times of operation, delivery routes and the vehicle booking system.

5.12 The appointed Construction Contractor will look to procure local contractors for the project, thereby minimising transport costs and impact on the local environment. The use of a booking system for deliveries will also help to ensure that the construction site is serviced in an efficient manner which will help to minimise the number of vehicle movements that would be generated.

Waste Management

5.13 In order to seek to reduce the number of HGV trips that are generated, aggregates generated on site during works will be re-used where practical. This includes concrete floor slabs, roadways, bases, pits and foundations associated with the former structures on the site, which will be crushed and stockpiled on site for re-use as a granular fill / capping material.

5.14 Whenever deliveries are undertaken, banksmen will be used to ensure that materials are transferred into the site as soon as possible to ensure that no dirt or rubbish is left on the public highway.

6 Construction Worker Travel Plan

Introduction

6.1 A Travel Plan is a package of measures aimed at promoting greener, cleaner travel choices and reducing reliance on the private car. It enables employers to reduce the impact of travel on the environment, whilst also bringing a number of other benefits to the organisation as an employer and to staff.

6.2 This Travel Plan seeks to address activities related to the construction of the proposed development, which includes commuter journeys for construction workers, material supplies and deliveries. By successfully addressing these different types of travel, via promoting travel via sustainable modes and sourcing labour and goods locally, the Travel Plan objectives can be achieved.

Provision for Travel Using Sustainable Modes

Pedestrian and Cycle Facilities

6.3 The site access road is lined with a continuous footway to the southern side; this connects with the existing footway on the A530 that runs south to the A556. North of the site a footway is present to the western side of the A530 also continuing around the site access junction. The footway provides access to the railway bridge, at which point no pedestrian facilities are provided. North of the railway bridge, the footway continues on the eastern side of the carriageway northwards to the junction with the A559.

6.4 The Trent-Mersey canal runs north-south alongside the A530 and provides an alternative pedestrian/cycle route. There is also an extensive public rights of way network between the A530 and Lostock Hollow to the east. These alternative routes are considered to be seasonal routes during the drier, summer months when daylight hours are longer.

6.5 The A530 provides access to the local residential area of Broken Cross, south of the site, via a number of smaller priority junctions. A continuous footway is present to the western side of the A530 linking with Broken Cross to the south. Pedestrian crossing facilities are provided at junctions by way of dropped kerbs and tactile paving. There are currently no pedestrian crossing facilities provided to facilitate pedestrian movement across the A530.

6.6 There are currently no cycle facilities present on the A530; however, the Trent-Mersey canal towpath provides a quiet traffic route linking with the traffic routes lining the A556 westbound. This route connects Broken Cross and Rudheath with the southern area of Northwich, providing access to the wider cycle network of Northwich also.

6.7 The construction site will provide facilities in accordance with requirements set out in the HSE guidelines. This will include a drying room, storage facilities, toilets and offices. This will further encourage people to travel to the site by sustainable modes, whilst having the added benefit of reducing the number of trips made off-site during lunch breaks.

Bus Services

6.8 A summary of the bus services in the vicinity of the site is shown on Figure 6.C. This figure also illustrates the location of bus stops within close proximity to the site and the railway stations at Lostock Gralam and Northwich.

6.9 Bus stops are located approximately 700m north of the site on the A559 Manchester Road, from which bus services numbers 45 and 289 operate. These provide direct links to Northwich town centre, Warrington, Knutsford and Altrincham throughout the day. The journey time from Manchester Road to Northwich is approximately 9 minutes. Further bus stops are located on the B5082 Middlewich Road approximately 1.2km south of the site. These bus stops are served by the number 2 circular service operated by Arriva which provides a link to Northwich and Weaverham. This operates with a 20 minute frequency throughout the day. The bus services are summarised in Table 6.1.

Table 6.1: Existing Bus Services (Monday – Saturday)

		Monday – Friday		Saturdays	
Service	**Route**	**Op. Hours**	**Typical Frequency**	**Op. Hours**	**Typical Frequency**
2	Northwich – Rudheath	0645-1816	20 mins	0714-1909	30 mins
45	Northwich-Warrington	0736-1849	Every 2 hours	0746-1746	Every 2 hours
289	Northwich-Lostock Gralam-Pickmere-Knutsford-Altrincham	0704-1754	5/day	0704-1754	5/day

Rail Services

6.10 Lostock Gralam Railway Station is located approximately 2.1km east of the site on Station Road. Northwich Railway Station is located approximately 2.2km west of the site on Manchester Road.

6.11 Northern Rail Services operates a train service between Manchester Piccadilly, Altrincham and Chester every hour Monday to Friday, via Northwich and Lostock Gralam. The journey time from Northwich and Lostock Gralam is approximately 30 minutes to Chester and 60 minutes to Manchester Piccadilly.

Car Share

6.12 There is significant potential for construction workers to car share to work, especially given the fact that some sub-contractors are likely to be travelling from the same origin (their contractor's workplace) to the same destination.

6.13 Car sharing is a relatively convenient form of travel, offering a significant potential to reduce overall private mileage of construction workers and visitors. It is this mode of transport which often forms one of the most convenient methods of sustainable travel for construction workers. Furthermore, the contractors will provide minibuses for construction workers.

6.14 The Construction Manager will promote a car-sharing scheme throughout the construction program. The Construction Manager will also make construction workers aware of existing car sharing schemes such as https://liftshare.com/uk.

Aims and Targets

6.15 Sustainable transport measures will be adopted, including the provision of a minibus service for construction workers. It is therefore considered there is good potential to reduce single occupancy car trips through car sharing and minibus provision, with some trips also transferred to cycle or public transport.

6.16 A temporary car parking area will be provided at the Lostock Works site, to accommodate parking on-site. Construction worker parking at the site will be monitored, controlled and recorded by the developer to ensure that single occupancy car use is minimised.

6.17 This CTMP and Travel Plan will be communicated to all construction workers as part of their induction / training process. An up to date copy of the Travel Plan will always be available for consultation.

Measures

6.18 As indicated above, there is some potential for construction workers to travel to the site by sustainable modes such as walking, cycling, and public transport. There is significant potential for construction workers to car share or travel by minibus. It is therefore deemed appropriate to promote the local services available as well as the following measures to promote sustainable travel by construction staff, as follows:

- include local public transport timetables and route maps within the on-site compound;
- provide changing and storage facilities for construction staff to encourage walking and cycling;
- provide construction staff with full details of the minibus service and agree suitable collection / drop off points to maximise its use; and
- manage, where possible, the number of contractors on site at any one time to reduce trips generated and promote car sharing.

6.19 Further to this, the following measures will be promoted to minimise the number of HGV trips generated by the development.

- Initiate a weekly booking system for the delivery of plant and materials to the site.
- Aim to procure local contractors for the project, thereby minimising transport costs and impact on the local environment.

- Use of the agreed vehicle routes will be included as a contractual requirement of the Contractors and will be communicated to all individuals associated with the works.

6.20 The Department for Transport (DfT) has published guidance regarding the efficient use of freight on the network. “Review of Low Carbon Technologies for Heavy Goods Vehicles” (2009) sets out a number of HGV technologies with the potential for reducing carbon emissions. Within this DfT report, a number of vehicle technologies and driver behavioural styles for reducing the environmental impact of HGVs are assessed. Some of these measures could be incorporated into the vehicle fleet in order to reduce the environmental impact of generated traffic. Such measures could include:

- spray reduction mud flaps – reduces spray and provides aerodynamic benefits;
- low rolling resistance tyres – can reduce CO_2 emissions by up to 5%;
- automatic tyre pressure adjustment – automatically monitors and adjusts tyre pressures, which could provide CO_2 reductions of around 7-8%;
- predictive cruise control – improves fuel efficiency of vehicles; and
- SAFED driver training scheme – aims to improve accident prevention and reduction and to reduce fuel consumption.

Residual Impacts

6.21 A booking system will be used to ensure that construction deliveries are managed efficiently with minimal disruption and delay. Local residents will be informed of the commencement of the construction process. The initiation of the Travel Plan measures alongside the targets will therefore minimise residual impacts upon the operation of the local highway network as well as reduce residual environmental impact.

7 Summary and Conclusions

7.1 The CTMP provides information to ensure that the development works are organised and delivered in a manner that mitigates and safeguards the highway impact, highway safety and amenity of the area surrounding the application site.

7.2 The construction period is anticipated to last for approximately 12 months. The construction programme and corresponding construction traffic strategy may be subject to change following the appointment of construction contractors and prior to work commencing on site. Any substantial changes in the build program and / or number of vehicle movements will be communicated to CWCC in advance of construction. An extension to the programme would lead to a decrease in the average number of movements.

7.3 Construction HGVs will access the site from the A530 south via the A530/A556 roundabout. This route provides links to Junction 18 and Junction 19 of the M6 via the A530/A54 and A556 (east), respectively.

7.4 Swept path analysis has been undertaken at the site access junction and of the site access road. The swept path analysis is shown at Figure 6.F. Access into the site at the site access junction is demonstrated to be suitable to accommodate the type and volume of traffic anticipated within the construction schedule in a safe and efficient manner.

7.5 The applicant estimates that the construction will require on average 82 construction personnel during the peak construction period. The Travel Plan seeks to minimise travel by single occupancy vehicle and sets out measures that will be adopted to achieve that aim.

7.6 All materials and plant associated with the development process will be stored within the temporary construction compound of the application site.

7.7 It is expected that the average number of HGV movements per day during construction will be less than or similar to the HGV movements which have are anticipated during the operational phase of development, i.e. up to approximately 96 two way HGV movements daily, at an average rate of 8 two way movements per hour.

7.8 The number of vehicle movements associated with the development construction period is not considered to have any significant impacts on the operation of the local highway network. It is anticipated that the majority of deliveries will be made via low loader vehicles and rigid HGVs.

7.9 The construction process will be managed and overseen by the appointed site Construction Manager. The Construction Manager's responsibilities will include acting as a point of contact for the local authority, stakeholders and members of the public. Further to this, the Construction Manager will also be responsible for delivery scheduling, construction route compliance and managing other contractors employed on-site.

7.10 The Construction Manager will evaluate details of the daily profile of deliveries proposed for the upcoming week. Through discussions with hauliers the Construction Manager will ensure that the deliveries are spread out across the week and across the day to minimise any potential disruption. All deliveries will be met by a member of staff who will assist vehicles entering, exiting and manoeuvring around the site

7.11 To minimise conflict between light construction vehicles and commuter peak periods, light vehicle movements will be largely outside of the typical commuter peak hours (08:00-09:00 & 17:00-18:00), thereby reducing potential impacts on queue lengths and/or driver delay during these periods.

7.12 Overall it is considered that the measures and control processes outlined in this CTMP are appropriate to overcome the identified constraints associated with the application site and enable construction traffic to be effectively and sustainably managed.

Annex 2.C.3: Waste and Materials Management Plan

General

A.1 The 'Waste Hierarchy' principle will be adhered to in order to minimise waste for disposal by encouraging the avoidance or reduction of waste where possible, followed by the reuse, recycling or recovery of waste where waste material generation is inevitable. All practicable efforts will be made to reduce the amount of waste that will be created, including:

- segregation of recyclable materials that can be re-used on site, especially concrete / brick; and
- careful excavation and segregation of contaminated soil to reduce cross-contamination.

A.2 Potential suppliers of imported soil/aggregate materials will be required to supply analytical data for the materials in order to ensure contaminated materials are not imported to site. Imported materials will be subject to initial visual screening prior to unloading in order to assess the presence of asbestos, organic contamination and large fragments of metal, wood, etc. Based on initial visual/olfactory spot checks, any suspect loads will remain on the vehicle and be returned to the supplier.

Re-Use of Material

A.3 Materials derived from site excavation such as concrete slabs, roadways, bases, and foundations from former structures on the site will be broken out, crushed and then stored for later re-use as granular fill or capping material (subject to the recommendations of the contaminated land risk assessments). This will allow for increase resource efficiency and reduced quantities of materials for off-site disposal.

A.4 All materials will be subject to chemical testing and asbestos screening prior to on site re-use.

Storage of waste

3.79 Appropriate storage of construction wastes will be provided allowing segregation of wastes, for example with the use of separate skips or other suitable containers. Skips will be covered to prevent litter and for if liquid wastes are stored, bunded hardstanding and drip pans will be used to prevent escape of any spilled liquids.

3.80 Storage areas will be located away from potential contaminant pathways, for example drains, soakaways and excavations. Any hazardous waste will be stored separately and suitably labelled to ensure identification.

3.81 Stockpiles and exposed areas will be covered or damped down using water to minimise the mobilisation of dust. The frequency of the treatments will be based on prevailing weather condition and the treatments applied will be recorded in the daily site log.

3.82 Based on the findings of the Phase 1 Risk Assessment, there is considered to be potential for the presence of asbestos-containing materials in made ground and the drainage system. This will be investigated in the Phase 2 Site Investigation and detailed risk assessment. Any buried asbestos-containing materials identified may be left in situ where appropriate or will be disposed of in a controlled manner in accordance with the Control of Asbestos Regulations 2012. This will include the use of sealed skips and sheeted stockpiles.

Disposal of waste

A.5 Waste will be collected and disposed of by a registered licensed contractor to an appropriately licensed facility. Documentation on the transfer and disposal of waste will be retained and in accordance with relevant regulations will provide details of the waste such as waste type, quantity, containment and location of disposal. Waste will be removed from the site at frequent intervals and the site kept clean and tidy.

A.6 Prior to the disposal of any soil waste off-site, it will be necessary to undertake detailed Waste Acceptance Criteria (WAC) testing. The analytical data will then be provided to the appropriate landfill for final characterisation of the waste.

A.7 All non-hazardous waste will be removed from site within strict adherence to waste legislation requirements, including Duty of Care Regulations. Prior to any agreed use of hauliers or waste disposal sites, the appropriate licences will be thoroughly checked to ensure that particular waste streams can be accepted and carrier licences are valid. This can only be undertaken by authorised personnel and copies of all necessary licences will be retained on site at all times and reviewed for expiry. No waste will leave site without appropriate waste transfer notes. It is essential that all waste transfer notes are inspected for detail and must contain the correct description of waste as well as the correct waste code, in line with the List of Waste Codes Regulations. Only authorised and fully trained personnel may sign waste transfer notes. Regular audits will be undertaken to ensure correct procedures are being followed.

A.8 The site will be registered with the Environment Agency as a hazardous waste producer if over 500kg of hazardous waste per annum is to be produced and the relevant documentation will be completed prior to disposal. No hazardous waste will leave site without the correctly completed consignment note. The consignment notes will contain all necessary information including waste description and hazardous waste registration number. Any carriers removing hazardous waste will have appropriate licences and disposal sites must be verified to be able to accept waste being sent. All hazardous waste will be stored on site in appropriate, covered or locked skips. Hazardous and non-hazardous wastes will not be mixed.

Waste records

A.9 The following legal records will be kept:

- Waste Carriers Registrations;

- Environmental Permits and Exemptions;
- Waste Transfer Notes; and
- Consignment Notes.

A.10 On completion of the construction phase works, these documents will be transferred to the Operating Company, DONG Energy REnescience Northwich O&M Limited, who will maintain these records on file for a minimum of three years.

Contaminated soil materials and waste

A.11 Given the findings of the Phase 1 Risk Assessment, the possible presence of asbestos and other inorganic and organic soil contamination in made ground will be assumed (pending the findings of the Phase II Site Investigation) and appropriate risk assessments will be undertaken prior to works being undertaken. When handling made ground, appropriate PPE and dust mitigation measures will be provided as a minimum.

A.12 Records suggest that the existing drainage system associated with the former works may be contaminated with asbestos. Care will be taken when inspecting or demolishing existing drainage features.

A.13 Any visual or olfactory evidence of contamination identified during redevelopment of the site will be reported to the environmental engineer and works will cease in this area until a suitable strategy for its removal or treatment has been designed. The Environment Agency and/or Environmental Health Officer will also be notified of any unexpected contamination and the measures put into place to mitigate potential risks.

A.14 Should any previously unidentified contamination be discovered during the course of the works, then works in this area will be paused, and a remedial strategy devised. This will be agreed with the local authority and a verification report produced to confirm that the proposed measures were properly implemented.

A.15 Stockpiling of material that is contaminated or suspected of being contaminated will be avoided where practicable. Where this is unavoidable, stockpiles will be located in areas of hardstanding or on plastic sheeting to prevent contaminants infiltrating the underlying ground.

A.16 Where contaminated material is encountered, site workers will be given information on how to manage it. Site workers will be provided with appropriate PPE and given training on the use of this equipment.

A.17 Japanese Knotweed is known to have existed in localised areas of the site but is understood to have been subject to treatment using a herbicide by a specialist contractor and was found to be dead in the Phase 1 Habitat Survey (Annex 7.C.2 in the ES). Expert advice will be sought prior to the excavation/transport or disposal of soils impacted by Japanese Knotweed. If live Japanese knotweed is identified on the site during the works, the treatment and disposal of Japanese Knotweed will follow the Environment Agency’s relevant code of practice.

Appendix 3.A: Scoping Note

RPS

DONG energy

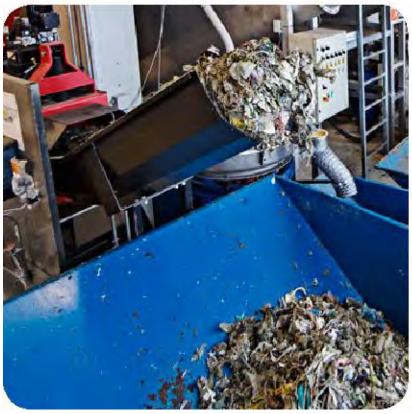
Appendix 3.A: EIA Scoping Note

REnescience Northwich

REnescience®







Quality Management

Prepared by:	Tom Dearing	Senior Environmental Consultant		08/07/15
Reviewed & checked by:	Dan Smyth	Senior Director	pp.	08/07/15
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0	06/07/15	Draft	-	-
1	08/07/15	Final	Internal review	-

DISCLAIMER

Contents

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Annexes

1 Introduction and EIA Screening

1.1 DONG Energy (the Applicant) proposes to develop **REnescience Northwich**, a bioresource project providing waste resource recovery and renewable electricity generation from biogas at a site allocated for waste management at the former Lostock Works near Northwich and Lostock Gralam. The proposed development is described in Section 3: in brief, it comprises enzymatic treatment, mechanical sorting and anaerobic digestion of mixed household waste to recover recyclable materials, generate renewable electricity, and produce a refuse-derived fuel (RDF) for use elsewhere. It will have a waste treatment capacity of up to 144,000 tonnes per annum (tpa).

1.2 Members of Cheshire West and Chester Council (CWCC) previously resolved to grant planning consent on this site in 2010 for Viridor to develop a Waste Treatment Plant with 200,000 tpa capacity, comprising mechanical sorting of recyclables and biodrying of residual waste to produce solid recovered fuel (SRF). That application was withdrawn in 2013 and the development has not proceeded.

1.3 At a pre-application meeting on 18th June 2015 between the applicant, DONG Energy, its planning and environmental advisers, RPS, and officers of CWCC, it was proposed by DONG Energy and agreed by CWCC that an Environmental Impact Assessment (EIA) should be undertaken for the proposed development, in view of its potential for environmental impact and the fact that the Viridor facility, of a similar nature, was screened as requiring EIA.

1.4 DONG Energy does not therefore intend to request a formal EIA Screening Opinion from CWCC.

1.5 This document has been prepared to accompany a request for an EIA Scoping Opinion. In Sections 2 and 3 it describes the site setting (including nearby sensitive receptors) and sets out the key characteristics of the proposed development, respectively. In Section 4, it summarises the EIA scope that RPS considers appropriate and on which CWCC's opinion is requested.

1.6 In addition to RPS's knowledge of the project and initial walkover surveys of the site, the proposed environmental topics and impacts to assess that were raised in the scoping opinion provided for the Viridor application EIA have been considered.

2 Site Setting

Location

2.1 The proposed development site is located off the A530 Griffiths Road, near Northwich and Lostock Gralam, Cheshire. The national grid reference is 367920, 374201 and the site location is shown in the accompanying Site Location Plan. It is approximately 3.7 ha in size.

2.2 The site is within an area ('*Lostock Works'*) that is allocated for waste management in the CWCC Adopted Local Plan (Part One) under strategic policy ENV 8 *Managing Waste*.

Access

2.3 The site is accessed via an existing private road serving the cluster of chemical industry facilities on the Lostock Works site, from a junction with the A530 Griffiths Road around 0.5 km south (as the crow flies) of the proposed development site boundary.

Description

2.4 The site is brownfield land that was previously used for chlorine manufacturing until 2001. At the time of the previous (Viridor) planning applications in 2009 and 2010, buildings were still present, but they have subsequently been demolished. At present, the site is cleared, with only some foundation slabs, hardstanding/roadways and a disused one-storey security hut at the entrance gate remaining. The site is enclosed by a palisade fence.

Site Setting

2.5 The proposed development site is set in a predominantly industrial area of existing and former chemical industry works operated previously by ICI, Brunner Mond and INEOS Chlor among other firms. The site itself has a history of use in chlorine manufacturing, which ceased in 2001.

2.6 This area has been used for industrial chemical manufacture for nearly 200 years, since the early 1800s. Soda ash and bleaching powder production commenced in the late 1800s and much of the surrounding land, particularly to the south west and east, has been used for lime waste disposal associated with soda ash manufacture.

2.7 In the area immediately around the site are:

- to the north: rail lines and sidings, open space/ponds, warehouses/commercial development and Manchester Road;
- to the east: Solvay chemical works, Tata Chemicals chemical works, INEOS brine purification plant and the Trent and Mersey Canal;
- to the west: a cleared brownfield site and rail siding; and

- to the south: Wade Brook, a rail siding and conveyor structure, ECO-Option (formerly Edelchemie) chemical recycling facility, and Griffiths Park.

2.8 The area immediately to the south-east of the site has planning consent granted in 2012 for the proposed Lostock Sustainable Energy Plant (SEP), which has not yet been constructed, on the site of the former Lostock Power Station (which is still standing but no longer in use). The land immediately to the west of the site has planning consent granted in 2007 to Organic Waste Management Ltd for a 'Bedminster' technology MBT facility. The consent has been implemented to the extent that ground has been broken, but the facility has not been constructed.

2.9 The site is located approximately 0.6 km from the residential outskirts of Northwich and Rudheath to the west and south (or around 2 km from Northwich town centre), and 1.2 km from the village of Lostock Gralam to the east.

2.10 The closest residences are on the A559 Manchester Road, approximately 180 m to the north of the site, separated from it by rail sidings, a tree belt and area of open space, warehouses and commercial developments, and the A559. There are further residences and commercial land uses along Manchester Road and around the A559 and A530 junction to the east, between the site and Lostock Gralam.

2.11 The Trent and Mersey Canal runs roughly north-south between the Tata chemical works and the A530, to the east of the proposed development site. The canal is used by pleasure craft and its towpath (around 420 m from the proposed development site at the closest point) is a public right of way, separated from the chemical works by security fencing. A further public right of way branches west from the canal towpath to connect with Works Lane, around 250 m north-east of the proposed development site boundary at the closest point. Other public rights of way are present further away, beyond the A559 to the north.

2.12 The site itself is not covered by any statutory nature conservation designations; however, the Plumley Lime Beds SSSI and the Witton Lime Beds SSSI are both located around 2.5 km from the site, to the east and northwest respectively.

2.13 The ecological designated sites within 15 km of the proposed plant (a conservatively large search area, given the proposed development's limited potential for ecological impacts due to air pollutant emissions) are:

- Oak Mere Special Area of Conservation – 12.5 km south west from site
- Rostherne Mere RAMSAR – 11.8 km from site
- West Midland Mosses Special Area of Conservation – 9.2 km from site;
- Midland Meres and Mosses Phase and Phase 2 Ramsars – 9.2 km from site; and
- 27 SSSIs – the two closest being Witton Lime Beds (2.4 km from site) and Plumley Lime Beds (2.6 km from site).

3 Project Description

Overview

3.1 The proposed REnescience Northwich development is a bioresource project, comprising stages of mechanical and biological treatment (MBT) of waste and renewable energy generation. It will have a waste input capacity of up to 18 tonnes per hour (tph), equivalent to 144,000 tonnes per annum (tpa) over the course of 8,000 typical annual operating hours. It will treat municipal solid waste (MSW) and fines that are supplied from existing intermediary waste transfer and treatment sites.

3.2 The facility will use a 'REnescience' enzymatic waste treatment process developed by DONG Energy, which has been proven at a commercial demonstration plant operating in Copenhagen, Denmark for five years that has treated waste from around Europe, including household waste from the UK. The REnescience process uses enzymes to remove organic matter from mixed wastes, in order that recyclable materials can be efficiently recovered and renewable energy can be generated. The REnescience process separates waste into four constituent fractions, all of which are expected to be capable of further use or recovery.

3.3 By using enzymes to target organic materials entrained in the waste and concentrate these organics into a single output, the process removes contamination from the remaining fractions, thus generating cleaner recyclable materials and enabling a higher degree of recycling to be achieved (the principal benefit of the DONG REnescience process).

3.4 In the proposed development, the separated organic fraction (in the form of bioliquid) will be further treated using the established anaerobic digestion (AD) process to generate biogas, which will then be used to generate up to 6 MWe gross of renewable electricity in on-site reciprocating gas engines, of which at least 5 MWe will be exported to the grid. Waste renewable heat from the gas engines will also be utilised in the REnescience process on site. Separating and concentrating organic material into bioliquid before AD treatment maximises the biogas production for renewable electricity generation, and minimises the residual digestate after de-watering, as shown in Figure 2.1.

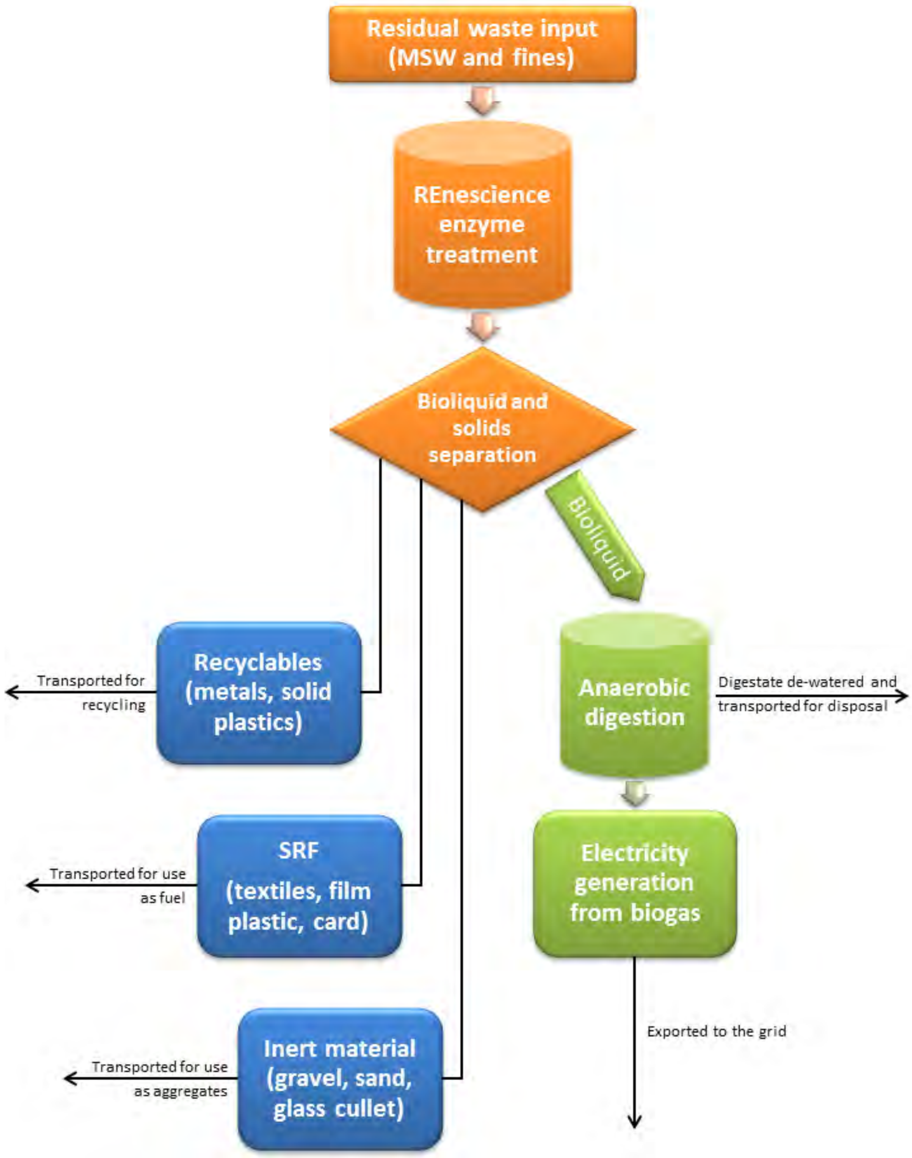
3.5 The four separated waste fractions and their recycling/recovery/disposal routes are as follows.

- **Bioliquid**, containing concentrated organic material in a liquid suspension. This is further treated on-site using AD to yield:
  - **biogas**, used to generate renewable heat and electricity in reciprocating gas engines; and
  - **digestate**, de-watered to leave **compost-like output (CLO),** which may be suitable for use in land restoration, and a concentrated **nutrient-rich liquid** that may be suitable for use as fertiliser or otherwise would be disposed of to an appropriate water treatment facility.

- **Recovered recyclable materials**: ferrous and non-ferrous metal and solid plastics (e.g. plastic bottles).
- Other recovered materials such as film plastics, textiles and remaining cardboard, which together form a **refuse-derived fuel (RDF)** or **solid recovered fuel (SRF)** that can be used for energy generation.
- **Recovered inert materials** such as sand, gravel and glass that can be re-used as aggregates.

3.6 Figure 2.1 summarises the waste treatment process and main outputs.

Figure 2.1: Process summary diagram



3.7 The accompanying drawings show an initial site layout and initial 3D views. The design process is ongoing and these are subject to change, which will be informed by engineering and operational requirements, environmental assessments, and feedback from public consultation.

Additional design work has been undertaken since plans were presented at the pre-application meeting with CWCC on the 18th June 2015, which has resulted in revisions to the proposed site layout. Note that the 3D views are concept illustrations of form and scale only; they do not at this stage show the buildings' appearance in terms of materials, colours and similar design points in detail. The 3D views differ slightly from the site layout as they were produced from a slightly earlier iteration of the layout design.

3.8 The REnescience technology uses an enzymatic process that is undertaken at low temperature and ambient pressure conditions in fully enclosed vessels ('bioreactors'), which will in turn be enclosed in a waste reception and processing building. This building will also house the waste reception bunker (below ground), mechanical waste separation stage of the process, control room and offices/staff amenity areas.

3.9 A loading area with storage for containers of separated recyclables, RDF/SRF and inert material outputs is provided in the building next to the sorting area, with further storage for full containers pending transport off-site located externally in a covered area in the north-east of the site. A second external covered area for storage and loading of digestate containers is located in the south of the site closer to the post-digester tank(s).

3.10 The AD stage will comprise up to two external circular tanks for bioliquid storage, one tank for retention of any off-spec bioliquid, up to four tanks for digestion, up to two post-digester tanks, a biogas buffer storage tank, and associated pipework and pumping equipment.

3.11 Five reciprocating gas engines will be located externally (expected to be standard 20 ft containers) and will share a single stack or bundle of flues. The optimum height of the stack will be established using air pollutant dispersion modelling, but it is expected to be in the range of 28 m to 40 m. An enclosed flare will also be provided as a back-up for flaring any biogas that does not meet the required specification for the gas engines.

3.12 Renewable electricity generated by the gas engines will be exported to the national grid. Two grid connection options are being explored. The first would utilise capacity in the existing 132 kV overhead line grid connection that is located adjacent to the southern boundary of the site, requiring a short section (likely < 50 m) of underground cable from the proposed development site into the existing substation. The second option would be to an SP Manweb 132 kV substation and would require a longer underground cable running off-site, which is discussed further below.

3.13 A small proportion of the electricity will be used on-site to power pumps, conveyors, waste separators, AD tank stirrers and other machinery in the waste treatment process. Waste heat from the gas engines will also be used to pre-heat water from the AD process that is mixed with incoming waste and re-circulated into the REnescience bioreactors.

3.14 Overall, the proposed development has a number of important advantages for waste treatment compared to alternatives such as energy-from-waste (EfW) incineration or other types of MBT.

- Aside from bag-opening and the separation of oversized material, no up-front waste shredding or crushing is required on-site: the enzymatic process is effective in targeting organic material in mixed, unsorted waste. This avoids potential dust, odour, noise or pollutant mobilisation issues that may be associated with shredding waste.

- REnescience is a low temperature, efficient biological process. The proposed development does not involve waste incineration, and is a highly energy- and space-efficient way of recovering recyclables and generating renewable energy from waste. This results in a relatively small site footprint and no requirement for a large incinerator stack, tall boiler house, complex air pollutant emissions abatement equipment or cooling plant.
- The process maximises recovery of value from the residual waste treated. All of the waste input is separated into fractions for recycling and energy recovery (as described above). The only remaining residual waste output that may require disposal is CLO from the de-watered digestate, production of which is which is minimised as described below.
- Using the REnescience enzymatic process to target the organic fraction in mixed waste and convert it to bioliquid has a triple benefit compared to typical MBT-AD facilities. Firstly, it produces cleaner, higher-value recyclables (metals, plastics). Secondly, it produces cleaner, higher value RDF/SRF with high calorific value and low odour. Thirdly, the homogenous bioliquid is a better feedstock than typical mixed organic waste for the AD stage: this leads to improved biogas yield and hence greater renewable electricity generation, and minimises the remaining CLO requiring disposal after de-watering.

Built development

3.15 Design work is ongoing, and as mentioned above will take into account engineering and operational requirements, environmental assessments, and feedback from public consultation. The accompanying drawings show an initial site layout and 3D views. Dimensions shown are indicative, generally using ‘worst-case’ conservative assumptions, and will be refined as design work progresses.

3.16 Note that the 3D views are concept illustrations of form and scale only; they do not at this stage show the buildings’ appearance in terms of materials, colours and similar design points in detail. The 3D views differ slightly from the site layout as they were produced from a slightly earlier iteration of the layout design.

3.17 Additional design work has been undertaken since plans were presented at the pre-application meeting with CWCC on the 18th June 2015, which has resulted in revisions to the proposed site layout.

3.18 In overview, the built development will comprise one main building with varying façades and roof heights to accommodate the offices and control room, waste unloading hall, enzyme treatment bioreactors (up to four horizontal cylindrical tanks approximately 45 m long and 4.5 m in diameter) and mechanical sorting stage. The highest apex of the building(s) is expected to be up to 25 m.

3.19 A loading area and covered/enclosed external hardstanding for container storage will be provided for process outputs (principally recyclables, RDF/SRF and CLO). Weighbridges for arriving and departing HGVs and a car parking area for staff/visitors will be constructed. AD tanks, associated pipework and pumps, gas engines, stack and flare and electrical transformer will be constructed externally.

3.20 The largest tank in the AD process is expected to be the post-digester tank, which would be up to 25 m diameter and 20 m height. An additional tank to provide further biogas storage (as a buffer between biogas production in the AD process and consumption in the gas engines) is also under consideration. Total biogas storage will be less than 10 t.

3.21 The optimum height of the stack will be established using air pollutant dispersion modelling, but it is expected to be between 28 m and 40 m.

3.22 As mentioned, the form and appearance of the main building(s) is subject to ongoing design work. At this initial stage, it is expected that the main building form will take the appearance of a series of intersecting boxes with level eaves lines. The use of parapets would hide the pitched roofs behind and create the desired contemporary horizontal eaves lines.

3.23 The building may be externally clad in a mixture of profiled and microrib metal cladding and at present the cladding is proposed to be predominantly neutral silver/grey with accent colours to the offices and loading doors. Curtain wall glazing may be used around the office entrance with ribbon windows on the upper floors, and translucent wall cladding is being considered around limited parts of the building façades to optimise natural light within and provide exterior visual interest. It is intended that the simple eaves lines, along with the neutral grey/silver colours, will help soften the buildings into the skyline. Building massing and appearance will be considered in the landscape and visual impact assessment undertaken as part of the EIA.

Landscape planting

3.24 Viewpoint photographs show that the site is generally well-screened by existing vegetation in the land around its perimeter and by the industrial works to the east and south. The vegetation has grown substantially since the last planning application and EIA for this site, by Viridor in 2010, and offers significantly better screening of views than at that time. The site is set in an industrial context, being a former chlorine works and being located within a cluster of active chemical works facilities.

3.25 At present, given the good existing screening and setting of the site, it is not anticipated that significant additional landscape planting will be required to mitigate visual impact. However, in line with the goal of minimising adverse impact and enhancing biodiversity where feasible, the site layout option presently under consideration allows space for a landscape planting area at the north-western part of the site. This would further screen lower level views of the anaerobic digestion tanks from the nearest residences, which are to the north, and if feasible would also be designed to provide connectivity down to Wade Brook.

Hours of operation

3.26 The REnescience enzyme treatment and AD stages are relatively slow biological processes that cannot be frequently stopped and started, and during normal operation will operate continuously (i.e. during day and night time, weekdays and weekends). The gas engines will also run continuously during normal operation to make use of the continuous biogas production and provide a ‘baseload’ electricity output to the grid.

3.27 Waste will only be delivered and process outputs will only be collected during daytime working hours (07:00 to 19:30 Monday to Sunday, including Bank Holidays), avoiding peak traffic periods where practicable. The mechanical waste sorting stage, following enzyme treatment, is expected mainly also to operate during daytime working hours.

3.28 Allowing for planned maintenance downtime, the facility is expected to operate for up to 8,000 hours per annum.

Access and traffic

3.29 Waste will be delivered to the facility in bulk by HGV from existing intermediary waste transfer and treatment sites. Waste will be sourced from within the region, e.g. the North West and Midlands. Access will be via the existing private road serving this site and the adjacent chemical works, off the A530 Griffiths Road. HGVs will also be used to transport process outputs (separated recyclables, RDF/SRF, CLO, inert materials). It is possible that some return journeys for HGVs that delivered waste can be used to transport these outputs. Assuming not, and as a rough initial approximation (to be confirmed through a transport assessment undertaken as part of the EIA), the proposed development may require up to 97 two-way HGV movements per day (equivalent to eight per hour or one HGV every fifteen minutes both in- and outbound, assuming an even distribution in the working day).

3.30 Around 19 employees (depending on shift patterns) are expected to staff the facility during weekdays (fewer at night and weekends), and appropriate parking together with facilities for cyclists and pedestrians will be provided.

3.31 In this initial approximation, total vehicle movements are likely to be 135 two-way movements per day, counting HGVs and staff vehicles, with a maximum of 9 and 18 two-way movements in the AM and PM peak periods, respectively.

3.32 Based on present site information and information provided for previous applications using this access road, we do not anticipate at present that improvements to the access road itself or the T junction with the A530 will be required. Again, this will be considered in the transport assessment undertaken as part of the EIA.

Emissions

3.33 There will be controlled emissions to air from the following sources. These will be assessed in the air quality impact assessment as part of the EIA.

- A single shared stack or bundle of flues for the exhaust of the five gas engines.
- A backup gas flare (used intermittently to dispose of biogas if it does not meet the gas engines' specifications).
- A stack to exhaust emissions from a natural-gas fired boiler that provides start-up heat to the process following shutdown for planned maintenance.
- Air extracted and vented from the waste handling areas in the main process building. This air will be released through biofilters or other control measures to minimise potential for odour emissions.

3.34 Control and monitoring measures will be in place to avoid fugitive releases of biogas.

3.35 Most noise-generating waste treatment activities will be inside the waste processing building. The principal external noise sources will be the gas engines and mobile machinery such as front-end loaders. Noise emissions will be assessed as part of the EIA.

3.36 The REnescience process makes efficient use of water, recirculating it between the enzyme and AD treatment stages. During normal operation there will be no process water discharge to watercourses or the sewer network. Clean surface runoff will be discharged to Wade Brook, with appropriate SuDS/runoff attenuation in place.

Grid connection

3.37 The facility is expected to generate at least 5 MW of renewable electricity for export to the grid (net of the facility's own electricity demand). There is an existing 132 kV substation and overhead line grid connection immediately adjacent to the southern boundary of the development site. The Applicant is exploring whether capacity on this grid connection can be secured. If so, a short underground cable from the development's own transformers into this existing substation would be required.

3.38 Alternatively, a grid connection to an existing 132 kV substation operated by the distribution network operator SP Manweb around 1.3 km east (as the crow flies) of the development site off Lostock Green / Lostock Hollow road south of Lostock Gralam may be required. If so, it is likely that an underground cable would run from the development site down its access road to the A530. From there, it could run north up the A530 to the railway bridge and then east to the substation (parallel to an existing underground cable and to the railway line), or it could run south down the A530 and then back north to the substation via Lostock Green / Lostock Hollow road.

3.39 The grid connection in this case would be the responsibility of SP Manweb and would not be within the planning application boundary for this development. Nevertheless, as works required by and directly associated with the development, it would be considered in the EIA and in the Planning Supporting Statement.

Construction programme

3.40 Should the proposed development be granted planning consent, construction is anticipated to commence in the first quarter of 2016 and to take around 12 months, allowing for commissioning in Q1 2017 and operation by the end of March 2017.

3.41 The AD stage requires a commissioning process taking around three to four months in total. The construction programme will therefore prioritise construction of at least one AD digester and post-digester tank, gas engine, and the associated equipment (pipework, pumps, stack and flare, transformers and grid connection) for the end of 2016. This first digester tank will be commissioned using an alternative feedstock (i.e. organic waste of a nature to develop the correct bacteria culture to process the REnescience bioliquid) in Q1 2017. Material from the first digester tank will then be used to commission the remaining tanks in sequence, in order that overall the AD facility will be fully operational and ready to receive bioliquid from the REnescience process as that is commissioned and ramps up production of bioliquid during H1 2017.

3.42 In order to prepare the site for construction works (enabling a rapid construction programme), the Applicant may undertake initial works in 2015 to complete the demolition of previous structures on site (which can be carried out under the prior notification approval given in 2013, with an updated method statement and ecology survey information that will be submitted to CWCC) by excavating the remaining foundation slabs and crushing the concrete for re-use.

4 Proposed EIA Scope

4.1 RPS has reviewed the development's likely engagement with areas of potential environmental impact, based on its experience of the impacts typically associated with this type and scale of waste treatment facility and an initial appraisal of the sensitivity of the site and nearby receptors. This review has also been informed by the EIA scope defined for the previous Viridor application on this site and the Scoping Opinion given at that time.

4.2 Table 4.1 summarises the environmental topic areas that are proposed to be scoped in to the EIA. Possible environmental impacts that are not considered to be relevant or significant, and that are therefore not proposed for inclusion in the EIA, are listed in Table 4.2. An indicative structure for the ES is given at the end of this section.

4.3 RPS's approach to the EIA process has already involved and will continue to include direct consultation by its technical specialists with the relevant officers in CWCC and other bodies to agree an appropriate assessment methodology for technical studies and, in due course, any appropriate mitigation of impacts. Direct consultation to date is summarised at Annex 3.A.1. The direct consultation correspondence sets out the proposed methodology for several of the EIA topic assessments.

4.4 Due to the project timescale, it is necessary for RPS to immediately progress elements of the EIA such as desktop studies and surveys. RPS's intention is to continue with direct one-to-one technical consultation, with the intention that necessary groundwork to fully address issues raised in the Scoping Opinion, when received, will be in place.

4.5 As discussed in the previous section, the Applicant may wish to remove building foundations, during 2015, that remain after previous demolition of buildings on the site. This would not fall within the scope of the planning application. The EIA baseline, however, will consider the site in its present state, i.e. prior to removal of foundation slabs having been undertaken.

Table 4.1: Proposed EIA topics

EIA topic	Notes
Amenity	Amenity issues such as litter, odour and lighting are relevant to the proposed scheme and were also raised in the Viridor application Scoping Opinion by Network Rail and Manchester Airport (due to potential for litter to attract birds into the flight path). The project description chapter of the ES will summarise lighting design and the good housekeeping and environmental management procedures that will be required of the facility under its Environmental Permit to control issues such as litter. Lighting design will be detailed in the Design and Access Statement. Potential for odour release and appropriate mitigation measures including an Odour Management Plan will be assessed in the Air Quality and Odour ES chapter. (The Odour Management Plan will form part of the operational management plans regulated under the Environmental Permit by the Environment Agency.) The potential impacts of lighting on visual amenity and sensitive species (e.g. bats) will be assessed in the LVIA and Ecology chapters of the ES, respectively.
Air quality and odour	The facility will have controlled releases of air pollutants (trace quantities of nitrogen oxides and carbon monoxide) from combustion of biogas in the gas engines, combustion of natural gas in the

EIA topic	Notes
	start-up boiler and combustion of biogas in the backup biogas flare. The potential impact on local air quality will be assessed with reference to the air quality standards set to protect public health through detailed dispersion modelling, which will also be used to determine the optimum stack height. Air pollutant impacts on sensitive ecological receptors will also be assessed. Potential odour impacts will be considered both quantitatively (for releases from the biofilters or equivalent control measures) and qualitatively (for potential fugitive releases). An Odour Management Plan (OMP) will be prepared. A Dust Management Plan (DMP) will be prepared for the construction phase. Depending on the level of traffic that the facility would generate when operational, an assessment of the air quality impacts of operational traffic may also be undertaken if necessary.
Noise and vibration	Noise and vibration during construction and operation of the facility will be assessed. The principal external noise-generating activities during operation are expected to be the gas engines and stack, and vehicles moving on site. Overall noise levels generated by process equipment within the treatment building will also be assessed.
Ecology	An extended phase one habitat survey has been undertaken and existing records have been requested in a desktop search. The site is brownfield and of low ecological value, but offers some opportunities for ecological enhancement. Orchids and a potential bat roost (in the site's only remaining building, its former security hut at the access gate) have been identified; bat emergence surveys are ongoing and to date one bat has been observed. The attached Site Layout Plan shows landscape and habitat planting with connectivity to Wade Brook that is initially under consideration. The proposed planning conditions relevant to ecology when the Viridor application was recommended for approval have been noted: *provision of bird and bat boxes; a buffer of 10m from Wade Brook to prevent access during construction works; restriction of removal of scrub / vegetation between 1st March and 31st August to protect breeding birds; mitigation of loss of waterbodies/amphibians* [not relevant]*; translocation of orchids.* Japanese Knotweed is present on the site but is already under management by its current owner. Natural England has been consulted regarding Habitats Regulations Assessment, and the response indicating that this is not required is given at Annex 3.A.2. Potential for air pollutant impacts on sensitive habitats close enough to be affected will be assessed.
Landscape and visual impact	The impact of the facility on visual amenity and landscape character will be assessed, with reference to representative viewpoints and a zone of theoretical visibility based on a worst-case initial assumption for the height of the tallest structure, the facility's stack. Initial desk study and viewpoints indicate that the site is generally well-screened by existing vegetation and/or built form. Further landscape planting to offer screening that is under initial consideration is shown in the attached Site Layout Plan. Input to the facility's design in terms of visual appearance to minimise any adverse impact will also be summarised in the Design and Access Statement.
Archaeology and cultural heritage	Two main features of archaeological interest have been identified by an initial desk study: a Roman Road and a former First World War explosives works. Potential impact of construction and operation on archaeology and heritage assets will be assessed. A walkover survey and initial assessment of unexploded ordnance (UXO) risk have already been undertaken.
Traffic and transport	The proposed development will generate additional heavy goods vehicle (HGV) and light passenger vehicle traffic on the highway network, likely to be of a similar number to those required for the previous Viridor application (after allowing for that facility's greater throughput and export of some of its product by rail). Impacts on traffic flows, operational capacity and highways safety will be assessed. The highways impact mitigation provisions proposed by means of s.106 agreement for the Viridor application are noted; consideration to whether any similar mitigation may be required in the case of this application will be given in the Transport Statement and ES chapter.
Flood risk and drainage	The site is >1 ha in size and the proposed development is likely to increase the impermeable surface area on the site compared to its present cleared state with some hardstanding remaining in situ. A flood risk assessment will be undertaken. This will inform drainage design with appropriate runoff attenuation/SuDS. The facility will discharge clean surface runoff to Wade Brook and will have a foul sewer connection for staff amenity areas. There will be no process water discharge during normal operation. The great majority of process water will be recirculated within the process; any excess water in the form of a nutrient-rich liquid will be tankered off-site for possible use as a fertiliser or treatment and disposal.
Ground	The proposed development site has a history of industrial use. Substantial information is already

EIA topic	Notes
conditions	available regarding ground conditions and potential contamination from intrusive surveys undertaken at the time of the Viridor application. A desk study, further targeted intrusive surveys / monitoring and an assessment of ground conditions and hydrogeology will be undertaken. The response of the Cheshire Brine Subsidence Compensation Board in the Viridor Scoping Opinion is noted.

Table 4.2: EIA topics not proposed

EIA topic	Notes
Alternative sites appraisal	The EIA Regulations 2011 require "*an outline of the main alternatives studied by the applicant or appellant and an indication of the main reasons for his choice, taking into account the environmental effects".* Consideration of alternative designs will be given in the Design and Access Statement, which will also identify where mitigation recommended in the course of the environmental studies has been incorporated into the proposed design. Consideration of alternative waste management methods and the facility's place in the 'waste hierarchy' will be given in the Planning Supporting Statement. Given that the site has a previous resolution to grant planning permission for a waste management facility and is allocated for waste management use within the adopted local plan, we do not consider that an assessment of alternative sites is required in this case.
Socio-economics	Although the proposed development will provide employment for around 24 full-time staff, plus direct and induced employment through the construction phase and supply chain procurement, its potential for wider socio-economic impacts is considered to be very minor. It would not affect provision of or demand for housing, services, retail, recreation or other socio-economic aspects. The Planning Supporting Statement will consider the employment, training opportunities and inward investment offered by the proposed development under the relevant sections of planning policy.

Approach to EIA

4.6 The EIA process will seek to identify the potential environmental impacts of a development and to avoid, reduce or offset any likely significant adverse effects through mitigation measures while also seeking enhancement of likely beneficial effects where possible.

4.7 The magnitude of an effect does not directly translate into its significance. For example, a significant effect may arise as a result of a relatively modest impact affecting a resource of national value, or a large impact on a resource of local value. In broad terms therefore, the significance of the effect can depend on both its magnitude and the sensitivity / importance of the receptor, as summarised in Table 4.3.

Table 4.3: Significance matrix

		Magnitude of impact			
		Large	**Medium**	**Small**	**Imperceptible**
Sensitivity	**Very high**	Substantial	Substantial	Major	Moderate
	High	Substantial	Major	Moderate	Minor
	Medium	Major	Moderate	Minor	Negligible
	Low	Moderate	Minor	Negligible	Negligible

4.8 The ES will provide topic-specific methodologies for each assessment, based on professional guidance, British Standards and other recognised approaches as appropriate. Overall, assessments will consider: short- and long-term impacts; direct, indirect and cumulative impacts; interactions between impacts; the resulting likely temporary or permanent effects without mitigation; and finally the likely effects after mitigation.

4.9 The correspondence summarised at Annex 3.A.2 has in several cases set out the proposed methodology for individual EIA topic assessments.

4.10 Details of all relevant committed developments have been requested from CWCC and will be included in the EIA as receptors and/or sources of cumulative impacts where relevant.

Public consultation

4.11 A programme of public and other stakeholder consultation is taking place during July-September 2015 in order that feedback can be sought and taken into account, where possible and appropriate, during the design and EIA process prior to submission of the planning application.

4.12 Two key stakeholder workshops were held in the morning and evening of Thursday 2nd July. Three public exhibitions are being held at venues in Lostock Gralam and Rudheath on Thursday 9th, Saturday 11th and Tuesday 14th July. Further public exhibitions are planned for September 2015, allowing time for feedback from the July events to be taken on board.

4.13 Events have been advertised in the local press, by direct leaflet drop to residents, and through the project website (www.dongenergy.co.uk/northwich) and social media. Feedback can be given at the events (with forms provided) and by email and post.

Indicative ES structure

Volume 1

Non-technical summary

Volume 2

1. Introduction and EIA approach
2. Planning policy review
3. Site location and description of development
4. Air quality and odour
5. Noise and vibration
6. Ecology
7. Landscape and visual impact
8. Archaeology and cultural heritage
9. Traffic and transport
10. Flood risk
11. Ground conditions

Volume 3

Plans

Figures

Technical appendices

Supporting documents

Indicative list of planning application documents / supporting documents:

1. Planning Supporting Statement
2. Design and Access Statement
3. Transport Statement
4. Odour Management Plan

Annex 3.A.1: Correspondence and Consultation to Date

A.1 Direct technical consultation with officers of CWCC to request baseline data and agree the scope and methodology of assessments is ongoing. To date, the following people have been consulted.

Table A.1: Technical consultation to date

Topic	Consultee (at CWCC unless otherwise noted)
Air quality	I. Nadin and K. Davis (Senior Regulatory Services Officer) Response from K. Davis on 12/06/15
Noise and vibration	M. Doyle (Lead Environmental Protection Officer) and P. Hargreaves (Senior Regulatory Services Officer) Response from P. Hargreaves on 25/06/15
Ecology	C. Storey (Lead Adviser, **Natural England**) Response on 04/06/15 CWCC and local ecology / records groups, during June-July 2015
Landscape and visual impact	J. Seiler Responses on 25/06/15 and 07/07/15
Archaeology and cultural heritage	R. Edwards (Historic Environment Records Officer) Response on 29/05/15
Traffic and transport	*No consultation to date*
Flood risk and drainage	J. Candlin (Regulatory Services Officer) Acknowledgement on 29/05/15
Ground conditions	M. Wright (Senior Regulatory Services Officer) Acknowledgement on 12/06/15

A.2 Additional CWCC officers recommended for consultation by Hazel Honeysett (not yet contacted):

- S. Carlisle – Flood Management
- M. Young – Lead Local Flood Authority
- M. Leah – Archaeology Officer
- K. Henderson – Built Conservation Officer

Annex 3.A.2: Natural England Consultation Response

Date: 04 June 2015
Our ref: 155596_9480_DAS Pre-Contract Scoping_MBT at Lostock Works
Your ref: MBT at Lostock Works

NATURAL ENGLAND

Kerry Shakespeare
RPS Planning and Development

BY EMAIL ONLY

Customer Services
Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire
CW1 6GJ

T 0300 060 3900

Dear Kerry

Discretionary Advice Service (Pre contract DAS Scoping)
Development Proposals and Location: Mechanical-biological treatment (MBT) waste treatment facility, incorporating anaerobic digestion (AD) and electricity generation using the biogas produced at Lostock Works.

Thank you for submitting your Discretionary Advice Request Form on the above, which was received on 3 June 2015.

How Natural England responds to Development Management consultations is set out in the Natural England Standard: 'Responding to Development Management Consultations' (NESTND037). It sets out what we will consider in relation to biodiversity, geodiversity, landscape, seascape, access, green infrastructure and soils for the projects themselves and any associated environmental assessments.

The advice in this letter is provided as part of Natural England's Scoping pre-contract Discretionary Advice Service and will not be charged for. The information below is in direct response to your question relating to the need for a Habitats Regulations Assessment. If you require further advice prior to submitting the application to the Local Planning Authority, this would be provided under a charged DAS contact.

Conservation of Habitats and Species Regulations 2010 (referred as the Habitat Regulations)
It is the responsibility of the Local Planning Authority (LPA) to prepare a Habitat Regulations Assessment (HRA). In order to fulfil their duties under the Habitat Regulations they need to be provided with sufficient information to address any impacts on any European designated sites. This information falls to the applicant to provide. In some circumstances the applicant may produce a shadow HRA that if acceptable, could be adopted by the LPA can adopt. However, in this case an HRA is not required for the reasons provided below.

Natural England can confirm that there are no European sites that need to be considered in respect of this development. We would only expect consideration of European sites if they were within 500 m of this type of proposed development (i.e. Mechanical and Biological Waste Treatment facilities).

Sites of Special Scientific Interest (SSSIs)
The distance criteria for air pollution assessments is the same for European sites for this type of development, therefore only SSSIs that fall within 500 m of the development site need to be considered. Given that all the SSSI's that you have stated in your letter are all over 500 m from the

development site, no further assessment on the SSSI's in terms of air pollution needs to be undertaken.

We note that you intend to prepare an 'Assessment of Air Quality Impacts on Nature Conservation Sites', which we would support, as this would offer the LPA sufficient information on which to base their decision.

This letter concludes Natural England's Initial/DAS scoping Advice, under the Discretionary Advice Service. If you would like to discuss a need for further advice on this case as part of Natural England's charged Discretionary Advice Service, please contact Natural England's Commercial Team at commercialservices@naturalengland.org.uk, to discuss how we could advise you further. They will respond within 2 working days to your enquiry.

We would appreciate your feedback to help in continuing to shape this service. We have attached a feedback form to this letter and would welcome any comments you might have about our service. The advice provided within the Discretionary Advice Service is the professional advice of the Natural England adviser named below. It is the best advice that can be given based on the information provided so far. Its quality and detail is dependent upon the quality and depth of the information, which has been provided. It does not constitute a statutory response or decision, which will be made by Natural England acting corporately in its role as statutory consultee to the competent authority after an application has been submitted. The advice given is therefore not binding in any way and is provided without prejudice to the consideration of any statutory consultation response or decision, which may be made by Natural England in due course. The final judgement on any proposals by Natural England is reserved until an application is made and will be made on the information then available, including any modifications to the proposal made after receipt of discretionary advice. All pre-application advice is subject to review and revision in the light of changes in relevant considerations, including changes in relation to the facts, scientific knowledge/evidence, policy, guidance, or law. Natural England will not accept any liability for the accuracy, adequacy, or completeness of, nor will any express or implied warranty be given for, the advice. This exclusion does not extend to any fraudulent misrepresentation made by or on behalf of Natural England.
If you have any specific questions on aspects that are not covered by our Standing Advice for European Protected Species or have difficulty in applying it to this application please contact us at with details at consultations@naturalengland.org.uk.

Yours sincerely

Claire Storey
Lead Adviser
Cheshire, Greater Manchester, Merseyside & Lancashire Area Team

Appendix 3.B: Scoping Opinion

Cheshire West & Chester Council

Mr Tom Dearing
Senior Environmental Consultant
RPS Planning & Development
6 -7 Lovers Walk
Brighton
East Sussex
BN1 6AH

Development Management
Cheshire West and Chester Council
Wyvern House
The Drumber
Winsford
CW7 1AH
Tel: 0300 123 8 123

web: www.cheshirewestandchester.gov.uk

Reference	Your Reference	please ask for:	date:
15/02915/EIA		Hazel Honeysett 01244 977 733 Hazel.Honeysett@cheshirewestandchester.gov.uk	13th August 2015

Dear Mr Dearing,

Application Number: 15/02915/EIA
Request for formal Scoping opinion (under Regulation 13 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2011 for Proposed Waste Treatment Plant and energy generation at land off Griffiths Road, Lostock Gralam, Northwich

I refer to your request received 8th July 2015 for an EIA Scoping Opinion under Regulation 13 of the above Regulations and can provide you with the following information.

Scoping Opinion

In light of the above please find below consultation response with respect to the Scoping request which sets out information to be provided within an Environmental Impact Assessment submitted along with a planning application.

External Consultees

Environment Agency: Please see attached letter dated 4th August 2015

Natural England: Please see attached letter dated 27th July 2015

Historic England: Pease see attached letter dated 22nd July 2015

Network Rail: Diane Clarke Tel: 0161 880 3598
Network Rail has the following comments as the proposal is adjacent to the operational railway and Network Rail land and whilst this consultation is not a planning application we would wish to flag up to the developer our areas of concern.

(1)

We would very strongly recommend that before any planning application is submitted to the LPA that the developer contact our Asset Protection team with the details and the plans.

(2)

Network Rail would require details of:

- Drainage works on site
- Piling works on site
- Fencing
- Excavation works on site
- Any plant or tower crane working on site
- Details of routes to site for HGVs to ensure that any low bridges or bridges with limited loads in the area are not impacted
- Landscaping within 10m of the railway boundary

(3)

Has the applicant given thought to delivering the waste via the railway sidings in place of HGV trips?
(Three plans are attached, two from Network Rail and one submitted with the Scoping Report from RPS stating Proposed Site Layout)

Health & Safety Executive: Harvey Tucker Tel: 0151 9513858

My comments are limited to matters concerning: i) The Planning (Hazardous Substances) Regulations 2015 & ii) Article 18 of the Town and Country Planning (Development Management Procedure) (England) Order 2015, by virtue of HSE is a statutory consultee for developments in the vicinity of major hazard sites and major accident hazard pipelines.

i) With reference to the document EIA Scoping Note REnescience Northwich (RPS doc project JAS8407, date of issue 08/07/15 rev1) Para 3.20 states "Total biogas storage will be less than 10 t". Providing the biogas is classified as a Flammable Gas and there are no other Hazardous Substances which aggregate with biogas, then Hazardous Substances Consent will not be required. If however the biogas attracts an acute toxic classification then Hazardous Substances Consent may possibly be required.

ii) For proposed developments which fall with HSE consulation zones the Applicant can obtain indictative HSE advice via HSE`s Planning Advice Web App (http://www.hse.gov.uk/landuseplanning/index.htm)

Internal Consultees

Landscape Officer: John Seiler john.seiler@cheshirewestandchester.gov.uk

The 3.7 ha brownfield site is located off A530 Griffiths Road as described within the EIA Scoping Note.
Pre application correspondence with the applicants Landscape representative has led to agreement on the viewpoints and zone of theoretical visibility. Should the developer wish to proceed, please submit a Landscape and Visual Impact Assessment (LVIA) as outlined in the scoping report, the findings of which should inform and shape the development.
The submitted LVIA should include:-
1) Introduction
2) Methodology
3) Baseline information
4) Landscape Character Areas
The LVIA should refer to the following Landscape Character Study document:-
• Vale Royal SPD 5 Landscape Assessment and Guidelines: Area 6b Lostock Plain

5) Zone of Theoretical Visibility –submitted and approved

6) Viewpoints
A selection of proposed viewpoints have been submitted and approved at pre application stage. They views include views from, PROW, public spaces and close to local residents. As agreed the viewpoints are to be included within the ZTV plan with supporting photographs.

Please ask the applicants Landscape Consultant to contact me directly to discuss and and confirm the key viewpoints which will require photomontages. Please also provide some section views to demonstrate the levels of the site and surrounding landscape. For reference the images provided to date are all taken in summer, in full leaf. The assessment should include worst case views and take note of winter impacts and if possible include winter views.

7) Layout and Mitigation –the LVIA and proposed development layout should be an iterative process. The LVIA should assess the quarry in operation and include any proposed mitigation measures as part of the assessment.
8) Effects –Landscape and Visual.

Highways Officer: Paul Parry paul.parry@cheshirewestandchester.gov.uk

Paul has liaised with Nicola Clay, Senior Transport Planner, RPS Planning & Development regarding the detail to be included within a Transport Assessment. This information is set out in the attached e-mail correspondence.

Environmental Protection Unit: Kate Davis kate.davis@cheshirewestandchester.gov.uk

The Environmental Protection Team was contacted by RPS Consultants by email on the 1st June 2015. We were asked to comment on the proposed scope and method of an Air Quality Assessment that would be carried out to accompany the formal application.

My initial comments were that the basic approach is ok but there are some things that will need to be incorporated:

1. The assessment of the impact of road traffic generated emissions once the site is operational need to be included. This shall include a worst case assessment of all of the waste coming into and out of site by road

2. Given the location of the site Manchester Ringway MET data would be more appropriate than Liverpool

3. The cumulative impact of both road traffic and stack emissions will need to be considered. This shall include existing processes and committed developments in the local area

4. Receptors to be agreed with CWaC. These will vary depending on whether we are looking at road traffic, construction or stack impacts. Note – permission has been grated for a sizable residential development to land immediately to the south of this site. Permission has also been granted for a retirement complex to the west of this site.

My response was sent directly to RPS on the 12th June

Please note: Regarding potential contaminated land issues I am waiting on a response from Martin Wright. I will forward these comments to you in due course.
Regarding potential noise issues I am waiting on a response from Martin Doyle. I will forward these comments to you in due course.

Biodiversity Officer: Laura Hughes laura.hughes@cheshirewestandchester.gov.uk

The application requests an EIA Scoping opinion for a biogas plant.

Protected sites:

The Witton Lime Beds SSSI are approx. 1.4km to the west of the site (not 2km as stated in the report) and the Plumbley Lime Beds SSSI are approx. 2.5km to the east of the site. Ashtons and Neumann's Flashes are approx. 900m to the north-west of the site and Wincham Brook Valley approx. 1.5km to the north-east of the site. It should be assessed whether or not air or water emissions from the site will impact on these designated sites.

Protected species:

Ecological surveys have previously been carried out at the site and require updating. Wade Brook runs along the southern boundary of the site, which is known to contain Water voles. An updated Extended Phase One Habitat Survey should be carried out at the site. Any further species or habitat specific surveys recommended from this (for example, breeding birds, Bats, Great Crested Newts, Water voles) should also be carried out. Any mitigation proposals and method statements of works required should also be submitted for approval.

It should be demonstrated how Wade Brook will be protected from any potential pollution issues, or changes in hydrological regime.

Built Conservation Officer: Marie Farrow marie.farrow@cheshirewestandchester.gov.uk

Section of 4 of the EIA scoping note states that the potential impact of the proposals on the cultural heritage will be considered within the archaeological and cultural heritage chapter within the EIA. Considering the close proximity of the Trent and Mersey Canal conservation area, this proposal is considered appropriate.

Archaeology Officer: Mark Leah mark.leah@cheshireeast.gov.uk

Table 4.1 (Proposed EIA Topics) in Section 4 of the EIA Scoping Note confirms that archaeological potential of the site and the impact of the development will be considered in an archaeology and cultural heritage chapter within the EIA. The main justification for this is that the site is known to have been crossed by the line of a Roman road and was formerly occupied by a World War One explosives factory.

It is advised that this represent an appropriate approach and that the main focus of the study is likely to concern the potential for any below-ground remains of these two features surviving on the site and the need, if any, for further archaeological mitigation.

Planning Policy: Hazel Honeysett: Hazel.Honesysett@cheshirewestandchester.gov.uk

Consideration should be given to the Cheshire West and Chester Local Plan (Part One) Strategic Policies and retained policies within the Cheshire Replacement Waste Local Plan. Coupled with this, consideration should also be given to National Planning Guidance and policy, and addressed within the Environmental Statement.

Should you require any further information please contact me on the number above.

Yours sincerely

Hazel Honeysett
Principal Planning Officer
Strategic Projects & Highways

Cheshire West & Chester Council
4 Civic Way
Ellesmere Port
CH65 0BE

Our ref: SO/2015/115118/01-L01
Your ref: 15/02915/EIA

Date: 04 August 2015

FAO Hazel Honeysett

Dear Madam

EIA SCOPING OPINION FOR PROPOSED WASTE TREATMENT PLANT AND ENERGY GENERATION
LAND OFF GRIFFITHS ROAD, LOSTOCK GRALAM, NORTHWICH

Thank you for referring the above scoping opinion to the Environment Agency for consultation.

With regards to the proposed EIA topics we would like to make the following comments:-

Air Quality and Odour

The facility should employ Best Available Techniques (BAT) to prevent or where not possible mitigate odour pollution from the site arising from operations, maintenance, accidents, incidents, non-conformances and closure and those drawn to the attention of the operator as a result of complaints. In particular:

Storage of digestate

- All such storage areas (including those for the storage of solid fractions) should be provided with appropriate emissions control and abatement systems.
- In order to maximise recovery of biogas, operators should consider including a system to collect additional biogas produced from the storage of digestate.
- Digestate must be stored in a manner that will minimise odour and not give risk to pollution. Storage provision should take into account situations where the land-bank may be unavailable for prolonged periods, for example, where the land is waterlogged or frozen.

Sampling Points

Point source emissions to air should have appropriate facility for sampling in line with our Monitoring Guidance.

Noise and Vibration

The facility should employ BAT to prevent or where not possible mitigate noise pollution from the site arising from operations, maintenance, accidents, incidents, non-conformances and closure and those drawn to the attention of the operator as a result of complaints.

Ecology

As part of any development of this area we would expect to see any appropriate ecological surveys undertaken at the appropriate time of year by a suitably qualified ecologist. Dependent on the results of these surveys we would expect to see appropriate mitigation and compensation.

Depending on what the applicant intends to do and how this affects the watercourse a water vole (*Arvicola amphibius*) and an otter (*Lutra lutra*) survey maybe needed in the Environmental Statement. These surveys should be carried out at the appropriate time of year with recognised techniques. The water vole and otter are protected under Schedule 5 of the Wildlife & Countryside Act (1981). This legislation also protects their habitat. We have records of these species on Wade Brook.

From an ecological perspective, the Environmental Statement must assess the impact on the adjacent watercourse Wade Brook. Details of mitigation and compensation for any adverse impacts on this site should also be included.

The current red line boundary is adjacent to Wade Brook and the current proposed layout shows development close to the watercourse. It is unclear how the development and associated infrastructure will affect this watercourse.

We would expect to see an appropriate undeveloped buffer strip adjacent to Wade Brook and adequate mitigation for any unavoidable adverse impact. The EIA scope states 'a buffer of 10 meters from Wade Brook to restrict access during construction works'. This buffer strip needs to be a permanent inclusion as part of the site design rather than something put in place only during construction works. It also need to be measured from bank top, bank top is defined as the point at which the bank meets normal land levels.

<u>Flood Risk and Drainage</u>

We welcome the inclusion of flood risk to be considered in detail as part of any EIA.

As the site is within Flood Zone 1 (low risk from fluvial and tidal flood sources) the primary functions of the EIA will be to consider flood risk from other (Local) sources and also to consider the issue of surface water management.

The role to evaluate whether the detail contained within the FRA will rest with Lead Local Flood Authority staff within Cheshire West and Chester.

We would also suggest that a site drainage scheme is undertaken which considers the following:-

- Regular HGV/tanker movements
- Tertiary containment
- Surface water pre-treatment – for example, if a car park is required then appropriate measures should be used to ensure no contaminated surface water is discharged to controlled waters
- Foul sewer connection for site offices - foul water should be directed to the sewer system and only clean and uncontaminated water should be discharged to the watercourse
- Non-mains drainage assessment – to include implementation of mitigation measures for non-mains drainage, due to the site being in a Groundwater Vulnerability Zone (GVZ) and Nitrate Vulnerable Zone (NVZ)
- Settlement facilities – Surface water discharge to nearby watercourse Wade Brook is not suitable without pre-treatment of surface water during significant

Cont/d..

construction works

Ground Conditions
We are aware that the historical land uses associated with this site has led to elevated concentration of contamination in the ground which may pose a risk to controlled waters.

Information held by us indicates that the site is located immediately adjacent to Wade Brook and above two Secondary Aquifers associated with underlying bedrock and superficial deposits.

Given the known and suspected condition of the land at the current time we would, on application for planning permission look to recommend conditions regarding land contamination and risks to controlled waters.

This may alter depending on the information provided in support of the full EIA submission (as we have identified that a ground conditions chapter is included in the proposed EIA document) but fundamentally where a positive, significant pollutant linkage is identified we would look for assessment and, where necessary, remediation.

We would recommend that a remediation strategy includes the following components to deal with the risks associated with contamination of the site is submitted with any planning application.

1. A preliminary risk assessment which has identified:
   - all previous uses
   - potential contaminants associated with those uses
   - a conceptual model of the site indicating sources, pathways and receptors
   - potentially unacceptable risks arising from contamination at the site.

2. A site investigation scheme, based on (1) to provide information for a detailed assessment of the risk to all receptors that may be affected, including those off site.

3. The results of the site investigation and the detailed risk assessment referred to in (2) and, based on these, an options appraisal and remediation strategy giving full details of the remediation measures required and how they are to be undertaken.

4. A verification plan providing details of the data that will be collected in order to demonstrate that the works set out in the remediation strategy in (3) are complete and identifying any requirements for longer-term monitoring of pollutant linkages, maintenance and arrangements for contingency action.

All investigations of land potentially affected by contamination should be carried out by or under the direction of a suitably qualified competent person and in accordance with BS 10175 (2001) Code of practice for the investigation of potentially contaminated sites. The competent person would normally be expected to be chartered member of an appropriate body (such as the Institution of Civil Engineers, Geological Society of London, Royal Institution of Chartered Surveyors, Institution of Environmental Management) and also have relevant experience of investigating contaminated sites. The Specialist in Land Condition (SilC) qualification administered by the Institution of Environmental Management provides an accredited status for those responsible for signing off LCR's. For further information see - www.silc.org.uk

If proposed, no infiltration of surface water drainage into the ground where adverse concentrations of contamination are present is permitted other than with the express written consent of the local planning authority, which may be given for those parts of the site where it has been demonstrated that there is no resultant unacceptable risk to controlled waters.

Piling or any other foundation designs using penetrative methods shall not be permitted other than with the express written consent of the local planning authority, which may be given for those parts of the site where it has been demonstrated that there is no resultant unacceptable risk to groundwater.

Due to the former land use(s), soil and /or groundwater contamination may exist at the site and the associated risks to controlled waters should be addressed by:
1. Following the risk management framework provide in CLR11, Model procedures for the management of land contamination
· https://www.gov.uk/government/publications/managing-land-contamination
2. Referring to the Environment Agency guiding principles for land contamination and the land contamination sections in the Environment Agency's Groundwater Protection: Principles and Practice
· https://www.gov.uk/government/publications/managing-and-reducing-land-contamination
· https://www.gov.uk/government/publications/groundwater-protection-principles-and-practice-gp3
3. Further information may be found on the land contamination technical guidance pages on the direct.gov website
· https://www.gov.uk/government/collections/land-contamination-technical-guidance

Where the remediation / redevelopment of the site will involve waste management issues we offer the following advice:

Waste on site:
If any waste is to be used onsite, the applicant will be required to obtain the appropriate waste exemption or permit from us. We are unable to specify what exactly would be required if anything, due to the limited amount of information provided.

The developer must apply the waste hierarchy in a priority order of prevention, re-use, recycling before considering other recovery or disposal options. Government Guidance on the waste hierarchy in England is at:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69403/pb13530-waste-hierarchy-guidance.pdf

The CLAIRE definition of waste: development code of practice (version 2) provides operators with a framework for determining whether or not excavated material arising from site during remediation and /or land development works are waste or have ceased to be waste. The code of practice is available at: http://www.claire.co.uk

Under the Code of practice:
- Excavated materials that are recovered via a treatment operation can be re-used on site providing they are treated to a standard such they are fit for purpose and unlikely to cause pollution
- Treated materials can be transferred between sites as part of a "hub and cluster" project
- Some naturally occurring clean material can be directly transferred between sites.

Developers should ensure that all contaminated materials are adequately characterised both chemically and physically in line with British Standard BS EN 14899:2005 "characterisation of waste" – sampling of waste materials – framework for the preparation and application of a sampling plan" and the permitting status of any proposed treatment or disposal activity is clear.

If in doubt we should be contacted on 03708 506 506 or at enquiries@environment-agency.gov.uk for advice at an early stage to avoid any delays.

Waste to be taken off site:
Contaminated soil that is, or must be, disposed of is waste. Therefore it's handling, transport and disposal is subject to waste management legislation which includes:

- Duty of Care Regulations 1991
- Hazardous Waste (England and Wales) Regulations 2005
- Environmental permitting (England and Wales) Regulations 2010
- The Waste (England and Wales) Regulations 2011

If any controlled waste is to be removed off site, then the site operator must ensure a registered waste carrier is used to convey the waste material off site to an appropriate permitted facility and all relevant documentation is completed and kept in line with regulations.

You should be aware that any permit may not be granted. Additional 'Environmental Permitting Guidance' can be accessed via the government website at: https://www.gov.uk/environmental-permit-check-if-you-need-one

If the total quantity of waste material to be produced or taken off site is hazardous waste and is 500kg or greater in any 12 month period the developer will need to register with us as a hazardous waste producer.

The applicant is advised to contact the Environment Management team at our Warrington Office or refer to guidance on our website http://www.environment-agency.gov.uk/subjects/waste

The proposed development lies within 250 metres from the Griffiths Park, a former landfill site that accepted Lime and ash wastes, alloprene, brine plant scale, distiller scale, fly ash, oil fired boiler dust, inert non-hazardous non-flammable solid industrial waste, Sodium bicarbonate contaminated with 1-2% free ammonia. and canteen waste. There may be a potential for landfill gas to be generated.

Developers may be required to carry out a comprehensive risk assessment due to the risks the former landfill site poses. The local authority's Environmental Health and Building Control departments would wish to ensure that any threats from landfill gas have been adequately addressed in the proposed development. This may include building construction techniques that minimise the possibility of landfill gas entering any enclosed structures on the site to be incorporated into the development. The following publications provide further advice on the risks from landfill gas and ways of managing these:

i. Waste Management Paper No 27
ii. Environment Agency LFTGN03 'Guidance on the Management of Landfill Gas'
iii. Building Research Establishment guidance – BR 414 'Protective Measures for Housing on Gas-contaminated Land' 2001

Cont/d..

iv. Building Research Establishment guidance – BR 212 'Construction of new buildings on gas-contaminated land' 1991
v. CIRIA Guidance – C665 'Assessing risks posed by hazardous ground gases to buildings' 2007

We would suggest that the following topic is also included in any EIA:-

Water Framework Directive (WFD)
In developing plans you should be aware of WFD (Wade Brook GB112068060370).

Depending on what the applicant intends to do with this site a WFD assessment maybe required as part of the EIA. The work done for other parts of the EIA will contribute to the WFD section. WFD assessment must demonstrate that the proposed scheme does not (key requirements):

- Cause deterioration in the status of any water body through deterioration in the status of the Biological Quality Elements (BQEs) or
- Compromise the ability of the water body to achieve its WFD status objectives (through improvement works if necessary)

And should where possible

- Indicate how the proposed scheme contributes to the delivery of WFD objectives i.e. remove any existing redundant retaining walls.

Advice to Applicant and LPA
This development will require an Environmental Permit under the Environmental Permitting (England and Wales) Regulations 2010 from us. The applicant is advised to contact our Environment Management Team to discuss the issues likely to be raised.

We advise that the mitigation measures needed to protect people and the environment in order to obtain a permit may have implications for the planning application.

Therefore we recommend parallel tracking of the planning and permit applications, so that joint discussions between the operator, the local planning authority and ourselves are undertaken to allow these issues to be resolved. This should reduce uncertainty as to whether the activity is likely to be permitted, which in turn will reduce uncertainty and promote faster decision making for both planning and permitting applications.

Please do not hesitate to contact me should you have any questions or queries in relation to the above.

Yours faithfully

Ms DAWN HEWITT
Planning Liaison Officer

Direct dial 01925 542499

Direct fax 01925 415961
Direct e-mail dawn.hewitt@environment-agency.gov.uk

End

Date: 27 July 2015
Our ref: 159747
Your ref: 15/02915/EIA

Customer Services
Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire
CW1 6GJ

T 0300 060 3900

Hazel Honeysett
Cheshire West and Chester Council
Hazel.Honeysett@cheshirewestandchester.gov.uk

BY EMAIL ONLY

Dear Mrs Honeysett,

Environmental Impact Assessment Scoping consultation (Regulation 15 (3) (i) of the EIA Regulations 2011): Waste Treatment Plant and energy generation
Location: land off Griffiths Road, Lostock Gralam, Northwich

Thank you for seeking our advice on the scope of the Environmental Statement (ES) in your consultation dated and received on 14 July 2015.

Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

Case law[1] and guidance[2] has stressed the need for a full set of environmental information to be available for consideration prior to a decision being taken on whether or not to grant planning permission. Annex A to this letter provides Natural England's advice on the scope of the Environmental Impact Assessment (EIA) for this development.

Should the proposal be amended in a way which significantly affects its impact on the natural environment then, in accordance with Section 4 of the Natural Environment and Rural Communities Act 2006, Natural England should be consulted again.

We would be happy to comment further should the need arise but if in the meantime you have any queries please do not hesitate to contact us. For any queries relating to the specific advice in this letter only please contact Kathryn Kelsall on 0300 060 4342. For any new consultations, or to provide further information on this consultation please send your correspondences to consultations@naturalengland.org.uk.

We really value your feedback to help us improve the service we offer. We have attached a feedback form to this letter and welcome any comments you might have about our service.

Yours sincerely

Miss Kathryn Kelsall
Cheshire, Greater Manchester, Merseyside and Lancashire Area Team

[1] Harrison, J in *R. v. Cornwall County Council ex parte Hardy* (2001)
[2] *Note on Environmental Impact Assessment Directive for Local Planning* Authorities Office of the Deputy Prime Minister (April 2004) available from http://webarchive.nationalarchives.gov.uk/+/http://www.communities.gov.uk/planningandbuilding/planning/sustainabilityenvironmental/environmentalimpactassessment/noteenvironmental/

Annex A – Advice related to EIA Scoping Requirements

1. General Principles

Schedule 4 of the Town & Country Planning (Environmental Impact Assessment) Regulations 2011, sets out the necessary information to assess impacts on the natural environment to be included in an ES, specifically:

- A description of the development – including physical characteristics and the full land use requirements of the site during construction and operational phases.
- Expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation, etc.) resulting from the operation of the proposed development.
- An assessment of alternatives and clear reasoning as to why the preferred option has been chosen.
- A description of the aspects of the environment likely to be significantly affected by the development, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the interrelationship between the above factors.
- A description of the likely significant effects of the development on the environment – this should cover direct effects but also any indirect, secondary, cumulative, short, medium and long term, permanent and temporary, positive and negative effects. Effects should relate to the existence of the development, the use of natural resources and the emissions from pollutants. This should also include a description of the forecasting methods to predict the likely effects on the environment.
- A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.
- A non-technical summary of the information.
- An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the applicant in compiling the required information.

It will be important for any assessment to consider the potential cumulative effects of this proposal, including all supporting infrastructure, with other similar proposals and a thorough assessment of the 'in combination' effects of the proposed development with any existing developments and current applications. A full consideration of the implications of the whole scheme should be included in the ES. All supporting infrastructure should be included within the assessment.

2. Biodiversity and Geology

2.1 Ecological Aspects of an Environmental Statement

Natural England advises that the potential impact of the proposal upon features of nature conservation interest and opportunities for habitat creation/enhancement should be included within this assessment in accordance with appropriate guidance on such matters. Guidelines for Ecological Impact Assessment (EcIA) have been developed by the Chartered Institute of Ecology and Environmental Management (CIEEM) and are available on their website.

EcIA is the process of identifying, quantifying and evaluating the potential impacts of defined actions on ecosystems or their components. EcIA may be carried out as part of the EIA process or to support other forms of environmental assessment or appraisal.

The National Planning Policy Framework sets out guidance in S.118 on how to take account of biodiversity interests in planning decisions and the framework that local authorities should provide to assist developers.

2.2 Internationally and Nationally Designated Sites

The ES should thoroughly assess the potential for the proposal to affect designated sites. European sites (eg designated Special Areas of Conservation and Special Protection Areas) fall within the scope of the Conservation of Habitats and Species Regulations 2010. In addition paragraph 118 of the National Planning Policy Framework requires that potential Special Protection

Areas, possible Special Areas of Conservation, listed or proposed Ramsar sites, and any site identified as being necessary to compensate for adverse impacts on classified, potential or possible SPAs, SACs and Ramsar sites be treated in the same way as classified sites.

Under Regulation 61 of the Conservation of Habitats and Species Regulations 2010 an appropriate assessment needs to be undertaken in respect of any plan or project which is (a) likely to have a significant effect on a European site (either alone or in combination with other plans or projects) and (b) not directly connected with or necessary to the management of the site.

Should a Likely Significant Effect on a European/Internationally designated site be identified or be uncertain, the competent authority (in this case the Local Planning Authority) may need to prepare an Appropriate Assessment, in addition to consideration of impacts through the EIA process.

Sites of Special Scientific Interest (SSSIs) and sites of European or international importance (Special Areas of Conservation, Special Protection Areas and Ramsar sites)
The development site is in close proximity to the following designated nature conservation sites:

- Witton Lime Beds SSSI
- Plumley Lime Beds SSSI

- Further information on SSSIs and their special interest features can be found at www.magic.gov . The Environmental Statement should include a full assessment of the direct and indirect effects of the development on the features of special interest within the SSSIs and should identify such mitigation measures as may be required in order to avoid, minimise or reduce any adverse significant effects.

- Natura 2000 network site conservation objectives are available on our internet site here.

- See air quality paragraph below for further details regarding designated sites and air quality.

2.3 Regionally and Locally Important Sites
The EIA will need to consider any impacts upon local wildlife and geological sites. Local Sites are identified by the local wildlife trust, geoconservation group or a local forum established for the purposes of identifying and selecting local sites. They are of county importance for wildlife or geodiversity. The Environmental Statement should therefore include an assessment of the likely impacts on the wildlife and geodiversity interests of such sites. The assessment should include proposals for mitigation of any impacts and if appropriate, compensation measures. Contact the local wildlife trust, geoconservation group or local sites body in this area for further information.

2.4 Protected Species - Species protected by the Wildlife and Countryside Act 1981 (as amended) and by the Conservation of Habitats and Species Regulations 2010
The ES should assess the impact of all phases of the proposal on protected species (including, for example, great crested newts, reptiles, birds, water voles, badgers and bats). Natural England does not hold comprehensive information regarding the locations of species protected by law, but advises on the procedures and legislation relevant to such species. Records of protected species should be sought from appropriate local biological record centres, nature conservation organisations, groups and individuals; and consideration should be given to the wider context of the site for example in terms of habitat linkages and protected species populations in the wider area, to assist in the impact assessment.

The conservation of species protected by law is explained in Part IV and Annex A of Government Circular 06/2005 *Biodiversity and Geological Conservation: Statutory Obligations and their Impact within the Planning System*. The area likely to be affected by the proposal should be thoroughly surveyed by competent ecologists at appropriate times of year for relevant species and the survey results, impact assessments and appropriate accompanying mitigation strategies included as part of the ES.

In order to provide this information there may be a requirement for a survey at a particular time of year. Surveys should always be carried out in optimal survey time periods and to current guidance by suitably qualified and where necessary, licensed, consultants. Natural England has adopted standing advice for protected species which includes links to guidance on survey and mitigation.

2.5 Habitats and Species of Principal Importance
The ES should thoroughly assess the impact of the proposals on habitats and/or species listed as 'Habitats and Species of Principal Importance' within the England Biodiversity List, published under the requirements of S41 of the Natural Environment and Rural Communities (NERC) Act 2006. Section 40 of the NERC Act 2006 places a general duty on all public authorities, including local planning authorities, to conserve and enhance biodiversity. Further information on this duty is available in the Defra publication 'Guidance for Local Authorities on Implementing the Biodiversity Duty'.

Government Circular 06/2005 states that Biodiversity Action Plan (BAP) species and habitats, 'are capable of being a material consideration…in the making of planning decisions'. Natural England therefore advises that survey, impact assessment and mitigation proposals for Habitats and Species of Principal Importance should be included in the ES. Consideration should also be given to those species and habitats included in the relevant Local BAP.

Natural England advises that a habitat survey (equivalent to Phase 2) is carried out on the site, in order to identify any important habitats present. In addition, ornithological, botanical and invertebrate surveys should be carried out at appropriate times in the year, to establish whether any scarce or priority species are present. The Environmental Statement should include details of:

- Any historical data for the site affected by the proposal (eg from previous surveys);
- Additional surveys carried out as part of this proposal;
- The habitats and species present;
- The status of these habitats and species (eg whether priority species or habitat);
- The direct and indirect effects of the development upon those habitats and species;
- Full details of any mitigation or compensation that might be required.

The development should seek if possible to avoid adverse impact on sensitive areas for wildlife within the site, and if possible provide opportunities for overall wildlife gain.

The record centre for the relevant Local Authorities should be able to provide the relevant information on the location and type of priority habitat for the area under consideration.

2.6 Contacts for Local Records
Natural England does not hold local information on local sites, local landscape character and local or national biodiversity priority habitats and species. We recommend that you seek further information from the appropriate bodies (which may include the local records centre, the local wildlife trust, local geoconservation group or other recording society and a local landscape characterisation document).

3. Designated Landscapes and Landscape Character

Nationally Designated Landscapes
The proposal site is not within/adjacent to any nationally designated landscapes.

Landscape and visual impacts
Natural England would wish to see details of local landscape character areas mapped at a scale appropriate to the development site as well as any relevant management plans or strategies pertaining to the area. The EIA should include assessments of visual effects on the surrounding area and landscape together with any physical effects of the development, such as changes in

topography. The European Landscape Convention places a duty on Local Planning Authorities to consider the impacts of landscape when exercising their functions.

The EIA should include a full assessment of the potential impacts of the development on local landscape character using landscape assessment methodologies. We encourage the use of Landscape Character Assessment (LCA), based on the good practice guidelines produced jointly by the Landscape Institute and Institute of Environmental Assessment in 2013. LCA provides a sound basis for guiding, informing and understanding the ability of any location to accommodate change and to make positive proposals for conserving, enhancing or regenerating character, as detailed proposals are developed.

Natural England supports the publication *Guidelines for Landscape and Visual Impact Assessment*, produced by the Landscape Institute and the Institute of Environmental Assessment and Management in 2013 (3rd edition). The methodology set out is almost universally used for landscape and visual impact assessment.

In order to foster high quality development that respects, maintains, or enhances, local landscape character and distinctiveness, Natural England encourages all new development to consider the character and distinctiveness of the area, with the siting and design of the proposed development reflecting local design characteristics and, wherever possible, using local materials. The Environmental Impact Assessment process should detail the measures to be taken to ensure the building design will be of a high standard, as well as detail of layout alternatives together with justification of the selected option in terms of landscape impact and benefit.

The assessment should also include the cumulative effect of the development with other relevant existing or proposed developments in the area. In this context Natural England advises that the cumulative impact assessment should include other proposals currently at Scoping stage. Due to the overlapping timescale of their progress through the planning system, cumulative impact of the proposed development with those proposals currently at Scoping stage would be likely to be a material consideration at the time of determination of the planning application.

The assessment should refer to the relevant National Character Areas which can be found on our website. Links for Landscape Character Assessment at a local level are also available on the same page.

Heritage Landscapes
You should consider whether there is land in the area affected by the development which qualifies for conditional exemption from capital taxes on the grounds of outstanding scenic, scientific or historic interest. An up-to-date list may be obtained at www.hmrc.gov.uk/heritage/lbsearch.htm and further information can be found on Natural England's landscape pages here.

4. Access and Recreation
Natural England encourages any proposal to incorporate measures to help encourage people to access the countryside for quiet enjoyment. Measures such as reinstating existing footpaths together with the creation of new footpaths and bridleways are to be encouraged. Links to other green networks and, where appropriate, urban fringe areas should also be explored to help promote the creation of wider green infrastructure. Relevant aspects of local authority green infrastructure strategies should be incorporated where appropriate.

Rights of Way, Access land, Coastal access and National Trails
There are no nearby National Trails. We recommend reference to the relevant Right of Way Improvement Plans (ROWIP) to identify public rights of way within or adjacent to the proposed site that should be maintained or enhanced.

5. Soil and Agricultural Land Quality

Impacts from the development should be considered in light of the Government's policy for the protection of the best and most versatile (BMV) agricultural land as set out in paragraph 112 of the NPPF. We also recommend that soils should be considered under a more general heading of sustainable use of land and the ecosystem services they provide as a natural resource in line with paragraph 109 of the NPPF.

6. Air Quality
Natural England can confirm that there are no European sites or SSSIs that need to be considered in respect of this development. We would only expect consideration of European sites and SSSIs if they were within 500m of this type of proposed development (i.e. Mechanical and Biological Waste Treatment facilities).

7. Climate Change Adaptation
The England Biodiversity Strategy published by Defra establishes principles for the consideration of biodiversity and the effects of climate change. The ES should reflect these principles and identify how the development's effects on the natural environment will be influenced by climate change, and how ecological networks will be maintained. The NPPF requires that the planning system should contribute to the enhancement of the natural environment 'by establishing coherent ecological networks that are more resilient to current and future pressures' (NPPF Para 109), which should be demonstrated through the ES.

8. Cumulative and in-combination effects
A full consideration of the implications of the whole scheme should be included in the ES. All supporting infrastructure should be included within the assessment.

The ES should include an impact assessment to identify, describe and evaluate the effects that are likely to result from the project in combination with other projects and activities that are being, have been or will be carried out. The following types of projects should be included in such an assessment, (subject to available information):

a. existing completed projects;
b. approved but uncompleted projects;
c. ongoing activities;
d. plans or projects for which an application has been made and which are under consideration by the consenting authorities; and
e. plans and projects which are reasonably foreseeable, ie projects for which an application has not yet been submitted, but which are likely to progress before completion of the development and for which sufficient information is available to assess the likelihood of cumulative and in-combination effects.

Historic England

NORTH WEST OFFICE

Ms Hazel Honeysett
Cheshire West and Chester Council
Development Management
Chester Area Office
The Forum
Chester
CH1 2HS

Direct Dial: 0161 2421424

Our ref: PA00385040
Your ref: 15/02915/EIA

22 July 2015

Dear Ms Honeysett

Request for Pre-application Advice

LAND AT GRIFFITHS ROAD, LOSTOCK GRALAM, NORTHWICH, CHESHIRE

Thank you for your letter of 14 July 2015 consulting Historic England about the EIA Scoping Report fo the site above .

This development could, potentially, have an impact designated heritage assets and their settings in the area around the site. In line with the advice in the NPPF, we would expect the Environmental Report to contain a thorough assessment of the likely effects which the proposed development might have upon those elements which contribute to the significance of these assets.

We would also expect the Environment Report to consider the potential impacts which the proposals might have upon those heritage assets which are not designated, defined in the NPPF as "a building, monument, site, place, area or landscape positively identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest". These ought to be included as heritage assets designated or otherwise as they are valued components of the historic environment. This information is available via www.heritagegateway.org.uk .

We would strongly recommend that you involve the Conservation Officer of Cheshire West and Chester Council and the archaeological staff at Cheshire Archaeology Planning Advisory Service in the development of this assessment. They are best placed to advise on local historic environment issues and priorities, how the policy or proposal can be tailored to minimise potential adverse impacts on the historic environment, the nature and design of any required mitigation measures, together with opportunities for securing wider benefits for the future conservation and management of heritage assets.

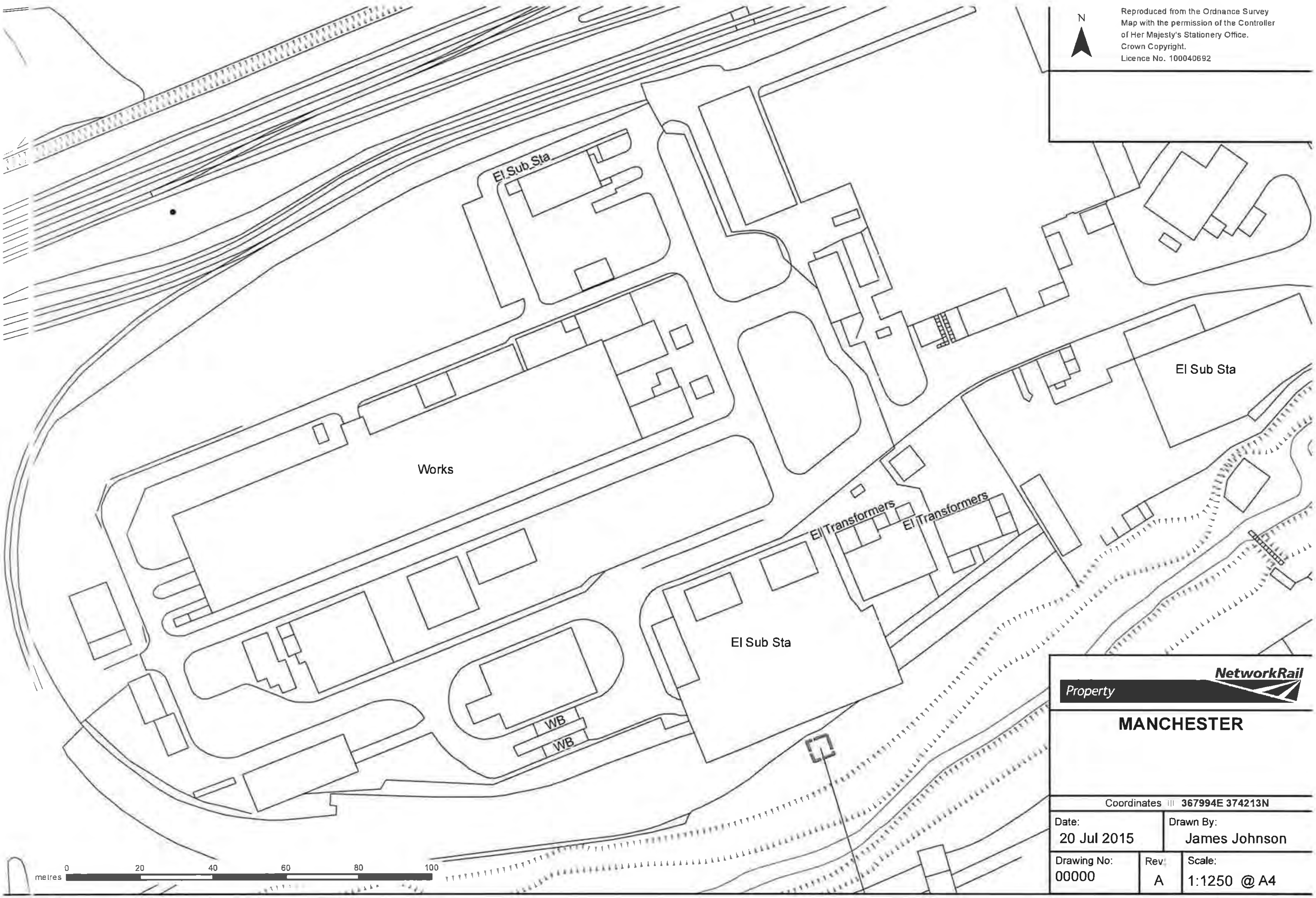
To assess the visual impact of the development we recommend that you use the methodology in Historic England's setting guidance (<http://www.helm.org.uk/guidance-library/setting-heritage-assets/>) and *Seeing the History in the View* (<http://www.helm.org.uk/guidance-library/seeing-history-view/>).

The assessment should also take account of the potential impact which associated activities (such as construction activity, servicing and maintenance, and associated traffic) might have upon perceptions, understanding and appreciation of the heritage assets in the area. Assessment should also consider, where appropriate, the likelihood of alterations to drainage patterns that might lead to in situ decomposition or destruction of below ground archaeological remains and deposits, and can also lead to subsidence of buildings and monuments.

If you have any queries about any of the above, or would like to discuss anything further, please contact me.

Yours sincerely

Alice Ullathorne
Assistant Inspector of Historic Buildings and Areas
E-mail: alice.ullathorne@HistoricEngland.org.uk



NetworkRail Property

MANCHESTER

Coordinates	367994E 374213N
Date: 20 Jul 2015	Drawn By: James Johnson
Drawing No: 00000	Rev: A
Scale: 1:1250 @ A4	

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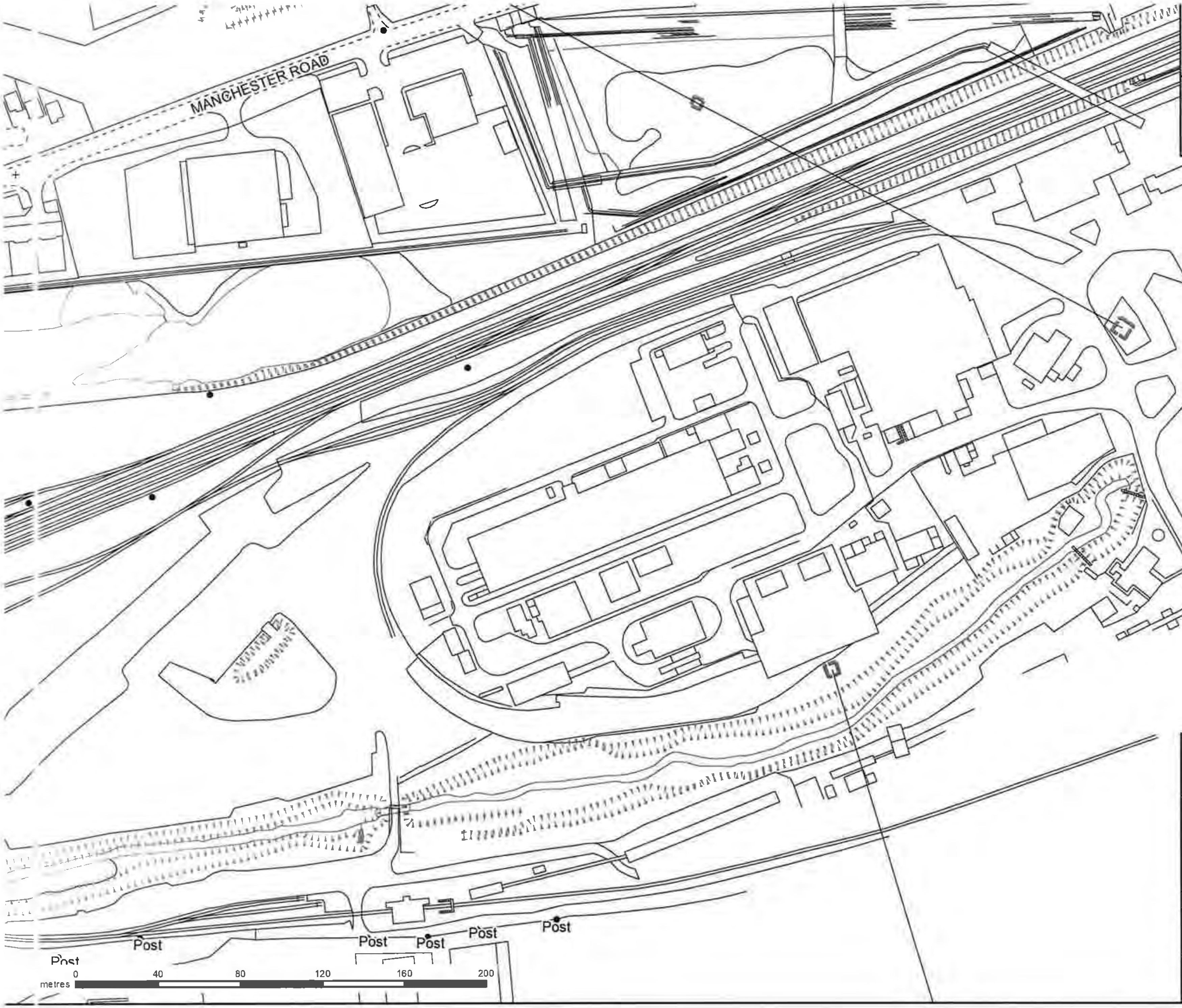

NetworkRail
Property

MANCHESTER

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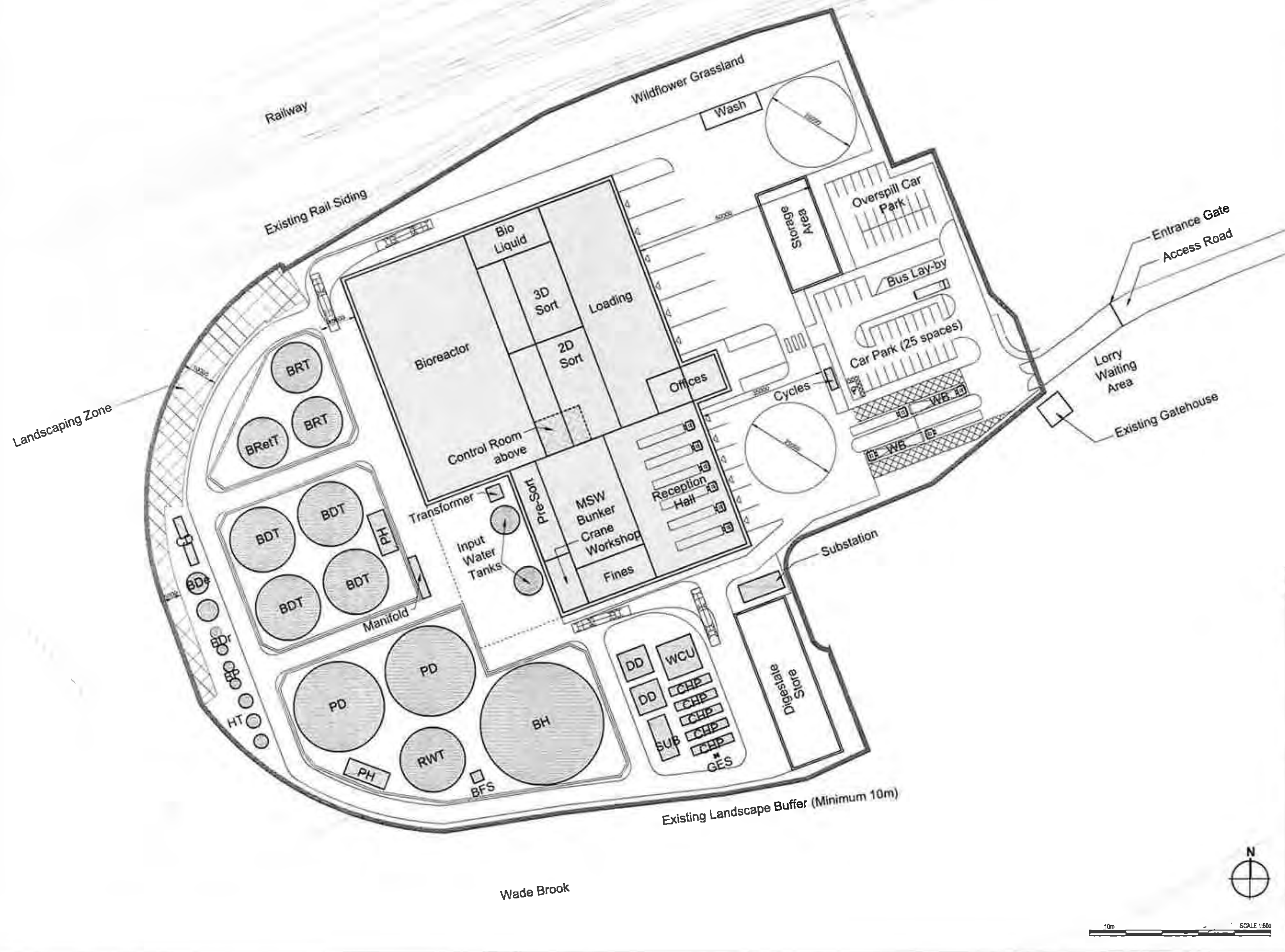
2. If received electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.
3. This drawing should be read in conjunction with all other relevant drawings and specifications.

Proposed Site Area: 3.054 Ha

Equipment Key

Equipment		Description
BRT	=	Bioliquid reception tank
BRetT	=	Bioliquid retention tank
BDT	=	Biogas digestor tank
HT	=	Hygienisation tank (optional)
CD	=	Contaminated de-gritter (cyclone)
PD	=	Post digester with gas storage
BDe	=	Biogas desulphuriser
BDr	=	Biogas dryer
BP	=	Biogas polisher
CHP	=	CHP containers
GES	=	Gas engine stack
BH	=	Biogas holder (optional)
BFS	=	Biogas flare stack
DD	=	Digestate dewatering
RWT	=	Reject water tank
WCU	=	Water cleaning unit
PH	=	Pumping hut (containerised)
SUB	=	Startup Boiler



RPS

Client: REnescience

Project: REnescience Northwich

Title: Proposed Site Layout

Status	Scale	Date Created
Preliminary	1:500 @A1	06.07.15
AY	JB	MJH

Drawing Number: NK018157_SK031

rpsgroup.com

Appendix 4.A: Assessment Methodology

Assessment Methodology

A.1 The Landscape and Visual Impact Assessment (LVIA) considers the potential effects of the development upon:

- individual landscape features and elements;
- landscape character; and
- visual amenity and the people who view the landscape.

Distinction between Landscape and Visual Effects

A.2 In accordance with the published guidance, landscape and visual effects have been assessed separately, although the procedure for assessing each of these is closely linked. A clear distinction has been drawn between landscape and visual effects as described below.

- Landscape effects relate to the effects of the project on the physical and other characteristics of the landscape and its resulting character and quality.
- Visual effects relate to the effects on views experienced by visual receptors (e.g. residents, footpath users, tourists etc.) and on the visual amenity experienced by those people.

Duration of Landscape and Visual Effects

A.3 The LVIA assesses the permanent effects relating to the project. Consideration has been given to seasonal variations in the visibility of the development. Consideration has been given to changes in the significance of effects likely to take place as new planting, proposed as part of the project, and existing planting matures.

Landscape and Visual Assessment Process

A.4 The assessment of the landscape effects of the project has followed a recognised process:

- identify the baseline landscape and townscape resource (e.g. individual elements and character) and its value;
- identify forces for change in the landscape of the surrounding area;
- evaluate the sensitivity of the landscape resource to the type of development proposed;
- identify potential landscape effects of the project through review of initial plans;
- develop measures to avoid, reduce and ameliorate adverse effects and to maximise the positive benefits of the project;
- identify scale of magnitude of change proposed;
- assess the significance of effects of the project on the landscape, taking into account the measures proposed; and

- report the findings of the assessment.

A.5 The assessment of visual effects followed a recognised process:

- identify potential visual receptors of the project (i.e. people who will have views of the development);
- select an appropriate number of representative or sensitive viewpoints to reflect the full range of different views towards the project;
- describe the nature of the baseline views towards the project for each representative viewpoint;
- identify forces for change in the visual amenity of the surrounding area;
- evaluate the sensitivity of the visual receptors represented by the viewpoints;
- identify potential visual effects of the project through review of initial plans;
- develop measures to avoid, reduce and ameliorate adverse effects and to maximise the positive benefits of the project;
- identify the scale or magnitude of the proposed changes;
- assess the significance of effects on the view from representative viewpoints, taking into account the visual context of the development and the measures proposed;
- assess the significance of effects on overall visual amenity; and
- report the findings of the assessment.

A.6 The assessment of representative viewpoints has been supplemented by scheduling of specific visual receptors and selected site visits to various locations to determine visual effects upon those likely to be affected to the greatest degree.

Assessment Criteria

A.7 The purpose of the LVIA is to evaluate the significance of landscape and visual effects to enable the likely significant effects of the project to be identified.

A.8 Published guidance states that the significance of effects is ascertained by professional judgement based on consideration of the sensitivity of the baseline landscape or visual receptor and the magnitude of change as a result of the project.

Sensitivity of Receptor

A.9 The sensitivity of a landscape or a view to change varies according to the nature of the existing resource and the nature of the proposed change. Considerations of value, integrity and capacity are all relevant when assessing sensitivity. For the purpose of this assessment, these terms are defined as follows.

- Value: the value or importance attached to a landscape for its scenic or aesthetic qualities, or cultural associations, can be recognised through national, regional or local designation.

Views tend not to be designated, but can be recognised through a name, or shown on a map, or through the creation of a parking lay-by or location of a bench.

- Integrity: the degree to which the value has been retained, the condition and integrity of the landscape or the view.
- Capacity: the ability of a landscape or view to accommodate the proposed change while retaining the essential characteristics that defines it.

A.10 Integrity or condition is based on judgements from visual functional and ecological perspectives. It also reflects the state of repair of the individual features and locations that make up the landscape and visual character of the area. Table 4.A.1 sets out the criteria for assessment of condition.

Table 4.A.1: Condition of Receptor

	Landscape Receptor	Visual Receptor
Poor	Areas generally negative in character with few, if any, valued features. Scope for positive enhancement.	Areas that generally offer short distance views with high levels of clutter and unremarkable features and high levels of intrusion.
Ordinary	Areas that exhibit positive character, but which may have evidence of degradation/erosion of some features. Change may be unlikely to be detrimental.	Areas where views are of a moderate distance or have low levels of clutter.
Good	Areas that exhibit a strong positive character with value features that combine to give the experience of unity, richness and harmony. These are landscapes that may be considered to be of particular importance to conserve and which may be sensitive or very sensitive to change.	Areas that generally have long distance views or views over pristine landscapes or townscapes devoid of clutter and intrusion.

A.11 Establishing the value of receptors allows judgements to be made about their importance at various scales. The criteria for the assessment of value that a receptor holds are set out in Table 4.A.2.

Table 4.A.2 Value of Receptor

	Landscape Receptor	Visual Receptor
Local	Areas that are not nationally or locally designated although may be valued by local people or have a community importance.	Areas where few people are likely to experience views or the duration of the view is likely to be very short.
Regional	Areas that are locally designated or have a local importance due to the presence of valuable features and associations.	Areas that receive a number of local visitors and tourists or the views are available for moderate durations.

	Landscape Receptor	Visual Receptor
National	Areas that are nationally valued or are of national policy importance.	Areas where views are available from large numbers of people including tourists through provision of facilities for their enjoyment, views are experienced for extended durations and views of or from heritage assets and planning designations.

A.12 Sensitivity is not readily graded in bands. However, in order to provide both consistency and transparency to the assessment process, Table 4.A.3 defines the criteria which have guided the judgement as to the sensitivity of the receptor.

Table 4.A.3: Sensitivity of Receptor

	Landscape Receptor	Visual Receptor
Low	Landscape value is low, with no designations; landscape integrity is low, with a landscape in poor condition and a degraded character with the presence of landscape detractors; and the landscape has the capacity to potentially accommodate significant change.	May include people at their place of work, or engaged in similar activities, whose attention may be focussed on their work or activity and who may therefore be potentially less susceptible to changes in view. Occupiers of vehicles whose attention may be focused on the road.
Medium	Landscape value is recognised or designated locally; the landscape is relatively intact, with a distinctive character and few landscape detractors; and the landscape is reasonably tolerant of change.	Viewers' attention may be focused on landscape, such as users of secondary footpaths, and people engaged in outdoor sport or recreation, e.g. fishing, water sports, golf.
High	Landscape value recognised by existing or proposed national designation. Sense of tranquillity or remoteness specifically noted in Landscape Character Assessment. High sensitivity to disturbance specifically noted in Landscape Character Assessment. The qualities for which the landscape is valued are in a good condition, with a clearly apparent distinctive character and absence of landscape detractors. This distinctive character is susceptible to relatively small changes.	Large number or high sensitivity of viewers assumed. Viewers' attention very likely to be focused on landscape. E.g. Residents experiencing views from dwellings; users of strategic recreational footpaths and cycleways; people experiencing views from important landscape features of physical, cultural or historic interest, beauty spots and picnic areas.

Magnitude of Change

A.13 The magnitude of change affecting landscape or visual receptors depends on the nature, scale and duration of the particular change within the landscape, the location of it and the overall effect on a particular view. This may be very small if the development is at some distance. In a landscape, the magnitude of change will depend on the loss or change in any important feature or characteristic, or a change in backdrop to, or outlook from, a landscape that affects its character. The angle of view, duration of view, distance from the development, degree of contrast with the existing characteristics of the view, prominence of the development and the extent of visibility can all influence the magnitude of the change in view. In addition, the general visibility and combination of effects of elevation and topography on openness and degree of obstruction by trees and buildings affect the magnitude of change.

Table 4.A.4: Magnitude of Change

	Landscape Effects	Visual Effects
Negligible	The effect of change on the perception of the landscape, the physical landscape or the landscape character is minimal or there is no change.	There is either no view or the character of the view will not be altered by the proposed development. The proposed development is at such a distance as to be barely perceptible, and may only be visible in clear conditions. May go unnoticed.
Small	Changes to the physical landscape, its character and the perception of the landscape are slight. Long distance to affected landscape type with views toward the character type the key characteristic. Effect reduced by presence of built elements.	Visible but not prominent. Minor component and no marked effect on view.
Medium	The proposed development forms a visible and recognisable feature in the landscape. Proposed development is within or adjacent to affected Landscape Type. Other built elements or human activities in views. Scale of development fits with existing features.	Prominent. Has an important, but not defining influence on view; is a key element in the view.
Large	Where there are substantial changes affecting the character of the landscape, or the important elements. Proposed development within or close to affected landscape type. Size of development out of scale with existing elements.	Dominant. Has a defining influence on view.

A.14 The following considerations are relevant when evaluating the magnitude of change.

- Distance: the distance between the receptor and the development. Generally, the greater the distance, the lower the magnitude.
- Extent: the extent of the proposal which is visible.
- Proportion: the arc of view occupied by the development in proportion to the overall field of view. A panoramic view, where the development takes up a small part of it, will generally be

of lower magnitude than a narrow, focussed view, even if the arc of view occupied by the proposal is similar.

- Duration: the duration of the effect. An effect experienced in a single location over an extended period of time is likely to result in a higher magnitude of change than an effect which is of a short duration, such as a view from a road.
- Orientation: the angle of the view in relation to the main receptor orientation, where there is a dominant direction to the vista.
- Context: the elements, which in combination provide the setting and context to the proposal.

Significance of Effect

A.15 The significance of the landscape and visual effects are assessed through consideration of the sensitivity of the receptor and the magnitude of change. The following table outlines the broad approach adopted to assess the significance of effect, together with professional judgement. This may lead some effects to fall between two significance categories.

Table 4.A.5: Significance of Effect

Landscape And Visual Sensitivity	Magnitude Of Change			
	Large	**Medium**	**Small**	**Negligible**
High	Substantial	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Neutral
Low	Moderate	Minor	Neutral	Neutral

A.16 The effect of relevant aspects of the project on the landscape and townscape has been described and the significance evaluated against the following criteria, defined as follows.

- Substantial adverse: Where the proposed changes cannot be mitigated, would be completely uncharacteristic and would substantially damage the integrity of a valued and important landscape or townscape.
- Major adverse: Where the proposed changes cannot be fully mitigated, would be uncharacteristic and would damage a valued aspect of the landscape or townscape.
- Moderate adverse: Where some elements of the proposed changes would be out of scale or uncharacteristic of an area.
- Minor adverse: Where the proposed changes would be at slight variance with the character of an area.
- Neutral: Where the proposals would be in keeping with the character of the area and/or would maintain the existing quality or where on balance the proposals would maintain quality (e.g. where on balance the adverse effects of the proposals are offset by beneficial effects).

- Minor beneficial: Where the proposed changes would fit in well with the existing character and would improve the character and quality of the landscape or townscape.
- Moderate beneficial: Where the proposed changes would not only fit in well with the existing character of the surrounding landscape or townscape, but would greatly improve the quality of the resource through the removal of detracting features.
- Major beneficial: Where the proposed changes would substantially improve character and quality through the removal of large scale damage and dereliction and provision of far reaching enhancements.

A.17 The effect of relevant aspects of the project on views has been described and the significance evaluated as follows.

- Substantial adverse: Where the proposed changes would form the dominant feature, would be completely uncharacteristic and substantially change the scene in valued views.
- Major adverse: Where the proposed changes would form a major part of the view, would be uncharacteristic, and would alter valued views.
- Moderate adverse: Where the proposed changes to views would be out of scale or uncharacteristic with the existing view.
- Minor adverse: Where the proposed changes to views would be at slight variance with the existing view.
- Neutral: Where the project would be imperceptible or would be in keeping with and would maintain the existing views or where on balance the proposals would maintain the quality of the views (which may on balance include adverse effects of the proposals which are offset by beneficial effects for the same receptor).
- Minor beneficial: Where the proposed changes to the existing view would be in keeping with and would improve the quality of the existing view.
- Moderate beneficial: Where the proposed changes to the existing view would not only be in keeping with, but would greatly improve the quality of the scene through the removal of visually detracting features.
- Major beneficial: Where the proposed changes to existing views would substantially improve the character and quality through the removal of large scale damage and dereliction and provision of far reaching enhancements.

A.18 The significance of effects is described as substantial, major, moderate, minor or neutral. Where there is only a negligible magnitude of impact on a landscape or visual resource, the assessment records neutral. Significance varies according to individual circumstances and the baseline situation, for example the presence of landscape designations and/or visual detractors.

A.19 Those effects identified as being of substantial or major significance may be regarded as significant effects in EIA terms. A conclusion that an effect is 'significant' should not be taken to imply that the project is unacceptable. Significance of effect needs to be considered with respect to the extent of a landscape or a view over which it is experienced.

Appendix 4.B: Master Impact Table

Table 4.B.1: Construction Phase Landscape Effects

Landscape/Townscape Receptor			**Landscape Effects**				**Significance of Effect**	
Character Area/Type	**Condition**	**Value (Level of Importance)**	**Sensitivity**	**Description**	**Magnitude of Proposed Change**	**Nature/ Duration of Proposed Change**	**Daytime**	**Night time**
National Character Areas								
Shropshire, Cheshire and Staffordshire Plain	Poor to Ordinary	Local	Low, site characteristic of the landscape	Direct, large scale construction site and contained ground level with high level construction activities in an industrial/urban location, not uncharacteristic of the character area. Some loss of early regenerating scrub and ruderals on disused site.	Medium effect on the landscape/ townscape	Adverse, short term	Minor adverse	Neutral
Cheshire Sandstone Ridge	Ordinary	Local	Low, site not within character area	Indirect, large scale construction works in the context of adjacent industry and character areas.	Small effect on landscape	Adverse, short term	Neutral	Neutral
Regional and Local Landscape Character Type / Areas **Cheshire Landscape Character**								
Urban - U	Poor	Local	Low, site characteristic of the landscape/ townscape	Direct, large scale construction site and contained ground level activities in an industrial location, not uncharacteristic of the character area. Some loss of early regenerating scrub and ruderals on disused site.	Medium	Adverse, short term	Minor adverse	Neutral
Anderton - Salt Flashes (SLF2)	Poor	Local	Low, site not within character area	Indirect, large scale construction works in the context of adjacent industry and character area.	Small	Adverse, short term	Neutral	Neutral
Industry - 18	Poor	Local	Low, site not within character area	Indirect, large scale construction works in the context of adjacent industry and character area.	Small	Adverse short term	Neutral	Neutral

Landscape/Townscape Receptor			Landscape Effects				Significance of Effect	
Character Area/Type	**Condition**	**Value (Level of Importance)**	**Sensitivity**	**Description**	**Magnitude of Proposed Change**	**Nature/ Duration of Proposed Change**	**Daytime**	**Night time**
Arley - Lower Farms and Woods (LFW3)	Ordinary	Local	Low, site not within character area	Indirect, large scale construction works in context of distant industry and character area.	Small	Adverse, short term	Neutral	Neutral
Stublach – East Lowland Plan (ELP4)	Poor to Ordinary	Local	Low, site not within character area	Indirect, large scale construction works in context of distant industry and character area	Small	Adverse, short term	Neutral	Neutral
Vale Royal Landscape Character								
Lostock Plain (6C)	Poor	Local	Low, site characteristic of the landscape / townscape	Direct large scale construction site and contained ground level and high level construction activities in an industrial location, not uncharacteristic of the character area. Small loss of early regenerating scrub and ruderals.	Medium	Adverse, short term	Minor adverse	Neutral
Northwich Salt Heritage Landscape (13A)	Poor	Local	Low, site not within character area	Indirect large scale construction works in context of adjacent industry and character area.	Small	Adverse, short term	Neutral	Neutral
Stublach Plain (6B)	Poor to Ordinary	Local	Medium, site not within character area	Indirect large scale construction works in context of adjacent industry and character area	Small	Adverse, short term	Minor adverse	Neutral

Table 4.B.2: Construction Phase Visual Effects

Receptor					Visual Effects			Significance of Effects	
VP	**Type**	**Location**	**Distance**	**Sensitivity**	**Description**	**Magnitude of change**	**Nature & duration of proposed change**	**Daytime**	**Night time**
1	Footpath. Pedestrians	Footpath (Rudheath FP6),Griffiths Road	400 m	Medium	Close restricted views gained by footpath users partly obscured by topography of high level construction activity including crane associated with stack construction and upper section of REnescience facility building and storage tanks. Low level works and vehicle movements would be screened by topography and intervening vegetation in the mid ground.	Small	Adverse, short term	Minor adverse	Neutral
2	Promoted path and canal. Pedestrians, residents and canal users.	Trent and Mersey Canal (Rudheath FP10), Rudheath.	600 m	High	Close open view towards site of crane and high level construction of stack, buildings and tanks would be visible above intervening vegetation particularly in winter. Low level activities would be screened by topography vegetation.	Small	Adverse, short term	Moderate adverse	Neutral
3	Public open space. Pedestrians, cyclists and recreational users.	Griffiths Park, Rudheath.	500 m	High	Close contained view gained by park users would focus on the construction site, activities and high level crane activity. The works would be undertaken within an industrial landscape within a site adjacent to existing heavy industry and large scale buildings.	Small	Adverse, short term	Moderate adverse	Neutral
4	Public open space. Pedestrians cyclists and recreational users.	Griffiths Park, Rudheath	200 m	High	Close contained view gained by park users of high level crane activity undertaken within a site adjacent, located within an industrial landscape that includes existing large scale buildings. Filtered view	Small	Adverse, short term	Moderate adverse	Neutral

Receptor					Visual Effects			Significance of Effects	
VP	**Type**	**Location**	**Distance**	**Sensitivity**	**Description**	**Magnitude of change**	**Nature & duration of proposed change**	**Daytime**	**Night time**
					of lower level activity in winter.				
5	Pedestrians and residents	James Street, Rudheath	500 m	High	Close view across rough grassland and regenerating shrub / woodland accessed by local residents of high level activities associated with proposed stack and building forming additional elements in the view. Low level activities would be screened by intervening vegetation.	Small	Adverse, short term	Moderate adverse	Neutral
6	Footpath and local road. Pedestrians, residents, and vehicle travellers.	Cranage Lane/ Manchester Road (Northwich FP15)	300 m	High	Close view across road and blocks of regenerating woodland and trees to the industrial gantries. High level construction activity associated with the stack, building and stacks would be visible new elements in the view. Low level construction activity and traffic movements would not be visible in summer or heavily filtered in winter.	Small	Adverse, short term	Moderate adverse	Neutral
7	Vehicle travellers, pedestrians and people at work.	Manchester Road	200 m	Low	Close view across road and roadside grass and scrub land including hardstanding, pipework and commercial buildings. High level construction activity of stack and building would be visible above intervening vegetation and buildings at the urban / industrial edge of Wincham. Some low level construction activity might be apparent beyond the railway from this location particularly in winter.	Medium	Adverse, short term	Minor adverse	Neutral
8	Footpath. Pedestrians	Footpath (Lostock Gralam FP2), Lostock	1.0 km	Medium	Close open view across rough grassland with intermittent individual trees and tree groups to the	No change	Adverse, short term	Neutral	Neutral

Receptor					Visual Effects			Significance of Effects	
VP	**Type**	**Location**	**Distance**	**Sensitivity**	**Description**	**Magnitude of change**	**Nature & duration of proposed change**	**Daytime**	**Night time**
		Hollow			industrial edge of Northwich. High level construction activity would largely be concealed by or viewed in association with other high level and industrial detractors.				
9	Public open space. Pedestrians, cyclists and recreational users.	Carey Park	2.0 km	High	Middle distance view over grassland to woodland edge of park. The intervening vegetation prevents open views of the site in summer. A filtered view would be achievable in winter. Construction activity would be largely screened or filtered by vegetation.	Negligible	Adverse, short term	Minor adverse	Neutral
10	Local road. Vehicle travellers	Park Lane, Pickmere	3.3 km	Low	Middle distance view from roadside across the arable and pasture fields of Pickmere Valley towards the industrial and urban edge of Wincham set amongst vegetation. View of high level construction activity would be a minor component in the distance within the context of the existing industry.	Small	Adverse, short term	Neutral	Neutral
11	Footpath. Pedestrians.	Footpath (Nether Peover FP11) near Cheadle Farm, Plumley	4.2 km	Medium	Middle distance view by footpath users across grassland and boundary hedgerows with trees. High level construction activity would be barely discernible in distance within the context of the industrial edge of Northwich.	Negligible	Adverse, short term	Neutral	Neutral
12	Promoted path. Pedestrians	Dane Valley Way, Middlewich	7.9 km	High	Long distance view across pasture field and boundary hedgerows towards the proposal site. No view of high level construction activity would be achievable due to	No change	Neutral, short term	Neutral	Neutral

Receptor					Visual Effects			Significance of Effects	
VP	**Type**	**Location**	**Distance**	**Sensitivity**	**Description**	**Magnitude of change**	**Nature & duration of proposed change**	**Daytime**	**Night time**
					screening provided by intervening vegetation in summer and winter.				
13	Footpath and golf course. Pedestrians and golfers.	Vale Royal Abbey Golf Course	6.2 km	High to Medium	Long distance view over mown grassland and boundary vegetation that contains the view. High level construction activity would be concealed due to screening provided by intervening vegetation in summer and winter.	No change	Neutral, short term	Neutral	Neutral

Table 4.B.3: Operational Phase Landscape Effects

Landscape / Townscape Receptor			Landscape Effects				Significance of Effect	
Character Area	**Condition**	**Value (Level of Importance)**	**Sensitivity**	**Description**	**Magnitude of Proposed Change**	**Nature/ Duration of Proposed Change**	**Daytime**	**Night time**
National Character Areas								
Shropshire, Cheshire and Staffordshire Plain	Poor to Ordinary	Local	Low, site characteristic of the landscape	Large scale REnescience plant in industrial urban fringe location within character area. Redevelopment of disused industrial site and landscape treatment. Not uncharacteristic of character area.	Medium	Beneficial, long term	Minor beneficial	Neutral
Cheshire Sandstone Ridge	Ordinary	Local	Low, site not within character area	Large scale REnescience plant in the context of adjacent industry and character area.	Negligible	Adverse, long term	Neutral	Neutral
Regional Landscape Character Type / Areas **Cheshire Landscape Character**								
Urban - U	Poor	Local	Low, site characteristic of the landscape/ townscape	Large scale REnescience plant in industrial location within character area. Redevelopment of disused industrial site and landscape treatment. Not uncharacteristic of character area.	Medium	Beneficial, long term	Minor beneficial	Neutral
Anderton – Salt Flashes (SLF2)	Poor	Local	Low, site not within character area	Large scale REnescience plant and stack in the context of adjacent and nearby large scale industry and visual detractors.	Small	Adverse, long term	Neutral	Neutral
Industry -18	Poor	Local	Low, site not within character area	Large scale REnescience plant and stack in the context of adjacent and nearby large scale industry and visual detractors.	Small	Adverse, long term	Neutral	Neutral
Arley – Lower Farms and Woods	Ordinary	Local	Low, site not within character area	Large scale REnescience plalnt and stack in context of adjacent (and distant) large scale industry.	Negligible	Adverse, long term	Neutral	Neutral

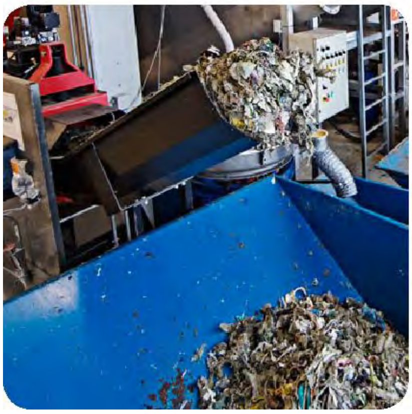
Landscape / Townscape Receptor			Landscape Effects				Significance of Effect	
Character Area	**Condition**	**Value (Level of Importance)**	**Sensitivity**	**Description**	**Magnitude of Proposed Change**	**Nature/ Duration of Proposed Change**	**Daytime**	**Night time**
Stublach – East Lowland Plain (ELP4)	Poor to Ordinary	Local	Low, site not within character area	Large scale REnescience plant and stack in context of adjacent (and distant) large scale industry.	Negligible	Adverse, long term	Neutral	Neutral
Vale Royal Landscape Character								
Lostock Plain (6C)	Poor	Local	Low, site characteristic of the landscape / townscape	Large scale REnescience plant in industrial location within character area. Redevelopment of disused industrial site and landscape treatment. Not uncharacteristic of character area.	Medium	Beneficial, long term	Minor beneficial	Neutral
Northwich Salt Heritage Landscape (13A)	Poor	Local	Low, site not within character area	Large scale REnescience plant and stack in context of adjacent large scale industry and visual detractors of character area.	Small	Adverse, long term	Neutral	Neutral
Stublach Plain (6B)	Poor to Ordinary	Local	Medium, site not within character area	Large scale REnescience plant in context of adjacent industry and character area.	Small	Adverse, long term	Minor adverse (in rural part of character area)	Neutral

Appendix 4.C: Landscape Management Plan

REnescience Northwich








Quality Management

Prepared by:	Jane Betts	Principal Consultant	Jane Betts.	05/10/15
Reviewed & checked by:	Paul Ellis	Associate Consultant	PEllis	05/10/15
Authorised by:	Paul Ellis	Associate Consultant	PEllis	05/10/15
Date of issue:	5 October 2015		**Revision number:**	2
Project number:	OXF9010			
Document file path:	O:\Jobs_8001-9000\8407s\Info_share\ES_submission\Final_Word\Vol3_Appendices\V3A4.C_Landscape_Management_Plan.docx			

Revision History				
Rev	**Date**	**Status**	**Reason for revision**	**Additional comments**
0	16/09/15	Draft	-	-
1	21/09/15	Draft	Draft for client review	-
2	05/10/15	Final	-	-

Contents

Figures and Annexes

Figures

Annexes

1 Induction

Overview

1.1 This Landscape Management Plan deals with the soft landscape works proposed as part of the REnescience Northwich development and addresses long term design objectives, management responsibilities and provides plans and maintenance schedules as follows:

- planting plans – including detail of where orchids will be relocated;
- written specifications (including soil depths, cultivation and other operations associated with plant and grass establishment;
- schedules of plants noting species, planting size and proposed numbers/densities;
- long term design objectives, and implementation programme; and
- management responsibilities and maintenance schedules.

1.2 Details of the existing site location, condition, and proposed development are given in the Environmental Statement (ES) accompanying the planning application.

1.3 This document is based on the landscape design shown Figure 4.Q in Volume 4 of the ES. It includes details of:

- medium term design objectives for a period covering at least five years from completion of the development;
- site clearance, landscape preparation operation and planting preparations as part of the scheme;
- written specifications including the planting proposal for the soft landscape works.
- details of replacement trees, shrubs and other planting in the event of any being removed, dying or becoming diseased or damaged within the five year maintenance period, post completion of the development;
- information of the time periods within which any tree, shrub or other planting/seeing should be replaced; and
- written specifications including cultivation and other operations associated with plant and grass establishment in the long term.

Design and Management Objectives

1.4 The design and management objectives of the landscape proposals are to integrate the proposed development within the existing surrounding landscape. In particular, to:

- provide enhancements to the aesthetics of the site through the provision of soft landscape features;

- retain and enhance existing landscape features where possible on site;
- provide landscape features that provide an element of visual screening; and
- establish long-term management of the site and the upkeep of the land area under the applicant's control.

Management Aims

1.5 The plan sets out specific management aims to supplement the design objectives and seeks to:

- increase biodiversity and create a quality ecological environment;
- retain and enhance existing landscape features where possible on site;
- provide enhancements to the site through the provision of soft landscape features;
- ensure that newly planted areas become well established and meet their landscape potential;
- introduce native wildflower grassland appropriate to the local area; and
- keep the site clear of litter and rubbish.

1.6 Landscape and ecological enhancement objectives can take many years to fulfil, during which time circumstances can change and opportunities arise. It is therefore expected that the management plan would require revision and that the management process be reviewed at five yearly intervals and be modified accordingly to incorporate any improvements, taking into consideration the evolution of landscape management practice. This would identify which species prove most successful and amend the specifications and management regimes accordingly.

Implementation and Maintenance Programme

1.7 The implementation of landscape works will be carried out concurrently with the development and be completed within one year of substantial construction completion. This Landscape Management Plan is in two parts, firstly describing the requirements for the first year after substantial completion and the following four years maintenance, and the secondly describing the long-term requirements from the sixth year onwards.

2 Implementation and Initial maintenance

The Landscape Scheme

2.1 The landscape proposals have been designed as an integral part of the development to provide treatments for the perimeter of the site and green spaces within the application boundary. The landscape design forms a sequence of specific landscape proposals focussed on the enhancement of the local landscape. The proposals comprise the following features:

- native tree and shrub planting within a boundary strip to provide a soft boundary treatment and screening along the west, south and east boundary of the site to integrate the buildings and tanks particularly when viewed from the north west;
- native tree and shrub planting along the southern boundary to provide connectivity to existing vegetation retained along Wade Brook;
- ground preparation for translocated fragrant orchids on part of site;
- wildflower grassland along northern boundary of the site; and
- internal areas of shrubs and individual trees.

2.2 The specification indicates the standards of workmanship that will be accepted in the implementation and maintenance of the landscape areas to be maintained by the REnescience Northwich development operator.

Vegetation Protection

2.3 All existing vegetation to be retained will be done so in line with the recommendations of BS 5837:2012 '*Trees in relation to design, demolition and construction – Recommendations*'. Appropriate protective fencing will be erected prior to any site clearance, excavation or preparation and will remain in place and intact until the site works are complete. The precise position of the fencing on site will be agreed with the Landscape Architect and Site Manager prior to commencement of site clearance works.

2.4 Protective fencing will be erected around the site allocated for fragrant orchid and short perennial habitat prior to translocation of fragrant orchids and will remain in place until the site works are complete. The precise position of the fencing on site will be agreed with the Ecologist and Site Manager prior to site preparation and translocation of orchids.

Soil

2.5 The existing soils (topsoil and subsoil) are not expected to be adequate or of sufficient quantity for planting, and imported topsoil is likely to be used on site for landscape areas. Site won or imported topsoil would be subject to validation in the form of sampling. A catch-all suit of analysis would be required and the recommendation for a clean cover system to cover made ground of the site is likely to be used. Prior to the commencement of the planting contract, all top soiling and grading operations and hard works will have been completed as part of the enabling engineering contract.

2.6 Topsoil will be spread to the following minimum depths:

- wildflower grassland areas 100 mm;
- shrub areas 300 mm;
- tree and shrub areas 450 mm; and
- tree pits as specified for larger stock.

2.7 The landscape contractor will satisfy himself that the topsoil is of the required depths at commencement of planting operations and this will be seen as an acceptance of the soil quality in order to satisfy the liability for all tree and shrub stock.

Planting Season

2.8 Sowing season for grass and wildflower seed mixes will be during suitable calm weather conditions from mid-March to the end of April or late August to mid-October. Sowing wildflower mixtures in dry weather will be avoided.

2.9 Planting deciduous and evergreen native trees and shrubs will generally be between early November to late March.

2.10 Container-grown plants can be planted at any time if ground and weather conditions are favourable and adequate watering can be ensured.

2.11 No planting will be undertaken during periods of freezing conditions.

Shrub and Tree Guards

2.12 Mesh and film shrub and tree guards will be placed round all plants to act as protection from rabbits, overspray or mechanical cutters. Round biodegradable or photodegradable guards will be placed around trees and be supported by a single square section timber stake.

3 Specification

3.1 This section of the Landscape Management Plan uses the format of the National Building Specification for landscape.

Q30: Seeding

To be read with preliminaries in National Building Specification for landscape.

General Information/Requirements

120 Climatic Conditions

- General: Carry out the work while soil and weather conditions are suitable.

145 Watering

- Quantity: Wet full depth of topsoil.
- Application: Even and without displacing seed, seedlings or soil.
- Frequency: As necessary to ensure the establishment and continued thriving of grass sward.

150A Water Restrictions

- Timing: If water supply is or is likely to be restricted by emergency legislation do not carry out seeding until instructed. If seeding has been carried out, obtain instructions on watering.

170A Setting Out

- Boundaries of seeding areas: Mark clearly.
- Notice: Give notice after setting out is complete to enable inspection to be arranged.

Seeding

311 Grass seed for wildflower areas.

- Supplier: Emorsgate.

Grass seed for amenity grass areas.

- Supplier: British Seed Houses

To specification and rates shown in Annex 4.C.1: Plant Specification – Mixes

335 Sowing Season

- Grass seed generally: during suitable calm weather conditions from mid-March to end of April or late August to mid-October.

Avoid sowing wildflower mixtures in dry weather.

Maintenance

605 Once planting has commenced, maintenance of seeded areas within planting plots will be the responsibility of the landscape contractor.

Q31: Planting

To be read with preliminaries in National Building Specification for landscape.

General Information/Requirements

112A Site Clearance

- General: Remove rubbish, concrete, metal, glass and contaminated topsoil.
- Stones: Remove those with largest dimension exceeding 75 mm.
- Contamination: Substances injurious to plant growth including subsoil, rubble, fuel, and lubricants.
- Vegetation: Retain and protect trees and existing vegetation to site boundaries as agreed on site with those responsible. Clear scrub and other surface vegetation to ground level and remove arisings.
- Tree and shrub areas: spray with an approved non-residual herbicide to remove the existing emergent vegetation.

Soil Conditions & Handling

It is important to maintain the physical condition of the soil and avoid structural degradation during all phases of soil handling (e.g. tree pit excavation, fertiliser incorporation, tree pit backfilling). As a consequence, soil handling operations will be carried out when soil is reasonably dry and non-plastic (friable) in consistency.

It is important to ensure that the soil is not unnecessarily compacted by trampling or trafficking by site machinery. In addition, topsoil handling will be stopped during and after heavy rainfall, and not continued until the soil is non-plastic in consistency. If, at any stage during the course of the soiling works, the soil is structurally damaged and compacted, the contractor will ensure that it is suitably cultivated to relieve the compaction and restore the structure prior to any planting.

- Soil for cultivating and planting: Moist, friable and not waterlogged.
- Frozen or snow covered soil: Give notice before planting. Provide additional root protection. Prevent planting pit sides and bases and backfill materials from freezing.

120 Climatic Conditions

- General: Carry out the work while soil and weather conditions are suitable. Do not plant during periods of frost, strong winds or excessive rain fall.

125A Times of year for planting

- Deciduous trees and shrubs: Generally early November to late March.
- Container grown plants: At any time if ground and weather conditions are favourable. Ensure that adequate watering and weed control is provided.

130 Mechanical Tools

- Restrictions: Do not use within 100 mm of tree and plant stems.

145 Watering

- Quantity: Wet full depth of topsoil.
- Application: Even and without damaging or displacing plants or soil.
- Frequency: As necessary to ensure establishment and continued thriving of planting.

150 Water Restrictions

- General: If water supply is or is likely to be restricted by emergency legislation, do not carry out planting until instructed. If planting has been carried out, obtain instructions on watering.

160A Notice

- Give notice to responsible authority before:
  - Setting out
  - Delivery of plants/ trees.
  - Planting and transplanting
  - Application of mulch
  - Each site visit during maintenance period
- Period of notice: 7 days.

165A Preparation, Planting and Mulching Materials

- General: Free from toxins, pathogens or other extraneous substances harmful to plant, animal or human life.
- Certification: Submit a certificate giving supply source, content analysis, confirmation of suitability for purpose and confirmation of absence of harmful substances.
- Certified materials: pesticides, fertilisers, soil ameliorants and bark mulch
- For the following materials submit a 1 litre sample for approval to the contract administrator.

  1. Ameliorants
  2. Mulches

- Give 7 days notice before ordering or using.

200A Plants/ Trees - General

- Condition: Materially undamaged, sturdy, healthy and vigorous.
- Appearance: Of good shape and without elongated shoots.
- Hardiness: Grown in a suitable environment and hardened off.
- Health: Free from pests, diseases, discoloration, weeds and physiological disorders.
- Root system and condition: To comply with the requirements of National Plant Specification and balanced with branch system.
- Species: True to name.
- Origin/ Provenance: As scheduled. Origin and Provenance have the meaning given in the National Plant Specification.

215A Plants/ Trees - Specification Criteria

- Name, forms, dimensions, provenance and other criteria: As scheduled and defined in the National Plant Specification.

235 Bare root plants to be used. Where Container Grown Plants/ Trees are used as a substitute the following will apply:

- Growing medium: With adequate nutrients for plants to thrive until permanently planted.
- Plants: Centred in containers, firmed and well watered.
- Root growth: Substantially filling containers, but not root bound, and in a condition conducive to successful transplanting.
- Hardiness: Grown in the open for at least two months before being supplied.
- Containers: With holes adequate for drainage when placed on any substrate commonly used under irrigation systems.

245A Labelling and information

- General: Provide each plant/ tree or group of plants/ trees of a single species or cultivar with supplier's labelling for delivery to site, showing:
  - Full botanical name.
  - Total number.
  - Supplier's name.
  - Employers name and project reference.
  - Plant specification, in accordance with scheduled National Plant Specification categories.

250A Supply of Trees/Shrubs – obtain plants from suppliers listed below unless otherwise agreed at time of tender with the responsible authority in writing.

Supplier list to be completed prior to tender.

Make arrangements for all tree/transplant stock to be inspected by the responsible authority and client representative at the supplying nursery/s. Costs to be covered by the contractor.

260 Plant/ Tree Substitution

- Plants/ trees unobtainable or known to be likely to be unobtainable at time of ordering: Submit alternatives, stating:
  - Price.
  - Difference from specified plants/ trees.
- Further alternatives: Proposed substitutions may not be acceptable and submission of further alternatives may be required.
- Approval: Obtain before making any substitution.

265 Plant/tree handling, storage and transport

- Standard: To CPSE 'Handling and establishing landscape plants' (obtainable from the Horticultural Trades Association) Part I, Part II and Part III, paragraphs 1.3.3 to 1.3.6, 3.0, and 4.0.
- Frost: Protect plants/ trees from frost.
- Handling: Handle plants/ trees with care. Protect from mechanical damage and do not subject to shock, e.g. by dropping from a vehicle.
- Plant packaging: Black polyethylene bags.
- Packaging of bulk quantities: Pallets or bins sealed with polyethylene and shrink wrapped.

270 Planting Generally

- Standard: To CPSE 'Handling and establishing landscape plants' (obtainable from the Horticultural Trades Association) Part III, paragraphs 6.2 to 6.6.
- Appearance: Plant upright or well balanced with best side to front.

290 Surplus Material

- General: Remove subsoil, stones, debris, wrapping material, canes, ties, temporary labelling, prunings and other arisings/ rubbish.

Preparation of Planting Beds/ Planting Materials

845B Topsoil Analysis for: Imported topsoil and/or existing topsoil to be re-used on site.

- Soil analyst: NRM laboratories, Coopers Bridge, Braziers Lane, Bracknell, RG42 6NS Tel: 01344 886338. Email: enquires@nrm.uk.com or similar approved soil testing consultancy.

- Collect samples in accordance with BS 3882: 2007 clause 5.3 from locations throughout the site.
- Provide:
  - pH level
  - Electrical conductivity
  - Exchangeable sodium percentage
  - Mechanical analysis
  - Textural classification
  - Stone Content (2mm, 20mm and 50mm)
  - Nutrient levels (nitrogen, available N, P, K and Mg)
  - Organic matter
  - Confirmation of soil grade as defined by BS 3882:2007
  - Phytotoxic & zootoxic contaminants
  - Chemical contaminants
  - Recommendations for making good any deficiencies and fertiliser treatment
  - Confirmation as to whether the soil is suitable for general amenity planting and lawn establishment
- A report detailing the soil analyst's recommendations to be sent to RPS via the responsible authority.
- Carry out any recommendations from the soil analyst for soil amelioration and/or soil handling to the approval of the responsible authority.
- Topsoil will be tested at regular intervals. One composite sample (minimum 2 kg) will represent no more than 5,000 m³ of topsoil.
- Topsoil will be tested once in the stockpiles.

335 General Fertiliser

- Locations: Dependant on the results of the topsoil testing. To be applied to all planting beds if deemed necessary by responsible authority.
- Manufacturer: Scotts
  - Product reference: Enmag compound slow release fertiliser
  - (4%N: 19%P205: 10%K20: 7.5%MgO).
- Application: Apply at 60 g/m2 to each plant position or across planting areas in accordance with the manufacturers recommended rates.
- Timing: At the time of planting.

- Substitutions: Contractor to specify alternatives with their Tenders.

341 Peat

- Peat or products containing peat: Do not use.

359A Bark Mulch

- Locations: To selected standards.
- Product reference: Amenity Bark Mulch.
- Manufacturer/ Supplier:

  Melcourt Industries Ltd or similar approved
  Boldridge Brake
  Long Newton
  Tetbury
  Gloucestershire
  GL8 8RT
  Tel: 01666 502711

- Coverage: 75mm thick.
- Timing: After planting.
- Substitutions: Contractor to specify alternatives with their Tenders, providing a sample to be approved by the competent authority.

375 Ripping

- As permitted by the presence of underground services and roots of existing trees, all **disturbed** planting areas (i.e. those where regrading has occurred) will be ripped with a single winged tine subsoiler to a depth of c. 750 mm (minimum 600 mm) at 1500 mm centres in the direction of the contour or to slight fall to relieve compaction. The contractor is to make himself aware of all existing service information prior to carrying out any cultivation works.
- The contractor will allow for further ripping and/or associated activities deemed necessary by the responsible authority where areas have been trafficked and compacted as part of these works.
- Following ripping carefully grade topsoil levels to smooth flowing contours to remove surface irregularities in accordance with this specification as necessary prior to planting operations.

376 Cultivation

- Cultivation (as required by type of planting operations): Loosen, aerate and break up soil into particles of 2 – 8 mm
  - Depth: full depth of topsoil.
  - Timing: Within 10 days prior to planting.

- Weather and ground conditions: Suitably dry.

- Surface: Leave regular and even.
- Undesirable material brought to the surface: Remove, including weeds, roots,
- Stones and clods larger than 50 mm in any dimension, tufts of grass and foreign matter.
- Soil within root spread of trees and shrubs to be retained: Do not dig or cultivate.

Planting Feathered/ Standard Trees

505 Tree Pits - Generally

- Sizes: See table below. Increase where necessary to ensure at least 75 mm deeper than root system and wide enough to accommodate roots when fully spread.
- Sloping ground: Maintain horizontal bases and vertical sides with no less than minimum depth throughout.
- Pit bottoms: With slightly raised centre. Break up to a depth of 150 mm.
- Pit sides: Scarify.
- Additional requirements: None.
- Backfilling material: As clause 586.

505A Tree Pit Sizes

Diameter (mm) Minimum Depth (mm)

Feathered 1000 mm x 1000 mm

(Disturbed ground)

512 Tree Pit Accessories

- Locations: All Nursery Trees (not protected by rabbit fencing).
- Product: Plastic rabbit/shelter guard
- Type: 600 mm high, diameter to suit stem (nominal 150 mm), placed around the base of each tree.

Supplied by:

Acorn Planting Products Limited or similar approved.
Little Money Road
Loddon
Norwich
NR14 6JD
Tel: 01508 528763
Email: sales@acorn-p-p.co.uk
Colour: Clear

535 Staking of Feathered/Standard trees

- Stakes: Softwood, peeled chestnut, larch or oak, free from projections and large or edge knots and with pointed lower end.
- Preservative treatment: To BS 4072 to minimum 150 mm above ground level.
- Nails: To BS 1202-1, galvanised, minimum 25 mm long and with 10 mm diameter heads.
- Minimum stake sizes: 75 mm in diameter and pointed at the lower end.

545A Short single staking for Feathered trees in Woodland Blocks

- Staking: Position stake close to tree on windward side and drive vertically at least 300 mm into bottom of pit before planting. Consolidate material around stake during backfilling.
- Height of stakes: Cut off to approximately 1/3 stem height or 600 mm above ground level whichever is the shorter.
- Ties: To be supplied by

  J Toms Ltd or similar approved.
  7 Marley Farm Headcorn Road
  Smarden
  Ashford, TN27 8PJ
  Tel: 01233 770066

  Email: infor@tomstreeties.co.uk

  1. Solid moulded rubber pad and

  2. 25 mm wide nylon reinforced, adjustable rubber belt secured to stake using galvanised clout nail in accordance with manufacturers recommendations.

- Tying: Secure tree firmly but not rigidly to stake with one tie within 25 mm of top of stake.

586B Backfill Material to planting pits for Feathered trees on disturbed ground.

Total tree pit depth = nominal 1000 mm

- Ensure base and sides of pit is well broken up
- Backfill the bottom 400 mm with topsoil from topsoil storage pile on site
- Consolidate 200 mm washed medium to coarse sand
- Backfill top 400 mm using the upper layers of the excavated topsoil.
- Topsoil Composition: Upper layers of site won topsoil and/or imported topsoil plus slow release fertiliser as clause 335.

590 Mulching ANS Trees

- Material: See clause 359A.
- Purity: Free of pests, disease, fungus and weeds.

- Preparation: Clear all weeds. Water soil thoroughly.
- Coverage: in circles around stem of each tree 1.0 m diameter, 75 mm thick.

Woodland Block Planting (Excluding Standard Trees)

680 Setting Out

- Planting density: Please refer to Figure 4.R in the ES for details
- Layout: Figure 4.Q in the ES.

685A Planting Pits

- Timing: Excavate pits no more than 48 hours before planting
- Sizes: 150 mm wider than roots when fully spread (approximately 300 mm) and 300 mm deep.
- Additional requirements: Increase dimensions where necessary to ensure that pits are at least 75 mm deeper than root system and wide enough to accommodate roots when fully spread.
- Pit bottom improvement: Break up to a depth of 100 mm.
- Backfilling material: As clause 586B.
- Accessories: Stake and tie each transplant with a timber stake.

586A Staking of Transplants in Woodland Blocks

- Stakes: Square sawn softwood stakes with pointed lower end.
- Preservative treatment: CCA treated.
- Minimum stake sizes: 750 mm x 25 mm x 25 mm.

587A Staking of Transplants

- Staking: Position stake close to tree on windward side and drive vertically at least 300 mm into bottom of pit before planting. Consolidate material around stake during backfilling.
- Height of stakes: approximately 450 mm above ground level
- Ties: Plastic ‘Interlock Ties’ supplied by:

  Acorn Planting Products Limited or similar approved
  Little Money Road
  Loddon
  Norwich
  NR14 6JD
  Tel: 01508 528763
- Contractor to specify alternatives with their Tenders.
- Tying: Secure tree firmly but not rigidly to stake with one tie within 25 mm of top of stake.

690 After Planting

- Watering: Immediately after planting, thoroughly and without damaging or displacing plants or soil.
- Firming: Lightly firm soil around plants.

Protecting/ Maintaining/ Making Good Defects

710 Maintenance

- Duration: Carry out the operations in the following clauses from completion of planting until the end of the 60 month defects liability period.
- Frequency of maintenance visits: Monthly during first growing season or as agreed maintenance schedule.

720 Failures of planting

- General: Plants/ trees/ shrubs that have failed to thrive (unless due to theft or malicious damage after substantial completion) during period stated in clause 710, will be regarded as defects due to materials or workmanship not in accordance with the contract and will be replaced with equivalent plants/ trees/ shrubs.
- During the 60 month defects period replacement planting as agreed with the responsible authority will be carried out every 12 months post substantial completion.
- Replacements: To match size of adjacent or nearby plants of same species or match original specification, whichever is the greater.
- Timing of making good: During the next suitable planting season.

740 Cleanliness

- Soil and arisings: Remove from hard surfaces and grassed areas.
- General: Leave the works in a clean tidy condition at Completion and after any maintenance operations. Maintain planted areas free from litter.

750 Woodland Planting and Shrub Maintenance

- Watering: Only as necessary to prevent plant wilting and death.
- Loose plants: Refirm surrounding soil, without compacting.
- Weed control: Maintain weed free area around each tree and shrub 600 mm in diameter by use of an approved non-residual herbicide for the first two years. Following this, spray any significant notifiable and/or pernicious weeds with an approved selective non-residual herbicide following agreement with the responsible authority.
- Nurse species (*Populus tremula*) to be removed after canopies of adjacent trees have joined; remaining trees to be thinned where necessary. Only as instructed by the responsible authority.

- Precautions: Ensure that trees and shrubs are not damaged by use of mowers, nylon filament rotary cutters and similar powered tools during grass maintenance. Any damage that could reasonably affect the future health and longevity of the plant will require the plant to be replaced at the same size at the contractors expense.
- Staking: Check condition of stakes, ties, guys, shelters and guards. Replace broken or missing items. Adjust if necessary to allow for growth and prevent rubbing of bark. Cut back any damaged bark.
- After 5 years, remove all stakes, ties and shelters and remove from site or as instructed by responsible authority.

760A Planting Maintenance - Pruning

- General: Prune at appropriate times for species, to remove dead or dying and diseased wood and suckers, to promote healthy growth and natural shape of species.
- Trees: prune to reflect natural habit of species and to favour a single central leader.

765 Planting Maintenance - Watering

- General: As clauses 145 and 150.

780 Maintenance Instructions

- General: Before end of the period stated in clause 710, submit printed instructions recommending procedures to be established by the Employer for maintenance of the planting work for one full year: Provide a schedule of any ongoing maintenance problems experienced during the defects liability period.
- Review recommendations for long term responsibilities and landscape management.

4 Requirements for Period of Maintenance

Introduction

4.1 DONG Energy Ltd is committed to the maintenance and aftercare of the landscaping features following substantial completion for a period of five years (60 months maintenance period).

4.2 Specific maintenance operations set out in section 5 of this report will be quantified with tender information. The chosen Landscape Contractor will be required to undertake all the operations (on behalf of DONG Energy Ltd) as specified herein or in other general conditions of the specification described on the accompanying drawings.

4.3 DONG Energy Ltd via its appointed contractor will appoint a competent Landscape Architect to monitor the implementation of the design and maintenance of the Landscape Proposals shown in Figure 4.Q and Figure 4.R in Volume 4 of the ES.

Maintenance Frequency

4.4 Visits by the Landscape Contractor to the site will be made as often as is necessary, but not less than bi-monthly during the first year and at least four times per year in the four additional years.

4.5 The Landscape Contractor is required to inform the Landscape Architect as soon as is practicable of any recommendations for remedial works observed during these regular maintenance visits.

Inspection and Reporting

4.6 The Landscape Architect should inspect the site no less frequently than 3 monthly intervals during the first year and at least twice per year in the four additional years.

4.7 After each visit recommendations for remedial and or additional works arising from the inspections should be provided in a written report. The Landscape Contractor will be required to implement all recommended works which are approved by the Client at the earliest opportunity.

Replacement Planting

4.8 Defective, dead or inadequately established plants will be replaced at an appropriate time during the five year maintenance period after completion. Following an assessment before the end of each growing season, the Landscape Architect will recommend the extent of required replacement which will be carried out at the earliest opportunity in the subsequent planting season.

4.9 Replacement planting will be undertaken strictly in accordance with either the relevant clauses of the Planting Specification for initial work or the recommendations of the Landscape Architect for subsequent work. Replacement plants should be of at least the same size, age and quality as the original stock. If it is evident that a species is not surviving in a particular location then an alternative native species should be agreed with the local planning authority.

Establishment Criteria

4.10 Plants identified in the replacement assessment as being dead, dying, unhealthy or having insufficient growth will be determined to be those which have failed to establish satisfactorily.

4.11 Insufficient growth is defined as not exhibiting visible signs of increased height and spread at the end of each growing season which would be typical for the species in the general climatic conditions of the locality.

Watering

4.12 Watering will be carried out to ensure the continued thriving of all the planting.

Weed Control

4.13 Growth and establishment of weed species, as defined in the Weeds Act 1959 and schedule 9 Part 2 of the Wildlife and Countryside Act 1981, will be prevented as far as is practicable.

4.14 Pernicious weeds in all parts of the site will be controlled before the dispersal of seeds by cutting and / or spot treatment with non-persistent herbicide and removed from site.

Herbicide and Pesticide

4.15 During the establishment period a weed- and grass-free area of 300 mm radius around each tree and shrub will be maintained. This will reduce competition for the growing trees and shrubs. Whenever plant densities are low enough to avoid risk of damage, selective non-persistent herbicides may be used for this purpose.

4.16 Safe and responsible use of herbicides and pesticides is paramount and relevant legislation must be adhered to. Those responsible should ensure awareness of all of the obligations imposed by these provisions.

4.17 All chemicals must be officially recognised for amenity, horticulture or forestry use and be non-toxic to humans, birds and animals when applied as recommended.

4.18 Non-persistent herbicides will be used as seldom as necessary and in the smallest recommended quantities for the control objective. Rotational use is preferred to prevent accumulation of particular chemicals and reduce the risk of week resistance. Application of liquid non-persistent herbicides should be by controlled droplet applicator and guards to prevent drift must be fitted to spraying equipment where used. Liquid non-persistent herbicide application must not take place in wet or windy weather conditions.

4.19 Those responsible will ensure that the method of herbicide/pesticide application does not lead to the pollution of any pond or watercourse and will hold responsibility for any such pollution.

4.20 No herbicides or pesticides will be used in the area allocated for retention and translocation of fragrant orchid and ragwort habitat.

Litter

4.21 Litter and other debris will be collected, removed and disposed of by the contractor from the site at least three times per year or more frequently if required.

Grassed Areas

4.22 Grassland maintenance aims to establish healthy and complete plant cover which will minimise soil erosion, crusting and control of pernicious weed competition. Pernicious weed control applies equally to planted and grassed areas including those seeded with wildflower grassland mix. Use of grass growth retardants will not be permitted in any part of the site.

4.23 Any trees or shrubs damaged by grass cutting operations will be regarded as defective and will be replaced.

4.24 Any significant failed or damaged areas of seeding including surface accumulation of stones, slope instability and localised subsidence or compaction will require remedial work to re-grade, re-cultivate and re-seed.

4.25 All machines will be well maintained and mowers will be set to cut the grass cleanly and evenly to the heights required. Grass cutting machines will be appropriate to the size of the areas being cut and standard of finish specified. To avoid damage to the stems of trees and shrubs, the use of cutting machines (including strimmers) within 500 mm of tree and shrubs stems will not be permitted.

Wildflower Grassland Areas – EM2

4.26 Post-establishment, the wildflower meadow will be subject to a routine mowing regime, with the sward being cut back early in the growing season (March/April) to a height of 50-75 mm with the arisings being removed during the first year.

4.27 A second cut will be planned for August, with the arisings being allowed to dry-out. A tidy up cut will then be undertaken in October with the arisings being collected.

4.28 All edges of grass adjacent to internal road way will kept neat by use of hand/mechanical edge strimmer.

Amenity Grassland Areas – A4

4.29 Post-establishment, amenity grassland will be subject to a routine mowing regime to maintain a neat sward cut to a height of 50 mm during the growing season. All edges of grass adjacent to the footway and car park will be kept neat by use of a hand/mechanical edge strimmer.

Native Tree and Shrub Planting

4.30 All work undertaken in the maintenance of native shrubs will be carried out in accordance with good horticultural practices. The contractor will liaise with the Landscape Architect to ensure that the standard of work undertaken is satisfactory.

4.31 The contractor will be responsible for the replacement of any plants damaged or killed by inappropriate use of herbicide or mechanical cutter. Replacement shrubs should be the same size and species as the damaged shrub.

4.32 A weed and grass free area of 300 mm radius will be maintained around each plant.

4.33 All shrubs will be examined at the end of the growing season (September) and where necessary pruning of dead or damaged wood will be undertaken to maintain appropriate form and vigour. When removing branches, care will be taken not to damage or tear the stem. Wounds will be kept as small as possible and cut back to sound wood.

Ivy

4.34 All work undertaken in maintenance of plots planted with ivy will be carried out in accordance with good horticultural practice.

4.35 The contractor will be responsible for the replacement of any plants damaged or killed by inappropriate use of herbicide or mechanical cutter. Replacement ivy should be the same size and species as the damaged plant.

4.36 Plots of ivy will be examined at the end of the growing seeding and cut back to the verge as necessary to maintain plants within planting plot. Where possible, ivy can be left to climb adjacent walls, trimmed as required to maintain a neat appearance.

Pruning

4.37 Pruning of damaged, dead or diseased wood will be undertaken when opportunities for pruning are identified which would be beneficial to growth form and plant health, as well as for cosmetic or safety reasons. Wood removed through pruning operations will be removed from the site for the first five years following substantial completion.

4.38 Pruning, trimming and cutting operations will be avoided during bird nesting season. No pruning will be done within the period of mid-February to September.

Transplanting of Existing Orchids

4.39 Existing fragrant orchids (*Gymnadenia conopsea),* from areas of the site identified by an ecologist, will be relocated to area allocated for fragrant orchids within the proposed site layout. Details of the translocation method are given in Annex 4.C.2 and the retained habitat area is shown in Figure 4.Q in Volume 4 of the ES.

4.40 All fragrant orchid plants identified will be translocated. The operation will be undertaken by a specialist contractor using plate bed lifting equipment and supervised by a suitably qualified ecologist.

5 Management Schedules for Soft Landscape

5.1 Specific maintenance operations for the various elements of the landscape scheme are set out below to cover the five year aftercare period following substantial completion.

Wildflower Grassland

5.2 Management aim: for wildflower meadow land to be floristically diverse.

5.3 Management objectives:

- to maintain wildflower grass areas by required mowing regime;
- to allow wildflower grassland to flower each year; and
- to control pernicious weeds.

Item	Objective	Operation	Timing	Frequency
1	Allow wildflower grass to regenerate	Cut to 50-75 mm after flowering and at the end of season	August and leave arisings. October and remove arisings	Cut twice per year depending on weather conditions.
2	Keep pernicious weeds under control	Check and report any weed problems to overseeing agent and spot treat or remove by hand.	June/July before seeds set.	As required
3	Keep grass areas free from litter	Litter picking and removal. By hand and removed to legal disposal.	Any time	As required
4	Keep edges with internal road way neat and tidy	Use hand/mechanical strimmer to tidy kerb edge.	Any time	As required

Amenity Grassland

5.4 Management aim: for amenity grassland to be kept short and neat for occasional use.

5.5 Management objectives:

- to maintain tidy amenity grassland by required mowing regime; and
- to control pernicious weeds.

Item	Objective	Operation	Timing	Frequency
1	Allow amenity grass to establish an even sward.	Cut during growing season to 50 mm to maintain even sward.	April to October	Once every 2 weeks
2	Keep pernicious weeds under control.	Check and report any weed problems to overseeing agent and spot treat or remove by hand.	June/July before seeds set.	As required

Item	Objective	Operation	Timing	Frequency
3	Keep grass areas free from litter.	Litter picking and removal. By hand and removed to legal disposal.	Any time	As required
4	Keep edges with footway and car park neat and tidy	Use hand/mechanical strimmer to tidy kerb edge.	Any time	As required

Native Shrub Planting

5.6 Management aim: to establish new areas of native shrubs associated with the REnescience facility.

5.7 Management objectives:

- to maintain native shrubs and ground cover to ensure good establishment and survival rate close to REnescience facility;
- to minimise completion from grass and weeds; and
- to keep planted area free from litter.

Item	Objective	Operation	Timing	Frequency
1	Keep planting plots free from weeds to reduce competition and improve visual amenity	Herbicide treatment to maintain 300 mm clear area around base of plants. Weeding by hand to present an attractive appearance.	March and August March to October	Twice per year Bi-monthly
2	Maintain plant stability and prevent wind blow	Firming and checking guards, stakes and ties	March and September	Twice per year
3	Maintain integrity of planting	Monitor any plant losses and replace.	Inspection September and replanting November to February.	Once per year for 5 years
4	Encourage growth and natural form of plant	Inspect for dead or damaged branches. Prune with good horticultural practice.	Autumn (before leaf fall)	Once per year
5	Keep native shrub plots free from litter	Litter picking, collection and removal to legal disposal.	As required	Monthly
6	Prevent plant pinching and improve visual amenity	Check and remove stakes and guards where necessary.	As required	Once on final inspection at end of year 5
7	Keep edges of plots next to roadway and footway neat.	Use hand/mechanical strimmer or hedge cutter to kerb edge tidy.	Any time	As required

Native Trees and Shrubs

5.8 Management aim: to establish vegetation boundary and visual screen to REnescience facility and increase green infrastructure and biodiversity.

5.9 Management objectives:

- to maintain belt of boundary trees and shrubs to ensure good establishment and survival rate close to REnescience facility;
- to promote a dense low and high level vegetation screen;
- to promote species diversity;
- to minimise competition from grass and weeds; and
- to keep planted area free from litter.

Item	Objective	Operation	Timing	Frequency
1	Keep planting plots free from weeds to reduce competition and improve visual amenity	Herbicide treatment to maintain 300 mm clear area around base of plants. Weeding by hand to present an attractive appearance.	March and August March to October	Twice per year Bi-monthly
2	Maintain plant stability and prevent wind blow	Firming and checking guards, stakes and ties	March and September	Twice per year
3	Maintain integrity of planting	Monitor any plant losses and replace.	Inspection September and replanting November to February.	Once per year for 5 years
4	Encourage healthy growth and natural form of plant.	Inspect for dead or damaged branches. Prune with good horticultural practice.	Autumn (before leaf fall)	Once per year
5	Keep boundary tree and shrub belt free from litter.	Litter picking, collection and removal to legal disposal.	As required	Bi-monthly
6	Prevent plant pinching and improve visual amenity	Check and remove stakes and guards where necessary.	As required	Check once per year. Remove on final inspection at end of year 5

Individual Trees

5.10 Management aim: feature trees to present a visible indication of tree structure.

5.11 Management objectives:

- to maintain newly planted trees to ensure good survival rate and development;
- to minimise competition from grass and weeds; and
- to maintain well shaped trees.

Item	Objective	Operation	Timing	Frequency
1	Reduce completion from grass and weeds	Herbicide treatment to maintain 300 mm clear around base of trees	March and August	Twice per year
2	Ensure trees grow straight and are not damaged.	Check the stakes, ties and guards are intact and secure. Check that guards and stakes are upright and not rubbing against bark. Adjust and replace as necessary.	As necessary	Four times per year.
3	Ensure trees become self-supporting	Check tree stability by gentle shaking. Remove stakes and guards once root growth is well established and tree is secure	Once	4-5 years after planting
4	Maintain good shape	Check for damage or disease to branches. Prune with good horticultural practice.	Autumn (before leaf fall)	Once per year
5	Ensure continued health of trees	Visual inspection for damage, poor growth, pests or disease. Take remedial action such as watering, decompaction, pest control.	As necessary	As necessary

Ivy

5.12 Management aim: to establish unbroken vegetation cover within narrow planting plots.

Management objectives:

- to maintain plots to ensure good survival rates and cover;
- to minimise competition from weeds;
- to maintain neat vegetation edge adjacent to road and pathways; and
- to keep planted area free from litter.

Item	Objective	Operation	Timing	Frequency
1	Keep plots free from weeds to reduce completion and improve visual amenity	Weeding by hand to present an attractive appearance	March to October	Bi-monthly
2	Maintain integrity of ground cover planting	Monitor any plant losses and replace	Inspection September and replanting November to February	Once per year for five years
3	Maintain neat edge to roads and footways	Hand or mechanical cut to back of kerb.	April and September	Twice a year
4	Keep Ivy plots free from litter	Litter picking, collection and removal to legal disposal.	As required	Bi-monthly

Fragrant Orchids

5.13 Management aim: to establish area suitable for continued thriving of fragrant orchid.

Management objectives:

- to maintain area of locally occurring fragrant orchid;
- to ensure no fertilisers are added and no pesticides used; and
- To keep orchid area free from litter.

Item	Objective	Operation	Timing	Frequency
1	To maintain bare ground	Annual hand weeding to maintain 50% bare ground and prevent one species becoming dominant.	At end of growing season (Sept/Oct).	Once per year
2	Limit encroachment of competing scrub	Hand pulling seedlings	Spring (May)	Once per year
3	Limit encroachment of competing scrub	Cutting back shrubs to maintain 10% cover	Autumn (Sept/Oct)	Once per year
4	Keep area free from litter	Litter picking collection and removal.	As required.	Bi-monthly

6 Requirements for Long Term Management

6.1 It is anticipated that the new landscape features will not become fully established until about six years after substantial completion of the development. At that time an assessment should be undertaken firstly to identify specific flora to be encouraged and secondly to inform an appraisal of additional replacement planting and long term management requirements.

6.2 It is recognised that the period of long-term management is a care period and will be required to manage and maintain the landscape surrounding the REnescience site to a regulated programme to achieve the desired long term effect.

6.3 Long-term management proposals can only be provisional and are intended to be subject to re-assessment. The primary purpose of this part of the plan is to give a broad indication of the nature of management likely to be required to achieve design objectives by twenty years after substantial completion.

6.4 Litter and weed control are ongoing requirements and should therefore be monitored and kept under control through regular and appropriate action as necessary.

Proposed Tree and Shrub Areas

6.5 The tree and shrub boundary treatment should be managed to create as dense visual screen. A good structure of low level shrubs and higher tree species should be promoted.

Management of Trees and Shrubs

6.6 Pruning of damaged, dead or diseased wood should continue to be undertaken as required to ensure beneficial form of growth and plant health or for cosmetic or safety reasons. Pruning or coppicing work would take place where necessary. The timing a techniques employed in pruning will follow established good horticultural and ecological practice. The bird nesting season in mid-February to September will be avoided.

6.7 Inspections should be made in year 10 to identify and remove any unwanted specimens or species, particularly nurse species after canopies of adjacent trees have joined.

6.8 Where possible, dead wood free from disease should to be retained within boundary planting to promote habitat diversity.

Maintenance Year	Operation	Timing	Frequency
Year 6 onwards	Litter clearance		As necessary
Year 7 onward	Pruning dead, diseased or dangerous wood.	Autumn	Annually / as required
Year 7 and Year 14	Coppice hazel, blackthorn, guelder rose to promote bushy growth.	November to February	As necessary

Maintenance Year	Operation	Timing	Frequency
Year 10	Remove unwanted or nurse species particularly after canopies of adjacent trees have joined.	Autumn	Once
Years 5 to 20	Reinforcement planting	November to February	As necessary
Years 5 to 20	Continuous monitoring		As necessary

Management of Shrubs

6.9 Inspections should be made to identify and remove unwanted specimens or species. Any plant species found to be failing in significant quantities should be replaced with species which would appear to be more resilient to the locality.

Management of Wildflower Grassland

6.10 Wildflower grassland areas are intended to be maintained by mechanical cutting (topping) as appropriate to meet the less intensively managed regime to allow seeding and increase biodiversity. The following measures should be observed:

- plant used for mowing to be appropriate to the areas to be mown and the gradients thereof;
- timing of cutting to allow for setting of seeds;
- maintain low fertility by avoiding fertiliser application and by removing cuttings from site wherever possible; and
- the management regime of the grassland should be adjusted as appropriate if the original design objectives are not being met.

Management of Fragrant Orchid Habitat

6.11 No fertilizers should be added or no herbicide or pesticides used in the area allocated for fragrant orchids. Ongoing hand-weeding as necessary should be used to maintain 50% bare ground. Inspection should be made to ensure encroachment of scrub is prevented. Scrub should be removed by hand to limit it to at most 10% cover to avoid shading of area.

Annexes

Annex 4.C.1: Plant Specification List

Trees and Shrubs Mix

Species	Common Name	% Mix	Size
Trees			
Acer campestre	Field maple	5	60-90 cm transplant
Alnus glutinosa	Alder	10	60-90 cm transplant
Betula pendula	Silver birch	5	60-90 cm transplant
Carpinus betulus	Hornbeam	6	1.5-2.0 m feathered
Populus tremula	Aspen	7	60-90 cm transplant
Prunus avium	Wild cherry	7	60-90 cm transplant
Shrubs			
Corylus avellana	Hazel	10	60-90 cm transplant
Crataegus monogyna	Hawthorn	10	60-90 cm transplant
Ilex aquifolium	Holly	10	45-60 cm pot grown
Prunus spinosa	Blackthorn	10	60-90 cm transplant
Salix caprea	Goat willow	10	60-90 cm transplant
Viburnum opulus	Guelder rose	10	60-90 cm transplant

Shrubs

Species	Common Name	% Mix	Size
Shrubs			
Cornus sanguinea	Dogwood	10	60-90 cm transplant
Crataegus monogyna	Hawthorn	30	60-90 cm transplant
Ilex aquifolium	Holly	25	45—60 cm pot grown
Prunus spinosa	Blackthorn	15	60-90 cm transplant
Rosa canina	Dog rose	10	60-90 cm transplant
Viburnum opulus	Guelder rose	10	60-90 cm transplant

Species	Common Name	Number	Size
Hedera helix	Ivy		2 ltr pot

Wildflower Grassland Mix

Emorsgate EM2 – Standard General Purpose Meadow Mixture

This meadow mixture contains species that are characteristic of traditional meadows across a wide range of soil types. Sowing rate 4 g/m^2.

Species	Common Name	%
Wild Flowers		
Achillea millefolium	Yarrow	0.5
Centaurea nigra	Common Knapweed	3
Daucus carota	Wild Carrot	0.4
Galium verum	Lady's Bedstraw	1.5
Knautia arvensis	Field Scabious	1.3
Leucanthemum vulgare	Oxeye Daisy	1
Lotus corniculatus	Birdsfoot Trefoil	1.4

Plantago lanceolata	Ribwort Plantain	2.5
Plantago media	Hoary Plantain	0.5
Primula veris	Cowslip	0.3
Prunella vulgaris	Selfheal	2
Ranunculus acris	Meadow Buttercup	3
Rhinanthus minor	Yellow Rattle	1.5
Rumex acetosa	Commom Sorrel	1.0
Trifolium pratense	Wild Red Clover	0.1
Grasses		
Agrostis capillaris	Common Bent	8
Cynosurus cristatus	Crested Dogstail	40
Festuca rubra	Slender-creeping Red-fescue	28
Phleum bertolonii	Smaller Cat's-tail	4

Amenity Grassland Mix

British Seed Houses A4 – Low Maintenance Areas

This low maintenance mixture is suitable for creating natural grassland landscapes where minimal maintenance is required. It is adaptable to a range of cutting heights. Sowing rate 35 g/m^2.

Species	**Common Name**	%
Grasses		
CORAIL	Strong Creeping Red Fescue	40
JOANNA	Chewings Fescue	30
MENTOR	Hard Fescue	25
HIGHLAND	Bent Grass	5%

Individual Trees

Species	**Common Name**	**Number**	**Size**
Prunus avium	Wild cherry	4	10-12 selected standard
Quercus robur	Common oak	5	10-12 selected standard
Sorbus aucuparia	Rowan	5	10-12 selected standard

Annex 4.C.2: Orchid Translocation Plan

Introduction

Fragrant orchid *Gymnadenia conopsea* was recorded on the REnescience Northwich development site during a Phase 1 Habitat Survey undertaken by in June 2015 (see Appendix 7.C in Volume 3 of the ES). The plant was recorded in one location close to the eastern boundary and one location just outside of the eastern boundary on the edge of the access road into the site. Both locations are shown on the plan and photographs below.

There is potential for the plants to be disturbed or destroyed during the construction phase of the proposed development. Therefore, the plants will be translocated to an area of retained habitat within the development site before the works commence.

Receptor site

A receptor site has been chosen close to where the orchids have been recorded along the eastern site boundary, as shown on the plan below. Its context within the overall landscaping proposals is shown in Figure 4.Q in Volume 4 of the ES. The habitat currently present in the receptor area is the same as that found on the donor sites and comprises limestone gravel, broken concrete and concrete hard standing. Its aspect, slope and hydrology are all the same as on the donor sites.

Translocation methodology

The translocation will be undertaken in autumn 2015, while initial site clearance and preparation work is being carried out. Autumn is the best time of year for the translocation, when the substrate is warm and receiving a good water supply allowing new root growth before winter. The translocation works will be supervised by a suitably-qualified ecologist.

A walkover survey will be undertaken by the ecologist to mark out the locations of orchids, where signs of the plants remain visible. The marked area will include a buffer measuring approximately 250 mm around each plant. The timing of the translocation means such signs may not be visible, in which case a wider area around the locations where orchids were previously recorded would be marked to ensure the plants are not accidentally damaged.

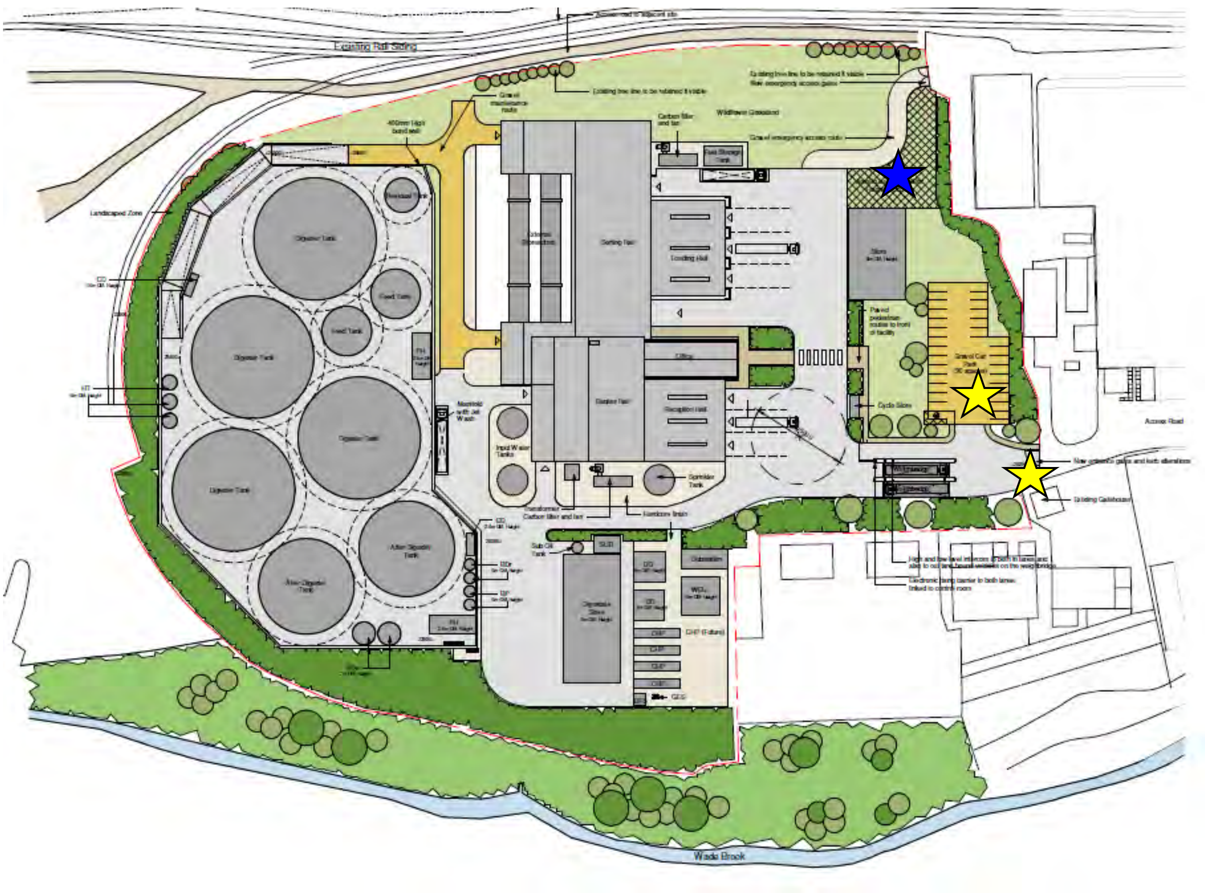
Preparation of the on-site receptor area will be carried out in advance of the translocation exercise. Any existing concrete hard standing will be broken down to a rubble/gravel texture and holes of the correct dimension will be made to receive the substrate from the donor area. If necessary, due to contamination identified in the existing ground material in this area, clean cover with calcareous gravel will be provided. A tracked excavator will be used to lift the marked out areas of substrate to a depth of 300 mm. Where necessary, the excavator will first break up any hard standing outside of the buffer area to allow the substrate within the buffer to be lifted free. The more substrate that can be transported the less likely the bulb and small feeder roots are disturbed.

The excavator will immediately move the substrate to the receptor area and place it within the pre-dug holes. Care will be taken to ensure that the substrate is placed in the same profile, i.e. so that any orchid tubers are not buried to the bottom. Should any orchid tubers be exposed, they will be re-covered to prevent damage during the placement. Additional substrate from the donor sites would be used to fill in any gaps and the excavator would gently press the substrate down to ensure a tight fit.

The on-site receptor area will be securely fenced during all construction phase works to prevent access by personnel or machinery and prevent materials from being stored on it.

The on-site receptor site will be further enhanced through a program of ongoing habitat management. Details are provided in a Landscape Management Plan in Appendix 4.C to the ES. The receptor area will be monitored over a five year period to confirm and evaluate the results of the translocation.

As a precautionary measure, any suitable habitat that can be protected and retained during the demolition works will be subject to a second site walkover in spring/summer 2016 (during the early parts of the main construction phase for the proposed development) to determine whether any new orchids have appeared. Should any be identified, they will be translocated to the receptor area using the methods described above.



Locations of fragrant orchid

Receptor area

Fragrant orchid in gravel near eastern boundary

Fragrant orchid in paving near the gatehouse

Appendix 5.A: Historic Environment Record Data

HERNumber	Site Name	Record Type
4238/0/0	Brunner Mond and Co and Ammonia Soda Co Factories	Monument

Administrative Area

Civil Parish	LOSTOCK GRALAM, VALE ROYAL, CHESHIRE WEST AND CHESTER
Civil Parish	NORTHWICH, VALE ROYAL, CHESHIRE WEST AND CHESTER
Civil Parish	RUDHEATH, VALE ROYAL, CHESHIRE WEST AND CHESTER
Historic Township/Parish/County	LOSTOCK GRALAM, GREAT BUDWORTH, CHESHIRE
Historic Township/Parish/County	RUDHEATH, GREAT BUDWORTH, CHESHIRE
Historic Township/Parish/County	WITTON CUM TWAMBROOKS, GREAT BUDWORTH, CHESHIRE
Ceremonial County	CHESHIRE

National Grid Reference

SJ 6791 7405	Central Point	Central Point of a large site. In the absence of a polygon consult the record (Monuments & Designations).

Short Summary

Chemical and salt works

Summary

Brunner Mond and Co and Ammonia Soda Co factories in Lostock Gralam operating during the Great War producing Phenol and Ammonium Nitrate for the production of explosives.

Monument Type and Date

ALKALI WORKS (AD 19TH CENTURY to Second World War - 1891 AD to 1945 AD?)
Evidence DOCUMENTARY EVIDENCE
BLEACH WORKS (AD 19TH CENTURY to Second World War - 1891 AD to 1945 AD?)
Evidence DOCUMENTARY EVIDENCE
BRINE SHAFT (AD 19TH CENTURY to Second World War - 1891 AD? to 1945 AD?)
Evidence DOCUMENTARY EVIDENCE
INLAND SALTWORKS (AD 19TH CENTURY to AD 20TH CENTURY - 1891 AD to 1985 AD?)
Evidence DOCUMENTARY EVIDENCE
CHEMICAL WORKS (AD 19TH CENTURY to AD 21st CENTURY - 1891 AD to 2050 AD)
Evidence DEMOLISHED BUILDING
Evidence DEMOLISHED STRUCTURE
Evidence DOCUMENTARY EVIDENCE
Evidence EXTANT BUILDING
Evidence EXTANT STRUCTURE
MINERAL RAILWAY (AD 19TH CENTURY to AD 21st CENTURY - 1891 AD to 2050 AD?)
Evidence DOCUMENTARY EVIDENCE
TRINITROTOLUENE FACTORY (First World War - 1914 AD? to 1915 AD?)
Evidence DOCUMENTARY EVIDENCE

PHENOL WORKS (First World War - 1914 AD? to 1918 AD?)
Evidence DOCUMENTARY EVIDENCE
AMMONIUM NITRATE WORKS (First World War - 1915 AD? to 1918 AD?)
Evidence DOCUMENTARY EVIDENCE

Status and other references		Grade	Date Assigned	
Conservation Area	Trent and Mersey Canal Conservation Area	Active	15/06/2000	
Listed Building	PLATTS HALL IN GROUNDS OF LOSTOCK WORKS	DL	22/06/1976	31/10/2006
Listed Building	MILEPOST AT NGR 685734	II	19/08/1986	
Locally Listed Building	Brunner Mond Offices, off Manchester Road		16/06/2006	

Description

<1> W D Cocroft, 2000, *Dangerous Energy - The Archaeology of Gunpowder and Military Explosives Manufacture* (Book)
Brunner Mond and Co and Ammonia Soda Co factories operated during the Great War producing material for the war effort. Initially the Brunner Mond site was used for the hazardous process of purifying the crude TNT produced at other plants. From 1915 TNT production moved to newer, more efficent and safer facilities. Chemists at Brunner Mond took the lead in devising methods to manufacture ammonium nitrate and production was centred on a number of pre-existing plants in Cheshire where there was long expertise in ammonia.

<2> Ordnance Survey, 1896-99, *Ordnance Survey 2nd edition 25 inch to 1 mile - Cheshire* (Map)
The salt works, Lostock Bleach Works and Lostock Works. A network of railway sidings connect the majority of the buildings and structures to the adjacent Cheshire Lines Railway (CHER 2267/1/0) and there is a possible small wharf where the site abuts the Trent and Mersey Canal. There are many smaller structures depicted on the map, including reservoirs, shafts (presumably brine), pumps and brine cisterns. Its not clear if Bonner's Green Works and bone mill form, immediately adjacent on the eastern side of the canal, part of the same complex.

<3> The GeoInformation Group, 2005, *1940s RAF Aerial Photographs from Operation Review* (Aerial Photograph)
The majority of the buildings and structures associated with the Lostock Bleach Works (as labelled on 2) have been demolished.

<4> Wardell Armstrong LLP, 2010, *Viridor, Proposed Development of a Waste Treatment Plant, Lostock Gralam: Archaeologu and Cultural Heritage* (Client Report)
The chemical works at Lostock Gralam was first established in 1891 by the firm of Bowman Thompson, who operated both ammonia soda works and a Leblanc works producing sulphuric acid, salt cake and bleaching powder. In 1900 the works were sold to Brunner, Mond and Co. whose founder members had been instrumental in the establishment of the chemical industry in Cheshire with their construction of a works producing soda at Winnington. For Brunner, Mond and Co. central Cheshire had the advantages of the local supply of brine and of recently created rail links facilitating the import of other raw materials and the export of their own products.

During the Great War Brunner, Mond and Co. produced phenol and ammonium nitrate for use in explosives and in 1926 the company became one of the founding partners in ICI, which took over the firm’s Lostock Gralam works.

By 1898 historic maps depict a number of shafts and brine cisterns in association with pumping stations. There is also documentary evidence which records that the Lostock Salt Works pumped brine up to the surface from depths of up to 90m. By 1938 the site had been entirely cleared of buildings and structures.

<5> Various, Various, *Written Communication to the HER* (Written communication)
The absence of any features and buildings associated with either the Lostock Bleach Works, the Lostock Works, or the

Lostock Salt Works on the 1938 Ordnance Survey map (see 4) is misleading. There are some clear correlations between buildings and structures depicted on the 1910 Ordnance Survey map (see 6) and the late 1940s RAF aerial photographs. It is possible that the site was considered to be of strategic importance and was therefore omitted from publically available maps. A not uncommon practice in the mid twentieth century during the Cold War.

<6> Ordnance Survey, 1911, *Ordnance Survey 3rd edition 25 inch to 1 mile - Cheshire* (Map)

<7> Huntings Surveys Ltd, 1971-1973, *1971-1973 County Survey* (Aerial Photograph)
By the early 1970s there has been a massive expansion of the site with many hectares of waste lime beds.

Sources

(1) W D Cocroft. 2000. Dangerous Energy - The Archaeology of Gunpowder and Military Explosives Manufacture. p.168-9, 275

(2) Ordnance Survey. 1896-99. Ordnance Survey 2nd edition 25 inch to 1 mile - Cheshire. SJ6774 (1898) & SJ6874 (1898)

(3) The GeoInformation Group. 2005. 1940s RAF Aerial Photographs from Operation Review. N/A.

(4) Wardell Armstrong LLP. 2010. Viridor, Proposed Development of a Waste Treatment Plant, Lostock Gralam: Archaeologu and Cultural Heritage. R3019. p.171

(5) Various. Various. Written Communication to the HER. Various. Edwards, R 28/05/2015

(6) Ordnance Survey. 1911. Ordnance Survey 3rd edition 25 inch to 1 mile - Cheshire. SJ6774 (1910) & SJ6874 (1910)

(7) Huntings Surveys Ltd. 1971-1973. 1971-1973 County Survey. N/A.

Related Monuments

4238/0/1	Brunner Mond Offices	Contemporary Complex

Associated Finds

Find Type	Period	Material

Associated Events/Activities

ECH3724	Platts Hall, Northwich - Fabric Survey Report (Event - Survey. Ref: 1997-98/098/AUA7741)
ECH3726	Platts Hall, Northwich - Archaeological Evaluation (Event - Intervention. Ref: 1997-98/(096)/AUA7823)
ECH4697	Viridor, Proposed Development of a Waster Treatment Plant, Lostock Gralam: Archaeology and Cultural Heritage (Event - Survey. Ref: LE10104/EIA 002A)

HERNumber	Site Name	Record Type
2515/20/0	Novelty Iron Works	Monument

Administrative Area

Civil Parish	NORTHWICH, VALE ROYAL, CHESHIRE WEST AND CHESTER
Historic Township/Parish/County	WITTON CUM TWAMBROOKS, GREAT BUDWORTH, CHESHIRE
Ceremonial County	CHESHIRE

National Grid Reference

SJ 6713 7409	Central Point	Central Point of a large site. In the absence of a polygon consult the record (Monuments & Designations).

Short Summary

Post Medieval Iron Works

Summary

Iron Works marked on the Ordnance Survey 1:500 town plan of Northwich. It is also marked on the First, Second and Third editions of the Ordnance Survey 6inch to 1 mile maps of Cheshire.

Monument Type and Date

INDUSTRIAL SITE (AD 19TH CENTURY to AD 20TH CENTURY - 1800 AD to 1999 AD)

IRON WORKS (AD 19TH CENTURY to AD 20TH CENTURY - 1800 AD to 1999 AD)

Evidence DOCUMENTARY EVIDENCE

Status and other references	Grade	Date Assigned

Description

Iron Works marked on the Ordnance Survey 1:500 town plan of Northwich. It is also marked on the First, Second and Third editions of the Ordnance Survey 6inch to 1 mile maps of Cheshire.

<1> Fawkes and Wynne, 1876, *OS 1/500 Northwich Town Map - AD1876* (Map)

<2> Ordnance Survey, 1881-2, *Ordnance Survey 1st edition 6 inch to 1 mile - Cheshire* (Map)

<3> Ordnance Survey, 1896-98, *Ordnance Survey 2nd edition 6 inch to 1 mile - Cheshire* (Map)

<4> Ordnance Survey, 1911-1914, *Ordnance Survey 3rd edition 6 inch to 1 mile - Cheshire* (Map)

Sources

(1) Fawkes and Wynne. 1876. OS 1/500 Northwich Town Map - AD1876.
(2) Ordnance Survey. 1881-2. Ordnance Survey 1st edition 6 inch to 1 mile - Cheshire.
(3) Ordnance Survey. 1896-98. Ordnance Survey 2nd edition 6 inch to 1 mile - Cheshire.
(4) Ordnance Survey. 1911-1914. Ordnance Survey 3rd edition 6 inch to 1 mile - Cheshire.

Related Monuments

Associated Finds

Find Type	Period	Material

Associated Events/Activities

HERNumber	Site Name	Record Type
2515/24/0	Brick and Tile Works, Middlewich Road	Monument

Administrative Area

Civil Parish	NORTHWICH, VALE ROYAL, CHESHIRE WEST AND CHESTER
Historic Township/Parish/County	WITTON CUM TWAMBROOKS, GREAT BUDWORTH, CHESHIRE
Ceremonial County	CHESHIRE

National Grid Reference

SJ 6723 7383	Central Point	Central Point of a large site. In the absence of a polygon consult the record (Monuments & Designations).

Short Summary

Post Medieval Brick and Tile Works

Summary

Brick and Tile Making Works marked on the Ordnance Survey 1:500 town plan of Northwich. It is also marked on the First, Second and Third Editions of the Ordnance Survey 6inch to 1 mile maps. On the different maps it is marked in slightly different locations, and part of the First Edition extent is turned into a playing field by the second edition. There is also a Brickfield on the Second Edition maps included which may or may not be part of this works. Brickfields were where clay was both extracted and fired to produce bricks.

Monument Type and Date

BRICKFIELD (AD 19TH CENTURY - 1800 AD to 1899 AD)
Evidence DOCUMENTARY EVIDENCE
BRICK AND TILEMAKING SITE (AD 19TH CENTURY to AD 20TH CENTURY - 1800 AD to 1999 AD)
Evidence DOCUMENTARY EVIDENCE
INDUSTRIAL SITE (AD 19TH CENTURY to AD 20TH CENTURY - 1800 AD to 1999 AD)

Status and other references	Grade	Date Assigned

Description

Brick and Tile Making Works marked on the Ordnance Survey 1:500 town plan of Northwich. It is also marked on the First, Second and Third Editions of the Ordnance Survey 6inch to 1 mile maps. On the different maps it is marked in slightly different locations, and part of the First Edition extent is turned into a playing field by the second edition. There is also a Brickfield on the Second Edition maps included which may or may not be part of this works.

<1> Fawkes and Wynne, 1876, *OS 1/500 Northwich Town Map - AD1876* (Map)

<2> Ordnance Survey, 1881-2, *Ordnance Survey 1st edition 6 inch to 1 mile - Cheshire* (Map)

<3> Ordnance Survey, 1896-98, *Ordnance Survey 2nd edition 6 inch to 1 mile - Cheshire* (Map)

<4> Ordnance Survey, 1911-1914, *Ordnance Survey 3rd edition 6 inch to 1 mile - Cheshire* (Map)

Sources

(1) Fawkes and Wynne. 1876. OS 1/500 Northwich Town Map - AD1876.
(2) Ordnance Survey. 1881-2. Ordnance Survey 1st edition 6 inch to 1 mile - Cheshire.

(3) Ordnance Survey. 1896-98. Ordnance Survey 2nd edition 6 inch to 1 mile - Cheshire.
(4) Ordnance Survey. 1911-1914. Ordnance Survey 3rd edition 6 inch to 1 mile - Cheshire.

Related Monuments

Associated Finds

Find Type	Period	Material

Associated Events/Activities

HERNumber	**Site Name**	**Record Type**
5828	Broken Cross Farm, Farm Road	Building

Administrative Area

Civil Parish RUDHEATH, VALE ROYAL, CHESHIRE WEST AND CHESTER

National Grid Reference

SJ 6825 7351 Central Point Central Point of a large site. In the absence of a polygon consult the record (Monuments & Designations).

Short Summary

A farm that has been demolished

Summary

CRITERION E: BUILDINGS INCLUDED IN THE VALE ROYAL BOROUGH COUNCIL HISTORIC BUILDINGS SURVEY 1977 - 79

Built circa 1825, the farm is now demolished,

Monument Type and Date

FARMHOUSE (AD 19TH CENTURY to AD 20TH CENTURY - 1825 AD to 1999 AD)
Evidence DOCUMENTARY EVIDENCE
FARMYARD (AD 19TH CENTURY to AD 20TH CENTURY - 1825 AD to 1999 AD)
Evidence DOCUMENTARY EVIDENCE

Status and other references		**Grade**	**Date Assigned**
Locally Listed Building	Broken Cross Farm, Farm Road		

Description

CRITERION E: BUILDINGS INCLUDED IN THE VALE ROYAL BOROUGH COUNCIL HISTORIC BUILDINGS SURVEY 1977 - 79

Circa 1825

Now demolished

<1> Vale Royal Borough Council, 2006, *Vale Royal Borough Council's List of Locally Important Buildings* (Report)

<2> Vale Royal Borough Council, 1977-79, *The Vale Royal Borough Council Historic Buildings Survey Index Card* (Paper Archive)

Sources

(1) Vale Royal Borough Council. 2006. Vale Royal Borough Council's List of Locally Important Buildings.

(2) Vale Royal Borough Council. 1977-79. The Vale Royal Borough Council Historic Buildings Survey Index Card. RUD/HB 1

Related Monuments

Associated Finds

Find Type	Period	Material

Associated Events/Activities

HERNumber	**Site Name**	**Record Type**
5891	North Station, Manchester Road	Building

Administrative Area

Civil Parish NORTHWICH, VALE ROYAL, CHESHIRE WEST AND CHESTER

National Grid Reference

SJ 6694 7393 Central Point Central Point of a large site. In the absence of a polygon consult the record (Monuments & Designations).

Short Summary

A railway station dating to 1897

Summary

CRITERION E: BUILDINGS INCLUDED IN THE VALE ROYAL BOROUGH COUNCIL HISTORIC BUILDINGS SURVEY 1977 - 79

A British Rail Station built in 1897. It is built of yellow brick with stone string courses and stone tablets over doors and windows. There are mock Corinthian marble pillars with ornate carving stone heads to main entrance. Pleasing wrought iron work on cast iron pillars support the glassed roof. There is a clock on the platform by Joyce of Whitchurch.

Judging by the markings on the front brickwork over the main entrance, a substantial canopy has existed at some time past.

Monument Type and Date

CORINTHIAN COLUMN (AD 19TH CENTURY - 1897 AD)

PILLAR (AD 19TH CENTURY - 1897 AD)

RAILWAY STATION (AD 19TH CENTURY - 1897 AD)

Covering Building Material	GLASS
Evidence	EXTANT BUILDING
Main Building Material	BRICK

STRING COURSE (AD 19TH CENTURY - 1897 AD)

Status and other references		**Grade**	**Date Assigned**
Locally Listed Building	North Station, Manchester Road		

Description

CRITERION E: BUILDINGS INCLUDED IN THE VALE ROYAL BOROUGH COUNCIL HISTORIC BUILDINGS SURVEY 1977 - 79

1897
British Rail Station

Yellow brick building with stone tablets over doors and windows. Stone string courses. Mock Corinthian marble pillars with ornate carving stone heads to main entrance. Pleasing wrought iron work on cast iron pillars. Supporting glassed roof. Clock on platform by Joyce of Whit church.

Judging by markings on front brickwork over the main entrance a substantial canopy has existed at some time past.

<1> Vale Royal Borough Council, 2006, *Vale Royal Borough Council's List of Locally Important Buildings* (Report)

<2> Vale Royal Borough Council, 1977-79, *The Vale Royal Borough Council Historic Buildings Survey Index Card* (Paper Archive)

Sources

(1) Vale Royal Borough Council. 2006. Vale Royal Borough Council's List of Locally Important Buildings.

(2) Vale Royal Borough Council. 1977-79. The Vale Royal Borough Council Historic Buildings Survey Index Card. NCH/HB 97

Related Monuments

Associated Finds

Find Type	Period	Material

Associated Events/Activities

HERNumber	Site Name	Record Type
5922	Schoolhouse, Manchester Road, Northwich	Building

Administrative Area

Civil Parish NORTHWICH, VALE ROYAL, CHESHIRE WEST AND CHESTER

National Grid Reference

SJ 6845 7465 Central Point Central Point of a large site. In the absence of a polygon consult the record (Monuments & Designations).

Short Summary

A liftable building

Summary

Criteria A: Unlisted timber framed buildings in Vale Royal which contain structural or building techniques which were designed to reduce the effects of subsidence.

A Victorian primary school dated to 1897.
It has mock Tudor gables and pleasant stained glass windows.

Monument Type and Date

JACKABLE TIMBER FRAMED BUILDING (AD 19TH CENTURY to Unknown - 1897 AD)
Evidence EXTANT BUILDING
SCHOOL (AD 19TH CENTURY to Unknown - 1897 AD)
Evidence EXTANT BUILDING
STAINED GLASS (AD 19TH CENTURY to Unknown - 1897 AD)
WINDOW (AD 19TH CENTURY to Unknown - 1897 AD)

Status and other references		Grade	Date Assigned
Locally Listed Building	Schoolhouse, Manchester Road, Northwich		16/06/2006

Description

Criteria A: Unlisted timber framed buildings in Vale Royal which contain structural or building techniques which were designed to reduce the effects of subsidence.

A Victorian primary school dated to 1897.
It has mock Tudor gables and pleasant stained glass windows.

<1> Vale Royal Borough Council, 2006, *Vale Royal Borough Council's List of Locally Important Buildings* (Report)

<2> Vale Royal Borough Council, 1977-79, *The Vale Royal Borough Council Historic Buildings Survey Index Card* (Paper Archive)

Sources

(1) Vale Royal Borough Council. 2006. Vale Royal Borough Council's List of Locally Important Buildings.
(2) Vale Royal Borough Council. 1977-79. The Vale Royal Borough Council Historic Buildings Survey Index Card. NCH/HB 25

Related Monuments

Associated Finds

Find Type	Period	Material

Associated Events/Activities

HERNumber	Site Name	Record Type
6749	Wincham Mill, Manchester Road	Building

Administrative Area

Civil Parish NORTHWICH, VALE ROYAL, CHESHIRE WEST AND CHESTER

National Grid Reference

SJ 6850 7467 Central Point Central Point of a large site. In the absence of a polygon consult the record (Monuments & Designations).

Short Summary

A 19th century storage mill and shop

Summary

CRITERION E: BUILDINGS INCLUDED IN THE VALE ROYAL BOROUGH COUNCIL HISTORIC BUILDINGS SURVEY 1977 - 79

A storage mill and shop with garages dated to 1870

This collection of buildings is now partially used by North Western Farmers Ltd.
The main buildings are not now used and still has lifting machinery. A plate on the derelict building reads: J K 7 W HESKETH 1870

Monument Type and Date

MILL (Post Medieval to Second World War - 1540 AD to 1945 AD)

Evidence EXTANT BUILDING
Main Building Material BRICK

SHOP (Post Medieval to Second World War - 1540 AD to 1945 AD)

Evidence EXTANT BUILDING
Main Building Material BRICK

CONVEYOR BELT (AD 19TH CENTURY to Second World War - 1800 AD to 1945 AD)

Status and other references		Grade	Date Assigned
Locally Listed Building	Wincham Mill, Manchester Road		

Description

CRITERION E: BUILDINGS INCLUDED IN THE VALE ROYAL BOROUGH COUNCIL HISTORIC BUILDINGS SURVEY 1977 - 79

1870
Storage mill and shop with garages.

A collection of buildings. Now used by North Western Farmers Ltd.
The main buildings are not now used. Still has lifting machinery.
A plate on the derelict building reads: J K 7 W HESKETH 1870

<1> Vale Royal Borough Council, 2006, *Vale Royal Borough Council's List of Locally Important Buildings* (Report)

<2> Vale Royal Borough Council, 1977-79, *The Vale Royal Borough Council Historic Buildings Survey Index Card* (Paper Archive)

Sources

(1) Vale Royal Borough Council. 2006. Vale Royal Borough Council's List of Locally Important Buildings.

(2) Vale Royal Borough Council. 1977-79. The Vale Royal Borough Council Historic Buildings Survey Index Card. NCH/HB 27

Related Monuments

Associated Finds

Find Type	Period	Material

Associated Events/Activities

HERNumber	Site Name	Record Type
4238/0/1	Brunner Mond Offices	Building

Administrative Area

Civil Parish	NORTHWICH, VALE ROYAL, CHESHIRE WEST AND CHESTER
Historic Township/Parish/County	LOSTOCK GRALAM, GREAT BUDWORTH, CHESHIRE
Ceremonial County	CHESHIRE

National Grid Reference

SJ 6824 7433	Central Point	Central Point of a large site. In the absence of a polygon consult the record (Monuments & Designations).

Short Summary

Early twentieth century office building

Summary

The Brunner Mond office building is a locally listed building and was built around the turn of the twentieth century.

Monument Type and Date

OFFICE (AD 20TH CENTURY - 1900 AD to 1999 AD)

Evidence	EXTANT BUILDING
Main Building Material	BRICK

Status and other references		Grade	Date Assigned
Locally Listed Building	Brunner Mond Offices, off Manchester Road		16/06/2006

Description

<1> Vale Royal Borough Council, 2006, *Vale Royal Borough Council's List of Locally Important Buildings* (Report)
Criterion E: Buildings included in the Vale Royal Borough Council Historic Buildings Survey 1977 - 79.

<2> Vale Royal Borough Council, 1977-79, *The Vale Royal Borough Council Historic Buildings Survey Index Card* (Paper Archive)

<3> Ordnance Survey, 1911, *Ordnance Survey 3rd edition 25 inch to 1 mile - Cheshire* (Map)
The office building is first depicted on this map.

Sources

(1) Vale Royal Borough Council. 2006. Vale Royal Borough Council's List of Locally Important Buildings.

(2) Vale Royal Borough Council. 1977-79. The Vale Royal Borough Council Historic Buildings Survey Index Card. NCH/HB 28

(3) Ordnance Survey. 1911. Ordnance Survey 3rd edition 25 inch to 1 mile - Cheshire. SJ6874 (1910)

Related Monuments

4238/0/0 Brunner Mond and Co and Ammonia Soda Co Contemporary Complex Factories

Associated Finds

Find Type	Period	Material

Associated Events/Activities

HERNumber	Site Name	Record Type
2267/1/0	Manchester to Chester Line (CLC)	Monument

Administrative Area

Civil Parish	CHESTER NON PARISH AREA, CHESTER, CHESHIRE WEST AND CHESTER
Historic Township/Parish/County	CHESTER, CHESTER HOLY TRINITY, CHESHIRE
Ceremonial County	CHESHIRE
UAD Project Areas (Medieval to Modern)	RAILWAY & INDUSTRIAL AREA

National Grid Reference

SJ 5920 7625	Linear	Line joining two or more 8 figure references. Applies to road routes, waterways or boundaries (Monuments).

Short Summary

Manchester to Chester Line (CLC)

Summary

The Manchester to Chester Line was owned and operated by the Cheshire Lines Committee. It ran on the Mid-Cheshire Line via Northwich, incorporating the Cheshire Midland Railway (from Manchester to Northwich), the West Cheshire Railway (from Northwich to Helsby) and the Cheshire and West Cheshire Junction Railway (Helsby to Chester). It opened in 1875 following the construction of the Northgate Station where the line terminated.

The Cheshire Midland Railway Company was given permission by Act of Parliament in 1860 for a 12 mile stretch between Manchester and Northwich and was completed in 1863. The West Cheshire Line was originally proposed in 1861 between Northwich and Chester but was only granted permission to extend as far as Mouldsworth in 1862. The Cheshire and West Cheshire Junction Railway Company was formed in 1865 to extend the line to Chester. Construction began on this last leg of the railway in 1871 and was opened for goods traffic in 1874 and finally for passengers in 1875 following the construction of the Northgate Station.

Following the closure of Northgate Station in 1969, the line to the station was removed, however, the junction linking it to the Wrexham line remained open for industrial and commercial traffic until the 1990s when it was finally shut down and dismantled.

Monument Type and Date

RAILWAY (AD 19TH CENTURY to AD 20TH CENTURY - 1875 AD to 1999 AD)

Status and other references	Grade	Date Assigned

Description

The Manchester to Chester Line was owned and operated by the Cheshire Lines Committee. It ran on the Mid-Cheshire Line via Northwich, incorporating the Cheshire Midland Railway (from Manchester to Northwich), the West Cheshire Railway (from Northwich to Helsby) and the Cheshire and West Cheshire Junction Railway (Helsby to Chester). It opened in 1875 following the construction of the Northgate Station where the line terminated.

The Cheshire Midland Railway Company was given permission by Act of Parliament in 1860 for a 12 mile stretch between Manchester and Northwich and was completed in 1863. The West Cheshire Line was originally proposed in 1861 between Northwich and Chester but was only granted permission to extend as far as Mouldsworth in 1862 (1). The Cheshire and West Cheshire Junction Railway Company was formed in 1865 to extend the line to Chester. Construction began on this last leg of the railway in 1871 and was opened for goods traffic in 1874 and finally for passengers in 1875 following the construction of the Northgate Station.

Following the closure of Northgate Station in 1969, the line to the station was removed, however, the junction linking it to the Wrexham line (CHER 10867/1/0) remained open for industrial and commercial traffic until the 1990s when it was finally shut down and dismantled. (1)

<1> Bolger. P., 1984, *An illustrated history of the Cheshire Lines Committee* (Book)

<2> Griffiths. R.P, 1947, *The Cheshire Lines Railway* (Book)

<3> Dyckhoff. N., 1984, *The Cheshire Lines Committee: Then and Now* (Book)

<4> Norton P A, 1984, *Railways and Waterways to Warrington* (Book)

<5> Holt, G. O., 1978, *A Regional History of the Railways of Great Britain: Volume 10, the North West* (Book)

<6> Ordnance Survey, 1874, *Ordnance Survey 1st edition 25 inch to 1 mile - Cheshire* (Map)

Sources

(1) Bolger. P.. 1984. An illustrated history of the Cheshire Lines Committee. P25
(2) Griffiths. R.P. 1947. The Cheshire Lines Railway. P2
(3) Dyckhoff. N.. 1984. The Cheshire Lines Committee: Then and Now.
(4) Norton P A. 1984. Railways and Waterways to Warrington. /15
(5) Holt, G. O.. 1978. A Regional History of the Railways of Great Britain: Volume 10, the North West.
(6) Ordnance Survey. 1874. Ordnance Survey 1st edition 25 inch to 1 mile - Cheshire.

Related Monuments

2267/1/20	Mickle Trafford Station	Contemporary Complex
2267/1/60	Railway Bridge	Contemporary Complex
2267/1/10	Mickle Trafford Goods Shed	Contemporary Complex
2267/1/11	Plemstall Crossing	Contemporary Complex
2267/1/12	Barrow Railway Station for Tarvin	Contemporary Complex
2267/1/13	Railway Goods Shed, Barrow	Contemporary Complex
2267/1/21	Mouldsworth Junction Railway Station	Contemporary Complex
2267/1/14	19th century railway cutting in Barrow	Contemporary Complex
2267/1/15	19th Century Railway Bridge at Barrow	Contemporary Complex
2267/1/16	19th century railway embankmemt at Barrow	Contemporary Complex
2267/1/17	Railway embankment in Barrow	Contemporary Complex
2267/1/18	Northwich - Chester Railway Bridge	Contemporary Complex
2267/1/19	Northwich - Chester Railway Cutting	Contemporary Complex
2267/1/22	Railway Signal Box	Contemporary Complex
2267/1/23	Railway Goods Shed in Mouldsworth	Contemporary Complex
2267/1/24	Railway Embankment in Ashton	Contemporary Complex
2267/1/25	Railway Bridge	Contemporary Complex
2267/1/26	Railway Bridge, Ashton	Contemporary Complex
2267/1/27	Railway cutting, Ashton	Contemporary Complex
2267/1/28	19th Century Railway Embankment	Contemporary Complex
2267/1/30	Unnamed Site in Delamere Parish	Contemporary Complex
2267/1/31	Delamere Station	Contemporary Complex
2267/1/32	Delamere Goods Shed	Contemporary Complex
2267/1/33	Signal Box in Delamere Parish	Contemporary Complex
2267/1/34	Leather's Crossing	Contemporary Complex

2267/1/35	Railway Cutting in Oakmere	Contemporary Complex
2267/1/36	Railway Signal Box	Contemporary Complex
2267/1/37	Winsford Junction Signal Box	Contemporary Complex
2267/1/38	Cuddington Station	Contemporary Complex
2267/1/41	19th Century Railway Cutting	Contemporary Complex
2267/1/42	Railway Embankment in Weaverham	Contemporary Complex
2267/1/40	19th Century Signal Box	Contemporary Complex
2267/1/39	Railway Goods Shed in Cuddington	Contemporary Complex
2267/1/43	Post Medieval Railway Bridge in Weaverham	Contemporary Complex
2267/1/47	Hartford and Greenbank Station	Contemporary Complex
2267/1/44	Post Medieval Railway Bridge in Weaverham	Contemporary Complex
2267/1/45	Hartford Junction Signal Box	Contemporary Complex
2267/1/46	Railway Cutting in Hartford	Contemporary Complex
2267/1/48	Signal Box on Northwich to Chester Railway	Contemporary Complex
2267/1/54	Northwich Station	Contemporary Complex
2267/1/53	19th century railway signal box	Contemporary Complex
2267/1/52	19th Century Railway Viaduct	Contemporary Complex
2267/1/51	Railway bridge in Northwich	Contemporary Complex
2267/1/56	19th century engine shed	Contemporary Complex
2267/1/57	Site of railway goods shed	Contemporary Complex
2267/1/58	19th century railway goods shed	Contemporary Complex
2267/1/59	19th century railway signal box	Contemporary Complex
2267/1/55	20th century railway turntable	Contemporary Complex
2267/1/50	19th century railway signal box	Contemporary Complex
2267/1/49	Site of a 19th century Signal Box	Contemporary Complex
2267/1/29	19th Century Railway Bridge	Contemporary Complex
10865/1/0	Chester Northgate Station	Contemporary Complex
2267/1/1	Engine Shed north of Trafford Street	Contemporary Complex
2267/1/2	Sidings at Northgate Station	Contemporary Complex
2267/1/3	Signal box at Victoria Road	Contemporary Complex
2267/1/4	Signal box at East Junction	Contemporary Complex
2267/1/5	South Junction, Brook Lane	Contemporary Complex
2267/1/6	Railway cutting at Brookfield House	Contemporary Complex
2267/1/7	Bridge at Newton Lane	Contemporary Complex
2267/1/8	Bridge at Newton Hollows Lane	Contemporary Complex
2267/1/9	Bridge at Mannings Lane	Contemporary Complex

Associated Finds

Find Type	Period	Material

Associated Events/Activities

HERNumber	Site Name	Record Type
729	Platts Hall	Building

Administrative Area

Civil Parish	NORTHWICH, VALE ROYAL, CHESHIRE WEST AND CHESTER
Historic Township/Parish/County	LOSTOCK GRALAM, GREAT BUDWORTH, CHESHIRE
Ceremonial County	CHESHIRE

National Grid Reference

SJ 6827 7436	Central Point	Central Point of a large site. In the absence of a polygon consult the record (Monuments & Designations).

Short Summary

Seventeenth century timber framed house

Summary

Platts Hall, also known as the Works House, was built in 1655. However, examination of the building revealed elements of an earlier building and there are documentary references dating from 1631. The building was demolished in 1998 and the timber framed west wing was re-erected at Bostock Hall.

Monument Type and Date

POST HOLE (Medieval to AD 17TH CENTURY - 1066 AD? to 1655 AD)

Evidence	EXCAVATED FEATURE

PIT (AD 14TH CENTURY to AD 16TH CENTURY - 1300 AD? to 1599 AD?)

Evidence	EXCAVATED FEATURE
Evidence	STRATIFIED FIND

TIMBER FRAMED BUILDING (AD 17TH CENTURY - 1655 AD)

Evidence	DOCUMENTARY EVIDENCE
Evidence	MOVED BUILDING

HOUSE (AD 17TH CENTURY to AD 20TH CENTURY - 1655 AD to 1998 AD)

Covering Building Material	TILE
Evidence	DOCUMENTARY EVIDENCE
Evidence	MOVED BUILDING
Main Building Material	BRICK
Main Building Material	TIMBER

Status and other references		Grade	Date Assigned	
Listed Building	PLATTS HALL IN GROUNDS OF LOSTOCK WORKS	DL	22/06/1976	31/10/2006

Description

<1> English Heritage, 2005, *List of Buildings of Special Architectural or Historic Interest* (Digital archive)

Platts Halll, also known as the Works House was built in 1655, but has later extensions and addittions. It comprises an oak-frame, largely brick-nogged with added brick left wing and tiled roofs. Brick stack in slope of roof. The right wing has gable to front and to left side (above left wing) and altered dormer to right side. Small framing; the front gable has ornate panel braces and shouldered mullioned window of 3 lights to attic, with date board 1655 XH. Interior: Stone corner fireplace in rear room; some chamfered oak beams; a little panelling; stair with wavy splat balusters, probably later seventeenth century.

<2> English Heritage/DCMS, Various, *Notification of inclusion, amendment or removal from the List of Buildings of Special Architectural or Historic Interest* (Written communication)
De-listed on 31/10/2006.

<3> Lancaster University Archaeological Unit, 1998, *Platts Hall, Northwich, Cheshire - Fabric Survey Report* (Client Report)
Overstreet Farm is first documented in 1631, which is somewhat earlier than a plaque dated 1655 that was on the northern elevation of the western wing of the Hall. In 1663 the farm was leased to a Peter Venables, but it was not until 1665 that Venables purchased the farm. At sometime after 1680 it appears to have been acquired by the Brooke family of Mere. It was leased from around 1810 unitil the 1860s to members of the Kinsey family. The farm, shortly after 1885, appears to have been sold to Brunner Mond and Co. and the farmland was developed for a chemical plant (see CHER 4238).

An analysis of the buildings fabric was undertaken in conjunction with the building survey undertaken during the course of the dismantling of the structure. It revealed that the earliest part of the building was an inglenook structure, set against the eastern external wall of the west wing, and dated to c.1630 or earlier. This would have been set within the former hallway of this earlier building. As part of a rebuiding of Plaits Hall in1655, a new West Wing with suites of comfortable rooms and a staircase was built. The earlier hall became a kitchen.

The fabric analysis has demonstrated that the design of the west wing was of a type which came into fashion in the later seventeenth century and was adopted as part of the vernacular tradition of North West England. This tradition can be seen in the symmetry of the main west elevations, the obvious signs of comfort and luxury in the number of fireplaces in this wing, and the internal layout which puts emphasis on social entertaining.

By contrast the East Wing, which is predominantly of nineteenth century indate (but includes some twentieth century elements), has a very conventional vernacular style. It incorporates reused timbers in the roof which have a rustic quality and potentially come from a barn rather than a domestic structure. It does not display the level of majesty of the earlier wing and perhaps indicates that the fortunes of the family had deteriorated since 1655 and the construction of west wing.

<4> Lancaster University Archaeological Unit, 1998, *Platts Hall, Northwich, Cheshire - Archaeological Evaluation* (Client Report)
In 1998 the building was dismantled and the west wing was re-erected at the nearby Bostock Hall.

An archaeological evaluation was undertaken after the demolition of the Hall. The evaluation was undertaken in two phases; the first was was confined to the footprint of the west wing, which contained the substantial remains of a timber-framed house of 1655. The second involved the excavation of a trench within the nineteenth century East Wing to investigate the potential for an earlier structure surviving in this locality. . However, documentary evidence has shown that there was a building on the site in 1631, prior to the construction date of the extant structure and the evaluation was therefore intended to demonstrate whether there was further evidence for an earlier building surviving.

Three trenches were excavated within the footprint of the west wing. One trench was extended across the northern external wall and a second across the western external wall. The excavations established that the archaeological stratigraphy has been extensively tuncated prior to the insertion of a concrete floor in the twentieth century. Only two deepeer features cut into natural subsoil had survived. One feature, a small pit, contained a single sherd of abraded late medieval pottery (fourteenth to sixteenth century date). These features clearly pre-dated the west wing, but were not necessarily elements of an earlier structure.

A single trench was excavated through the north western room of the east wing. Although the archaeological stratigraphy at this location was also truncated, it was less severe than in the west wing. The trench loacted the foundations of the nineteenth century wing, as well as elements of an earlier hearth. Within the interior of the room was a single post-hole and a natural tree bole; the latter clearly pre-dated the existing structure, but the post-hole was undated.

Sources

(1) English Heritage. 2005. List of Buildings of Special Architectural or Historic Interest. 57633

(2) English Heritage/DCMS. Various. Notification of inclusion, amendment or removal from the List of Buildings of Special Architectural or Historic Interest. 31/10/2006

(3) Lancaster University Archaeological Unit. 1998. Platts Hall, Northwich, Cheshire - Fabric Survey Report. R2235. R2235

(4) Lancaster University Archaeological Unit. 1998. Platts Hall, Northwich, Cheshire - Archaeological Evaluation. R2233. R2233

Related Monuments

Associated Finds

Find Type	Period	Material
FCH4370	POTTERY SHERDS (1) (AD 14TH CENTURY to AD 16TH CENTURY - 1300 AD? to 1599 AD?)	POTTERY

Associated Events/Activities

ECH1830	(Event - Survey)
ECH3724	Platts Hall, Northwich - Fabric Survey Report (Event - Survey. Ref: 1997-98/098/AUA7741)
ECH3726	Platts Hall, Northwich - Archaeological Evaluation (Event - Intervention. Ref: 1997-98/(096)/AUA7823)

HERNumber	Site Name	Record Type
844/1/0	Roman Road - Chester to Manchester (Route 7a)	Monument

Administrative Area

Civil Parish	ASHTON, CHESTER, CHESHIRE WEST AND CHESTER
Civil Parish	BARROW, CHESTER, CHESHIRE WEST AND CHESTER
Civil Parish	CHESTER NON PARISH AREA, CHESTER, CHESHIRE WEST AND CHESTER
Civil Parish	CHRISTLETON, CHESTER, CHESHIRE WEST AND CHESTER
Civil Parish	CUDDINGTON, VALE ROYAL, CHESHIRE WEST AND CHESTER
Civil Parish	DELAMERE, VALE ROYAL, CHESHIRE WEST AND CHESTER
Civil Parish	GREAT BOUGHTON, CHESTER, CHESHIRE WEST AND CHESTER
Civil Parish	HARTFORD, VALE ROYAL, CHESHIRE WEST AND CHESTER
Civil Parish	HORTON CUM PEEL, CHESTER, CHESHIRE WEST AND CHESTER
Civil Parish	KELSALL, CHESTER, CHESHIRE WEST AND CHESTER
Civil Parish	LITTLE BOLLINGTON, MACCLESFIELD, CHESHIRE EAST
Civil Parish	LITTLETON, CHESTER, CHESHIRE WEST AND CHESTER
Civil Parish	LOSTOCK GRALAM, VALE ROYAL, CHESHIRE WEST AND CHESTER
Civil Parish	MERE, MACCLESFIELD, CHESHIRE EAST
Civil Parish	MILLINGTON, MACCLESFIELD, CHESHIRE EAST
Civil Parish	NORTHWICH, VALE ROYAL, CHESHIRE WEST AND CHESTER
Civil Parish	OAKMERE, VALE ROYAL, CHESHIRE WEST AND CHESTER
Civil Parish	PLUMLEY, MACCLESFIELD, CHESHIRE EAST
Civil Parish	ROSTHERNE, MACCLESFIELD, CHESHIRE EAST
Civil Parish	TABLEY INFERIOR, MACCLESFIELD, CHESHIRE EAST
Civil Parish	TABLEY SUPERIOR, MACCLESFIELD, CHESHIRE EAST
Civil Parish	TARVIN, CHESTER, CHESHIRE WEST AND CHESTER
Civil Parish	WEAVERHAM, VALE ROYAL, CHESHIRE WEST AND CHESTER
Historic Township/Parish/County	ASHTON, TARVIN, CHESHIRE
Historic Township/Parish/County	BARROW, BARROW, CHESHIRE
Historic Township/Parish/County	BOLLINGTON, BOWDEN, CHESHIRE
Historic Township/Parish/County	BOLLINGTON, ROSTHERNE, CHESHIRE
Historic Township/Parish/County	CASTLE NORTHWICH, GREAT BUDWORTH, CHESHIRE
Historic Township/Parish/County	CHESTER, CHESTER HOLY TRINITY, CHESHIRE
Historic Township/Parish/County	CHRISTLETON, CHRISTLETON, CHESHIRE
Historic Township/Parish/County	CUDDINGTON, WEAVERHAM, CHESHIRE
Historic Township/Parish/County	EDDISBURY, DELAMERE, CHESHIRE

Historic Township/Parish/County	GREAT BOUGHTON, CHESTER ST OSWALD, CHESHIRE
Historic Township/Parish/County	HARTFORD, GREAT BUDWORTH, CHESHIRE
Historic Township/Parish/County	HORTON CUM PEEL, TARVIN, CHESHIRE
Historic Township/Parish/County	KELSALL, TARVIN, CHESHIRE
Historic Township/Parish/County	LITTLETON, CHRISTLETON, CHESHIRE
Historic Township/Parish/County	LOSTOCK GRALAM, GREAT BUDWORTH, CHESHIRE
Historic Township/Parish/County	MARSTON, GREAT BUDWORTH, CHESHIRE
Historic Township/Parish/County	MERE, ROSTHERNE, CHESHIRE
Historic Township/Parish/County	MILLINGTON, ROSTHERNE, CHESHIRE
Historic Township/Parish/County	NORTHWICH, GREAT BUDWORTH, CHESHIRE
Historic Township/Parish/County	OAKMERE, DELAMERE, CHESHIRE
Historic Township/Parish/County	PLUMLEY, GREAT BUDWORTH, CHESHIRE
Historic Township/Parish/County	ROSTHERNE, ROSTHERNE, CHESHIRE
Historic Township/Parish/County	TABLEY INFERIOR, GREAT BUDWORTH, CHESHIRE
Historic Township/Parish/County	TABLEY SUPERIOR, ROSTHERNE, CHESHIRE
Historic Township/Parish/County	TARVIN, TARVIN, CHESHIRE
Historic Township/Parish/County	WEAVERHAM CUM MILTON, WEAVERHAM, CHESHIRE
Historic Township/Parish/County	WEAVERHAM CUM MILTON, WHITEGATE, CHESHIRE
Historic Township/Parish/County	WEAVERHAM, WEAVERHAM, CHESHIRE
Historic Township/Parish/County	WINNINGTON, GREAT BUDWORTH, CHESHIRE
Historic Township/Parish/County	WITTON CUM TWAMBROOKS, GREAT BUDWORTH, CHESHIRE
Ceremonial County	CHESHIRE
UAD Project Areas (Thematic Surveys)	GENERAL AREA

National Grid Reference

SJ 5753 7608	Linear	Line joining two or more 8 figure references. Applies to road routes, waterways or boundaries (Monuments).

Short Summary

Roman road

Summary

A Roman road runs between Chester and Manchester, known locally as Watling Street (Margary Route 7a). The road led from the legionary fortress at Chester to the forts at Northwich and Manchester. It ran due east from the Eastgate along Foregate Street through Boughton to Vicars Cross, crossing the River Gowy at Stamford Bridge, then proceeding by Kelsall, south of Eddisbury hillfort and through Oakmere. It then merges with the modern road through Northwich then onto Manchester through Nether Tabley, Mere and Bucklow Hill.

Monument Type and Date

ROAD (Roman - 43 AD to 409 AD)

Evidence SUB SURFACE DEPOSIT

Status and other references		Grade	Date Assigned
Conservation Area	Sandiway Conservation Area		
Conservation Area	City Centre (Chester) Conservation Area		
Conservation Area	Northwich Conservation Area		
Conservation Area	Hartford Conservation Area		
Conservation Area	Trent and Mersey Canal Conservation Area		
Conservation Area	Boughton and the Meadows (Chester) Conservation Area		
Conservation Area	Boughton Canalside (Chester) Conservation Area		
Scheduled Monument	Roman Road, Thieves Moss, Delamere Forest		

Description

Chester to Manchester Roman road. First ran E to Manchester and then turned N to Carlisle. Margary No 7a (1). Antonine Inter II, known locally as Watling St. Road led from the fortress at Chester to the forts at Northwich and Manchester and then over the Pennines to York. From the E gate of the fortress, the road is followed by modern roads to Vicars Cross. It crosses the River Gowy at Stamford Bridge, then proceeds N of Kelsall, S of Eddisbury hillfort and through Oakmere. Thereafter the modern and Roman lines merge at Crabtree Cottages (582701). The course becomes less distinct from the junction with Cockpit Lane (607706). It probably follows the present road through Hartford to Northwich. It crosses the Weaver, then the present Manchester road takes up the alignment. About 2kms E of the river crossing is the junction with King St (now obscured).Then the route turns N through Nether Tabley (A556). That alignment continued through Mere and Bucklow Hill into

Manchester (2).

<1> Margary, I. D., 1973, *Roman Roads in Britain* (Book)

<2> Harris, B.E. (ed), 1987, *A History of the County of Chester: Volume I: Physique, Prehistory, Roman, Anglo-Saxon, and Domesday (Victoria County History)* (Book)

<3> Longley D, various, *Longley Archive* (Paper Archive)

<6> Matthews K J, 1999, *The creation of landscapes on the edge of the Empire: roads and the landscapes in northwest Britannia* (Article in monograph)

Sources

(1) Margary, I. D.. 1973. Roman Roads in Britain. /300-302 1973

(2) Harris, B.E. (ed). 1987. A History of the County of Chester: Volume I: Physique, Prehistory, Roman, Anglo-Saxon, and Domesday (Victoria County History). 1/218-219 1987

(3) Longley D. various. Longley Archive. /no.306

(6) Matthews K J. 1999. The creation of landscapes on the edge of the Empire: roads and the landscapes in northwest Britannia. Galliazzo V, (ed), Via Claudia Augusta. Un’arteria alle origini dell’Europa: ipotesi, problemi, prospettive,.

Related Monuments

844/1/15	Roman Road - North of Brookhouse Farm (Chester - Manchester Route 7a)	Contemporary Complex
844/1/19	Roman Road - Gowy Bank Farm (Chester - Manchester Route 7a)	Contemporary Complex
844/1/21	Roman Road - Boughton Road (Chester - Manchester Route 7a)	Contemporary Complex
844/1/22	Roman Road - Foregate Street (Chester - Manchester Route 7a)	Contemporary Complex
844/1/23	Roman Road - The Eastgate (Chester - Manchester Route 7a)	Contemporary Complex
844/1/25	Roman Road - Tarvin Sands (Chester - Manchester Route 7a)	Contemporary Complex
844/1/18	Roman Road - A51 at Stamford Bridge (Chester - Manchester Route 7a)	Contemporary Complex
844/1/17	Roman Road - Stamford Bridge (Chester - Manchester Route 7a)	Contemporary Complex
844/1/14	Roman Road - Hollands Lane (Chester - Manchester Route 7a)	Contemporary Complex
844/1/26	Roman Road - A51 at Tarvin Sands (Chester - Manchester Route 7a)	Contemporary Complex
844/1/27	Roman Road - West of Hollands Lane (Chester - Manchester Route 7a)	Contemporary Complex
844/1/16	Roman Road - Tarvin to Stamford Bridge (Chester - Manchester Route 7a)	Contemporary Complex
844/1/20	Roman Road - River Bollin (Chester - Manchester Route 7a)	Contemporary Complex
844/1/24	Roman Road - Street Hey field (Chester - Manchester Route 7a)	Contemporary Complex
844/1/5	Roman Road - Lobslack Quarry (Chester - Manchester Route 7a)	Contemporary Complex

844/1/8	Roman Road - Nettleford Wood (Chester - Manchester Route 7a)	Contemporary Complex
844/1/11	Roman Road -Station Road, Delamere (Chester - Manchester Route 7a)	Contemporary Complex
844/1/12	Roman Road - Greenbank (Chester - Manchester Route 7a)	Contemporary Complex
844/1/13	Roman Road - Crossing at Northwich (Chester - Manchester Route 7a)	Contemporary Complex
844/1/7	Roman Road - Lodge Farm, Oakmere (Chester - Manchester Route 7a)	Contemporary Complex
844/1/3	Roman Road - Nettleford Wood Junction (Chester - Manchester Route 7a)	Contemporary Complex
844/1/9	Roman Road - Watling Street, Oakmere (Chester - Manchester Route 7a)	Contemporary Complex
844/1/4	Roman Road - North of A556, Oakmere (Chester - Manchester Route 7a)	Contemporary Complex
844/1/6	Roman Road - Sandiway (Chester - Manchester Route 7a)	Contemporary Complex
844/1/2	Roman Road - East of Morreys Lane (Chester - Manchester Route 7a)	Contemporary Complex
844/1/10	Roman Road - South of Eddiesbury Hill Road (Chester - Manchester Route 7a)	Contemporary Complex
844/1/1	Roman Road - Thieves Moss, Delamere Forest (Chester - Manchester Route 7a)	Contemporary Complex
844/1/28	Roman Road - Oakmere (Chester - Manchester Route 7a)	Contemporary Complex
844/1/29	Roman Road - Cherry Orchard (Chester - Manchester Route 7a)	Contemporary Complex

Associated Finds

Find Type	Period	Material

Associated Events/Activities

ECH1207	Monuments Protection Programme (Chester) (Event - Interpretation. Ref: N/A)
ECH4770	Dunham Tank to Knutsfored Pipeline, Greater Manchester and Cheshire: Watching Brief, , Evaluation, and Strip and Record Investigation (Event - Intervention. Ref: L10045)
ECH4679	Land at 439 Chester Road, Hartford (Event - Intervention. Ref: 09/02426/REM)
ECH4788	Land at Golden Nook Farm, Cuddington, Cheshire (Event - Interpretation. Ref: PC/JG/12189)

HERNumber	Site Name	Record Type
728/1	Medieval road crossing	Monument

Administrative Area

Civil Parish	NORTHWICH, VALE ROYAL, CHESHIRE WEST AND CHESTER
Historic Township/Parish/County	LOSTOCK GRALAM, GREAT BUDWORTH, CHESHIRE
Ceremonial County	CHESHIRE

National Grid Reference

SJ 6820 7420	Approximate Position	Probable location. Equivalent to a 6 figure reference (Monuments & Designations).

Short Summary

Medieval Road

Summary

Site of a lost medieval road that crossed Wade Brook here or at Lostock Gralam Bridge.

Monument Type and Date

COMMUNICATIONS (Medieval - 1066 AD to 1539 AD)
ROAD (Road-minor, Medieval - 1066 AD to 1539 AD)
Evidence SUB SURFACE DEPOSIT
ROAD TRANSPORT SITE (Road route, Medieval - 1066 AD to 1539 AD)

Status and other references	Grade	Date Assigned

Description

Lost medieval road, crossing Wade Brook at SJ 682742 or at Lostock Gralam Bridge (1).

<1> *County Treasures Record* (Index)

Sources

(1) County Treasures Record. 4/A.187

Related Monuments

Associated Finds

Find Type	Period	Material

Associated Events/Activities

ECH549 Monuments Protection Programme Scoring (Event - Interpretation)

HERNumber	Site Name	Record Type
436/1/15	King Street Roman Road - Broken Cross to Middlewich section	Monument

Administrative Area

Civil Parish	LACH DENNIS, VALE ROYAL, CHESHIRE WEST AND CHESTER
Civil Parish	RUDHEATH, VALE ROYAL, CHESHIRE WEST AND CHESTER
Historic Township/Parish/County	WHATCROFT, DAVENHAM, CHESHIRE
Ceremonial County	CHESHIRE

National Grid Reference

SJ 6931 7025	Linear	Line joining two or more 8 figure references. Applies to road routes, waterways or boundaries (Monuments).

Short Summary

Roman road

Summary

From Broken Cross to Middlewich, for a distance of near 7km, an impressively straight section of King Street Roman road is still in use (the present A530 and B5309). It is a fine and typical example of a Roman road, raised about 2 -3 feet above ground level . King Street Roman road runs between Wilderspool and Middlewich and then onto Chesterton in Staffordshire

Monument Type and Date

ROAD (Road-major, Roman - 43 AD to 409 AD)

Evidence SUB SURFACE DEPOSIT

ROAD TRANSPORT SITE (Road route, Roman - 43 AD to 409 AD)

Status and other references	Grade	Date Assigned

Description

From Broken Cross to Middlewich, for a distance of near 7km, an impressively straight section of King Street Roman road is still in use (present A530 and B5309). Camden described this road as 'a noble way from Middlewich to Northwich, which has been raised so high with gravel, that one may easily discern it to be Roman' (1). Margary route 70a. A fine and typical example of a Roman road, raised 2-3ft generally and with the traditional name of King Street, sometimes appearing in a corrupted form as Kind Street. Parish boundaries follow it in some places (2).

<1> Harris, B.E. (ed), 1987, *A History of the County of Chester: Volume I: Physique, Prehistory, Roman, Anglo-Saxon, and Domesday (Victoria County History)* (Book)

<2> Margary, I. D., 1973, *Roman Roads in Britain* (Book)

Sources

(1) Harris, B.E. (ed). 1987. A History of the County of Chester: Volume I: Physique, Prehistory, Roman, Anglo-Saxon, and Domesday (Victoria County History). 1/220 Petch D F 1987

(2) Margary, I. D.. 1973. Roman Roads in Britain. /302 1957

Related Monuments

436/1/0	King Street Roman Road	Contemporary Complex
436/1/18	King Street Roman Road -Stockton Heath Primary School	Contemporary Complex

Associated Finds

Find Type	Period	Material

Associated Events/Activities

ECH5560	Warmingham to Lostock Brine Pipeline: Archaeological Desk-Based Assessment (Extract from EIA) (Event - Interpretation)

HERNumber	Site Name	Record Type
2267/1/54	Northwich Station	Monument

Administrative Area

Civil Parish	NORTHWICH, VALE ROYAL, CHESHIRE WEST AND CHESTER
Historic Township/Parish/County	WITTON CUM TWAMBROOKS, GREAT BUDWORTH, CHESHIRE
Ceremonial County	CHESHIRE

National Grid Reference

SJ 6697 7395 8 Figure Ref Known to within 10m of actual position (Monuments & Designations).

Short Summary

19th Century Railway Station

Summary

The London and North Western Railway Line (LNWR) from Sandbach joins the Cheshire Line Committee's Manchester - Chester railway at Northwich. The Station serving both lines consists of two buildings one on the Manchester Chester line and the smaller on the Sandbach line. They are joined by an iron footbridge on cast iron pillars. The station is constructed of yellow brick with gothic windows, and a glass and iron canopy over the platform.

Monument Type and Date

COMMUNICATIONS (AD 20TH CENTURY to AD 21st CENTURY - 1901 AD? to 2050 AD?)

RAILWAY STATION (AD 20TH CENTURY to AD 21st CENTURY - 1901 AD? to 2050 AD?)

Evidence EXTANT BUILDING

RAILWAY TRANSPORT SITE (Railway Route, AD 20TH CENTURY to AD 21st CENTURY - 1901 AD? to 2050 AD?)

Status and other references **Grade** **Date Assigned**

Description

The Cheshire Line Committee's Manchester - Chester Railway from Knutsford reached Northwich in 1863 and was extended to Chester and Helsby in 1869. The LNWR from Sandbach, which joins the CLC's Railway west of the Station, was opened in 1868.(1) The Station serving both lines consists of two buildings: the larger of the two north of the CLC platform; and the smaller on a platform between the CLC railway and Sandbach line. Between 1872 (2) and 1910 (3) the station is enlarged and the platforms joined by an iron footbridge on cast iron pillars(1). The station is constructed of yellow brick, Gothic windows, and a glass and iron canopy over the platform is set on cast iron pillars with decorated capitals and brackets.(1) Old style semaphone signals between the footbridge and road bridge, an engine house to the SE of the station, and a goods station with 16 bay single storey brick-built shed to the NW are all present within the immediate vicinity. (1)

<1> Ashmore, O, 1982, *The Industrial Archaeology of North West England* (Book)

<2> Ordnance Survey, 1893-96, *Ordnance Survey 1st edition 25 inch to 1 mile - Lancashire* (Map)

<3> Ordnance Survey, *Ordnance Survey 1:2500* (Map)

Sources

(1) Ashmore, O. 1982. The Industrial Archaeology of North West England. /50-52

(2) Ordnance Survey. 1893-96. Ordnance Survey 1st edition 25 inch to 1 mile - Lancashire. 1872 Sheet 34.6

(3) Ordnance Survey. Ordnance Survey 1:2500. Sheet 34.6 1910

Related Monuments

2267/1/0	Manchester to Chester Line (CLC)	Contemporary Complex

Associated Finds

Find Type	Period	Material

Associated Events/Activities

HERNumber	Site Name	Record Type
2267/1/56	19th century engine shed	Monument

Administrative Area

Civil Parish	NORTHWICH, VALE ROYAL, CHESHIRE WEST AND CHESTER
Historic Township/Parish/County	WITTON CUM TWAMBROOKS, GREAT BUDWORTH, CHESHIRE
Ceremonial County	CHESHIRE

National Grid Reference

SJ 6701 7388   8 Figure Ref   Known to within 10m of actual position (Monuments & Designations).

Short Summary

19th century engine shed

Summary

A engine shed built before 1872. Increased industrial activity in the late nineteenth and early twentieth century led to the reorganisation of the railways in Northwich and by 1910 the engine shed had been enlarged to house four lines. The Engine shed is still present on the 1973 OS map of Cheshire.

Monument Type and Date

COMMUNICATIONS (AD 20TH CENTURY to AD 21st CENTURY - 1901 AD? to 2050 AD?)

ENGINE SHED (AD 20TH CENTURY to AD 21st CENTURY - 1901 AD? to 2050 AD?)

RAILWAY TRANSPORT SITE (Railway Route, AD 20TH CENTURY to AD 21st CENTURY - 1901 AD? to 2050 AD?)

Evidence   EXTANT BUILDING

Status and other references	Grade	Date Assigned

Description

Illustrated on the 1:2500 1872 Ordnance Survey map (1) the engine house was to the south-east of the Station. Increased industrial activity in the late nineteenth and early twentieth century led to the reorganisation of the railway complexes in the vicinity of the Station. By 1910 (2) the engine shed had been enlarged (to over double its original size); the number of lanes which the shed housed was doubled to four; and the empty space between the shed and the station was utilised through the addition of a turntable and sidings. The engine shed is present on the c.1973 edition map. (3)

<1> Ordnance Survey, 1893-96, *Ordnance Survey 1st edition 25 inch to 1 mile - Lancashire* (Map)

<2> Ordnance Survey, *Ordnance Survey 1:2500* (Map)

<3> Ordnance Survey, 1995-2014, *Ordnance Survey 1:10000* (Map)

Sources

(1) Ordnance Survey. 1893-96. Ordnance Survey 1st edition 25 inch to 1 mile - Lancashire. 1872 Sheet 34.6

(2) Ordnance Survey. Ordnance Survey 1:2500. Sheet 34.6 1910

(3) Ordnance Survey. 1995-2014. Ordnance Survey 1:10000. Sheet SJ67SE 1973

Related Monuments

2267/1/0	Manchester to Chester Line (CLC)	Contemporary Complex

Associated Finds

Find Type	Period	Material

Associated Events/Activities

HERNumber	Site Name	Record Type
2267/1/57	Site of railway goods shed	Monument

Administrative Area

Civil Parish	NORTHWICH, VALE ROYAL, CHESHIRE WEST AND CHESTER
Historic Township/Parish/County	WITTON CUM TWAMBROOKS, GREAT BUDWORTH, CHESHIRE
Ceremonial County	CHESHIRE

National Grid Reference

SJ 6697 7400 8 Figure Ref Known to within 10m of actual position (Monuments & Designations).

Short Summary

19th century railway goods shed

Summary

Site of former goods shed to the north-east of Northwich station. It is shown on the 1872 Ordnance Survey map but had been demolished and replaced by a larger shed nearby before the 1910 map was made.

Monument Type and Date

COMMUNICATIONS (AD 20TH CENTURY to AD 21st CENTURY - 1901 AD? to 2050 AD?)

GOODS SHED (AD 20TH CENTURY to AD 21st CENTURY - 1901 AD? to 2050 AD?)

Evidence SUB SURFACE DEPOSIT

RAILWAY TRANSPORT SITE (Railway Route, AD 20TH CENTURY to AD 21st CENTURY - 1901 AD? to 2050 AD?)

Status and other references	Grade	Date Assigned

Description

Site of former goods shed situated to the north-east of the station. Present on the 1:2500 1872 Ordnance Survey map. (1) Constructed in a standard design of two parts: a larger section (approximately 30 metres by 8) housing one line of track; and a smaller section for clerical and administrative duties. Although sections of the sidings associated with the shed survive, (3) the shed has been demolished by 1910 (2) and replaced by a slightly larger shed to its north-east.

<1> Ordnance Survey, 1893-96, *Ordnance Survey 1st edition 25 inch to 1 mile - Lancashire* (Map)

<2> Ordnance Survey, *Ordnance Survey 1:2500* (Map)

<3> Ordnance Survey, 1995-2014, *Ordnance Survey 1:10000* (Map)

Sources

(1) Ordnance Survey. 1893-96. Ordnance Survey 1st edition 25 inch to 1 mile - Lancashire. 1872 Sheet 34.6

(2) Ordnance Survey. Ordnance Survey 1:2500. Sheet 34.6 1910

(3) Ordnance Survey. 1995-2014. Ordnance Survey 1:10000. Sheet SJ67SE 1973

Related Monuments

2267/1/0	Manchester to Chester Line (CLC)	Contemporary Complex

Associated Finds

Find Type	Period	Material

Associated Events/Activities

HERNumber	Site Name	Record Type
2267/1/58	19th century railway goods shed	Monument

Administrative Area

Civil Parish	NORTHWICH, VALE ROYAL, CHESHIRE WEST AND CHESTER
Historic Township/Parish/County	WITTON CUM TWAMBROOKS, GREAT BUDWORTH, CHESHIRE
Ceremonial County	CHESHIRE

National Grid Reference

SJ 6706 7405 8 Figure Ref Known to within 10m of actual position (Monuments & Designations).

Short Summary

19th century railway goods shed

Summary

19th century Railway Goods shed built to replace an earlier smaller one. It is shown on the OS maps of Cheshire from 1910 and 1973.

Monument Type and Date

COMMUNICATIONS (AD 20TH CENTURY to AD 21st CENTURY - 1901 AD? to 2050 AD?)

GOODS SHED (AD 20TH CENTURY to AD 21st CENTURY - 1901 AD? to 2050 AD?)

Evidence STRUCTURE

RAILWAY TRANSPORT SITE (Railway Route, AD 20TH CENTURY to AD 21st CENTURY - 1901 AD? to 2050 AD?)

Status and other references	Grade	Date Assigned

Description

The goods shed in question exists upon the 1:2500 1910 (2) and 1:10000 c.1973 (3) Ordnance Survey maps and was at least the second shed to be constructed at Northwich (Its predecessor was a little smaller and to the south-west of the shed 1). Complete with a large compliment of sidings, the building was to the north-east of the station, housed one lane of track, was sixteen bay, single storey and brick built. (4)

<1> Ordnance Survey, 1893-96, *Ordnance Survey 1st edition 25 inch to 1 mile - Lancashire* (Map)

<2> Ordnance Survey, *Ordnance Survey 1:2500* (Map)

<3> Ordnance Survey, 1995-2014, *Ordnance Survey 1:10000* (Map)

<4> Ashmore, O, 1982, *The Industrial Archaeology of North West England* (Book)

Sources

(1) Ordnance Survey. 1893-96. Ordnance Survey 1st edition 25 inch to 1 mile - Lancashire. /52 1872 Sheet 34.6

(2) Ordnance Survey. Ordnance Survey 1:2500. Sheet 34.6 1910

(3) Ordnance Survey. 1995-2014. Ordnance Survey 1:10000. Sheet SJ67SE 1973

(4) Ashmore, O. 1982. The Industrial Archaeology of North West England.

Related Monuments

2267/1/0	Manchester to Chester Line (CLC)	Contemporary Complex

Associated Finds

Find Type	Period	Material

Associated Events/Activities

HERNumber	Site Name	Record Type
2267/1/59	19th century railway signal box	Monument

Administrative Area

Civil Parish	NORTHWICH, VALE ROYAL, CHESHIRE WEST AND CHESTER
Historic Township/Parish/County	WITTON CUM TWAMBROOKS, GREAT BUDWORTH, CHESHIRE
Ceremonial County	CHESHIRE

National Grid Reference

SJ 6728 7403 8 Figure Ref Known to within 10m of actual position (Monuments & Designations).

Short Summary

19th century railway signal box

Summary

Railway signal box presumably built in or around 1863 when the Cheshire Lines Committee's Manchester - Chester line from the Knutsford direction reached Northwich. The signal box would have served as an access mechanism for entry and exit to the railway station, engine shed, goods shed and the industrial complexes of north Northwich.

Monument Type and Date

COMMUNICATIONS (AD 20TH CENTURY to AD 21st CENTURY - 1901 AD? to 2050 AD?)

RAILWAY TRANSPORT SITE (Railway Route, AD 20TH CENTURY to AD 21st CENTURY - 1901 AD? to 2050 AD?)

SIGNAL BOX (AD 20TH CENTURY to AD 21st CENTURY - 1901 AD? to 2050 AD?)

Evidence EXTANT BUILDING

Status and other references	Grade	Date Assigned

Description

Presumably built in or around 1863 when the Cheshire Lines Committee's Manchester - Chester line from the Knutsford direction reached Northwich. (1) The line was later extended to Chester and Helsby. The signal box would have served as an access mechanism for entry and exit to the station, an engine shed, a goods shed, and the industrial complexes of north Northwich. The signal box is present on the c.1973 Ordnance Survey map. (2)

<1> Sylvester D, 1971, *A History of Cheshire with Maps and Pictures* (Book)

<2> Ordnance Survey, 1995-2014, *Ordnance Survey 1:10000* (Map)

Sources

(1) Sylvester D. 1971. A History of Cheshire with Maps and Pictures. /58-61

(2) Ordnance Survey. 1995-2014. Ordnance Survey 1:10000. Sheet SJ67SE 1973

Related Monuments

2267/1/0	Manchester to Chester Line (CLC)	Contemporary Complex

Associated Finds

Find Type	Period	Material

Associated Events/Activities

HERNumber	Site Name	Record Type
2267/1/55	20th century railway turntable	Monument

Administrative Area

Civil Parish	NORTHWICH, VALE ROYAL, CHESHIRE WEST AND CHESTER
Historic Township/Parish/County	WITTON CUM TWAMBROOKS, GREAT BUDWORTH, CHESHIRE
Ceremonial County	CHESHIRE

National Grid Reference

SJ 6698 7390 8 Figure Ref Known to within 10m of actual position (Monuments & Designations).

Short Summary

20th century railway turntable

Summary

Situated between the station and the engine shed, the turntable is a twentieth century construction as it is not present on the 1910 Ordnance Survey map.

Monument Type and Date

COMMUNICATIONS (AD 20TH CENTURY to AD 21st CENTURY - 1901 AD? to 2050 AD?)

RAILWAY TRANSPORT SITE (Railway Route, AD 20TH CENTURY to AD 21st CENTURY - 1901 AD? to 2050 AD?)

RAILWAY TURNTABLE (Turntable, AD 20TH CENTURY to AD 21st CENTURY - 1901 AD? to 2050 AD?)

Evidence STRUCTURE

Status and other references	Grade	Date Assigned

Description

Situated between the station and the engine shed, the turntable is a twentieth century construction as it is not present on the 1910 Ordnance Survey map. The turntable is still present on the c.1973 Ordnance Survey map.

<1> Ordnance Survey, *Ordnance Survey 1:2500* (Map)

<2> Ordnance Survey, 1995-2014, *Ordnance Survey 1:10000* (Map)

Sources

(1) Ordnance Survey. Ordnance Survey 1:2500. Sheet 34.6 1910

(2) Ordnance Survey. 1995-2014. Ordnance Survey 1:10000. Sheet SJ67SE 1973

Related Monuments

2267/1/0	Manchester to Chester Line (CLC)	Contemporary Complex

Associated Finds

Find Type	Period	Material

Associated Events/Activities

HERNumber	Site Name	Record Type
2518/1	Wincham Corn Mill	Building

Administrative Area

Civil Parish	WINCHAM, VALE ROYAL, CHESHIRE WEST AND CHESTER
Historic Township/Parish/County	LOSTOCK GRALAM, GREAT BUDWORTH, CHESHIRE
Ceremonial County	CHESHIRE

National Grid Reference

SJ 6850 7470 8 Figure Ref Known to within 10m of actual position (Monuments & Designations).

Short Summary

19th century mill

Summary

A steam powered mill, three storeys high. A stone tablet inscribed 'Wincham Corn and Bone Mills JK and W. Hesketh 1870' is on the east side of the building.

Monument Type and Date

INDUSTRIAL SITE (AD 19TH CENTURY - 1800 AD to 1899 AD)

MILL (AD 19TH CENTURY - 1800 AD to 1899 AD)

Evidence EXTANT BUILDING

Status and other references	Grade	Date Assigned

Description

Steam powered mill occupied by NW farmers. On W, three storey building and kiln. On E, three storey building parallel to road, with stone tablet inscribed, 'Wincham Corn and Bone Mills JK and W. Hesketh 1870', (1).

<1> Ashmore, O, 1982, *The Industrial Archaeology of North West England* (Book)

Sources

(1) Ashmore, O. 1982. The Industrial Archaeology of North West England. /71

Related Monuments

Associated Finds

Find Type	Period	Material

Associated Events/Activities

HERNumber	Site Name	Record Type
436/1/0	King Street Roman Road	Monument

Administrative Area

Civil Parish	ALSAGER, CONGLETON, CHESHIRE EAST
Civil Parish	ANTROBUS, VALE ROYAL, CHESHIRE WEST AND CHESTER
Civil Parish	APPLETON, WARRINGTON
Civil Parish	BETCHTON, CONGLETON, CHESHIRE EAST
Civil Parish	BYLEY, VALE ROYAL, CHESHIRE WEST AND CHESTER
Civil Parish	CHURCH LAWTON, CONGLETON, CHESHIRE EAST
Civil Parish	GREAT BUDWORTH, VALE ROYAL, CHESHIRE WEST AND CHESTER
Civil Parish	LACH DENNIS, VALE ROYAL, CHESHIRE WEST AND CHESTER
Civil Parish	MARSTON, VALE ROYAL, CHESHIRE WEST AND CHESTER
Civil Parish	MIDDLEWICH, CONGLETON, CHESHIRE EAST
Civil Parish	MOSTON, CONGLETON, CHESHIRE EAST
Civil Parish	NORTHWICH, VALE ROYAL, CHESHIRE WEST AND CHESTER
Civil Parish	ODD RODE, CONGLETON, CHESHIRE EAST
Civil Parish	RUDHEATH, VALE ROYAL, CHESHIRE WEST AND CHESTER
Civil Parish	SANDBACH, CONGLETON, CHESHIRE EAST
Civil Parish	STOCKTON HEATH, WARRINGTON
Civil Parish	STRETTON, WARRINGTON
Civil Parish	WARRINGTON, WARRINGTON
Civil Parish	WHITLEY, VALE ROYAL, CHESHIRE WEST AND CHESTER
Civil Parish	WINCHAM, VALE ROYAL, CHESHIRE WEST AND CHESTER
Historic Township/Parish/County	ALSAGER, BARTHOLMLEY, CHESHIRE
Historic Township/Parish/County	ANTROBUS, GREAT BUDWORTH, CHESHIRE
Historic Township/Parish/County	APPLETON, GREAT BUDWORTH, CHESHIRE
Historic Township/Parish/County	BETCHTON, SANDBACH, CHESHIRE
Historic Township/Parish/County	BRADWALL, SANDBACH, CHESHIRE
Historic Township/Parish/County	BYLEY CUM YATEHOUSE, MIDDLEWICH, CHESHIRE
Historic Township/Parish/County	CHURCH LAWTON, CHURCH LAWTON, CHESHIRE
Historic Township/Parish/County	CROXTON, MIDDLEWICH, CHESHIRE
Historic Township/Parish/County	ELTON, MIDDLEWICH, CHESHIRE
Historic Township/Parish/County	GREAT BUDWORTH, GREAT BUDWORTH, CHESHIRE
Historic Township/Parish/County	HIGHER WHITLEY, GREAT BUDWORTH, CHESHIRE

Historic Township/Parish/County	LOSTOCK GRALAM, GREAT BUDWORTH, CHESHIRE
Historic Township/Parish/County	MARSTON, GREAT BUDWORTH, CHESHIRE
Historic Township/Parish/County	MIDDLEWICH, MIDDLEWICH, CHESHIRE
Historic Township/Parish/County	MOSTON, WARMINGHAM, CHESHIRE
Historic Township/Parish/County	NEWTON, MIDDLEWICH, CHESHIRE
Historic Township/Parish/County	ODD RODE, ASTBURY, CHESHIRE
Historic Township/Parish/County	RAVENSCROFT, MIDDLEWICH, CHESHIRE
Historic Township/Parish/County	RUDHEATH, DAVENHAM, CHESHIRE
Historic Township/Parish/County	RUDHEATH, GREAT BUDWORTH, CHESHIRE
Historic Township/Parish/County	SANDBACH, SANDBACH, CHESHIRE
Historic Township/Parish/County	SEVEN OAKS, GREAT BUDWORTH, CHESHIRE
Historic Township/Parish/County	STRETTON, GREAT BUDWORTH, CHESHIRE
Historic Township/Parish/County	TETTON, WARMINGHAM, CHESHIRE
Historic Township/Parish/County	WARRINGTON, WARRINGTON, LANCASHIRE
Historic Township/Parish/County	WHATCROFT, DAVENHAM, CHESHIRE
Historic Township/Parish/County	WINCHAM, GREAT BUDWORTH, CHESHIRE
Historic Township/Parish/County	WITTON CUM TWAMBROOKS, GREAT BUDWORTH, CHESHIRE
Ceremonial County	CHESHIRE

National Grid Reference

SJ 7204 6953	Linear	Line joining two or more 8 figure references. Applies to road routes, waterways or boundaries (Monuments).

Short Summary

Roman Road

Summary

This part of King Street has been traced from Warrington to Sandbach for 18 miles. Traced from Elworth to the west of Sandbach, Northwest from Elworth the road runs through Middlewich, but is covered by canal works and industrial development. From here it runs straight for 4 miles to Broken Cross near Over Street on the east side of Northwich. Then continues north west through Wincham, but is obliterated by saltworks, then up to Marston Church and Marston Hall to join the angle of the present road south of Great Budworth. This road then runs directly to Frankley and Stretton and then on to the Roman settlement at Wilderspool.

Monument Type and Date

ROAD (Road-major, Roman - 43 AD to 409 AD)
Evidence SUB SURFACE DEPOSIT
ROAD TRANSPORT SITE (Road route, Roman - 43 AD to 409 AD)

Status and other references		Grade	Date Assigned
Conservation Area	Great Budworth Conservation Area		
Conservation Area	Market Place, Hightown and Chapel Street (Sandbach) Conservation Area		
Conservation Area	Warrington - Church Street Conservation Area		
Conservation Area	Trent and Mersey Canal Conservation Area		
Conservation Area	Trent and Mersey Canal, Middlewich - Kent Green Conservation Area		

Description

King Street Roman Road. Traced from Warrington to Sandbach for 18 miles. Margary road number 70a. First traced by Margary at Elworth to the west of Sandbach (436/1/9) as a ridge in a field almost parallel with and east of the present road. It is uncertain what the actual course was to the south-east, though from its general direction it is probable that the road was designed to reach the Roman settlement at Chesterton, near Newcastle under Lyme, and may have done so by the present road from Sandbach to Rode Heath, near Alsager, which follows high ground and is very direct. Northwest from Elworth the road runs through Middlewich, but is covered by canal works and industrial development. From here it runs straight for 4 miles to Broken Cross near Over Street on the E side of Northwich. Then continues NW through Wincham, but is obliterated by saltworks, then up to Marston Church & Marston Hall to join the angle of the present road south of Great Budworth. This road then runs directly to Frankley & Stretton & then on to the Roman settlement at Wilderspool (1).

<1> Margary, I. D., 1973, *Roman Roads in Britain* (Book)

Sources

(1) Margary, I. D.. 1973. Roman Roads in Britain. /302-303

Related Monuments

436/1/17	King Street Roman Road - Abbeyfields Sandbach	Chronological
436/1/10	King Street Roman Road	Contemporary Complex
436/1/11	King Street - Middlewich to Chesterton Section	Contemporary Complex
436/1/12	King Street - Middlewich to Chesterton Section	Contemporary Complex
436/1/13	King Street - Middlewich to Chesterton Section	Contemporary Complex
436/1/9	Elworth Street (King Street)- Margary Route 70a	Geographical

436/1/15	King Street Roman Road - Broken Cross to Middlewich section	Contemporary Complex
436/1/2	King Street Roman Road - Wilderspool - Stretton section	Contemporary Complex
436/1/1	King Street Roman Road - Wilderspool to Stretton section	Contemporary Complex
436/1/5	King Street Roman Road - Wilderspool to Stretton section	Contemporary Complex
436/1/6	King Street Roman Road - Wilderspool to Stretton section	Contemporary Complex
436/1/4	King Street Roman Road - Wilderspool - Stretton section	Contemporary Complex
436/1/3	King Street Roman Road - Wilderspool - Stretton section	Contemporary Complex
436/1/7	King Street Roman Road-Wilderspool to Stretton section	Contemporary Complex
436/1/8	King Street Roman Road-Wilderspool-Stretton section	Contemporary Complex
436/1/14	King Street Roman Road - Wilderspool to Stretton section	Contemporary Complex
436/1/16	King Street Roman Road - Wilderspool to Stretton section	Contemporary Complex

Associated Finds

Find Type	Period	Material

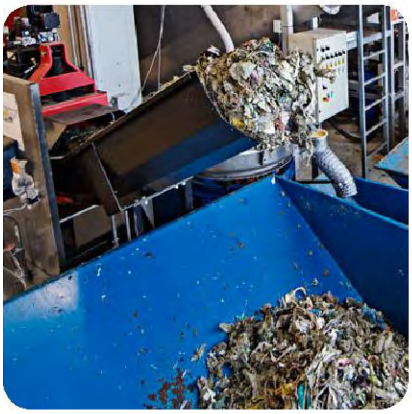
Associated Events/Activities

ECH1271	Monuments Protection Programme Scoring (Event - Interpretation)
ECH4065	100 Church Street, Warrington (Event - Intervention. Ref: B1647A)
ECH4114	Stockton Heath Primary School (Event - Intervention. Ref: N/A)
ECH4364	Canalside Farm, King Street, Rudheath, Northwich (Event - Interpretation)
ECH4697	Viridor, Proposed Development of a Waster Treatment Plant, Lostock Gralam: Archaeology and Cultural Heritage (Event - Survey. Ref: LE10104/EIA 002A)
ECH4813	Wincham Urban Village, Northwich, Cheshire: Heritage Statement (Event - Interpretation. Ref: WUV011)
ECH4806	An Archaeological Watching Brief in Response to a Gas Main Replacement Programme, King Street and Kinderton, Middlewich, Cheshire (Event - Intervention. Ref: N/A)
ECH4965	Proposed Gas Pipeline Works in Harbutt's Field, Middlewich, Cheshire: Archaeological Desk-Based Assessment (Event - Interpretation. Ref: N/A)

Appendix 6.A: Transport Assessment

Appendix 6.A: Transport Assessment

REnescience Northwich



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Quality Management

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Authorised by:	David Archibald	Technical Director		04/10/15
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Document file path:	O:\Jobs_8001-9000\8407s\Info_share\ES_submission\Final_Word\Vol3_Appendices\V3A6.A_Transport_Assessment.docx			

Revision History				
Rev	**Date**	**Status**	**Reason for revision**	**Additional comments**
0	23/09/15	Draft	-	-
1	01/10/15	Draft	Internal review	DS & TAD
2	04/10/15	Final	-	-

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Figure 6.F: Site Access Swept Path Analysis

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1 Introduction

Development Overview

1.1 This Transport Assessment (TA) has been prepared in support of a planning application by DONG Energy (the 'Applicant') for development of REnescience Northwich, a bioresources project comprising mechanical and biological treatment of waste, recovery of materials and renewable energy generation, at the Lostock Works industrial site near Lostock Gralam and Northwich, Cheshire.

1.2 The planning application is for a development with a nominal waste input capacity of 18 tonnes per hour (tph), equivalent to 144,000 tonnes per annum (tpa) over 8,000 operating hours, which is the proposed development's design capacity of 15 tph (120,000 tpa) plus a contingency of 20%. It will be a merchant facility, treating residual municipal solid waste (MSW), fines, and non-hazardous commercial and industrial (C&I) waste supplied from existing intermediary bulking and transfer sites.

1.3 Details of the proposed development are given in Chapter 2 in Volume 2 of the Environmental Statement (ES) to which this TA is appended. The development site is located west of Lostock Gralam, Cheshire, on land within the Lostock Works site (see Figure 6.A). The site was formerly occupied by the chlorine production works until 2001, and was the subject of a consent for Viridor to develop a larger scale (200,000 tpa input) waste treatment facility in 2010, which was withdrawn by Viridor in 2013 and will no longer go ahead. The development site is separate to the other existing chemical industry land-uses on the wider Lostock Works site.

1.4 The Lostock Works site is situated immediately west of the A530 Griffiths Road and south of the Northwich-Altrincham railway line (part of the Manchester to Chester main railway line). Access to the site is proposed by way of the existing private road serving the Lostock Works site, linking with the A530 south of the development site (see Figure 6.A).

Pre-Application Consultation

1.5 Formal pre-application consultation (ref: 15/02244/PREAPP – REnescience Northwich) has been held with Cheshire West and Chester Council (CWCC) to determine the level of assessment required for the development. It was agreed as part of this process that an Environmental Impact Assessment would be appropriate. This is detailed in Chapter 1 and Chapter 3 of the ES.

1.6 Transportation pre-application advice was subsequently sought from CWCC, which is the Local Highway Authority (LHA). The purpose of the consultation was to agree the scope and content of the TA, which would be undertaken separately to the Traffic and Transport chapter of the ES. A copy of the pre-application correspondence is attached in Annex 6.A.1.

1.7 It was agreed with CWCC that the TA would address the impact on traffic flows on the A530 (north and south of the A556), and A556 (east and west of the A530) for the future year, together with committed and proposed development traffic. An operational capacity assessment would also be undertaken at the site access junction with the A530 based on the same future scenario.

1.8 CWCC requested that in terms of committed development, account should be taken of the adjacent consented Lostock Sustainable Energy Plant (SEP) (ref: 11/0198/OUT), as a minimum.

1.9 CWCC advised that it would seek contributions towards existing highway improvement schemes promoted by CWCC, proportional to the potential traffic impact of the development.

1.10 Notwithstanding the above, CWCC raised the issue that the current state of the road surface at the site access is in poor condition. As such CWCC has requested that as part of the development some improvements should be undertaken.

1.11 Pre-application public exhibitions were held on six dates during July and September:

- 9 July, 2015 (Lostock Gralam);
- 11 July, 2015 (Lostock Gralam);
- 14 July, 2015 (Rudheath);
- 10 September, 2015 (Rudheath);
- 11 September, 2015 (Lostock Gralam); and
- 12 September, 2015 (Northwich).

1.12 Full details of public consultation are given in the Statement of Community Involvement (SoCI) accompanying the planning submission.

1.13 During these consultation sessions, local residents raised concerns regarding the existing deteriorating road condition of Griffiths Road on the approach to the A530/A556 roundabout, crossing Middlewich Road and rat running during road closures, particularly closures on the motorway, including use of Penny's Lane. These concerns are addressed below under Section 7 – Mitigation.

Scope of Transport Assessment

1.14 The anticipated level of travel demand for the development is less than 20 peak hour two way movements. This TA describes the site access proposals and assesses the impact of development traffic, upon the local network, at the following junctions over a 24 hour period:

- A530/A559; and
- A530/A556.

1.15 The assessment (Section 6) has taken into consideration local background traffic growth to 2017; the year of opening, together with identified committed developments in the locality of the development site. Growth in light vehicle traffic on the local highway network in future years comprises the additional traffic associated with the committed developments. As such, future year assessments are based upon the 2017 baseline plus committed development.

1.16 Analysis has also been undertaken of existing road safety conditions for the study area. This has taken into account the latest five year accident statistics.

1.17 The following research has been undertaken in the preparation of this TA:

- review of local transport infrastructure and facilities;
- analysis of existing traffic levels on the local highway network;
- acquisition and analysis of data concerning existing road safety conditions and potential implication of the proposed development;
- assessment of the operation and capacity of the proposed site access junction; and
- assessment of development traffic upon the wider network at identified receptors.

2 Policy and Guidance

2.1 The government is seeking to reduce the increasing environmental impacts associated with transportation though the delivery of national and local transportation policies. The overarching aim at each level is to reduce the need to travel and the level of private car journeys that are generated.

2.2 For the purpose of this application, the following national and local guidance has been referred to:

- National Planning Policy Framework (2012);
- Planning Practice Guidance (2014);
- Cheshire West and Chester Council – Local Transport Plan: Integrated Transport Strategy 2011 – 2026 (2014); and
- (former) Cheshire County Council – Cheshire Replacement Waste Local Plan (2007) (Policies saved after 29 Jan 2015).

National Planning Policy

2.3 The National Planning Policy Framework (NPPF), March 2012, replaces the former Planning Policy Guidance Notes and Statements 1 to 25 (PPG13: Transport inclusive). At the heart of the NPPF is a presumption in favour of sustainable development.

2.4 A set of core land-use planning principles have been identified for planning and decision making purposes. These principles advise that planning should actively manage patterns of growth to make the best possible use of public transport, walking and cycling, whilst focusing significant development in locations which are or can be sustainable.

2.5 In the context of transport, the NPPF advises that transport has a role to play in facilitating sustainable development, as well as contributing to wider sustainability and health objectives. The transport system needs to be balanced in favour of sustainable transport modes and to maximise their use; however, it is recognised that opportunities will vary from urban to rural areas.

2.6 Government transport policy is aimed at reducing the need to travel, in addition to reducing the proportion of journeys made by private cars. To deliver a sustainable transport system, development should be located where the need to travel and journey length will be minimised and the use of sustainable transport can be maximised. Taking into consideration the proposed development, the following location design principles are relevant:

- to give priority to pedestrian/cycle movements and have access to high quality public transport facilities;
- layouts which minimise conflicts between traffic and cyclists or pedestrians;
- incorporate facilities for charging plug-in and other ultra-low emission vehicles; and

- consider needs of people with disabilities.

2.7 The NPPF advises that development should be approved unless any adverse impacts of doing so would significantly and demonstrably outweigh the benefits. In paragraph 32 of the document, it is stated that development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe.

2.8 Planning Practice Guidance (PPG), March 2014, provides web-based support for all planning practice guidance, linking to the NPPF. Previous guidance documents have been replaced by new documents, with the intention of replacing other current guidance. With regard to whether to provide a Transport Assessment, Transport Statement or no assessment, the guidance states:

"Local planning authorities, developers, relevant transport authorities, and neighbourhood planning organisations should agree what evaluation is needed in each instance."

2.9 The guidance states that Transport Assessments/Statements and Travel Plans can positively contribute to:

- *"encouraging sustainable travel;*
- *lessening traffic generation and its detrimental impacts;*
- *reducing carbon emissions and climate impacts;*
- *creating accessible, connected, inclusive communities;*
- *improving health outcomes and quality of life;*
- *improving road safety; and*
- *reducing the need for new development to increase existing road capacity or provide new roads."*

2.10 The guidance states that Transport Assessments/Statements and Travel Plans should be proportionate to the size and scope of the proposed development, be tailored to particular local circumstances and be established at the earliest practicable possible stage of a development proposal.

2.11 The guidance continues by stating that these reports should be brought forward through collaborative ongoing working between the Local Planning Authority/Transport Authority, transport operators, Rail Network Operators, Highways Agency and other relevant bodies.

2.12 With regard to parking, the guidance moves away from the former use of maximum parking guidance and states that:

"Maximum parking standards can lead to poor quality development and congested streets; local planning authorities should seek to ensure parking provision is appropriate to the needs of the development and not reduced below a level that could be considered reasonable."

2.13 Circular 02/2013: The Strategic Road Network and the Delivery of Sustainable Development (Sept 2013) was produced by the Highways Agency (HA) on behalf of the Department of

Transport (DfT), setting out the way in which the HA will deliver sustainable development whilst safeguarding the primary function and purpose of the Strategic Road Network (SRN).

2.14 As part of the Local Plan process, the HA will work with the local authority to assess the cumulative and individual impacts of the proposals upon the ability of the road links and junctions affected to accommodate the forecast traffic flows in terms of capacity and safety. Paragraph 9 states that:

"Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe".

2.15 Paragraph 16 states that through the production of Local Plans, the HA encourages development:

"At locations that are or can be made sustainable, that allow for uptake of sustainable transport modes and support wider social and health objectives, and which support existing business sectors as well as enabling new growth".

2.16 Paragraph 27 states that:

"Where the overall forecast demand at the time of opening of the development can be accommodated by the existing infrastructure, further capacity mitigation will not be sought".

2.17 The HA will encourage the preparation and implementation of a robust travel plan that promotes the use of sustainable transport modes such as walking, cycling and public transport as an effective means of managing the impact of development on the road network, and reducing the need for major transport infrastructure. Paragraph 30 accepts that within the provisions of a travel plan for a new development:

"It may be possible to free up additional capacity within the road network so that the demand generated by a proposed development, which would otherwise be unacceptable, can be accommodated".

2.18 Paragraph 33 refers to capacity enhancement measures and states:

"Only after travel plan and demand management measures have been fully explored and applied will capacity enhancement measures be considered."

Cheshire West and Chester Council Local Plans and Policies

2.19 National policy on transport and land use establishes broad policy objectives that reflect the government's aspirations for integrating land development and transport. The role of local government is to develop strategies based on specific local social and spatial requirements, which deliver the national aspirations.

2.20 Local strategy with respect to waste management land use and transport is articulated in statutory documents prepared by the planning and highway authority, CWCC. The relevant polices are discussed below.

2.21 Local Transport Plan (LTP): Integrated Transport Strategy 2011 – 2026 (2014) sets out the Council's plans and proposals for improving local transport in the area up to 2026. The LTP goals and objectives are designed to support the local and national aspirations for transport, overcoming existing transport issues in the county.

2.22 Air pollutant and greenhouse gas emissions in West Cheshire tend to be higher than the national average with a higher proportion arising from industry and business. This is reflective of the energy-intensive processes of the local economy. The Council is therefore committed to ensuring that new development takes place in accessible locations and is designed to reduce the need for car borne travel and minimise carbon dioxide emissions.

2.23 New highway and development schemes should be designed in such a way to meet the needs of cyclists and pedestrians. Air quality will be monitored by assessing new developments on their merits for potential impact on the environment. Potential measures to reduce air pollution, especially within Air Quality Management Areas (AQMAs), include traffic management, the adoption of planning policies to control development, public transport improvements, travel plans and vehicle emissions testing. It will be important for the Council to avoid locating new development in areas with existing or potential air quality problems arising from local traffic.

2.24 Air pollutant emissions from traffic associated with the proposed development have been assessed in Chapter 10 of the ES. The proposed development site is not within or near to any AQMA and will not lead to any breach of Air Quality Standards.

2.25 The Cheshire Replacement Waste Local Plan policies saved after 29 January 2015 covers all aspects of planning for all waste management activities across the county. The policies were retained within this document as part of the adoption of the Cheshire West and Chester Council's Local Plan: Part One Strategic Policies (January 2015). The Replacement Waste Local Plan attempts to achieve a more sustainable approach to waste management by:

- identifying policies waste management facilities will be assessed against; and
- identifying sites which are considered suitable in principle to accommodate such facilities.

2.26 The following key objective has been set at paragraph 1.16:

"…

H. to minimise the environmental impacts of transporting waste in accordance with the management and disposal of waste at the nearest appropriate facility and the adoption of more sustainable methods for the movement of waste."

2.27 The previous policy 27 'Sustainable transportation of waste and waste derived materials' has since been superseded and replaced by policy ENV8 'Managing Waste' of the new Local Plan. ENV 8 'Managing Waste' states that waste facilities should attempt to be co-located within the borough to support the existing network of waste management sites. Lostock Works in Northwich should be safeguarded as a site for waste land use as opposed to a site for alternative uses.

2.28 The supporting text to this policy enforces the locational credentials of those identified sites to be safeguarded for waste management land-uses:

"locational strategy for waste facilities is based on the use of existing operational sites in the borough and three locations at Ince Park near Ellesmere Port, Lostock Works, Northwich and Kinderton Lodge near Middlewich. These all benefit from planning consent for waste uses, and although at the current time are not operational, are located in proximity to the largest conurbations in the borough and have the potential for the co-location of waste management facilities."

2.29 Local Plan: Part One Strategic Policies (January 2015) is the first local development document to be produced by CWCC, with the purpose to provide the overall vision, strategic objectives, spatial strategy and strategic planning policies to 2030.

2.30 Policy STRAT 5 'Northwich' highlights that the town and its surrounding settlements (including Lostock Gralam) have excellent transport links and proximity to the M6 and national motorway network. Proximity to two major UK airports enhances economic opportunities in the area.

2.31 Policy STRAT 10 'Transport and accessibility' notes that development and associated transport infrastructure should improve accessibility to jobs and key services, and sustain economic growth in the borough and surrounding area. New development should demonstrate that any additional traffic can be accommodated safely and satisfactorily within the existing, or proposed, highway network. Satisfactory arrangements need to be made prior to the site's implemented use in order to achieve this. Proposals for new industrial development should attempt to transport material via modes of transport that do not use the highway network.

3 Existing Situation

Local Highway Network

3.1 The site access is proposed via the existing private access road through the Lostock Works site, illustrated in Figure 6.A and shown diagrammatically in Annex 6.A.4. The private access road within Lostock Works adjoins the local public highway network at the A530 south east of the development site in the form of a simple priority junction, with a nearside diverge taper. The access road is approximately 7.5m in width, allowing for two-way HGV traffic flow (see Figure 6.F), and is subject to a 15mph speed restriction.

3.2 The A530 is a classified 'A' road continuing north to connect with the A559 at a priority junction, and south to link with the A556 in the form of a four arm roundabout junction. The majority of the A530 is subject to national speed restrictions of 60 mph. The section of the A530 between the Middlewich Road/A530/Penny's Lane junction south of the site and the A556 roundabout is subject to a 40 mph speed restriction.

3.3 The A530 south and A556 approaches to the A530/A556 roundabout are dual carriageway roads. The A530 north is a single carriageway road, with two lane flared entry onto the roundabout.

3.4 The A556 forms part of the local principal road network, taking the form of a dual carriageway road with an approximate width of 7.5 metres in both directions. The A556 provides direct access to the M6 at Junction 19, north east of the site, and links with the A54, A49 and M53 to Chester and beyond. The A556 is a dual carriageway road. It is subject to national speed restrictions of 70 mph and has streetlights along much of its length. There are footways and separate cycle tracks along both sides of the A556 to the west of the A530 and there is a shared cycle/footway on the approach to the roundabout. To the east of the A530, the A556 has a footway on the northern side of the carriageway. The A530 is a single carriageway route linking with the A54 to the south west, which subsequently links with the M6 at Junction 18.

3.5 The site is therefore strategically placed between Junction 18 and Junction 19 of the M6. The M6 routes north to south connecting the north west with Birmingham, as well as providing a link to other motorways including the M1, M40, M5, M62 and the M56.

3.6 The site lies adjacent to the Manchester to Chester main railway line. Access to the site from the north, via the A559 and A530, is restricted due to a low railway bridge over the A530 which has a 3.6m height restriction. As such, this restricts HGV access to the Lostock Works site from the north (A559 Manchester Road) and therefore all HGVs must route to/from the south via Griffiths Road (A530) and King Street.

Highway Safety

3.7 Personal Injury Accident (PIA) data has been collected for the latest available five year period from CWCC for the local highway network surrounding the site. The search period includes the dates 1st July 2010 to 30th June 2015 and covers the A530 between the roundabout junction with the A556 and the priority ‘T’ junction with the A559.

3.8 The full data output is attached at Annex 6.A.2 with an analysis of the PIAs in terms of location and severity illustrated on Figure 6.B.

3.9 The data indicate that a total of 22 injury accidents occurred during the search period, with two classified as serious and the rest as slight. There were no fatal incidents.

3.10 A serious injury accident took place July 2012, approximately 300 metres south of the T junction with the A559 Manchester Road, whereby a motorcyclist travelling north towards the junction collided with the rear of an HGV turning into a private driveway on the sweeping bend. In the other serious injury accident September 2012, a cyclist travelling north at the A556/A530 roundabout was hit by a car approaching the junction from the western arm, that failed to give-way.

3.11 Ten of the slight incidents took place at the A556/A530 roundabout junction. These were due to shunting incidents, failing to look properly on approach or exit of the junction and a pedestrian crossing the A556 at an inappropriate location. There was one other PIA involving a pedal cyclist at this roundabout where a car driver failed to give way to the cyclist.

3.12 Seven of the slight PIAs took place at the priority staggered crossroad junction between Penny’s Lane, the A530 and B5082 Middlewich Road. One of these was due to a car driver, pursued by a police car, colliding with the kerb and barrier whilst turning left from the B5082. Others were attributable to failing to slow down on approach from the B5082 to the junction, driving on the incorrect side of the carriageway, failing to negotiate the left-hand bend whilst travelling south on the A530 and colliding with a parked unattended vehicle.

3.13 The remaining three slight PIAs took place at the A559/A530 priority T junction. One was due to a vehicle travelling over the brow of the hill north-east, where the driver lost control, causing a collision with an oncoming vehicle. In another, a vehicle crossed the path of an oncoming vehicle to enter a private driveway. The other injury accident had unknown factors.

3.14 The analysis demonstrates that the injury accidents that took place over the five year period along the A530 were the result of driver error. A relatively small number of injury accidents caused casualty to vulnerable road users (pedal cyclists and pedestrians). Overall it is considered that the existing safety record indicates that there is a good level of safety on the local highway network.

Pedestrian and Cyclist Facilities

3.15 The private site access road within Lostock Works is lined with a continuous footway to the southern side, which is approximately 1m in width. This connects with the existing footway on the A530, which is approximately 1.5m in width, continuing south to the A556. North of the site a footway is present to the western side of the A530 approximately 1.5m in width, which continues around the site access junction. The footway provides access to the railway bridge, at which point no pedestrian facilities are provided. North of the railway bridge the footway continues on the eastern side of the carriageway northwards to the junction with the A559.

3.16 The Trent and Mersey Canal runs north-south alongside the A530 and its towpath provides an alternative pedestrian/cycle route. There is also an extensive public rights of way network between the A530 and Lostock Hollow to the east. These alternative routes are considered to be seasonal routes during the drier, summer months when daylight hours are longer.

3.17 The A530 provides access to the local residential area of Broken Cross, south of the site via a number of smaller priority junctions. A continuous footway is present to the western side of the A530 linking with Broken Cross to the south. Pedestrian crossing facilities are provided at junctions by way of dropped kerbs, tactile paving and pedestrian central refuge points. There are currently no pedestrian crossing facilities provided to facilitate pedestrian movement east-west across the A530.

3.18 There are currently no cycle facilities present on the A530; however, the Trent and Mersey Canal towpath provides a quiet traffic route linking with the traffic routes lining the A556 westbound. This route connects Broken Cross and Rudheath with the southern area of Northwich, providing access to the wider cycle network of Northwich.

Public Transport

3.19 A summary of the bus services in the vicinity of the site is shown on Figure 6.C. This also illustrates the location of bus stops within close proximity to the site and the railway stations at Lostock Gralam and Northwich.

3.20 Bus stops are located approximately 700m north of the site on the A559 Manchester Road, from which bus services numbers 45 and 289 operate. These provide direct links to Northwich town centre, Warrington, Knutsford and Altrincham throughout the day. The journey time from Manchester Road to Northwich is approximately 9 minutes. Further bus stops are located on the B5082 Middlewich Road approximately 1.2km south of the site. These bus stops are served by the number 2 circular service operated by Arriva which provides a link to Northwich and Weaverham. This operates with a 20 minute frequency throughout the day. The bus services are summarised in Table 3.1.

Table 3.1: Existing Bus Services (Monday – Saturday)

		Monday – Friday		Saturdays	
Service	**Route**	**Op. Hours**	**Typical Frequency**	**Op. Hours**	**Typical Frequency**
2	Northwich – Rudheath	0645-1816	20 mins	0714-1909	30 mins
45	Northwich-Warrington	0736-1849	Every 2 hours	0746-1746	Every 2 hours
289	Northwich-Lostock Gralam-Pickmere-Knutsford-Altrincham	0704-1754	5/day	0704-1754	5/day

3.21 Lostock Gralam Railway Station is located approximately 2.1km east of the site on Station Road. Northwich Railway Station is located approximately 2.2km west of the site on Manchester Road.

3.22 Northern Rail Services operates a train service between Manchester Piccadilly, Altrincham and Chester every hour Monday to Friday, via Northwich and Lostock Gralam. The journey time from Northwich and Lostock Gralam is approximately 30 minutes to Chester and 60 minutes to Manchester Piccadilly.

Baseline Traffic Conditions

3.23 The study area has been agreed with CWCC as part of the transport scoping consultation. The study area has assessed the impact of the development traffic at the following links, which are also illustrated in Figure 6.D.

Table 3.2: Study Area Road Links

Link No.	Link Location
1	A530 (Griffiths Road) north of site access
2	Site access
3	A530 (Griffiths road) south of site access to Middlewich Road
4	A530 north of A556, south of Middlewich Road
5	A556 east of A530
6	A530 south of A556
7	A556 west of A530

3.24 Automatic traffic count (ATC) surveys have been carried out by Axiom Traffic, for each link of the above junctions for a 7 day period from the 24th to 30th June, 2015. The survey period did not coincide with any school holidays or bank holiday periods.

3.25 The purpose of the survey was to provide the local network average weekday traffic flows, which are summarised in Table 3.3. The results of the survey are attached at Annex 6.A.3.

Table 3.3: Existing (2015) Local Highway Network Two Way Traffic Flows

5 day weekday average

	Link1	Link 2	Link 3	Link 4	Link 5	Link 6	Link 7
Time Period	A530 (north site access)	Site Access Road	A530 (south site access)	A530 (north of A556)	A556 (east)	A530 (south of A556)	A556 (west)
0000-0100	21	1	21	45	125	95	115
0100-0200	16	2	16	32	78	71	65
0200-0300	13	2	13	37	86	94	81
0300-0400	17	2	17	38	99	110	95
0400-0500	33	3	32	71	172	164	145

	Link1	Link 2	Link 3	Link 4	Link 5	Link 6	Link 7
Time Period	A530 (north site access)	Site Access Road	A530 (south site access)	A530 (north of A556)	A556 (east)	A530 (south of A556)	A556 (west)
0500-0600	90	13	93	234	468	462	405
0600-0700	185	58	208	447	1246	662	967
0700-0800	459	91	501	977	2727	1350	2256
0800-0900	640	63	667	1196	2980	1287	2718
0900-1000	531	59	569	1009	2044	980	1903
1000-1100	485	57	502	916	1652	860	1421
1100-1200	474	67	496	918	1587	823	1386
1200-1300	562	58	576	1015	1675	959	1485
1300-1400	555	53	569	1014	1677	968	1409
1400-1500	552	52	569	1043	1876	1139	1536
1500-1600	645	72	660	1115	2202	1172	1832
1600-1700	735	71	760	1264	2757	1458	2347
1700-1800	802	26	812	1388	2978	1586	2561
1800-1900	582	39	599	1084	2384	1230	2055
1900-2000	362	10	361	697	1374	683	1237
2000-2100	193	13	196	426	828	413	760
2100-2200	142	2	143	311	612	332	592
2200-2300	107	3	108	225	511	268	468
2300-0000	41	4	44	106	328	165	276
12 H	7021	709	7279	12940	26540	13812	22909
24 H	8241	823	8532	15609	32469	17331	28113

J1 – Site Access/A530

3.26 The site access forms the minor arm of a simple priority junction with nearside diverge lane, with the A530 (Griffiths Road). An operational capacity assessment has been undertaken of the junction for the existing situation. The ATC data has provided the baseline two way traffic flows for the junction. The directional split of traffic has been based upon that previously observed as part of the traffic data collated for the adjacent site planning application (ref: 11/01968/OUT). The observed 2015 traffic flows are attached at Annex 6.A.4.

3.27 An assessment has been undertaken using the industry standard software PICADY 9. This has been undertaken for the existing AM and PM peak hour situation, as these represent the highest weekday traffic flows during a 24 hour period. Table 3.4 below summarises the results, with the full output report attached in Annex 6.A.5. Typically, the analysis of operational capacity refers to a ratio of flow to capacity (RFC values), which compares traffic flows to the theoretical capacity. RFC values in excess of 1.0 illustrate that traffic flows exceed the theoretical capacity of the junction.

Table 3.4: J1 A530/Site Access Road Existing Conditions (2015) PICADY 9 Assessment

	AM (0800-0900)		PM (1700-1800)	
	Queue (Veh)	RFC	Queue (Veh)	RFC
Site access – A530(n)	0.0	0.02	0.0	0.02
Site access – A530(s)	0.1	0.05	0.0	0.04
A530(n) – site access & A530(s)	0.0	0.02	0.0	0.00

3.28 The assessment indicates that the junction operates well within capacity during the typical commuter AM and PM peak hours (0800-0900 and 1700-1800 respectively). The maximum RFC is calculated to be 0.05 during the AM peak hour on the site access road. Queuing of up to 1 vehicle is experienced (rounding up from the theoretical 0.1 fraction of a vehicle shown in Table 3.4).

Committed Development

3.29 Details of committed developments within the vicinity of the site have been obtained. These are included as part of the baseline position, against which to assess the development proposals. The following list provides a summary of those developments which have been taken into consideration.

- APP/2001/0223: Lostock Triangle Business Park (consented, partially occupied)
- Gadbrook Park (consented, partially occupied)
- 12/03652/OUT & 12/03653/OUT: Cottage Close and Farm Road residential (consented)
- 08-0020-OUM & 08-0021-OUM: Hargreaves Road residential (pending)
- 11/01968/OUT & 14/04654/OUT: Land south of Chapel Street, Wincham residential (pending)
- 4/08/0034/FZ5: ‘Bedminster’ technology Organic Waste Management Bio Energy Plant (consented, not operational)
- 09/10799/CPO: ‘Broadthorn Recycling Centre’ (consented)
- 10/00691/DECC: ‘Lostock Sustainable Energy Plant’ (consented, not operational)

3.30 Further details regarding the development proposals and/or status of development and associated traffic flows are provided below.

Lostock Triangle (APP/2001/0223)

3.31 The Lostock Triangle Business Park is an existing development located to the east of Lostock Gralam and to the south of the A559 Manchester Road. The application received planning permission in June 2006. The proposals consisted of 45,461 m² B1 office use, 995 m² retail units, 974 m² pub use, a 120 bed hotel and an 80 bed hotel (details taken from the Design and Access Statement – Commercial Development Projects Ltd – App No: APP/2001/0553).

3.32 At the time of undertaking the traffic surveys (June 2015), 2,837m² GFA of B1 office space remained vacant on site. Of the consented hotel schemes, only one 56 bed hotel is operational.

3.33 The residual committed development traffic for the business park has therefore taken account of the vacant office space and potential future development of the 80 bed hotel development only. The estimated traffic flows and distribution generated by the Lostock Triangle Business Park have been derived from the Wincham Waste Treatment Plant Transport Assessment (09/02430/WAS). Full details of the traffic flows and assumptions are attached at Annex 6.A.6. The distribution applied to the residual trip generation is as summarised in Table 3.5 below.

Table 3.5: Lostock Triangle Planning Application Trip Distribution

Link No.	Route/Link	%
1	A530 north of site access	10%
3	A530 south of site access	0%
-	A530 north of Middlewich Road	10%
4	A530 north of A556	10%
-	A530 south of Middlewich Road	10%
5	A556 east of A530	25%
6	A530 south of A556	35%
7	A556 west of A530	0%

Gadbrook Park Business Park

3.34 Gadbrook Park is an existing business park, located to the south of Rudheath and accessed via the A556. The business park first opened in 1984, but 2,572m^2 of office space remains vacant (source: www.gadbrookpark.com).

3.35 The estimated traffic flows and distribution for the vacant office space has been calculated from the trip rates provided within the Lostock SEP Transport Assessment (ref: 10/00691/DECC). The full details are attached at Annex 6.A.6. The assignment of traffic around the site is based upon the following proportions (Table 3.6), of which the A556 West and A556 East are of relevance to this assessment:

Table 3.6: Gadbrook Park Trip Distribution

Link No.	Route/Link	%
-	Gadbrook Road North	20%
5	A556 east of A530	20%
6	A530 south of A556	20%
7	A556 west of A530	40%

‘Bedminster’ Technology Organic Waste Management Plant (4/08/0034/FZ5)

3.36 The ‘Bedminster’ technology Organic Waste Management Ltd bio-energy plant is a consented development located on part of the former Lostock Works adjacent to the site. The site is for a bio-energy plant with the capacity for up to 3,000 tonnes of waste a week and 1,000 tonnes of biomass. All trip generation estimates have been obtained from the Transport chapter of the Environmental Statement accompanying the planning application.

3.37 The trip distribution for the Organic Waste Management Ltd development, as presented in Table 3.7, is based upon that assumed when considering this development as part of the planning application for the previous proposal on the REnescience Northwich site (09/02047/WAS). The development trips have been assigned across the network using the distribution percentages shown below. Full details of the traffic flows and distribution are attached in Annex 6.A.6.

Table 3.7: ‘Bedminster’ Technology Organic Waste Management Plant Planning Application Trip Distribution

Link No.	Route/Link	%
2	Site access	100%
-	Manchester Road west of Griffiths Road	0%
-	Manchester Road east of Griffiths Road	0%
1	A530 north of site access	0%
3	A530 south of site access	100%
-	A530 north of Middlewich Road	100%
-	Middlewich Road	10%
-	Penny’s Lane	0%
-	A530 south of Middlewich Road	90%
4	A530 north of A556	90%
7	A556 west of A530	32%
5	A556 east of A530	29%
6	A530 south of A556	29%

Broadthorn Recycling Centre (09/10799/CPO)

3.38 The Broadthorn Storage and Recycling of Waste Centre is an approved development located off the A530 Griffiths Road and accessed via the site access to the existing Lostock Works site. The proposed use of the site is as a non-hazardous household, commercial and industrial waste recycling centre and will involve the erection of a mixed waste transfer building and ancillary works. The site is anticipated to generate up to 100 two-way trips on a weekday and up to 70 two-way trips on a Saturday or Sunday. Details of the likely trip generation are taken from the Planning Statement for the site. Again, the trips have been assigned across the network using the distribution percentages within Table 3.7. Full details of the traffic flows and distribution are attached in Annex 6.A.6.

Hargreaves Road (ref: 08-0020-OUM)

3.39 A development of 209 houses and 97 flats with a continuing care retirement community comprising a 96 bed care home, 178 retirement units and a retail parade is proposed on land at Hargreaves road. The application is still pending determination but has been included in the baseline scenario, consistent with other planning applications in the locality. Peak hour traffic flows for the development have been taken from the accompanying Transport Assessment (TA) undertaken by Axis. The distribution and assignment of traffic across the local network within the Axis TA has been based upon that of the previously submitted SBC TA which accompanied the original 2008 planning application (08-0020-OUM). Full details of the traffic flows and distribution are attached in Annex 6.A.6.

Cottage Close (12/03652/OUT & 12/03653/OUT)

3.40 Land adjacent to Cottage Close, Rudheath has been approved for residential development. The development proposals comprise a total of 61 residential units distributed over two sites, accessed from Farm Road and Griffiths Road (A530). The site accessed from Farm Road will accommodate up to 43 units with the remaining 13 units accommodated on land accessed from Griffiths Road.

3.41 The trip generation and distribution has been derived from the SCP Transport Assessment submitted as part of the planning application. The general assignment of traffic around the site is based upon the following proportions (Table 3.8). Full details of the traffic flows and distribution are attached in Annex 6.A.6.

Table 3.8: Cottage Close Planning Application Trip Distribution

Site	Route	%	Link No.
Farm Close development	A530 North	25%	1 & 3
	A530 South	75%	4
Griffiths Road development	A530 South	50%	4
	Middlewich Road	50%	-

Lostock Sustainable Energy Plant (10/00691/DECC)

3.42 Land to the south of the proposed development has been consented for development of an energy-from-waste facility. The site, when fully operational, has the potential to generate up to 60MW of electricity and 100 tonnes per hour of steam from 600,000tpa of waste-derived fuel.

3.43 The trip generation and distribution for the consented development has been derived from the Transport Assessment submitted as part of the application. The general assignment of HGV traffic and staff trip generation around the site is based upon the proportions provided in Table 3.9, as derived from the TA. Full details of the traffic flows and distribution are attached in Annex 6.A.6.

Table 3.9: Lostock SEP Planning Application Trip Distribution

Link No.	Link	Staff Distribution	HGV Distribution
1	A530 North	0.1%	0%
3	A530 South	17.1%	100%
5	A556 East / A537 East	8.9%	0%
1	A530 North / A559 West / A553 North	2.7%	0%
5	A530 South / A556 East	16.7%	70%
7	A530 South / A556 West	2.7%	0%
1	A530 North / A559 North	11.9%	0%
1	A530 North / A559 West	0.3%	0%
1	A530 North / M6 North	2.4%	0%
6	A530 South / M6 South	1.8%	30%
6	A530 South / A54 East	35.5%	0%
	Total	**100.0%**	**100%**

Total Committed Development Traffic

3.44 Where 24 hour trip generation is unavailable for the committed development, an observed peak hour to 24 hour factor has been applied from the observed ATCs to calculate each 24 hour committed development traffic flow. Full details of the total committed development traffic flows are attached in Annex 6.A.6.

3.45 The total number of vehicle trips generated by all the committed developments for inclusion within a baseline scenario against which to assess the development proposals are shown attached at Annex 6.A.7 for the AM and PM peak hours and summarised in Table 3.10 below.

Table 3.10: Total Committed Development Peak Hour Traffic Flows

	Arrivals	Departures	Total
0800-0900	276	508	784
1700-1800	460	333	793
24h	4,060	4,712	8,772

Development Site History

3.46 The proposed development site has been the subject of two previous planning applications (unrelated to the proposed REnescience Northwich development) for a Waste Treatment Plant (WTP). An application was submitted in 2009 (ref: 09/02047/WAS) for a WTP with a capacity of 250,000 tonnes per annum. The application was recommended for approval by the Local Highways Development Control Officer on the basis that 'the development would not have an unacceptable impact on the highway network'. The proposals were refused, principally on reasons related to the capacity of the facility. There were no reasons for highway refusal.

3.47 A subsequent application was submitted in 2010 (ref: V/10/01834/WAS) proposing a reduction in the overall capacity of the WTP to 200,000 tonnes per annum; CWCC resolved to grant approval but this application was subsequently withdrawn in 2013.

3.48 The proposed REnescience Northwich development is not associated with either of the previously submitted applications, which will no longer go ahead, and is of a lower input capacity.

4 Proposed Development

4.1 The proposed development, as described in the introduction, will treat waste to recover materials and generate renewable electricity. As such, it will generate vehicle movements during operation associated with staff commuting, waste deliveries and the collection of recovered materials and other process outputs for transport off-site.

Operation and Waste Source Location

4.2 The development will employ around 24 full-time equivalent (FTE) staff working in either a three-shift or two-shift pattern. Based on the proposed shift patterns and job roles, there will be up to 19 staff on site at any one time, varying over a 24 hour period. The shift pattern and number of staff by job role are presented in Table 4.1.

Table 4.1: Staff Numbers and Shift Pattern by Job Role

Employee	Number of Employees	Typical Start Time	Typical Finish Time
One plant manager	1	0900	1700
One operation manager	1	0900	1700
Staff members for operation (14)	5	0700	1500/1900
	2	1500/1900	2300
	2	2300	0700
Three technicians for maintenance	3	0900	1700
Cleaning	1	0900	1700
Laboratory technician	1	0900	1700
Office personnel	3	0900	1700
Total staff	**19**	**n/a**	**n/a**

4.3 Waste delivery and materials collection will only take place during daytime working hours (07:00 to 19:30).

Access and Parking

Vehicular Access

4.4 Waste will be delivered to the facility in bulk by heavy goods vehicles (HGVs) with a capacity of 25 tonnes from existing intermediary waste transfer and treatment sites. No waste deliveries will be by household refuse collection vehicles (RCVs).

4.5 Access will be from the A530, via the existing private access road serving the site and the adjacent facilities within Lostock Works. The existing junction with the A530 has been found to operate with residual capacity during the AM and PM peak hours (see Table 3.4).

4.6 There is a low railway bridge over the A530 to the north of the site. This restricts HGV access from the north. As such, all HGV routing is proposed to the south of the site via the A530 and A556. This routing will be controlled by contract with hauliers.

4.7 HGVs will transport recovered materials and other process inputs and outputs being imported and exported to/from the site. There is the potential that some export materials will be back-loaded onto vehicles arriving with import materials. However, to ensure a robust assessment, it has been assumed that all trips are new trips and therefore import vehicles will leave the site un-laden and all export vehicles will arrive un-laden.

4.8 The access into the site via the existing access road has been assessed using swept path analysis. Whilst the access road is typically 7.5m in width, some road narrowing has been identified. The analysis has therefore demonstrated that some road widening (<3m) is required to facilitate two way HGV flow along parts of the access road (see Figure 6.F). These works would be carried out as part of the site construction, in agreement with the existing site users.

4.9 After entering the site, waste deliveries will turn to reverse into the waste reception hall. The turning area is shown in the site layout plan shown in Figure 2.E in of the ES. This is directly opposite the site entrance, minimising internal manoeuvring for waste delivery HGVs arriving and departing.

4.10 Further turning space for materials collection HGVs is provided outside the loading area in the north of the site.

Pedestrian/Cycle Access

4.11 A pedestrian footway is present to one side of the site access road enabling safe access into the site. Although the current footpath is constrained in width it does offer a pedestrian access route. This pedestrian access will be retained/reinstated following any access road widening works.

4.12 There are no identified cycle routes through the Lostock Works site; however, traffic speeds are restricted to 15mph, which, together with relatively straight sight lines, provides a suitable environment for cycling. There is the potential that the HGV traffic could prove intimidating for some cycle users and therefore deter cycling on site. Notwithstanding this, there is the option to cycle to the Lostock Works site and continue on foot from the site access to the proposed development.

4.13 Alternative access for pedestrians and cyclists accessing the Lostock Works site from the north can be sought from Works Lane (see Figure 6.A). This route is a residential road, linking with the A559 (Manchester Road) north of the site, and east to a public footpath at the Trent and Mersey canal and wider public rights of way network. Although this does not at present provide a direct public access to the proposed development site within Lostock Works (due to the intervening

Tata Chemicals and Solvay facilities), safe pedestrian/cycle access for staff may be possible via the Works Lane entrance at Lostock Works to the proposed development site in agreement with the other existing Lostock Works site users.

Parking

4.14 There is currently no specific local car parking standard for the proposed land-use, and therefore car parking will be provided based on operational needs. Staff car parking will be provided for 30 vehicles within the site's main car park, including two electric charging points and with 1 space allocated for disabled users. This will be sufficient to serve the daily, full, complement of staff at 19, inclusive of shift changeover periods, and a small number of visitors. The car park will be accessed by way of a separate access to that of HGVs after the main site entrance, as illustrated in the site layout plan (Figure 2.E in the ES).

4.15 There are no cycle parking standards for the proposed land-use facility; however, the standards for B2 land use have been used for guidance purposes. On this basis, CWCC advises that cycle parking is provided at 1 space per 450sqm for B2 land-use developments. Based on the proposed development gross floor area (c. 4,500sqm) this equates to provision of 10 cycle parking spaces. Covered cycle storage for 10 bicycles is proposed at the edge of the car park closest to the main office building and reception. A marked pedestrian crossing will be provided at this spot for safe access from the car/bike park to the reception.

5 Development Traffic

Construction Traffic

5.1 The proposed construction period is anticipated to commence in the first quarter of 2016 and to take around 12 months, allowing for commissioning in Q1 2017 and operation by the end of March 2017.

5.2 Construction materials will be sourced locally where appropriate, to minimise the environmental impact of transportation. During the construction period, the normal hours of working are proposed to be (unless agreed otherwise with the planning authority):

- Monday to Friday: 07:00 to 19:00, except during British Summer Time (BST) when: 07:00 to 21:00;
- Saturday: 07:00 to 13:00; and
- Sunday and Bank Holidays: no working unless agreed in advance with the planning authority.

5.3 It is proposed to stagger the various shift start and end times within the construction complex (on weekdays, for example, civil employees 07:30 – 18:30 and mechanical trades 07:00 – 18:00, plus two hours during BST). This small stagger in shift start and ending times will allow for a greater spread in traffic flow over the peak periods and facilitate access to the construction site.

5.4 It is expected that the average number of HGV movements would be less than that of the operational period of the facility, but at times may be similar, i.e. during construction there would be up to around the 96 two way HGV movements daily, at an average rate of 8 two way movements per hour, that are anticipated during operation.

5.5 It is possible that total car and light vehicle movements associated with staff travelling to and from the site, during some phases of construction, will exceed the number during the operational phase. However, in accordance with standard construction practice, these light vehicle movements will be largely outside of the typical commuter peak hours (08:00 – 09:00 & 17:00 – 18:00), arriving earlier and leaving over an extended peak between 16:00 and 19:00, thereby reducing potential impacts on queue lengths and/or driver delay during these periods.

5.6 Construction traffic will access the site using the existing site access from the A530, with HGVs being required to access the site from the A530/A556 south and turn right to follow this route when leaving the site. A Construction Traffic Management Plan (CTMP) which includes monitoring of this requirement has been prepared and is included with the ES at Annex 2.C.2. The requirements of the CTMP will be included in construction contract tender documents and will be discussed in detail with the contractor prior to awarding a contract.

Commissioning Period

5.7 There will be an initial commissioning period of around four to six months, starting in late 2016 or early 2017, to start up the bioreactors and AD plant. During this phase, some initial deliveries of waste and AD feedstock material would overlap with the last phases of construction traffic. However, as the bulk of construction work requiring material deliveries will be complete by the time commissioning commences, this is not anticipated to lead to greater construction-phase traffic than described above.

5.8 Material from the first digester tank will then be used to commission the remaining tanks in sequence, not requiring any additional traffic. The bulk of construction, including the REnescience plant and balance of AD plant, will be complete by the end of March 2017. Commissioning of the REnescience bioreactors and bio-liquid production will occur in parallel with the commissioning of the remaining three AD digestion tanks and equipment during the remainder of H1 2017.

Operational Traffic

Staff Trips

5.9 The anticipated staff trips are based on data provided by DONG Energy regarding the proposed level of staffing by job role and shift pattern. For staff other than shift operatives, standard working hours have been assumed of 09:00 – 17:00. At the time of application, the shift patterns for the shift operatives are yet to be confirmed, but are anticipated to one of the following three options:

- 2 shifts: 07:00 – 19:00 / 19:00 – 07:00;
- 3 shifts (option 1): 07:00 – 15:00 / 15:00 – 23:00 / 23:00 – 07:00; or
- 3 shifts (option 2): 07:00 – 19:00 / 19:00 – 23:00 / 23:00 – 07:00.

5.10 A three shift system is the preferred option, with five operative staff on site during the daytime and two staff on site during the evening and night time shifts. The proposed three-shift start/finish times for option 1 and option 2 do not coincide with the local network peak periods. The shift start/finish times reduce the level of staff arriving during these periods. Managerial and administrative staff would work typical office hours of 09:00 – 17:00 thus arriving/departing during the AM and PM peak hours respectively.

5.11 For the purposes of this assessment, three-shift option 1 has been assumed. The potential staff trip generation by hour for the full development is presented in Table 5.1. The arrival and departures times are based on the reasonable assumption that staff would arrive and depart during the hour preceding and following the respective start and finish times.

Table 5.1: Staff Trip Generation

		Staff Trips		
Time Period		**Arrival**	**Departures**	**Total**
06:00	**07:00**	5	0	5
07:00	**08:00**	0	2	2
08:00	**09:00**	10	0	10
14:00	**15:00**	2	0	2
15:00	**16:00**	0	5	5
17:00	**18:00**	0	10	10
22:00	**23:00**	2	0	2
23:00	**00:00**	0	2	2
TOTAL		**19**	**19**	**38**

5.12 DONG Energy has advised that staff will be recruited locally and therefore there is the potential for staff to travel by alternative means to the private car to the site. However, it has been assumed that all trips are undertaken as car driver, presenting a worst case scenario.

5.13 The staff traffic has been distributed based on the 2011 census local journey to work data. The origin destination data for car drivers has been assessed for the Middle Super Output Layers within Cheshire West and Chester to MSOA 018, in which the site lies. The most logical route to the site from each MSOA area has determined the distribution and assignment of staff trips. The full calculations are presented in Annex 6.A.8, with the routing summarised in Table 5.2.

Table 5.2: Distribution and Assignment of Staff Traffic

Direction of Travel (Arriving)	% Traffic	Link No.
A530 North / A559 West	18%	2 & 1
A530 North / A559 East	0%	2 & 1
A530 South / A556 West	59%	2, 3, 4 & 7
A530 South / A556 East	0%	2, 3, 4 & 5
A530 South	7%	2, 3, 4 & 6
A530 South / Middlewich Road	16%	2, 3

5.14 Based on the local census data, the largest proportion of staff are anticipated to travel from the south west (59%) via the A556 (west), from locations within the outer-lying areas of Northwich and Chester. Approximately 18% will travel to the site from the north via the A559. Staff trips across central Northwich and via Middlewich Road are projected to account for 16% of trips.

5.15 Peak hour staff two-way vehicle movements have been assigned to the highway network in accordance with the distribution; these are summarised in Table 5.3 below.

Table 5.3: Staff Traffic Flow Distribution and Assignment

Direction of Travel (arriving)	% Traffic	AM	PM	Daily
A530 North / A559 West	18%	2	2	7
A530 North / A559 East	0%	0	0	0
A530 South / A556 West	59%	6	6	24
A530 South / A556 East	0%	0	0	0
A530 South	7%	1	1	3
A530 South / Middlewich Road	16%	2	2	4

HGV Traffic

5.16 Operational traffic associated with waste imports and material exports has been based on the assumption that all deliveries would be undertaken by road. The site is located adjacent to a former rail siding. However, at this stage it is not known that import or export of materials would be feasible via this route, so all-road delivery has been assumed as a worst-case.

5.17 The potential HGV trip generation is based on the nominal waste treatment capacity of up to 144,000 tonnes per annum. The assessment takes into consideration both waste input and the output of recovered recyclables and other materials from the process. The mass balance for both input and output anticipates a total of 274,740 tonnes per annum. The total mass balance has formed the basis of the trip generation, as presented in Table 5.4.

Table 5.4: Materials Input and Output

Material	In (tonnes)	Out (tonnes)	Notes
Waste	151,680		
Enzymes	1,300		
Oversize reject waste		7,680	Back-loaded onto vehicles importing waste
Other reject waste			Worst case of one HGV-load per day assumed
Recovered ferrous metals		2,480	
Recovered non-ferrous metals		1,360	
Recovered 3D plastics		4,320	
RDF/SRF		51,200	
Inert material		11,200	
CLO (de-watered digestate)		41,600	
Water treatment residual stream		9,600	
Total input	**152,980**		
Total output		**121,760**	Less 7,680t back-loaded oversize reject
Total mass generating <u>new</u> vehicle trips	**274,740**		152,980t input + 121,760t output

Note 1: waste input is greater than 144,000 tpa nominal waste treatment capacity to account for up to 7,680 of rejected waste that is unsuitable for treatment due to being oversized. This and the additional assumed one HGV trip per day for other rejected waste is a highly conservative approach, as the commercial imperative will be to minimise such rejects.
Note 2: the mass of outputs shown here is slightly greater than shown in the mass balance in Table 2.3 of Chapter 2, again in order to be conservative, allowing for some uncertainty in mass of biogas production (not shown here as used on-site, requiring no transport) that affects the total mass balance.

5.18 DONG Energy proposes a 5.5 day working week for HGV deliveries and exports. Taking into consideration eight bank holidays per annum, this equates to 278 working days annually. The total mass of materials to be transported would therefore be approximately 988 tonnes per day on average.

5.19 All materials transported to and from the proposed development will be in bulk loads with a payload capacity of 25 tonnes. For the purposes of this assessment and to make it robust, the average HGV payload has been assumed to be 22.5 tonnes. Commercially, it will be advantageous to maximise each load to reduce transport costs, so this lower payload assumption is conservative for this assessment.

5.20 Assuming a daily average of 988 tonnes and HGV deliveries at 22.5 tonnes per load, this equates to approximately 45 deliveries of import and export materials per day. An additional HGV load has been accounted for, to remove reject loads of waste (e.g. oversized or otherwise unsuitable material), which again is very conservative as commercial contracts for waste will minimise the amount of reject material. This results in a total of 46 deliveries (92 two way) per day, as summarised in Table 5.5, which presents HGV daily trip generations based on the materials input and output, working days and average vehicle payload.

Table 5.5: HGV Daily Trip Generation

Material Type	Mode	TPA	Days of Operation	Materials transported per day (T)	Av. Payload	Containers per HGV	Deliveries per day	Deliveries per hour
In	HGV	152,980	278	550	22.5	1	25	2
Out	HGV	121,760	278	438	22.5	1	20	1.7
		Assume one lorry-load per day for reject loads as worst-case					1	
Total		274,740		988			46	4

5.21 While the facility would be operational 24 hours a day, deliveries would occur during normal daytime working hours between 07:00 and 19:00. The 12 hour delivery working period is limited at the source/destination of materials, which is facilities that also only operate deliveries over a 12 hour period. The applicant has advised that a flat profile temporal distribution of deliveries is expected and will be managed during operation. Although some fluctuation around the hourly and daily averages can be expected in practice, these already include a +20% margin from 120,000 tpa design waste treatment capacity to the 144,000 tpa nominal capacity applied for, and the annual total is a realistic upper limit. Therefore, the HGV movements have been distributed evenly across a 12 hour working day (helping to avoid the peak periods). Based on 46 deliveries daily this equate to 3.8 vehicles per hour. For rounding purposes, 4 vehicles per hour have been assumed, thus equating to 48 deliveries daily as summarised in Table 5.6.

Table 5.6: HGV Trip Generation by Hour

5.5 day operation		**HGV Trips**		
Time Period		**Arrival**	**Departures**	**Total**
07:00	**08:00**	4	4	8
08:00	**09:00**	4	4	8
09:00	**10:00**	4	4	8
10:00	**11:00**	4	4	8
11:00	**12:00**	4	4	8
12:00	**13:00**	4	4	8
13:00	**14:00**	4	4	8
14:00	**15:00**	4	4	8
15:00	**16:00**	4	4	8
16:00	**17:00**	4	4	8
17:00	**18:00**	4	4	8
18:00	**19:00**	4	4	8
TOTAL		**48**	**48**	**96**

5.22 DONG Energy is in ongoing discussion with potential suppliers to the proposed development. As such, the specific journey origins of waste deliveries are not precisely known at this stage, but are anticipated to be from within the North West and north Midlands.

5.23 A low railway bridge north of the site on the A530 restricts HGV access from the A559. All HGVs will therefore access the site from the south, via the A530/A556 roundabout.

5.24 The M6 provides a strategic link to the wider North West and Midlands areas. HGVs will route to/from the site using the following strategic links:

- M6 Junction 19/A556/A530
- M6 Junction 18/A530/A54

5.25 DONG Energy anticipates that around two thirds (66%) of total deliveries will access the site from the M6, with two thirds of this fraction (44% of the total HGVs) arriving from J19 and one third (22% of the total HGVs) arriving from J18. The remaining one third (33%) of all deliveries are likely to arrive from the west via the A556/A530 south of the site. Table 5.7 presents the potential distribution of HGV traffic by route. These anticipated strategic HGV routes are illustrated in Figure 6.E.

Table 5.7: HGV Trip Distribution Analysis

Journey Origin (Arriving)	Route	% Traffic
J19	A556 east of A530	44%
J18	A530 south of A556	22%
West	A556 West	33%

5.26 The distribution is assumed to be applicable to both imported and exported materials, with exported materials being transported to facilities within the regions identified above for use, further processing, onward transport to customers or disposal. Based on the above proportions (Table 5.7) the HGV trip generation (Table 5.6) has been assigned to the network as presented in Table 5.8.

Table 5.8: HGV Trip Generation Distribution

Time Period	A530 (N)	A530 (S) / A556 (W)	A530 (S) / A556 (E)	A530 (S)
	0%	33%	44%	22%
0700-0800	0	2	4	2
0800-0900	0	2	4	2
0900-1000	0	2	4	2
1000-1100	0	2	4	2
1100-1200	0	2	4	2
1200-1300	0	2	4	2
1300-1400	0	2	4	2
1400-1500	0	2	4	2
1500-1600	0	2	4	2
1600-1700	0	2	4	2
1700-1800	0	2	4	2
1800-1900	0	2	4	2
Total	**0**	**24**	**48**	**24**

Total Development Trip Generation

5.27 Based on the foregoing information it is possible to calculate the total hourly development vehicular trip generation. This is presented in Table 5.9.

Table 5.9: Proposed Development Staff and HGV Trip Generation

5.5 Day Operation		HGV Trips			Staff Trips			Total Trips		
Time Period		**Arrival**	**Departures**	**Total**	**Arrival**	**Departures**	**Total**	**Arrival**	**Departures**	**Total**
06:00	**07:00**	0	0	0	5	0	5	5	0	5
07:00	**08:00**	4	4	8	0	2	2	4	6	10
08:00	**09:00**	4	4	8	10	0	10	14	4	18
09:00	**10:00**	4	4	8	0	0	0	4	4	8
10:00	**11:00**	4	4	8	0	0	0	4	4	8
11:00	**12:00**	4	4	8	0	0	0	4	4	8
12:00	**13:00**	4	4	8	0	0	0	4	4	8
13:00	**14:00**	4	4	8	0	0	0	4	4	8
14:00	15:00	4	4	8	2	0	2	6	4	10
15:00	**16:00**	4	4	8	0	5	5	4	9	13
16:00	**17:00**	4	4	8	0	0	0	4	4	8
17:00	**18:00**	4	4	8	0	10	10	4	14	18
18:00	**19:00**	4	4	8	0	0	0	4	4	8
19:00	**20:00**	0	0	0	0	0	0	0	0	0
20:00	**21:00**	0	0	0	0	0	0	0	0	0
21:00	**22:00**	0	0	0	0	0	0	0	0	0
22:00	**23:00**	0	0	0	2	0	2	2	0	2
23:00	**00:00**	0	0	0	0	2	2	0	2	2
Total Daily		**48**	**48**	**96**	**19**	**19**	**38**	**67**	**67**	**134**

5.28 Peak vehicle trips of 18 vehicles are anticipated to occur between 08:00 – 09:00 and 17:00 – 18:00, coinciding with the peak commuter periods. The peak movements are due to the staff changeover periods occurring at 09:00 and 17:00 daily, of which light vehicle traffic accounts for 10 movements and HGVs 8 movements. It is anticipated that the development would generate 134 two-way movements daily, of which light vehicles account for 19 movements and HGVs account for 96 movements.

5.29 Temporal distribution of the development traffic as a whole across the local highway network is summarised in Table 5.9. This assumes, as discussed above, that all materials are transported by road.

5.30 Over the course of a typical working day, 48 vehicles will travel northbound on the M6 via Junction 19 and 24 vehicles will travel southbound on the M6 via Junction 18. HGV traffic is anticipated to route predominantly via Junction 19 of the M6, accounting for all traffic movements in this direction. The remaining site traffic (54 vehicles) is anticipated to travel west on the A556. The peak hour and daily movements are summarised in Table 5.10 and are attached in detail at Annex 6.A.9.

Table 5.10: Total Development Two Way Trip Generation and Distribution

	AM Peak		PM Peak		24 Hour Flows	
	Total	HGVs	Total	HGVs	Total	HGVs
A530 north of site access	2	0	2	0	7	0
A530 south of site access	16	8	16	8	127	96
A530 north of A556	14	8	14	8	123	96
A556 west of A530	8	3	8	3	54	24
A556 east of A530	3	3	3	3	48	48
A530 south of A556	2	2	2	2	24	24

5.31 The previous application on this development site (ref: 09/00234/WAS), for a 250,000 tpa input (later 200,000 tpa input) Waste Treatment Plant, was recommended for approval by CWCC, based on the findings of the Transport Assessment; stating: *"it is not considered that the proposal would have unacceptable impacts on the highway network".*

5.32 The worst case daily trip generation for the proposed REnescience Northwich development is anticipated to be 134 vehicle movements, including 96 HGV movements. Based on the scale of the proposed development compared with the previous proposals for this site, it is anticipated that the overall impact on weekday traffic flows will be less.

Decommissioning

5.33 The REnescience Northwich plant has been designed for a minimum operational life of 25 years. Decommissioning would be in accordance with a decommissioning plan agreed at the time with the local planning authority. An outline decommissioning statement is at Appendix 2.B to the ES.

5.34 It is anticipated that the decommissioning phase would generate some level of vehicle movements on the local highway network, but it is not anticipated that the level of movements would exceed those experienced during the construction phase of the development.

6 Transport Assessment

6.1 It is anticipated that the development will be operational in 2017. In accordance with best practice, growth factors to 2017 have been applied to the baseline traffic flows using the Department for Transport (DfT) National Transport Model (NTM) central forecast, adjusted to reflect local conditions using TEMPRO. This is to assess the future impact of the development for a year when the development should be built out and operational.

6.2 Growth rates for the operational year of 2017 have been obtained for the AM and PM peak and average weekday for the local area of Northwich (Annex 6.A.10). These are listed below:

	2015 - 2017
AM peak	1.024
PM peak	1.026
Average weekday	1.025

6.3 The baseline average five day weekday traffic data, with background traffic growth, has provided the opening year background traffic flows. The operational year traffic flows are attached at Annex 6.A.11.

6.4 Based on the quantum and location of the identified committed developments, it is considered that the associated traffic generation accounts for future background growth in traffic beyond 2017 on the local network. The '2017 + committed development' link traffic flows are attached at Annex 6.A.12. As such no further growth has been applied to the network for future years beyond 2017. The 2017 + committed development + proposed development traffic flows are attached at Annex 6.A.13. As such the following scenarios have been tested as part of this assessment:

- 2017;
- 2017 + committed development; and
- 2017 + committed development + proposed development.

Operational Assessment

6.5 The site access/A530 junction has been tested for the future year scenarios using the PICADY 9 software. The results of the assessment are attached at Annex 6.A.5 and summarised in Table 6.1 below. PICADY is the industry standard software for assessment of simple priority T-junctions.

Table 6.1: J1 – A530/Site Access Road Future Year Conditions, PICADY 9 Assessment

	AM 0800-0900		PM 1700-1800	
	Queue (Veh)	**RFC**	**Queue (Veh)**	**RFC**
Baseline 2015 + Growth 2017				
Site Access – A530(n)	0	0.02	0	0.02
Site Access – A530(s)	0.1	0.05	0	0.04
A530(n) – Site Access & A530(s)	0	0.02	0	0
2017 + Committed Development				
Site Access – A530(n)	0	0.02	0	0.03
Site Access – A530(s)	0.1	0.10	0.1	0.11
A530(n) – Site Access & A530(s)	0	0.03	0	0
2017 + Committed Development + Proposed Development				
Site Access – A530(n)	0	0.02	0	0.03
Site Access – A530(s)	0.1	0.12	0.2	0.16
A530(n) – Site Access & A530(s)	0	0.04	0	0

6.6 The operational assessment has found there is significant residual capacity following the addition of background traffic growth and committed development. A maximum RFC of 0.11 is reported, occurring during the PM peak hour on the site access arm. The impact of the development traffic on residual capacity is considered to be negligible, with the maximum RFC increasing marginally to 0.16 during PM peak hour.

Link Impacts

6.7 The percentage increases in traffic flows on the local highway network links resulting from the traffic generated by the proposed development have been calculated ('2017 + committed development + proposed development'). These have been assessed against the '2017 year of opening + Committed Development' for the average 5 day weekday baseline.

6.8 The total vehicle two-way traffic, 'without' and 'with' development traffic, is summarised in Table 6.2 and Table 6.3 respectively. The resulting percentage increases on each link are shown in Table 6.4.

6.9 The level of increase in total traffic over all time periods, on all links, does not exceed 3%, with the maximum being 2.9% increase on the A530 south of the site access. With the exception of that link, the impact in terms of total traffic increase is everywhere less than 2% (Table 6.4).

Table 6.2: 2017 + Committed Development Two Way Traffic Flows (Weekday Average)

	Link1	Link 2	Link 3	Link 4	Link 5	Link 6	Link 7
	A530 (north of site access)	Site access	A530 (south of site access)	A530 (north of A556)	A556 (east)	A530 (south of A556)	A556 (west)
0000-0100	23	1	24	53	132	100	122
0100-0200	18	2	18	38	82	75	68
0200-0300	15	2	15	44	91	99	85
0300-0400	19	2	19	45	105	116	100
0400-0500	37	3	36	84	182	173	153
0500-0600	101	13	104	276	495	487	428
0600-0700	216	81	253	547	1328	720	1025
0700-0800	527	143	613	1204	2918	1470	2394
0800-0900	730	103	790	1454	3190	1404	2884
0900-1000	600	88	670	1222	2189	1061	2021
1000-1100	548	106	613	1130	1777	938	1516
1100-1200	536	115	605	1131	1710	901	1479
1200-1300	636	86	676	1228	1800	1041	1578
1300-1400	627	81	667	1225	1799	1046	1498
1400-1500	628	110	693	1284	2014	1238	1639
1500-1600	734	133	797	1372	2360	1276	1951
1600-1700	831	101	884	1524	2945	1571	2490
1700-1800	910	65	950	1678	3184	1715	2719
1800-1900	655	76	708	1315	2541	1318	2181
1900-2000	409	21	418	835	1461	733	1310
2000-2100	218	14	221	504	879	442	802
2100-2200	160	2	162	369	650	355	625
2200-2300	127	13	129	274	547	299	494
2300-0000	52	16	56	132	349	184	292
8 H	480	121	525	1219	2764	1954	2273
12 H	9144	1354	9905	18427	33640	17711	28899
24 H	9357	1378	10121	18967	34727	18762	29855

Table 6.3: 2017 + Committed Development + Proposed development Two Way Traffic Flows (Weekday Average)

	Link1	Link 2	Link 3	Link 4	Link 5	Link 6	Link 7
	A530 (north of site access)	**Site access**	**A530 (south of site access)**	**A530 (north of A556)**	**A556 (east)**	**A530 (south of A556)**	**A556 (west)**
0000-0100	23	1	24	53	132	100	122
0100-0200	18	2	18	38	82	75	68
0200-0300	15	2	15	44	91	99	85
0300-0400	19	2	19	45	105	116	100
0400-0500	37	3	36	84	182	173	153
0500-0600	101	13	104	276	495	487	428
0600-0700	217	86	256	550	1328	720	1028
0700-0800	527	153	623	1213	2922	1472	2398
0800-0900	732	120	805	1468	3194	1407	2893
0900-1000	600	96	677	1229	2193	1062	2024
1000-1100	548	114	621	1138	1781	940	1519
1100-1200	536	123	613	1139	1714	903	1481
1200-1300	636	94	684	1235	1804	1042	1581
1300-1400	627	88	675	1233	1803	1048	1500
1400-1500	628	120	703	1294	2018	1240	1643
1500-1600	734	146	808	1383	2364	1278	1956
1600-1700	831	109	892	1532	2949	1572	2493
1700-1800	912	83	966	1693	3188	1718	2727
1800-1900	655	83	716	1323	2545	1319	2183
1900-2000	409	21	418	835	1461	733	1310
2000-2100	218	14	221	504	879	442	802
2100-2200	160	2	162	369	650	355	625
2200-2300	127	15	131	276	547	299	496
2300-0000	52	18	58	134	349	184	293
8 H	482	128	530	1223	2764	1954	2277
12 H	9151	1484	10027	18545	33688	17736	28953
24 H	9364	1508	10243	19084	34775	18786	29910

Table 6.4: Link Flow Development Traffic Weekday Increase with Development

	Link1	Link 2	Link 3	Link 4	Link 5	Link 6	Link 7
Time Period	**A530 (north of site access)**	**Site access**	**A530 (south of site access)**	**A530 (north of A556)**	**A556 (east)**	**A530 (south of A556)**	**A556 (west)**
0000-0100	0.0%	0%	0.0%	0.0%	0.0%	0.0%	0.0%
0100-0200	0.0%	0%	0.0%	0.0%	0.0%	0.0%	0.0%
0200-0300	0.0%	0%	0.0%	0.0%	0.0%	0.0%	0.0%
0300-0400	0.0%	0%	0.0%	0.0%	0.0%	0.0%	0.0%
0400-0500	0.0%	0%	0.0%	0.0%	0.0%	0.0%	0.0%
0500-0600	0.0%	0%	0.0%	0.0%	0.0%	0.0%	0.0%
0600-0700	0.4%	6%	1.3%	0.6%	0.0%	0.1%	0.3%
0700-0800	0.1%	7%	1.5%	0.7%	0.1%	0.1%	0.2%
0800-0900	0.2%	17%	2.0%	1.0%	0.1%	0.2%	0.3%
0900-1000	0.0%	9%	1.1%	0.6%	0.2%	0.2%	0.1%
1000-1100	0.0%	7%	1.2%	0.7%	0.2%	0.2%	0.2%
1100-1200	0.0%	7%	1.3%	0.7%	0.2%	0.2%	0.2%
1200-1300	0.0%	9%	1.1%	0.6%	0.2%	0.2%	0.2%
1300-1400	0.0%	9%	1.1%	0.6%	0.2%	0.2%	0.2%
1400-1500	0.1%	9%	1.4%	0.8%	0.2%	0.1%	0.3%
1500-1600	0.1%	10%	1.4%	0.8%	0.2%	0.2%	0.3%
1600-1700	0.0%	8%	0.9%	0.5%	0.1%	0.1%	0.1%
1700-1800	0.2%	27%	1.7%	0.8%	0.1%	0.2%	0.3%
1800-1900	0.0%	10%	1.1%	0.6%	0.2%	0.1%	0.1%
1900-2000	0.0%	0%	0.0%	0.0%	0.0%	0.0%	0.0%
2000-2100	0.0%	0%	0.0%	0.0%	0.0%	0.0%	0.0%
2100-2200	0.0%	0%	0.0%	0.0%	0.0%	0.0%	0.0%
2200-2300	0.3%	16%	1.9%	0.8%	0.0%	0.0%	0.4%
2300-0000	0.7%	13%	2.9%	1.0%	0.0%	0.1%	0.4%
8 H	0.3%	6%	0.9%	0.4%	0.0%	0.0%	0.2%
12 H	0.1%	10%	1.2%	0.6%	0.1%	0.1%	0.2%
24 H	0.1%	9%	1.2%	0.6%	0.1%	0.1%	0.2%

6.10 Based on the negligible impact of the increases in traffic on the local highway network, the proposed development is unlikely to have a detrimental impact on road safety. The development proposals would attract vehicles that are similar to those which are already on the network and over the course of the construction and operational period would increase traffic flows by marginal amounts. There would be no significant change in the character of the network and therefore it is considered that the proposals would not significantly alter the injury accident rate.

6.11 The negligible increases in development traffic are also not considered to have a significant impact on pedestrian/cycle users. In terms of pedestrian delay and amenities, this has been assessed as part of the Environmental Statement (Chapter 6 – Transport), which found that the development traffic would not have a significant impact on delay.

6.12 In the context of amenity, fear and intimidation, the increases in vehicular traffic are below the thresholds for effects (again see further information in Chapter 6 of the ES) and would therefore not contribute towards increasing perceived levels of fear and intimidation.

6.13 It is not anticipated that there would be an impact on public transport services. Demand generated for travel by local bus services from staff would be much less than 38 two way trips daily.

6.14 The existing bus services (Figure 6.C) do not route along the A530. Traffic increases elsewhere on the network are projected to be no more than 3%, therefore it is not anticipated that this level of increase would result in a significant impact on the operation of local bus services.

7 Mitigation

7.1 The foregoing Transport Assessment has demonstrated that there will be a negligible impact on the local road network due to the increase in total weekday traffic flows, associated with the proposed development, including taking into account future background growth and traffic from other committed developments.

Off-site Highways Improvements

7.2 CWCC advised during the scoping consultations that there are currently three proposed highway improvement schemes in the locality of the site, for which developer contributions may be sought, depending on the degree and nature of traffic impact from the proposed development. The schemes are as follows:

- provision of controlled pedestrian crossing on the A530;
- provision of a signalised junction at the Middlewich Road/Griffiths Road/Penny's Lane/King Street junction; and
- extension of the current 40mph speed limit northwards along Griffiths Road.

7.3 The delivery of these schemes is subject to funding coming from various committed developments, with the largest proportion sought from the Lostock SEP development (ref: 10/00691/DECC).

7.4 The development impact on the approaches to the A530/Middlewich Road/Penny Lane junction and A530/A556 junctions (expressed as percentage increase over 2017 + committed development flows) is summarised in Table 7.1 below for the AM and PM peak hours.

Table 7.1: Development Impact in Locality of Proposed Highway Improvement Schemes

	Link 3	Link 4	Link5
Time Period	**A530 (south of site)**	**A530 (north of A556)**	**A556 (east)**
0800-0900	2.0%	1.0%	0.1%
1700-1800	1.7%	0.8%	0.1%
24 H	1.2%	0.6%	0.1%

7.5 The overall development traffic impact to total vehicle flows is forecast to be negligible (no more than 2%) on the approaches to the respective junctions.

7.6 Notwithstanding this, regard has been had for the local resident concerns associated with pedestrian delay and severance on King Street (A530 between Middlewich Road and the A556).

7.7 Studies undertaken by and on behalf of the Institute of Environmental Management and Assessment (IEMA) have shown that pedestrian delay is perceptible or considered significant beyond a lower delay threshold of 10 seconds, for a link with no crossing facilities. A 10 second pedestrian delay in crossing a road is likely to be associated with a two-way link flow of approximately 1,400 vehicles per hour (IEMA, March 1993).

7.8 IEMA recognises that severance can result from difficulty in crossing a heavily trafficked road. Studies on behalf of IEMA indicate that severance effects are considered ‘slight’, ‘moderate’ and ‘substantial’ where changes in traffic flows of 30%, 60% and 90% occur, respectively. The potential increase in traffic flows on King Street is found to be substantially less than 30% at 1%. It is therefore considered that pedestrian delay should be the focus of any mitigation schemes and not severance.

7.9 The weekday average traffic flows on Link 3 (A530 north of the A556) indicate peak hourly traffic flows of 1,388 vehicles (17:00 – 18:00). Following the addition of background traffic growth, committed development and the proposed development, this increases to 1,693 vehicles per hour (17:00 – 18:00). While the increase in traffic flows as a result of the proposed development does not impact upon highway capacity, nor result in severance, it is possible that some pedestrian delay could be experienced on this link.

7.10 It is therefore proposed that the REnescience Northwich development would provide a proportional contribution towards a pedestrian crossing on the A530 and/or at the Middlewich Road/A530 junction. Contributions towards the maintenance of a pedestrian crossing and signalised junction improvement scheme for the A530 and Middlewich Road/A530 junction, respectively, have previously been proposed as part of the Lostock SEP planning application. A proportional contribution to one or both of these schemes, relative to the scale of the proposed development, would therefore be consistent with previous proposals.

7.11 The provision of a formal crossing point at either or both locations would afford a safe and convenient location for pedestrian movements across the A530. The road safety analysis of the Middlewich Road/A530 junction in Section 3, above, found that accidents in the last five years have resulted from driver error, and no particular issues were identified. Notwithstanding this, the introduction of traffic signals at this junction would introduce vehicle control whilst also providing the added benefit of facilitating pedestrian movements across the A530 at this location.

Construction Traffic Management Plan

7.12 Construction traffic will access the site using the existing site access from the A530 (Griffiths Road). A Construction Traffic Management Plan (CTMP) has been prepared (see Annex 2.C.2) for consideration by the Highway Authority as an enhancement measure prior to determination. The applicant is fully committed to the implementation of a CTMP and will accept a planning condition requiring its implementation. Contractor details will be confirmed assuming planning consent is given for the project.

7.13 The CTMP and the Construction Environmental Management Plan (CEMP, Appendix 2.C) to which is forms an annex provide the following information:

- arrangements for delivery scheduling and management;
- liaison with other users of the Lostock Works site;
- approved access routes and any necessary restrictions, including during periods of disruption on the highway network;
- temporary signage in the vicinity of the site warning of construction traffic;
- arrangements for road maintenance and cleaning; and
- wheel cleaning arrangements and regular road sweeping runs (to ensure dust and dirt is not transported onto the public roads etc).

Delivery and Servicing Management Plan

7.14 The day to day delivery and servicing of the facility will be managed by way of a Delivery and Servicing Management Plan (DSMP). This will comprise a document detailing how deliveries and servicing will be undertaken at the site, focussing on HGVs. The DSMP will follow the same principles as the CTMP and can be secured as a pre-operational condition of the planning consent.

7.15 The DSMP will provide a Travel Plan for freight movements for the development. The implementation of measures set out within the DSMP will assist in minimising the number of trips made by freight and delivering during off-peak periods. It will aim to maximise the use of viable strategic routes to minimise the impact of servicing and deliveries on the local highway network.

7.16 The key aim of the DSMP will be to reduce any impact on the local highway network. The DSMP will also aid in reducing CO_2 emissions, congestion and road collisions by improving relationships between the facility operators and their supply chain.

7.17 The DSMP would include the following information:

- routes that HGVs will take to access the site;
- delivery and servicing schedule (daily/weekly/monthly;
- measure to reduce the number of deliveries undertaken daily/weekly/monthly (including, for example, loading out HGVs delivering waste, with products and residues; and
- liaison with other users of the Lostock Works site.

8 Summary and Conclusions

Summary

8.1 This Transport Assessment has been prepared by RPS Planning and Development to assess the transport implications resulting from the proposed REnescience Northwich development. The development site is located within Lostock Works (Figure 6.A) and is brownfield land, used as a chlorine works until 2001. In the preparation of the Transport Assessment, regard has been had of the pre-application consultation response provided by CWCC (Annex 6.A.1).

8.2 The proposed development site forms part of the larger Lostock Works industrial site, and is within an area allocated for waste facility land-uses under policy ENV 8 ‘Managing Waste’ of the Cheshire West and Chester (CWCC) Local Plan Strategic Policies (January 2015). This is based on the locational strategy for waste facilities to be sited on existing operational sites, which benefit from being in proximity to the largest conurbations in the borough and have the potential for the co-location of waste management facilities.

8.3 Policy STRAT 5 ‘Northwich’ of the Local Plan highlights that Northwich and its surrounding settlements (including Lostock Gralam) have excellent transport links and proximity to the M6 and the national motorway network. Its proximity to two major UK airports enhances economic opportunities in the area.

8.4 The location of the proposed development site is therefore consistent with national and local planning policy.

8.5 The facility has a design waste treatment capacity of 120,000tpa, and the planning application is for a 20% greater nominal waste input capacity of 144,000 tpa, to allow flexibility for future refinement and efficiency improvements in the process on site. The facility will treat waste supplied from existing intermediary waste transfer and treatment sites. The facility will use a ‘REnescience’ enzymatic waste treatment process to remove organic matter from mixed wastes. The process will recover recyclable materials and produce other process outputs (the largest of which, by mass, being dewatered digestate and refuse-derived fuel).

8.6 It is anticipated that the build out of the site will cover a 12 month period from Q1 2016 to Q1 2017. The level of HGV traffic during the construction phase is anticipated to be similar to that of the operational HGV traffic. Staff traffic during construction (for up to 150 workers at peak) may be greater than operation at times, but will travel outside peak highway traffic times in accordance with standard industry practice. A Construction Traffic Management Plan (CTMP) has been prepared and submitted alongside the Transport Assessment (see Annex 2.C.2 to the ES). This sets out in further detail the routing of vehicles and level of movements over the construction phase, with measures that will be employed to manage these, promoting sustainable transport and minimising traffic impacts.

8.7 As a worst case scenario, 100% of deliveries of waste and transport of process outputs by road has been assumed, together with the 20% up-lift in design capacity discussed above. Deliveries of waste and collection of materials will be undertaken over a 5.5 day working week. The likely scenario would equate to 46 vehicles daily. Distributed over a 12 hour working day period, this equates to 3.8 HGVs per hour. An upper figure of 48 HGVs daily has therefore been assessed, assuming 4 HGVs per hour.

8.8 The facility will be operated by up to 19 staff, varying over a 24 hour period. Staff trips are forecast from the proposed level of staff required to operate the site in any one 24 hour period. The temporal distribution of staff arrivals and departures are based on the associated working hours by job role.

8.9 The total development vehicle trip generation for the site, over a 24 hour period, is anticipated to be 67 two way movements, including staff.

8.10 HGVs and staff vehicles will access the site via the existing private access road within Lostock Works, from the A530 Griffiths Road. All vehicle traffic will access the site from the A530.

8.11 The spatial distribution and assignment of staff traffic has been based on local 2011 origin-destination (OD) census data for the resident population by method of travel to work. The OD data has been analysed for the Middle Super Output Layers (MSOA) within Cheshire West and Chester travelling to MSOA 018 in which the site lies. Assignment of staff trips is based on the most logical routing of journeys.

8.12 The spatial distribution and assignment of HGV traffic has been informed by DONG Energy's potential waste source locations. The low railway bridge crossing the A530 north of the site access road restricts HGV traffic at this point. Therefore all HGV traffic will route on the A530 south of the site access, via the A530/A556 roundabout.

8.13 ATC data has been collected for the local highway network and site access, for June 2015. This data has provided the observed (2015) baseline from which the future year scenarios have been calculated.

8.14 The opening year of the facility is forecast to be 2017. Growth factors have been calculated from the NTM database and adjusted for local conditions using TEMPRO for the respective peak hours and average 5 day weekday traffic flows. Committed development contributing to the local network within the study area has been added to the growthed 2017 traffic flows. It is considered that the committed development traffic accounts for future growth on the network beyond 2017 and this provides the future year baseline traffic data.

8.15 A junction operational assessment using PICADY 9 has demonstrated that under existing conditions (2015) the site access road/A530 junction operates with significant residual capacity. A maximum RFC of 0.05 is reported for the AM peak. For the future year conditions, following the addition of the development traffic, a maximum RFC is reported of 0.16 during the PM peak on the site access road.

8.16 Assessment of each respective link within the study area has found that the traffic impact of the development represents no more than a 3% increase in total traffic flows, with the exception of the internal Lostock Works private access road. The greatest total traffic flow increase over a 24 hour period at off-site locations would be on the A530 south of the junction with the private site access road (2.9%); total traffic flow increases on all other public highway links are not anticipated to increase by more than 2%.

8.17 Personal Injury Accident (PIA) data from the local highway network has been reviewed for the latest five year period. The conclusions from this analysis have found two serious and no fatal accidents, and that driver error was the main causal factor of reported incidents. It is therefore considered that there are no road safety issues within the vicinity of the site that could be exacerbated by the proposed development.

8.18 CWCC has advised that contributions may be sought for off-site highway improvement schemes, notably: (1) provision of controlled pedestrian crossing on the A530; (2) provision of a signalised junction at the Middlewich Road/Griffiths Road/Penny's Lane/King Street junction; and/or (3) extension of the current 40mph speed limit northwards along Griffiths Road. CWCC confirmed that the level of contribution sought would be proportional to the potential impact of the development traffic. The relevant level of impact is quantified at Link 3, 4 and 5. During the AM and PM peak hours development traffic contributes no more than 2% and a maximum of 1.2% for the daily period.

8.19 Notwithstanding this, regard has been had for the local resident concerns associated with pedestrian delay and severance on King Street (A530 between Middlewich Road and the A556). It is therefore proposed that the REnescience Northwich development would provide a proportional contribution towards a pedestrian crossing on the A530 and/or at the Middlewich Road/A530 junction. Contributions towards the maintenance of a pedestrian crossing and signalised junction improvement scheme for the A530 and Middlewich Road/A530 junction, respectively, have previously been proposed as part of the Lostock SEP planning application. A proportional contribution to one or both of these schemes, relative to the scale of the proposed development, would therefore be consistent with previous proposals.

8.20 It is proposed that a Delivery and Servicing Management Plan (focusing on HGVs) will be prepared on receipt of planning consent, prior to operation. This document would detail the typical delivery schedule of the site and management of same. It will also include measures proposed to ensure sustainable practices, minimising impact on the local highway network.

Concluding Comments

8.21 On the basis of this assessment, it is concluded that the REnescience Northwich development would not have a material impact on the local highway network in terms of traffic flow or highway safety. It is therefore considered that there are no transportation or traffic reasons why the development proposal should not be acceptable to the planning and highways authority.

8.22 Notwithstanding the above, DONG Energy is willing to make a contribution towards improvements to one or more schemes to facilitate convenient and safe movement of pedestrians across the A530.

References

Guidelines for the Environmental Assessment of Road Traffic (Guidance Note 1), Institute of Environmental Assessment, 1993 (now the Institute of Environmental Management and Assessment)

National Planning Policy Framework (2012)

Planning Practice Guidance (2014)

Cheshire West and Chester Council - Local Transport Plan: Integrated Transport Strategy 2011 - 2026 (2014)

Cheshire Council - Cheshire Replacement Waste Local Plan (Policies saved after 29 Jan 2015)

Annexes

Annex 6.A.1: Pre-Application Consultation Correspondence

Nicola Clay

From: Nicola Clay
Sent: 02 September 2015 14:40
To: 'PARRY, Paul'
Cc: David Archibald; Tom Dearing
Subject: RE: 15/02244/PREAPP - REnesicence Northwich - Transport Scoping

Hi Paul

Your response is well timed, thank you for taking the time to review my comments.

With regards to the future year of 2021 which you have requested I have looked at the growth rates and this would result in a 5% increase in background traffic growth over the operational year (2017*). This would subsequently reduce the impact of the development traffic further demonstrating a further nil detriment impact.

With regards to the operational assessment at the site access the highest RFC during the peak hours for 2017 + committed + proposed development traffic is reported at 0.16, thus a 5% increase in background traffic would have a negligible affect at this junction. I therefore propose to provide commentary to this effect within the TA.

*the operational year is 2017 as opposed to 2016 quoted in my previous email.

The HGV increases are found to be relatively low on the public highway also, with the greatest increases experienced on the A530 south of the site access and north of the A556 of circa 20% between 1800h and 1900h. In absolute terms the HGV movements are projected to equate to 8 two way movements (2 per 15 mins). The total traffic increase at this time is forecast to be no more than 3%. On all other links, increases on HGV traffic are anticipated of no more than 3.5%.

Kind Regards

Nicola

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From: PARRY, Paul [mailto:Paul.Parry@cheshirewestandchester.gov.uk]
Sent: 02 September 2015 12:36
To: Nicola Clay
Subject: RE: 15/02244/PREAPP - REnesicence Northwich - Transport Scoping

Hi Nicola

Thanks for this, sorry in delay getting back to you, holidays etc.

Generally I'm OK with what you set out given the predicted low percentage impact. I would want to see the future year for 2021 (5 years post application). Although I agree it would be approx. 1% and therefore negligible could you also provide some dialogue on the percentage increase in HGV traffic?

I think there could be a lot of public interest in this given the level of interest in the previous Incinerator application so I would want to make sure what was submitted was suitably robust.

I take the point about staff travel plan and would also support the suggestion of a delivery and servicing Management Plan.

Regards

Paul

Paul Parry IEng FIHE
Principal Development Officer - Team Leader, Highways Development Control
Cheshire West and Chester Council

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From: Nicola Clay [mailto:nicola.clay@rpsgroup.com]
Sent: 19 August 2015 11:32
To: PARRY, Paul
Subject: RE: 15/02244/PREAPP - REnesicence Northwich - Transport Scoping

Hi Paul

Thank you for your response below. I had hope to reply to you sooner but had been waiting for conformation of our development traffic until doing so. I am now in a better position to comment on this and therefore would like to discuss a couple of items in further detail with you.

The development traffic when fully operational we anticipate to generate 4 HGVs an hour over a 12hour working day (8 two way movements/hour). This based on a 5.5 day working week assuming an average payload of 22.5t HGV. The HGV assumptions have been calculated against the total input and output of the MBT facility and a 20% uplift for robust purposes.

The site will be staffed by 19 employees split over 3 shifts on any one day. The temporal distribution of staff movements are set out as set out below. during the AM and PM commuter peaks it is anticipate that staff would generate 10 one way movements.

		Staff Trips		
Time Period		Arrival	Departures	Total
06:00	07:00	5		5
07:00	08:00		2	2
08:00	09:00	10		10
09:00	10:00			0
10:00	11:00			0
11:00	12:00			0
12:00	13:00			0

13:00	**14:00**			0
14:00	**15:00**	2		2
15:00	**16:00**		5	5
16:00	**17:00**			0
17:00	**18:00**		10	10
18:00	**19:00**			0
19:00	**20:00**			0
20:00	**21:00**			0
21:00	**22:00**			0
22:00	**23:00**	2		2
23:00	**00:00**		2	2
TOTAL		**19**	**19**	**38**

On the basis of the total development traffic flows during the commuter peak hours amounting to 18 two way movements (8 HGV + 18 staff) and the impact the development traffic contributing no greater than a 1% increase in traffic flow at these junctions during the AM and PM peaks, we did not propose undertaking operational assessments of the A530/A556 junction.

In view of the low numbers of staff present on site (total 19 daily over 24 hours) the implementation of a full Staff Travel Plan we did not consider to be necessary, but management of waste travel could be done so by way of a Delivery and Servicing Management Plan.

I have identified a number of committed developments which I list below that contribute traffic onto the network within the study area. With regard to Lostock Triangle and Gadbrook Park, account has been made of the proportion of development which remained vacant at the time of undertaking ATC surveys.

- 08-0020-OUT – Hargreaves Road
- 09-10799-CPO Broadthorn
- 11-01968-OUT Wincham
- 12-03652-OUT and 12-03656-OUT Land at Farm Road
- Gadbrook Park
- Lostock Triangle
- Broathorn
- Bedminster
- 10/00691/DECC TATA SEP

Taking into consideration the quantum of committed development, respective locations and routing of traffic I have considered that this will account for future year traffic growth. The proposed opening year for the development is 2016. I have therefore applied a background traffic growth factor to the survey data 2015-2016 and then assumed that the future year assessment will be accounted for in the following scenarios:

- 2016 + Committed Development
- 2016 + Committed Development + Proposed Development

The HGV routing strategy takes into consideration the restrictions of the low bridge to the north of the site. The strategy assumes that the majority of HG traffic will access the site from J19 of the M6 (44%) via the A556 with a smaller proportion from J18 via the A530 (33%) and 22% from the west via the A556.

Kind Regards

Nicola

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From: PARRY, Paul [mailto:Paul.Parry@cheshirewestandchester.gov.uk]
Sent: 24 June 2015 13:42
To: Nicola Clay
Subject: RE: 15/02244/PREAPP - REnesicence Northwich - Transport Scoping

Hi Nicola

I will do some digging to see if any other committed Devs I would want you to take into account and come back to you.

The 10/00691/DECC application was one done by RPS (Bruce Bamber) so that should have lots of the info you need.

You haven't mentioned looking at the A556/A530 roundabout, so will expect that to be included in your TA. There are issues at that roundabout in the peaks.

There is also a scheme to increase the capacity at the A556/A530 roundabout of the back of the 10/00691 application. So aging will expect this to form part of your considerations. Also the state of the road surface at the site access is poor so this would be something that needs addressing.

I'd expect a Travel Plan as well and an assessment of sustainable travel modes/options.

In terms of the schemes you mention there has been little progress on any of them as they are all subject to funding coming off various developments, mainly the 10/00691/DECC application. So again go through that and take a look at those requirements. I would be expecting your site to provide towards these as well. But will be done to what you show in impacts.

However we are expecting to see a pedestrian crossing done near the A556 roundabout off a small housing site next to then roundabout that is currently in train.

In terms of HGV routing I assume you are aware of the low bridge on the A530 to the north of your site that affects how the HGV s will be able to route to the site. It's 3.6m headroom.

I hope this helps.

Regards

Paul

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From: Nicola Clay [mailto:nicola.clay@rpsgroup.com]
Sent: 24 June 2015 12:36

To: PARRY, Paul
Subject: 15/02244/PREAPP – REnesicence Northwich - Transport Scoping

Dear Paul,

I tried reaching you earlier, but understand from colleagues that you are in meetings.

I am contacting you regarding highways scoping advice in relation to the proposed development for a Mechanical-biological treatment (MBT) waste treatment facility, incorporating anaerobic digestion (AD) and electricity generation using the biogas produced at Lostock Works ref: 15/02244/PREAPP ï REnesicence Northwich. A Pre-app meeting was held last Thursday with the case officers at CWCC (Rod Brookfield and Hazel Honeysett). Hazel has subsequently advised that I should contact yourself in relation to the Transportation and Highways elements of the project.

It was agreed with CWCC at the meeting last week that this is an EIA project and will not be requesting a formal screening opinion. We are therefore proposing to progress TS and ES Transport Chapter, the scope of which I wish to agree with you. You may be aware that there has been a previous application on the site in 2009-10, for a similar facility but of a larger scale. The adjacent site to the west was the subject of two applications in 2006-7 for waste management purposes also. The site is proposed to be accessed from the existing Lostock Works access road from the A350 similar to that of the previous applications. I therefore propose to assess a similar study area to that of the previous ES, this incorporates the A530 between the junction with A559 and the A556.

New baseline traffic surveys are currently being undertaken which I propose to growth up to a future year Staff trips are to be derived from the number of staff on-site and proposed shift patterns. The distribution and assignment of trips will be based on local census O/D data and the most logical routing for each journey origin.
The HGV movements are based on maximum operating capacity of the facility and subsequent output and load of vehicles. Routing is to be based on the suitability of the local strategic road network and destination of vehicles as advised by the intended Operator.
Consideration will be had for committed development traffic also, if you have any further developments to add those already identified below, please advise accordingly:

- 08-0020-OUM: Demolition of existing structures and redevelopment of land for the residential use for up to 306 dwellings, associated infrastructure and open space ï Phase 1
- 08-0021-OUM: Continuing Care Retirement Community
- 10-0069-DEC

The ES will address the impact on traffic flows on the A530 (north and south), and A559 (east and west) for the future year 2020 (5 years from the intended year of application, 2015) together with committed and proposed development traffic. An operational capacity assessment will also be undertaken at the site access junction with the A530 based for the same future scenario.

PIA data will be analysed for the study area, procured from CWCC.

Please could you also advise of any offsite highways works in the local area which contributions are likely to be sought for. Previously we have been aware of 3 schemes, but I am unsure as to theses status of these:

- Provision of controlled pedestrian crossing on the A530
- Provision of a signalised junction at the Middlewich Road/Griffiths Road/Penneys Lane/King Street junction
- Extension of the current 40mph speed limit northwards along Griffiths Road

Please could you confirm that the above scope is acceptable to your requirements, or should you require further detail please do not hesitate to contact me.

Kind Regards

Nicola

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Annex 6.A.2: PIA Data

Personal Injury Collision Report

Recorded road traffic collisions which have occurred on the Cheshire West and Chester highway

For:	**Alison Goddard**
Company	**RPS Planning & Development**
Reason for request	**Transport assessment**
Location:	**A533 Griffiths Road, Northwich**
Date Range:	**1-07-2010 to 30-06-2015**
CWaC Reference:	**1505**
Date	**Friday, 21 August 2015**
By	**David Reeves**
	Road Safety, Place Operations Cheshire West and Chester Council

Cheshire West and Chester Council cannot be held responsible for the quality and accuracy of the data being provided by Cheshire Constabulary at this time

David Reeves, Engineer within the Road Safety Team, has prepared this report due to a request by ***Alison Goddard*** on behalf of ***RPS Planning & Development*** to complete a Personal Injury Collision search on the following locations; ***A533 Griffiths Road.***

The search was carried out on ***Friday, 21 August 2015.***

As requested a ***five*** year search was done using the most up to date information we hold which covered the years ***01-07-2010*** to ***30-06-2015***.

Payment of **£300.00** has been received in receipt of this data.

This data has been requested as part of a transport assessment due to a proposed new development in the area.

Below is a site summary

Total collisions	***22***	
Involving	***39***	vehicles
and	***27***	casualties

Collision Severity Breakdown

Fatal	***0***	Serious	***2***	Slight	***20***

Casualty Severity Breakdown

Fatal	***0***	Serious	***2***	Slight	***25***

Collisions involving

Children	***2***
Pedal cycles	***3***
Car	***21***
Motorcycles	***5***
Darkness	***7***
Skidding	***1***

Collisions by severity and by year
July to June

	2010 /11	2011 /12	2012 /13	2013/ 14	2014 /15	Total
Fatal	***0***	***0***	***0***	***0***	***0***	***0***
Serious	***0***	***0***	***2***	***0***	***0***	***2***
Slight	***4***	***5***	***3***	***2***	***6***	***20***
Total	***4***	***5***	***5***	***2***	***6***	***22***

Casualties by severity and by year
July to June

	2010/ 11	2011 /12	2012 /13	2013 /14	2014 /15	Total
Fatal	**0**	**0**	**0**	**0**	**0**	**0**
Serious	**0**	**0**	**2**	**0**	**0**	**2**
Slight	**5**	**6**	**4**	**2**	**8**	**12**
Total	***5***	***6***	***6***	***2***	***8***	***14***

A533 Griffiths Road 5 yr Plot to 30/06/2015

No	Area	L/A	Reference	Severity	Day	Date	Time	Grid Coords	Link/Node	Street
1		E06000050	0712155277	Slight	Saturday	02/06/2012	02:58	368355/373174		

Location: Middlewich Road (B5082) at Junction with Griffiths Road (A530) Northwich **1st Rd:** B5082 **2nd Rd:** A530

Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy Fac	Special	Hazard
MPH	Single c'way	T/Stag Give	Dark/lights lit	Fine	Dry	None	None	None	None

Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B/T
1	Car	No	Left turn	W N	On main	Mid junction	Over	Kerb	Str't ahead	Barr	Male		-ve
2	Car	No	Going ahead	W E	On main	Junt appr	No	None		None	Male		N/R

Cas No	Veh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil
1	1	Drv/Rider	Male	17	Slight	No	Not ped	Not ped	Not ped	Other

Description: V1 (Car) is Approached by Police Officer on Foot, V1 Drives Off. Police Officer Gets Back into his Vehicle V2 (Police Car) and Follows V1. V1 Turns off Carriageway and Collides with Kerb and Barrier at Junction, V1 Loses Control and V1 Rolls.

User Information: **Contributory Factors:** 601V001A 901V001A 605V001A 607V001A

No	Area	L/A	Reference	Severity	Day	Date	Time	Grid Coords	Link/Node	Street
2	WR	E06000050	CC10231701	Slight	Monday	09/08/2010	16:23	368368/373182		

Location: Griffiths Road (A530) at Junction with Middlewich Road (B5082) Northwich **1st Rd:** A530 **2nd Rd:** B5082

Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy Fac	Special	Hazard
MPH	Single c'way	X-Rds Give	Daylight	Fine	Wet	None	None	None	None

Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B/T
1	Car	No	Right turn	NW SW	On main	Enter main	No	None	Str't ahead	None	Female		-ve
2	Car	No	Going ahead	S N	On main	Junt appr	No	None		None	Male		-ve

Cas No	Veh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil
1	1	Drv/Rider	Female	66	Slight	No	Not ped	Not ped	Not ped	Other

Description: V2 (Car) Travelling from Middlewich Heading North Along King Street and onto Griffiths Road. V1 (Car) Stops at the Junction of Griffiths Road, Eastbound, turning right onto King Street. V1 Exits Junction and Collides with V2.

User Information: **Contributory Factors:** 405V001A 406V001B

No	Area	L/A	Reference	Severity	Day	Date	Time	Grid Coords	Link/Node	Street
3	WR	E06000050	CC10320894	Slight	Monday	01/11/2010	19:58	368366/373183		

Location: Griffiths Road (A530) at Junction with Middlewich Road (B5082) Northwich **1st Rd:** A530 **2nd Rd:** B5082

Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy Fac	Special	Hazard
MPH	Single c'way	Other Give	Dark/lights lit	Rain	Wet	None	None	None	None

Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B/T
1	Car	No	Right turn	NW S	On main	Mid junction	No	Kerb		None	Female		-ve
2	Car	No	Going ahead	S N	On main	Mid junction	No	None		None	Male		-ve

Cas No	Veh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil
1	1	Drv/Rider	Female	20	Slight	No	Not ped	Not ped	Not ped	Other
2	2	Passenger	Female	63	Slight	Front	Not ped	Not ped	Not ped	Other

Description: Vehicle 2 (Car) is Travelling from Towards Wincham. as Vehicle 2 Approaches Junction of Middlewich Road Vehicle 1 (Car) Comes over the Humpback Bridge, Slows but Does Not Stop at Junction and Pulls out across the Path of Vehicle 2. Vehicle 2 Attempts to Brake but Collides with the Drivers Door of Vehicle 1. Vehicle 1 is Turned Around and Strikes Kerb with Rear Nearside Wheel Causing the Wheel to Break.

User Information: **Contributory Factors:** 405V001A 406V001A

No	Area	L/A	Reference	Severity	Day	Date	Time	Grid Coords	Link/Node	Street
4	WR	E06000050	CC10343522	Slight	Tuesday	23/11/2010	10:25	368572/372696		

Location: Shurlach Road (A556) at Junction with King Street (A530) Rudheath **1st Rd:** A556 **2nd Rd:** A530

Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy Fac	Special	Hazard
MPH	Dual c'way	R'dabt Give	Daylight	Fine	Dry	None	None	None	None

Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B/T
1	Car	No	Stop	E W	On main	Ent r'about	No	None		None	Male		-ve
2	Van/Goods <	No	Stop	E W	On main	Ent r'about	No	None		None	Male		-ve

Cas No	Veh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil
1	1	Passenger	Female	42	Slight	Front	Not ped	Not ped	Not ped	Other

Description: V1(Car) and V2(Goods Vehicle) Travelling Along A556 Manchester Bound, They Reach Roundabout at Rudheath. V1 Slows down to Give Way to Vehicle on right Alreaduy Committed on Roundabout. V2 Directley Behind Goes into Rear of V1 Causing Minor Damage.

User Information: **Contributory Factors:** 308V002A 406V002A 405V002A 408V002A

A533 Griffiths Road 5 yr Plot to 30/06/2015

No	Area	L/A	Reference	Severity	Day	Date	Time	Grid Coords	Link/Node	Street
5	WR	E06000050	CC10350632	Slight	Tuesday	30/11/2010	18:35	368563/372692		

Location: Rudheath Roundabout (A556) at Junction with King Street (A530) Northwich **1st Rd:** A556 **2nd Rd:** A530

Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy Fac	Special	Hazard
MPH	Roundabout	R'dabt Give	Dark/lights lit	Fine	Wet	None	None	None	None

Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B/T
1	Car	No	Going ahead	E W	On main	Ent r'about	No	None		None	Male		-ve
2	M/cycle 50 -	No	Left turn	N E	On main	Leave r'about	No	None		None	Male		-ve

Cas No	Veh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil
1	2	Drv/Rider	Male	28	Slight	No	Not ped	Not ped	Not ped	Other

Description: V1 (Car) Enters Roundabout from Dual Carriageway into Path of V2 (Motorcycle) which is Travelling on Roundabout.

User Information: **Contributory Factors:** 401V001A 403V001A 405V001A

No	Area	L/A	Reference	Severity	Day	Date	Time	Grid Coords	Link/Node	Street
6		E06000050	CC11183104	Slight	Saturday	02/07/2011	18:15	368467/372678		

Location: Shurlach Road (A556) 20 Meters West of King Street (A530) Northwich **1st Rd:** A556 **2nd Rd:** A530

Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy Fac	Special	Hazard
MPH	Dual c'way	R'dabt Give	Daylight	Fine	Dry	None	Footbridge	None	None

Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B/T
1	Car	No	Going ahead	E W	On main	Leave r'about	No	None		None	Male		-ve

Cas No	Veh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil
1	1	Pedestrian	Male	25	Slight	No	South	Nearside	<50m of ped	Other

Description: Pedestrian Walks out into the Road and is Narrowly Avoided by a Vehicle. Pedestrian then Having Initially Walked Back to the Pavement Walks out into the Road, on Seeing an Approaching Vehicle Runs and Tries to Walk onto the Pavement Agin and is Struc K by Vehicle 1.

User Information: **Contributory Factors:** 802C001A 803C001A 808C001A

No	Area	L/A	Reference	Severity	Day	Date	Time	Grid Coords	Link/Node	Street
7		E06000050	CC11192013	Slight	Monday	11/07/2011	07:15	368511/372741		

Location: King Street (A530) at Junction with Shurlach Road (A556) Northwich **1st Rd:** A530 **2nd Rd:** A556

Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy Fac	Special	Hazard
MPH	Single c'way	R'dabt Give	Daylight	Fine	Dry	None	None	None	None

Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B/T
1	Car	No	Going ahead	N S	On main	Junt appr	No	None		None	Male		-ve
2	M/cycle 50 -	No	Waiting	N S	On main	Junt appr	No	None		None	Male		-ve

Cas No	Veh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil
1	2	Drv/Rider	Male	46	Slight	No	Not ped	Not ped	Not ped	Other

Description: Vehicle 2 (Motor Cycle) Waiting to Enter Roundabout in Lane One. Vehicle 1 (Car) Waiting Behind Sees Gap in Flow of Traffic. Vehicle 2 Moved Forward Appeared to Driver of Vehicle 1 That Moped Had Entered Roundabout when in Fact Waiting. Vehicle 1 Mov Ed to Line of Junction Whilst Looking to Right. Vehicle 1 Collides with Rear of Vehicle 2 Causing Rider to Fall to the Ground.

User Information: **Contributory Factors:** 402V002B 406V001B

No	Area	L/A	Reference	Severity	Day	Date	Time	Grid Coords	Link/Node	Street
8		E06000050	CC12171782	Slight	Friday	22/06/2012	15:25	368624/374741		

Location: Manchester Road (A559) at Junction with Griffiths Road (A530) Lostock Gralam **1st Rd:** A559 **2nd Rd:** A530

Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy Fac	Special	Hazard
MPH	Single c'way	T/Stag Give	Daylight	Fine	Dry	None	Refuge	None	None

Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B/T
1	Car	No	Going ahead	NE SW	On main	Junt appr	No	None		None	Male		N/R
2	Car	No	Right turn	SW NE	On main	Junt appr	No	None		None	Female		N/R

Cas No	Veh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil
1	1	Drv/Rider	Male	18	Slight	No	Not ped	Not ped	Not ped	Other

Description: V1(Car) Travelling Along Manchester Road, Lostock Gralam Towards Northwich Has Collided with V2(Car) at the Junction of Griffiths Road and Manchester Road Lostock Gralam

User Information: **Contributory Factors:** 405V001A

A533 Griffiths Road 5 yr Plot to 30/06/2015

No	Area L/A	Reference	Severity	Day	Date	Time	Grid Coords	Link/Node	Street
9	E06000050	CC12182258	Slight	Wednesday	27/06/2012	18:20	368515/372741		

Location: King Street (A530) at Junction with Shurlach Road (A556) Northwich **1st Rd:** A530 **2nd Rd:** A556

Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy Fac	Special	Hazard
MPH	Single c'way	R'dabt Give	Daylight	Fine	Dry	None	None	None	None

Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B/T
1	Car	No	Going ahead	NW SE	On main	Junt appr	No	None		None	Male		N/C
2	Car	No	Waiting	NW SE	On main	Junt appr	No	None		None	Female		N/C

Cas No	Veh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil
1	2	Drv/Rider	Female	24	Slight	No	Not ped	Not ped	Not ped	Other
2	2	Passenger	Female	8	Slight	Front	Not ped	Not ped	Not ped	Other

Description: Vehicle 2 (Car) Stops at Giveway Markings at Junction Roundabout Waiting to Merge into Traffic when Vehicle 1 (Car) Runs into Rear of Vehicle 2 Causing Damage and Injury.

User Information: **Contributory Factors:** 405V001A 403V001A

No	Area L/A	Reference	Severity	Day	Date	Time	Grid Coords	Link/Node	Street
10	E06000050	CC12183202	Serious	Tuesday	03/07/2012	09:40	368527/374463		

Location: Griffiths Road (A530) 300 Meters South of Manchester Road Northwich **1st Rd:** A530 **2nd Rd:**

Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy Fac	Special	Hazard
MPH	Single c'way	NotJCT	Daylight	Fine	Dry	None	None	None	None

Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B/T
1	M/cycle >	No	Going ahead	SW NE	On main	Not at	No	None		None	Male		-ve
2	Van/Goods <	No	Left turn	SW NW	On main	Not at	No	None		None	Male		-ve

Cas No	Veh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil
1	1	Drv/Rider	Male	29	Serious	No	Not ped	Not ped	Not ped	Other

Description: V1(Motor Cycle) Exiting Sweeping right Hand Bend. Collides with Rear N/S of V2(Van) turning into Gateway of Local Business

User Information: **Contributory Factors:** 405V001A 406V001A

No	Area L/A	Reference	Severity	Day	Date	Time	Grid Coords	Link/Node	Street
11	E06000050	CC12244467	Slight	Monday	27/08/2012	13:14	368352/373176		

Location: Middlewich Road (B5082) at Junction with King Street (A530) Rudheath **1st Rd:** B5082 **2nd Rd:** A530

Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy Fac	Special	Hazard
MPH	Single c'way	Multi Give	Daylight	Fine	Wet	None	None	None	None

Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B/T
1	Car	No	Right turn	NW SE	On main	Enter main	No	None		None	Female		-ve
2	Car	No	Left turn	SE NW	On main	Leav main	No	None		None	Male		-ve

Cas No	Veh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil
1	1	Drv/Rider	Female	23	Slight	No	Not ped	Not ped	Not ped	Other
2	2	Drv/Rider	Male	51	Slight	No	Not ped	Not ped	Not ped	Other

Description: V2 (Car) Turns left from Main Road into Ajoining Carriageway. V1 Travelling on Wrong Side of Road Collides with Front of V2.

User Information: **Contributory Factors:** 305V001A 405V001A

No	Area L/A	Reference	Severity	Day	Date	Time	Grid Coords	Link/Node	Street
12	E06000050	CC12264412	Slight	Friday	14/09/2012	19:24	368296/373386		

Location: Griffiths Road (A530) 141 Meters South West of Cottage Close Northwich **1st Rd:** A530 **2nd Rd:**

Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy Fac	Special	Hazard
MPH	Single c'way	NotJCT	Dark/no lights	Fine	Dry	None	None	None	None

Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B/T
1	Car	No	Lt hand	NW SE	On main	Not at	Over	Kerb	Nearside	Sign	Male		+ve

Cas No	Veh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil
1	1	Drv/Rider	Male	23	Slight	No	Not ped	Not ped	Not ped	Other

Description: Vehicle 1 (Car) Travelling South on Griffiths Road Fails to Neociate left Hand Bend Skids across Centre Line into Opposite Carriageway. V1 over Compensates Steering Leaving Nearside Carriageway. V1 Impacts with Nearside Kerb Causing Vehicle to Roll O N Offside. V1 Continues Course Along Grass Verge Colliding and Destroying Cross Road Warning Sign Were V1 Comes to Rest.

User Information: **Contributory Factors:** 501V001A 306V001B

No	Area L/A	Reference	Severity	Day	Date	Time	Grid Coords	Link/Node	Street
13	E06000050	CC12266592	Serious	Sunday	16/09/2012	14:37	368488/372705		

Location: Shurlach Road (A556) at Junction with King Street (A530) Northwich **1st Rd:** A556 **2nd Rd:** A530

Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy Fac	Special	Hazard
MPH	Roundabout	R'dabt Give	Daylight	Fine	Dry	None	None	None	None

Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B/T
1	Car	No	Going ahead	W E	On main	Ent r'about	No	None		None	Female		-ve
2	Pedal Cycle	No	Going ahead	S N	On main	Mid junction	No	None		None	Male		N/R

Cas No	Veh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil
1	2	Drv/Rider	Male	24	Serious	No	Not ped	Not ped	Not ped	Other

Description: Vehicle 2 (Pedal Cycle) on Roundabout, Vehicle 1 (Car) Approaches Roundabout from Chester Direction, Slows, Looks but Fails to See Cyclist, Accelerates onto Roundabout into Path of Vehicle 2. Vehicle 2 Hits O/S/F Door Throwing Rider to Ground Causing Dislocated Shoulder.

User Information: **Contributory Factors:** 405V001A

No	Area L/A	Reference	Severity	Day	Date	Time	Grid Coords	Link/Node	Street
14	E06000050	CC12293791	Slight	Saturday	13/10/2012	01:36	368623/374716		

Location: Griffiths Road (A530) 29 Meters South West of Manchester Road Northwich **1st Rd:** A530 **2nd Rd:**

Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy Fac	Special	Hazard
MPH	Single c'way	NotJCT	Dark/lights lit	Fine	Dry	None	None	None	None

Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B/T
1	M/cycle 50 -	No	O/T sta veh	NE SW	On main	Not at	No	None		None	Male		+ve
2	Car	No	Parked	P P	On main	Not at	No	None		None	Untra.	-1	N/R

Cas No	Veh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil
1	1	Drv/Rider	Male	25	Slight	No	Not ped	Not ped	Not ped	Other

Description: V1 (Motorcycle) Turns into Griffiths Road from Manchester Road. V1 Collides with Parked Unattended V2 (Car). Rider of V1 then Leaves the Scene.

User Information: **Contributory Factors:** 403V001B 501V001A 602V001B

No	Area L/A	Reference	Severity	Day	Date	Time	Grid Coords	Link/Node	Street
15	E06000050	CC13260366	Slight	Wednesday	11/09/2013	19:30	368598/374740		

Location: **1st Rd:** A559 **2nd Rd:** A530

Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy Fac	Special	Hazard
MPH	Single c'way	T/Stag Give	Dark/lights lit	Fine	Wet	None	None	None	None

Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B/T
1	Van/Goods <	No	Going ahead	SW NE	On main	Junt appr	No	None		None	Male		N/R
2	Car	No	Going ahead	NE SW	On main	Junt appr	No	None		None	Male		N/C

Cas No	Veh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil
1	2	Drv/Rider	Male	67	Slight	No	Not ped	Not ped	Not ped	Other

Description: V1 travelling in direction of Lostock Gralam. Vehicle when going over brow of hill loses control and travels sideways into path of oncoming V2. believed low impact collision. Both vehicles stop at location. Minor front end damage to both vehicles

User Information: **Contributory Factors:** 103V001B 306V001B 307V001B 602V001B

No	Area L/A	Reference	Severity	Day	Date	Time	Grid Coords	Link/Node	Street
16	E06000050	CC14150585	Slight	Tuesday	27/05/2014	08:45	368647/372729		

Location: **1st Rd:** A556 **2nd Rd:**

Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy Fac	Special	Hazard
MPH	Dual c'way	NotJCT	Daylight	Fine	Dry	None	None	None	None

Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B/T
1	Car	No	Waiting	NE SW	On main	Not at	No	None		None	Male	-1	N/R
2	Car	No	Waiting	NE SW	On main	Not at	No	None		None	Female		N/R

Cas No	Veh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil
1	2	Drv/Rider	Female	24	Slight	No	Not ped	Not ped	Not ped	Other

Description: V2 was stop/starting in a traffic queue due to roundworks aproaching a roundabout. V2 stopped and V1 collided with the rear bumper of V2 causing damage and injury.

User Information: **Contributory Factors:** 405V001A 308V001A

No	Area L/A	Reference	Severity	Day	Date	Time	Grid Coords	Link/Node	Street
17	E06000050	CC14205308	Slight	Tuesday	15/07/2014	17:50	368568/372694		

Location: **1st Rd:** A556 **2nd Rd:** A530

Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy Fac	Special	Hazard
MPH	Dual c'way	R'dabt Give	Daylight	Fine	Dry	None	None	None	None

Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B/T
1	Car	No	Stop	N E	On main	Junt appr	No	None		None	Male		N/C
2	Car	No	Waiting	N E	On main	Junt appr	No	None		None	Female		N/C

Cas No	Veh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil
1	2	Drv/Rider	Female	22	Slight	No	Not ped	Not ped	Not ped	Other

Description: V2 was stationary at roundabout when V1 collides with the rear of V2 casuing slight damage and injury

User Information:

Contributory Factors: 405V001B 406V001B

No	Area L/A	Reference	Severity	Day	Date	Time	Grid Coords	Link/Node	Street
18	E06000050	CC14225555	Slight	Friday	01/08/2014	14:53	368370/373194		

Location: **1st Rd:** A530 **2nd Rd:** B5082

Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy Fac	Special	Hazard
MPH	Single c'way	X-Rds Give	Daylight	Fine	Dry	None	None	None	None

Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B/T
1	Car	No	Right turn	NW S	On main	Enter main	No	None		None	Female		-ve
2	Car	Singl	Going ahead	S N	On main	Mid junction	No	None		None	Male		-ve

Cas No	Veh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil
1	1	Drv/Rider	Female	49	Slight	No	Not ped	Not ped	Not ped	Other
2	1	Passenger	Female	7	Slight	Front	Not ped	Not ped	Not ped	Other

Description: VEH001 is a car emerging from Middlewich Road onto King Street with the intention of turning right. VEH002 is a car and a laiden trailer travelling north along King Street. VEH001 pulls out of junction into path of VEH002

Contributory Factors: 405V001A 404V002B 406V001A 602V001B

No	Area L/A	Reference	Severity	Day	Date	Time	Grid Coords	Link/Node	Street
19	E06000050	CC14257490	Slight	Sunday	31/08/2014	10:35	368519/372666		

Location: **1st Rd:** A556 **2nd Rd:** A530

Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy Fac	Special	Hazard
MPH	Roundabout	R'dabt Give	Daylight	Rain	Wet	None	None	Oil or diesel	None

Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B/T
1	Car	No	Left turn	SE W	On main	Ent r'about	No	None		None	Male		-ve
2	Pedal Cycle	No	Going ahead	E W	On main	Leave r'about	No	None		None	Male		N/R

Cas No	Veh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil
1	2	Drv/Rider	Male	51	Slight	No	Not ped	Not ped	Not ped	Other

Description: V1 travelling north west on A556 Chester Road approaches King Street roundabout in lane 1 intending to turn left slows down and looks towards right and sees 2 cars going slowly on the roundabout so decides to pull out onto roundabout intending to turn left (west wards) onto a530 King Street dual carraigeway, collides with cyclist who is crossing the roundabout on A530 from King Street (east side) to King Street (west side) causing him to fall off cycle and injure his head.

Contributory Factors: 405V001A 507V002B 704V001B

No	Area L/A	Reference	Severity	Day	Date	Time	Grid Coords	Link/Node	Street
20	E06000050	CC14351413	Slight	Wednesday	26/11/2014	22:00	368498/372725		

Location: **1st Rd:** A556 **2nd Rd:** A530

Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy Fac	Special	Hazard
MPH	Roundabout	R'dabt Give	Dark/lights lit	Fine	Dry	None	None	None	None

Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B/T
1	Car	No	Left turn	E N	On main	Ent r'about	No	None		None	Male		-ve
2	Pedal Cycle	No	Going ahead	S N	On main	Leave r'about	No	None		None	Male		-ve

Cas No	Veh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil
1	2	Drv/Rider	Male	28	Slight	No	Not ped	Not ped	Not ped	Other

Description: Vehicle 1 travelling eastbound approaching roundabout to exit first turning to head northbound when vehicle 2 (cyclist) was crossing the exit. Collided on the exit from roundabout.

User Information:

Contributory Factors: 310V001B 402V001B 404V002B 405V001A 406V001A

A533 Griffiths Road 5 yr Plot to 30/06/2015

No	Area L/A	Reference	Severity	Day	Date	Time	Grid Coords	Link/Node	Street
21	E06000050	CC14355305	Slight	Sunday	30/11/2014	14:19	368644/374758		

Location: 1st Rd: A559 **2nd Rd:** A530

Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy Fac	Special	Hazard
MPH	Single c'way	T/Stag Give	Daylight	Fine	Dry	None	None	None	None

Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B/T
1	M/cycle 125 -	No	Going ahead	E W	On main	Junt appr	No	None		None	Male		-ve
2	Car	No	Right turn	W E	On main	Junt appr	No	None		None	Female		-ve

Cas No	Veh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil
1	1	Drv/Rider	Male	18	Slight	No	Not ped	Not ped	Not ped	Other

Description: v2 travelling eastbound on manchester road towards manchester. V1 travelling westbound on manchester road towards northwich town centre. V2 turns right onto driveway across the path of v1 and collision occurs.

Contributory Factors: 405V002A 403V002A

No	Area L/A	Reference	Severity	Day	Date	Time	Grid Coords	Link/Node	Street
22	E06000050	CC15182782	Slight	Friday	26/06/2015	11:02	368523/372659		

Location: 1st Rd: A556 **2nd Rd:** A530

Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy Fac	Special	Hazard
MPH	Roundabout	R'dabt Give	Daylight	Rain	Wet	None	None	None	None

Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B/T
1	Goods unknown	No	Waiting	SE NW	On main	Junt appr	No	None		None	Male		-ve
2	Car	No	Waiting	SE NW	On main	Junt appr	No	None		None	Male		-ve

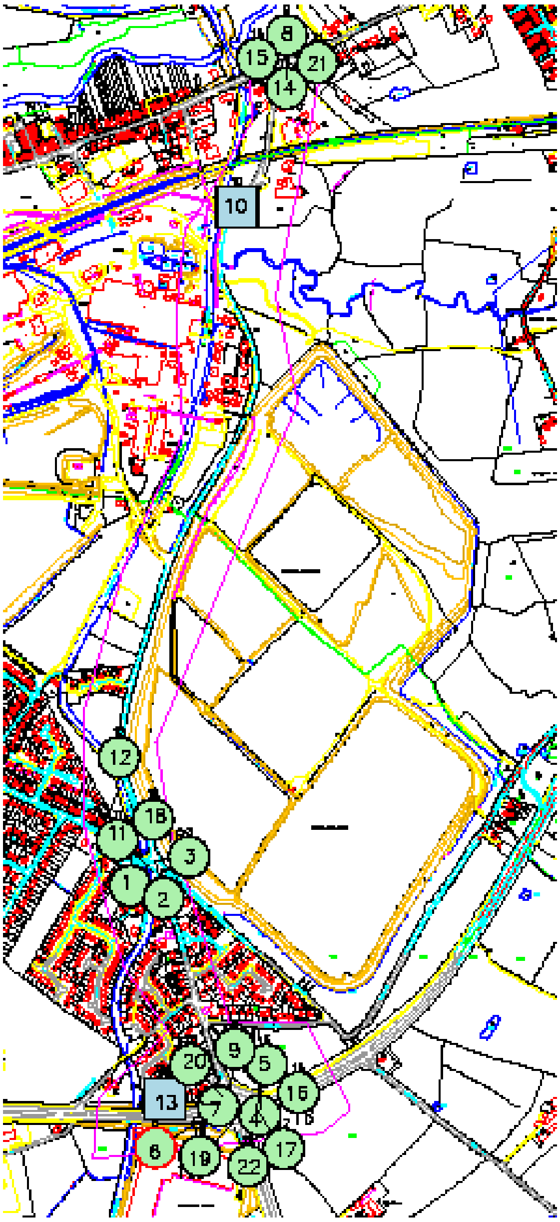
Cas No	Veh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil
1	2	Drv/Rider	Male	56	Slight	No	Not ped	Not ped	Not ped	Other
2	2	Passenger	Male	36	Slight	Front	Not ped	Not ped	Not ped	Other

Description: Description removed.

User Information:

Contributory Factors: 402V001A

Location plot for recorded injury collisions



Road Safety Engineering Team
Cheshire West and Chester Council,
Place Operations,
Winsford Area Office,
Clough Road,
Winsford
Cheshire.
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Annex 6.A.3: ATC Data

North of Site Access

19028		RUDHEATH JUNE 2015								
Site	**Location**	**Direction**	**Start Date**	**End Date**	**Posted Speed Limit (PSL)**	**Total Vehicles**	**5 Day Ave.**	**7 Day Ave.**	**Average 85%ile Speed**	**Average Mean Speed**
Site No: 19028001	Site 1, Griffiths Road, Rudheath (Warning Sign) SJ 68550 74201	Channel: Northbound	Wed 24-Jun-15	Tue 30-Jun-15	60	23666	3721	3381	47.5	40.7
		Channel: Southbound	Wed 24-Jun-15	Tue 30-Jun-15		28517	4520	4074	44.3	37.9
										39.29

	7 day average			5 day average		
	Northbound	**Southbound**	**Two Way**	**Northbound**	**Southbound**	**Two Way**
00:00	42.7	40.9	41.8	42.5	41.1	41.8
01:00	39.6	38.4	39.0	39.6	36.9	38.3
02:00	41.4	36.7	39.0	40.2	37.0	38.6
03:00	39.8	35.1	37.5	39.8	34.7	37.3
04:00	41.8	36.8	39.3	41.8	36.1	38.9
05:00	43.5	39.1	41.3	43.6	39.3	41.5
06:00	43.3	38.8	41.1	43.6	39.1	41.3
07:00	42.1	38.9	40.5	41.7	38.5	40.1
08:00	40.4	38.1	39.2	39.6	37.7	38.7
09:00	38.2	37.4	37.8	36.9	37.0	36.9
10:00	39.7	37.2	38.5	39.1	36.9	38.0
11:00	39.8	37.3	38.5	39.6	37.1	38.4
12:00	40.4	37.8	39.1	40.2	37.3	38.8
13:00	40.5	37.4	38.9	40.2	37.1	38.7
14:00	39.8	37.2	38.5	39.6	36.6	38.1
15:00	40.6	37.4	39.0	40.3	37.2	38.7
16:00	40.8	37.4	39.1	40.5	37.0	38.7
17:00	42.2	38.3	40.2	42.1	37.9	40.0
18:00	42.1	38.8	40.5	42.0	38.4	40.2
19:00	42.0	39.1	40.6	41.8	39.1	40.4
20:00	42.5	39.8	41.2	42.4	39.5	41.0
21:00	42.9	39.8	41.4	42.4	39.8	41.1
22:00	42.3	38.2	40.2	42.5	38.7	40.6
23:00	43.1	38.6	40.9	42.2	39.1	40.7
12H,7-19	40.4	37.7	39.1	40.1	37.4	38.7
16H,6-22	40.6	37.9	39.3	40.3	37.6	39.0
18H,6-24	40.7	37.9	39.3	40.4	37.6	39.0

24H,0-24	40.7	37.9	39.3	40.4	37.6	39.0

19028			RUDHEATH		Site No: 19028001		Location	Site 1, Griffiths Road, Rudheath (Warning Sign)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Wed 24-Jun-15											
00:00	**8**	0	0.0	6	75.0	1	12.5	1	12.5	0	0.0
01:00	**7**	0	0.0	4	57.1	1	14.3	2	28.6	0	0.0
02:00	**5**	0	0.0	3	60.0	1	20.0	1	20.0	0	0.0
03:00	**5**	0	0.0	3	60.0	1	20.0	1	20.0	0	0.0
04:00	**19**	0	0.0	13	68.4	3	15.8	3	15.8	0	0.0
05:00	**45**	0	0.0	29	64.4	9	20.0	7	15.6	0	0.0
06:00	**119**	4	3.4	91	76.5	20	16.8	4	3.4	0	0.0
07:00	**404**	6	1.5	329	81.4	54	13.4	14	3.5	1	0.3
08:00	**385**	3	0.8	316	82.1	54	14.0	11	2.9	1	0.3
09:00	**349**	3	0.9	301	86.3	29	8.3	10	2.9	6	1.7
10:00	**354**	2	0.6	313	88.4	33	9.3	5	1.4	1	0.3
11:00	**279**	1	0.4	230	82.4	39	14.0	8	2.9	1	0.4
12:00	**251**	2	0.8	200	79.7	36	14.3	13	5.2	0	0.0
13:00	**234**	1	0.4	199	85.0	31	13.3	3	1.3	0	0.0
14:00	**217**	2	0.9	178	82.0	29	13.4	8	3.7	0	0.0
15:00	**264**	3	1.1	223	84.5	29	11.0	8	3.0	1	0.4
16:00	**287**	5	1.7	244	85.0	32	11.2	6	2.1	0	0.0
17:00	**311**	2	0.6	281	90.4	23	7.4	5	1.6	0	0.0
18:00	**222**	5	2.3	200	90.1	9	4.1	8	3.6	0	0.0
19:00	**133**	3	2.3	120	90.2	4	3.0	6	4.5	0	0.0
20:00	**86**	1	1.2	72	83.7	8	9.3	5	5.8	0	0.0
21:00	**52**	2	3.9	46	88.5	2	3.9	2	3.9	0	0.0
22:00	**41**	1	2.4	36	87.8	4	9.8	0	0.0	0	0.0
23:00	**18**	0	0.0	14	77.8	1	5.6	3	16.7	0	0.0
12H,7-19	**3557**	**35**	**1.0**	**3014**	**84.7**	**398**	**11.2**	**99**	**2.8**	**11**	**0.3**
16H,6-22	**3947**	**45**	**1.1**	**3343**	**84.7**	**432**	**11.0**	**116**	**2.9**	**11**	**0.3**
18H,6-24	**4006**	**46**	**1.2**	**3393**	**84.7**	**437**	**10.9**	**119**	**3.0**	**11**	**0.3**
24H,0-24	**4095**	**46**	**1.1**	**3451**	**84.3**	**453**	**11.1**	**134**	**3.3**	**11**	**0.3**

19028		RUDHEATH			Site No: 19028001		Location		Site 1, Griffiths Road, Rudheath (Warning Sign)		
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Thu 25-Jun-15											
00:00	**14**	1	7.1	7	50.0	3	21.4	3	21.4	0	0.0
01:00	**11**	1	9.1	5	45.5	3	27.3	2	18.2	0	0.0
02:00	**10**	0	0.0	6	60.0	1	10.0	2	20.0	1	10.0
03:00	**8**	0	0.0	6	75.0	0	0.0	2	25.0	0	0.0
04:00	**16**	0	0.0	13	81.3	2	12.5	1	6.3	0	0.0
05:00	**39**	0	0.0	31	79.5	2	5.1	6	15.4	0	0.0
06:00	**71**	2	2.8	57	80.3	9	12.7	3	4.2	0	0.0
07:00	**179**	7	3.9	148	82.7	21	11.7	3	1.7	0	0.0
08:00	**317**	2	0.6	270	85.2	39	12.3	6	1.9	0	0.0
09:00	**252**	5	2.0	205	81.4	39	15.5	3	1.2	0	0.0
10:00	**209**	0	0.0	169	80.9	34	16.3	5	2.4	1	0.5
11:00	**224**	3	1.3	189	84.4	29	13.0	3	1.3	0	0.0
12:00	**238**	0	0.0	201	84.5	30	12.6	7	2.9	0	0.0
13:00	**216**	0	0.0	184	85.2	29	13.4	3	1.4	0	0.0
14:00	**233**	5	2.2	194	83.3	30	12.9	4	1.7	0	0.0
15:00	**251**	3	1.2	208	82.9	30	12.0	10	4.0	0	0.0
16:00	**293**	4	1.4	251	85.7	27	9.2	10	3.4	1	0.3
17:00	**282**	1	0.4	258	91.5	17	6.0	6	2.1	0	0.0
18:00	**238**	2	0.8	218	91.6	11	4.6	6	2.5	1	0.4
19:00	**159**	4	2.5	144	90.6	10	6.3	1	0.6	0	0.0
20:00	**80**	3	3.8	72	90.0	4	5.0	1	1.3	0	0.0
21:00	**74**	2	2.7	63	85.1	5	6.8	4	5.4	0	0.0
22:00	**54**	0	0.0	44	81.5	4	7.4	6	11.1	0	0.0
23:00	**20**	0	0.0	18	90.0	1	5.0	1	5.0	0	0.0
12H,7-19	**2932**	**32**	**1.1**	**2495**	**85.1**	**336**	**11.5**	**66**	**2.3**	**3**	**0.1**
16H,6-22	**3316**	**43**	**1.3**	**2831**	**85.4**	**364**	**11.0**	**75**	**2.3**	**3**	**0.1**
18H,6-24	**3390**	**43**	**1.3**	**2893**	**85.3**	**369**	**10.9**	**82**	**2.4**	**3**	**0.1**
24H,0-24	**3488**	**45**	**1.3**	**2961**	**84.9**	**380**	**10.9**	**98**	**2.8**	**4**	**0.1**

19028		RUDHEATH			Site No: 19028001		Location	Site 1, Griffiths Road, Rudheath (Warning Sign)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Fri 26-Jun-15											
00:00	**13**	0	0.0	10	76.9	1	7.7	2	15.4	0	0.0
01:00	**7**	0	0.0	4	57.1	2	28.6	1	14.3	0	0.0
02:00	**8**	0	0.0	6	75.0	1	12.5	1	12.5	0	0.0
03:00	**9**	0	0.0	6	66.7	1	11.1	2	22.2	0	0.0
04:00	**15**	0	0.0	10	66.7	2	13.3	3	20.0	0	0.0
05:00	**33**	0	0.0	30	90.9	1	3.0	2	6.1	0	0.0
06:00	**77**	3	3.9	61	79.2	9	11.7	4	5.2	0	0.0
07:00	**219**	2	0.9	185	84.5	28	12.8	4	1.8	0	0.0
08:00	**291**	3	1.0	237	81.4	46	15.8	5	1.7	0	0.0
09:00	**256**	1	0.4	214	83.6	32	12.5	9	3.5	0	0.0
10:00	**239**	1	0.4	188	78.7	43	18.0	7	2.9	0	0.0
11:00	**240**	0	0.0	189	78.8	44	18.3	7	2.9	0	0.0
12:00	**288**	3	1.0	240	83.3	37	12.9	8	2.8	0	0.0
13:00	**307**	0	0.0	269	87.6	29	9.5	9	2.9	0	0.0
14:00	**263**	5	1.9	225	85.6	28	10.7	5	1.9	0	0.0
15:00	**284**	1	0.4	235	82.8	40	14.1	8	2.8	0	0.0
16:00	**305**	6	2.0	256	83.9	33	10.8	9	3.0	1	0.3
17:00	**305**	0	0.0	274	89.8	25	8.2	5	1.6	1	0.3
18:00	**316**	1	0.3	282	89.2	24	7.6	9	2.9	0	0.0
19:00	**192**	2	1.0	171	89.1	14	7.3	5	2.6	0	0.0
20:00	**107**	4	3.7	96	89.7	6	5.6	1	0.9	0	0.0
21:00	**76**	1	1.3	70	92.1	3	4.0	2	2.6	0	0.0
22:00	**40**	0	0.0	35	87.5	4	10.0	1	2.5	0	0.0
23:00	**13**	0	0.0	11	84.6	2	15.4	0	0.0	0	0.0
12H,7-19	**3313**	**23**	**0.7**	**2794**	**84.3**	**409**	**12.4**	**85**	**2.6**	**2**	**0.1**
16H,6-22	**3765**	**33**	**0.9**	**3192**	**84.8**	**441**	**11.7**	**97**	**2.6**	**2**	**0.1**
18H,6-24	**3818**	**33**	**0.9**	**3238**	**84.8**	**447**	**11.7**	**98**	**2.6**	**2**	**0.1**
24H,0-24	**3903**	**33**	**0.9**	**3304**	**84.7**	**455**	**11.7**	**109**	**2.8**	**2**	**0.1**

19028	RUDHEATH	Site No: 19028001	Location	Site 1, Griffiths Road, Rudheath (Warning Sign)
Wed 24-Jun-15 to Tue 30-Jun-15		Channel: Northbound		

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sat 27-Jun-15											
00:00	**19**	0	0.0	13	68.4	3	15.8	3	15.8	0	0.0
01:00	**7**	0	0.0	5	71.4	0	0.0	2	28.6	0	0.0
02:00	**5**	0	0.0	4	80.0	0	0.0	1	20.0	0	0.0
03:00	**7**	0	0.0	2	28.6	2	28.6	3	42.9	0	0.0
04:00	**5**	0	0.0	4	80.0	0	0.0	1	20.0	0	0.0
05:00	**32**	0	0.0	28	87.5	0	0.0	4	12.5	0	0.0
06:00	**34**	2	5.9	25	73.5	1	2.9	6	17.7	0	0.0
07:00	**56**	1	1.8	43	76.8	10	17.9	2	3.6	0	0.0
08:00	**158**	2	1.3	123	77.9	21	13.3	12	7.6	0	0.0
09:00	**207**	3	1.5	185	89.4	16	7.7	3	1.5	0	0.0
10:00	**273**	2	0.7	245	89.7	23	8.4	3	1.1	0	0.0
11:00	**295**	2	0.7	262	88.8	25	8.5	6	2.0	0	0.0
12:00	**287**	0	0.0	256	89.2	26	9.1	5	1.7	0	0.0
13:00	**276**	4	1.5	251	90.9	17	6.2	4	1.5	0	0.0
14:00	**255**	5	2.0	228	89.4	18	7.1	3	1.2	1	0.4
15:00	**226**	7	3.1	205	90.7	11	4.9	3	1.3	0	0.0
16:00	**177**	3	1.7	160	90.4	12	6.8	2	1.1	0	0.0
17:00	**137**	6	4.4	122	89.1	8	5.8	1	0.7	0	0.0
18:00	**116**	3	2.6	105	90.5	6	5.2	2	1.7	0	0.0
19:00	**120**	1	0.8	112	93.3	7	5.8	0	0.0	0	0.0
20:00	**94**	1	1.1	89	94.7	4	4.3	0	0.0	0	0.0
21:00	**65**	5	7.7	58	89.2	2	3.1	0	0.0	0	0.0
22:00	**34**	1	2.9	31	91.2	2	5.9	0	0.0	0	0.0
23:00	**27**	0	0.0	25	92.6	2	7.4	0	0.0	0	0.0
12H,7-19	**2463**	**38**	**1.5**	**2185**	**88.7**	**193**	**7.8**	**46**	**1.9**	**1**	**0.0**
16H,6-22	**2776**	**47**	**1.7**	**2469**	**88.9**	**207**	**7.5**	**52**	**1.9**	**1**	**0.0**
18H,6-24	**2837**	**48**	**1.7**	**2525**	**89.0**	**211**	**7.4**	**52**	**1.8**	**1**	**0.0**
24H,0-24	**2912**	**48**	**1.7**	**2581**	**88.6**	**216**	**7.4**	**66**	**2.3**	**1**	**0.0**

19028		RUDHEATH			Site No: 19028001		Location	Site 1, Griffiths Road, Rudheath (Warning Sign)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sun 28-Jun-15											
00:00	**26**	1	3.9	23	88.5	1	3.9	1	3.9	0	0.0
01:00	**16**	0	0.0	13	81.3	3	18.8	0	0.0	0	0.0
02:00	**8**	0	0.0	7	87.5	0	0.0	1	12.5	0	0.0
03:00	**4**	0	0.0	3	75.0	1	25.0	0	0.0	0	0.0
04:00	**7**	0	0.0	6	85.7	0	0.0	1	14.3	0	0.0
05:00	**23**	1	4.4	21	91.3	1	4.4	0	0.0	0	0.0
06:00	**22**	1	4.6	17	77.3	2	9.1	2	9.1	0	0.0
07:00	**22**	0	0.0	20	90.9	1	4.6	1	4.6	0	0.0
08:00	**33**	1	3.0	31	93.9	1	3.0	0	0.0	0	0.0
09:00	**103**	3	2.9	86	83.5	12	11.7	2	1.9	0	0.0
10:00	**202**	1	0.5	187	92.6	13	6.4	1	0.5	0	0.0
11:00	**199**	2	1.0	185	93.0	8	4.0	4	2.0	0	0.0
12:00	**236**	3	1.3	219	92.8	9	3.8	5	2.1	0	0.0
13:00	**223**	0	0.0	208	93.3	13	5.8	2	0.9	0	0.0
14:00	**234**	4	1.7	214	91.5	14	6.0	2	0.9	0	0.0
15:00	**207**	3	1.5	196	94.7	7	3.4	1	0.5	0	0.0
16:00	**128**	5	3.9	112	87.5	7	5.5	4	3.1	0	0.0
17:00	**121**	2	1.7	111	91.7	4	3.3	4	3.3	0	0.0
18:00	**102**	1	1.0	92	90.2	7	6.9	2	2.0	0	0.0
19:00	**89**	3	3.4	79	88.8	3	3.4	4	4.5	0	0.0
20:00	**66**	1	1.5	57	86.4	5	7.6	3	4.6	0	0.0
21:00	**39**	1	2.6	34	87.2	3	7.7	1	2.6	0	0.0
22:00	**31**	1	3.2	25	80.7	2	6.5	3	9.7	0	0.0
23:00	**9**	0	0.0	8	88.9	0	0.0	1	11.1	0	0.0
12H,7-19	**1810**	**25**	**1.4**	**1661**	**91.8**	**96**	**5.3**	**28**	**1.6**	**0**	**0.0**
16H,6-22	**2026**	**31**	**1.5**	**1848**	**91.2**	**109**	**5.4**	**38**	**1.9**	**0**	**0.0**
18H,6-24	**2066**	**32**	**1.6**	**1881**	**91.1**	**111**	**5.4**	**42**	**2.0**	**0**	**0.0**
24H,0-24	**2150**	**34**	**1.6**	**1954**	**90.9**	**117**	**5.4**	**45**	**2.1**	**0**	**0.0**

19028	RUDHEATH	Site No: 19028001	Location	Site 1, Griffiths Road, Rudheath (Warning Sign)
Wed 24-Jun-15 to Tue 30-Jun-15		Channel: Northbound		

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Mon 29-Jun-15											
00:00	**8**	0	0.0	7	87.5	1	12.5	0	0.0	0	0.0
01:00	**4**	0	0.0	2	50.0	1	25.0	1	25.0	0	0.0
02:00	**4**	0	0.0	3	75.0	0	0.0	1	25.0	0	0.0
03:00	**7**	0	0.0	5	71.4	0	0.0	2	28.6	0	0.0
04:00	**10**	0	0.0	9	90.0	0	0.0	1	10.0	0	0.0
05:00	**37**	1	2.7	30	81.1	3	8.1	3	8.1	0	0.0
06:00	**78**	2	2.6	71	91.0	4	5.1	1	1.3	0	0.0
07:00	**189**	5	2.7	166	87.8	15	7.9	3	1.6	0	0.0
08:00	**286**	3	1.1	245	85.7	31	10.8	7	2.5	0	0.0
09:00	**275**	2	0.7	218	79.3	48	17.5	7	2.6	0	0.0
10:00	**217**	4	1.8	177	81.6	27	12.4	7	3.2	2	0.9
11:00	**229**	1	0.4	197	86.0	23	10.0	8	3.5	0	0.0
12:00	**265**	1	0.4	211	79.6	41	15.5	12	4.5	0	0.0
13:00	**250**	1	0.4	204	81.6	36	14.4	9	3.6	0	0.0
14:00	**203**	1	0.5	157	77.3	42	20.7	3	1.5	0	0.0
15:00	**272**	3	1.1	227	83.5	37	13.6	5	1.8	0	0.0
16:00	**293**	4	1.4	246	84.0	35	12.0	8	2.7	0	0.0
17:00	**318**	2	0.6	285	89.6	25	7.9	6	1.9	0	0.0
18:00	**236**	1	0.4	215	91.1	10	4.2	10	4.2	0	0.0
19:00	**160**	3	1.9	141	88.1	14	8.8	2	1.3	0	0.0
20:00	**88**	3	3.4	73	83.0	8	9.1	4	4.6	0	0.0
21:00	**64**	7	10.9	53	82.8	2	3.1	2	3.1	0	0.0
22:00	**35**	0	0.0	34	97.1	1	2.9	0	0.0	0	0.0
23:00	**15**	0	0.0	13	86.7	2	13.3	0	0.0	0	0.0
12H,7-19	**3033**	**28**	**0.9**	**2548**	**84.0**	**370**	**12.2**	**85**	**2.8**	**2**	**0.1**
16H,6-22	**3423**	**43**	**1.3**	**2886**	**84.3**	**398**	**11.6**	**94**	**2.8**	**2**	**0.1**
18H,6-24	**3473**	**43**	**1.2**	**2933**	**84.5**	**401**	**11.6**	**94**	**2.7**	**2**	**0.1**
24H,0-24	**3543**	**44**	**1.2**	**2989**	**84.4**	**406**	**11.5**	**102**	**2.9**	**2**	**0.1**

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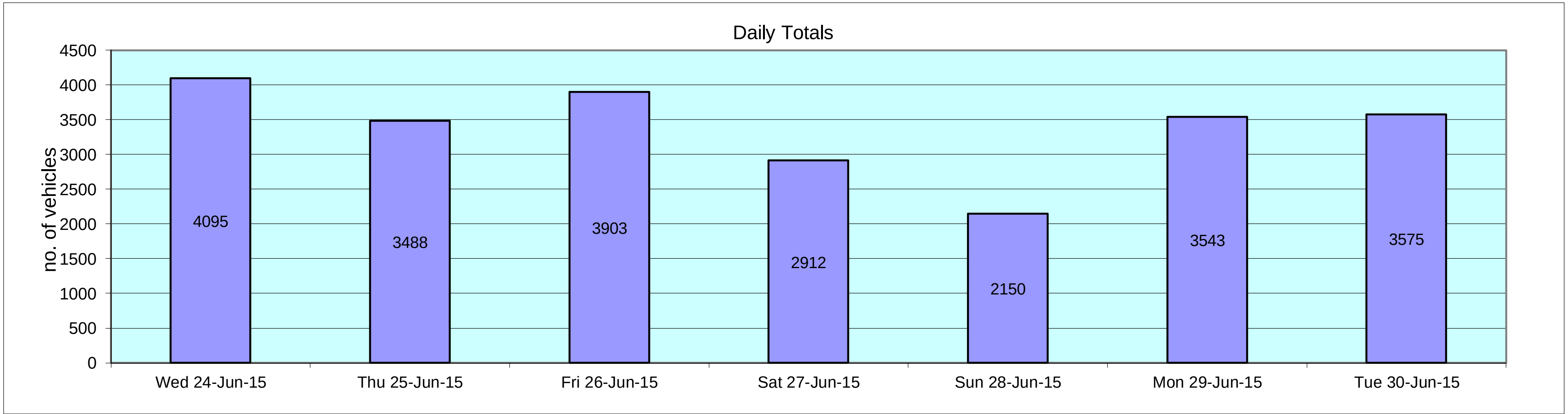
19028	RUDHEATH				Site No: 19028001		Location	Site 1, Griffiths Road, Rudheath (Warning Sign)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Tue 30-Jun-15											
00:00	10	0	0.0	7	70.0	1	10.0	2	20.0	0	0.0
01:00	9	0	0.0	6	66.7	0	0.0	3	33.3	0	0.0
02:00	4	0	0.0	2	50.0	0	0.0	2	50.0	0	0.0
03:00	10	1	10.0	3	30.0	2	20.0	4	40.0	0	0.0
04:00	18	1	5.6	12	66.7	1	5.6	4	22.2	0	0.0
05:00	32	0	0.0	29	90.6	1	3.1	2	6.3	0	0.0
06:00	77	2	2.6	63	81.8	8	10.4	4	5.2	0	0.0
07:00	213	3	1.4	186	87.3	17	8.0	6	2.8	1	0.5
08:00	310	5	1.6	271	87.4	31	10.0	3	1.0	0	0.0
09:00	287	4	1.4	225	78.4	55	19.2	3	1.1	0	0.0
10:00	239	2	0.8	208	87.0	28	11.7	1	0.4	0	0.0
11:00	215	2	0.9	170	79.1	34	15.8	8	3.7	1	0.5
12:00	275	1	0.4	229	83.3	37	13.5	7	2.6	1	0.4
13:00	227	2	0.9	178	78.4	40	17.6	6	2.6	1	0.4
14:00	223	1	0.5	186	83.4	30	13.5	6	2.7	0	0.0
15:00	295	7	2.4	233	79.0	43	14.6	11	3.7	1	0.3
16:00	287	5	1.7	237	82.6	36	12.5	8	2.8	1	0.4
17:00	258	4	1.6	223	86.4	26	10.1	5	1.9	0	0.0
18:00	212	1	0.5	192	90.6	13	6.1	6	2.8	0	0.0
19:00	141	5	3.6	115	81.6	14	9.9	7	5.0	0	0.0
20:00	94	1	1.1	82	87.2	8	8.5	3	3.2	0	0.0
21:00	69	5	7.3	59	85.5	3	4.4	2	2.9	0	0.0
22:00	58	2	3.5	44	75.9	8	13.8	4	6.9	0	0.0
23:00	12	1	8.3	9	75.0	2	16.7	0	0.0	0	0.0
12H,7-19	3041	37	1.2	2538	83.5	390	12.8	70	2.3	6	0.2
16H,6-22	3422	50	1.5	2857	83.5	423	12.4	86	2.5	6	0.2
18H,6-24	3492	53	1.5	2910	83.3	433	12.4	90	2.6	6	0.2
24H,0-24	3575	55	1.5	2969	83.1	438	12.3	107	3.0	6	0.2

19028		RUDHEATH			Site No: 19028001		Location	Site 1, Griffiths Road, Rudheath (Warning Sign)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Daily Totals											
Wed 24-Jun-15	**4095**	46	1.1	3451	84.3	453	11.1	134	3.3	11	0.3
Thu 25-Jun-15	**3488**	45	1.3	2961	84.9	380	10.9	98	2.8	4	0.1
Fri 26-Jun-15	**3903**	33	0.9	3304	84.7	455	11.7	109	2.8	2	0.1
Sat 27-Jun-15	**2912**	48	1.7	2581	88.6	216	7.4	66	2.3	1	0.0
Sun 28-Jun-15	**2150**	34	1.6	1954	90.9	117	5.4	45	2.1	0	0.0
Mon 29-Jun-15	**3543**	44	1.2	2989	84.4	406	11.5	102	2.9	2	0.1
Tue 30-Jun-15	**3575**	55	1.5	2969	83.1	438	12.3	107	3.0	6	0.2
Total Vehicles											
[--]	**23666**	305	1.3	20209	85.8	2465	10.0	661	2.7	26	0.1



19028			RUDHEATH					Site No: 19028001			Location	Site 1, Griffiths Road, Rudheath (Warning Sign)				
Wed 24-Jun-15 to Tue 30-Jun-15								Channel: Northbound								
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<21**	**21-<31**	**31-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**61-<66**	**66-<71**	**71-<76**	**=>76**
Wed 24-Jun-15																
00:00	**8**	-	43.8	8.6	0	0	1	0	5	0	2	0	0	0	0	0
01:00	**7**	-	40.3	8.3	0	0	1	2	2	2	0	0	0	0	0	0
02:00	**5**	-	35	9	0	0	2	1	2	0	0	0	0	0	0	0
03:00	**5**	-	41.5	10.8	0	0	1	1	1	1	1	0	0	0	0	0
04:00	**19**	45.1	40.6	6	0	0	0	10	6	2	1	0	0	0	0	0
05:00	**45**	48.2	38.4	9.6	0	0	11	15	10	4	4	1	0	0	0	0
06:00	**119**	48.6	40.7	7.5	0	0	9	49	29	26	5	1	0	0	0	0
07:00	**404**	44.9	38.8	6.6	1	2	21	225	119	28	5	1	2	0	0	0
08:00	**385**	43.7	32.7	12	56	9	44	177	76	22	1	0	0	0	0	0
09:00	**349**	41.9	24.1	15	154	14	18	101	53	9	0	0	0	0	0	0
10:00	**354**	44.4	38.6	5.4	0	2	4	234	89	24	1	0	0	0	0	0
11:00	**279**	45.3	39.4	6	0	0	6	168	73	26	3	2	1	0	0	0
12:00	**251**	46.6	40.1	6.9	0	0	17	111	81	33	8	0	0	1	0	0
13:00	**234**	47.1	39.7	7.2	0	2	13	116	59	37	5	1	1	0	0	0
14:00	**217**	45.4	39.4	6.6	1	0	5	129	56	17	7	1	1	0	0	0
15:00	**264**	45.6	40.1	6.1	0	0	8	131	93	22	9	1	0	0	0	0
16:00	**287**	46.5	40.5	6.8	1	3	3	132	101	37	6	4	0	0	0	0
17:00	**311**	48.1	41.1	6.8	0	5	4	127	101	65	8	1	0	0	0	0
18:00	**222**	47.3	40.8	6.7	0	2	7	90	80	35	7	1	0	0	0	0
19:00	**133**	46.5	40.4	6.9	0	2	3	60	46	16	5	1	0	0	0	0
20:00	**86**	49.1	42.9	6.9	0	0	1	28	35	14	4	3	1	0	0	0
21:00	**52**	48.8	42.4	6.6	0	0	2	15	20	12	3	0	0	0	0	0
22:00	**41**	52.1	42.5	9.1	0	1	1	16	8	7	6	2	0	0	0	0
23:00	**18**	50.5	40.9	9.1	0	0	2	7	5	1	2	1	0	0	0	0
12H,7-19	**3557**	**45.5**	**37.5**	**9.7**	**213**	**39**	**150**	**1741**	**981**	**355**	**60**	**12**	**5**	**1**	**0**	**0**
16H,6-22	**3947**	**45.7**	**37.8**	**9.6**	**213**	**41**	**165**	**1893**	**1111**	**423**	**77**	**17**	**6**	**1**	**0**	**0**
18H,6-24	**4006**	**45.7**	**37.9**	**9.6**	**213**	**42**	**168**	**1916**	**1124**	**431**	**85**	**20**	**6**	**1**	**0**	**0**
24H,0-24	**4095**	**45.8**	**37.9**	**9.6**	**213**	**42**	**184**	**1945**	**1150**	**440**	**93**	**21**	**6**	**1**	**0**	**0**

19028		RUDHEATH			Site No: 19028001			Location	Site 1, Griffiths Road, Rudheath (Warning Sign)							
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound											
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<21**	**21-<31**	**31-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**61-<66**	**66-<71**	**71-<76**	**=>76**
Thu 25-Jun-15																
00:00	**14**	47	40.5	7.5	0	0	1	6	4	2	1	0	0	0	0	0
01:00	**11**	45.6	39.6	5.9	0	0	0	7	2	2	0	0	0	0	0	0
02:00	**10**	38.8	35	4.3	0	0	1	9	0	0	0	0	0	0	0	0
03:00	**8**	-	39.8	8.4	0	0	1	3	3	0	1	0	0	0	0	0
04:00	**16**	49.9	44.1	6.2	0	0	0	4	6	4	2	0	0	0	0	0
05:00	**39**	52.4	44.5	7.7	0	0	0	13	10	8	6	1	1	0	0	0
06:00	**71**	49.4	43.7	5.8	0	0	0	17	32	16	5	1	0	0	0	0
07:00	**179**	49.9	42.8	8.1	0	5	4	44	68	39	15	2	2	0	0	0
08:00	**317**	46.8	41.4	5.5	0	0	0	133	128	47	9	0	0	0	0	0
09:00	**252**	46.7	40.8	6.8	0	1	5	117	87	27	12	1	1	1	0	0
10:00	**209**	45.1	39.3	6.6	0	0	11	113	65	13	5	0	1	1	0	0
11:00	**224**	45	39.2	5.9	0	1	1	143	56	16	6	0	1	0	0	0
12:00	**238**	45.9	39.7	6.6	0	0	12	122	69	28	4	3	0	0	0	0
13:00	**216**	45.4	39.6	6.1	0	0	7	116	69	19	4	0	1	0	0	0
14:00	**233**	45	38.6	6.5	0	1	14	136	58	21	1	1	1	0	0	0
15:00	**251**	45.7	39.4	6.5	0	2	10	132	74	27	5	1	0	0	0	0
16:00	**293**	46.1	40.5	6.5	0	1	8	137	102	34	6	5	0	0	0	0
17:00	**282**	49.1	42.5	6.8	0	1	9	81	115	54	19	3	0	0	0	0
18:00	**238**	48.9	42.6	6.5	0	1	1	78	95	47	12	3	0	1	0	0
19:00	**159**	49.8	43	7.7	0	3	0	50	56	34	7	8	1	0	0	0
20:00	**80**	49.8	42.4	8.2	0	2	0	30	21	19	5	2	1	0	0	0
21:00	**74**	48.5	42.1	5.8	0	0	0	29	24	19	2	0	0	0	0	0
22:00	**54**	46.4	41.4	7.2	0	0	2	21	22	5	2	1	1	0	0	0
23:00	**20**	51.6	44.3	7.9	0	0	1	5	4	6	4	0	0	0	0	0
12H,7-19	**2932**	**46.8**	**40.6**	**6.6**	**0**	**13**	**82**	**1352**	**986**	**372**	**98**	**19**	**7**	**3**	**0**	**0**
16H,6-22	**3316**	**47.3**	**40.8**	**6.7**	**0**	**18**	**82**	**1478**	**1119**	**460**	**117**	**30**	**9**	**3**	**0**	**0**
18H,6-24	**3390**	**47.4**	**40.9**	**6.8**	**0**	**18**	**85**	**1504**	**1145**	**471**	**123**	**31**	**10**	**3**	**0**	**0**
24H,0-24	**3488**	**47.5**	**40.9**	**6.8**	**0**	**18**	**88**	**1546**	**1170**	**487**	**133**	**32**	**11**	**3**	**0**	**0**

AXIOM Traffic Limited

Data produced by
Axiom Traffic Ltd

19028		RUDHEATH			Site No: 19028001			Location	Site 1, Griffiths Road, Rudheath (Warning Sign)							
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound											
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<21**	**21-<31**	**31-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**61-<66**	**66-<71**	**71-<76**	**=>76**
Fri 26-Jun-15																
00:00	**13**	52.4	43.7	10.1	0	0	1	4	3	2	2	0	1	0	0	0
01:00	**7**	-	39.9	9.4	0	0	1	3	1	1	1	0	0	0	0	0
02:00	**8**	-	50.1	12.1	0	0	0	1	3	2	0	0	0	2	0	0
03:00	**9**	-	41.3	9.1	0	0	1	3	3	0	2	0	0	0	0	0
04:00	**15**	49.1	41.8	7.8	0	0	1	5	5	2	2	0	0	0	0	0
05:00	**33**	52.6	45.8	6.9	0	0	0	7	9	10	5	2	0	0	0	0
06:00	**77**	49.8	44.4	5.9	0	0	1	14	30	26	5	1	0	0	0	0
07:00	**219**	47.6	41.7	6.1	0	1	4	74	94	39	7	0	0	0	0	0
08:00	**291**	47.7	41.6	6.5	0	1	4	114	114	40	14	3	1	0	0	0
09:00	**256**	45.5	40	5.8	0	0	6	128	92	24	6	0	0	0	0	0
10:00	**239**	45	38.7	6.1	0	1	10	145	58	20	5	0	0	0	0	0
11:00	**240**	44.9	39.3	5.7	0	1	7	130	83	17	2	0	0	0	0	0
12:00	**288**	47.2	41.3	5.9	0	0	4	118	111	47	6	2	0	0	0	0
13:00	**307**	47.4	41.6	6.3	0	1	2	123	123	41	13	3	0	1	0	0
14:00	**263**	47.1	41.2	6.6	1	1	3	108	102	36	9	3	0	0	0	0
15:00	**284**	48	41.2	6.8	0	1	6	123	93	44	14	2	0	1	0	0
16:00	**305**	45	38.5	6.9	0	7	15	168	86	24	4	1	0	0	0	0
17:00	**305**	46.5	41.4	5.6	0	0	4	114	137	41	9	0	0	0	0	0
18:00	**316**	48.6	41.2	7.2	0	1	20	112	106	56	21	0	0	0	0	0
19:00	**192**	49.2	42.8	6.7	0	2	0	62	69	46	9	4	0	0	0	0
20:00	**107**	51.2	43.4	8.6	0	1	4	33	27	25	11	5	0	1	0	0
21:00	**76**	48.9	42.8	6.5	0	1	0	21	34	14	6	0	0	0	0	0
22:00	**40**	49.8	43.8	6.6	0	0	1	9	16	10	3	1	0	0	0	0
23:00	**13**	49.2	43.5	6.3	0	0	0	4	4	4	1	0	0	0	0	0
12H,7-19	**3313**	**46.7**	**40.7**	**6.4**	**1**	**15**	**85**	**1457**	**1199**	**429**	**110**	**14**	**1**	**2**	**0**	**0**
16H,6-22	**3765**	**47.3**	**41**	**6.6**	**1**	**19**	**90**	**1587**	**1359**	**540**	**141**	**24**	**1**	**3**	**0**	**0**
18H,6-24	**3818**	**47.4**	**41**	**6.6**	**1**	**19**	**91**	**1600**	**1379**	**554**	**145**	**25**	**1**	**3**	**0**	**0**
24H,0-24	**3903**	**47.5**	**41.1**	**6.6**	**1**	**19**	**95**	**1623**	**1403**	**571**	**157**	**27**	**2**	**5**	**0**	**0**

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19028			RUDHEATH				Site No: 19028001			Location	Site 1, Griffiths Road, Rudheath (Warning Sign)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Northbound									
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Sat 27-Jun-15																
00:00	**19**	49.3	44.9	8.9	0	0	1	4	5	6	1	1	1	0	0	0
01:00	**7**	-	38.5	7.6	0	0	1	3	2	1	0	0	0	0	0	0
02:00	**5**	-	46	8.3	0	0	0	1	2	1	0	1	0	0	0	0
03:00	**7**	-	38.5	7.6	0	0	1	3	2	1	0	0	0	0	0	0
04:00	**5**	-	46.5	12	0	0	0	2	1	0	1	0	1	0	0	0
05:00	**32**	50.7	43.9	7.8	0	0	2	7	8	10	5	0	0	0	0	0
06:00	**34**	52.8	42.8	8.6	0	0	1	15	7	4	4	3	0	0	0	0
07:00	**56**	50	43.7	6.6	0	0	0	17	19	14	5	0	1	0	0	0
08:00	**158**	49.3	41.4	7.6	0	0	12	57	43	33	12	1	0	0	0	0
09:00	**207**	47.9	41.6	6.9	0	2	4	76	81	32	7	5	0	0	0	0
10:00	**273**	46.8	40.6	6.3	0	0	9	123	94	36	10	1	0	0	0	0
11:00	**295**	45.6	40.4	5.7	0	0	3	147	109	27	8	1	0	0	0	0
12:00	**287**	46.6	40.8	5.8	0	0	1	142	96	38	9	1	0	0	0	0
13:00	**276**	47.2	41.6	6.5	1	1	3	102	117	41	5	6	0	0	0	0
14:00	**255**	45.7	39.5	6.7	0	0	16	129	76	23	10	0	1	0	0	0
15:00	**226**	46.4	40.8	6.9	0	2	5	100	83	22	9	5	0	0	0	0
16:00	**177**	46.9	41.1	6.3	0	1	2	74	69	23	7	1	0	0	0	0
17:00	**137**	49	42.9	6	0	0	0	44	54	30	8	0	1	0	0	0
18:00	**116**	49.9	43.3	6.8	0	1	0	33	47	22	10	3	0	0	0	0
19:00	**120**	46.8	40.9	6.7	0	1	2	52	44	16	3	1	1	0	0	0
20:00	**94**	50.5	41.6	9	0	5	0	33	28	15	12	1	0	0	0	0
21:00	**65**	50.3	43.1	6.8	0	0	1	20	26	9	8	1	0	0	0	0
22:00	**34**	48	41.7	7.2	0	0	2	11	13	6	1	1	0	0	0	0
23:00	**27**	48.4	43.1	8.1	0	0	0	10	11	3	1	1	0	1	0	0
12H,7-19	**2463**	**47.4**	**41.1**	**6.5**	**1**	**7**	**55**	**1044**	**888**	**341**	**100**	**24**	**3**	**0**	**0**	**0**
16H,6-22	**2776**	**47.7**	**41.2**	**6.7**	**1**	**13**	**59**	**1164**	**993**	**385**	**127**	**30**	**4**	**0**	**0**	**0**
18H,6-24	**2837**	**47.7**	**41.2**	**6.7**	**1**	**13**	**61**	**1185**	**1017**	**394**	**129**	**32**	**4**	**1**	**0**	**0**
24H,0-24	**2912**	**47.8**	**41.3**	**6.8**	**1**	**13**	**66**	**1205**	**1037**	**413**	**136**	**34**	**6**	**1**	**0**	**0**

19028		RUDHEATH			Site No: 19028001			Location	Site 1, Griffiths Road, Rudheath (Warning Sign)							
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound											
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Sun 28-Jun-15																
00:00	26	47.6	41.3	6.6	0	0	0	13	7	5	0	1	0	0	0	0
01:00	16	45.3	40.4	5.3	0	0	0	8	6	2	0	0	0	0	0	0
02:00	8	-	42.9	9.1	0	0	0	4	2	0	1	1	0	0	0	0
03:00	4	-	41	12.4	0	0	1	1	0	1	1	0	0	0	0	0
04:00	7	-	37.4	7.4	0	0	1	4	1	1	0	0	0	0	0	0
05:00	23	48.9	42.4	6.9	0	0	1	7	7	7	1	0	0	0	0	0
06:00	22	48	42.3	6.8	0	0	1	6	10	3	2	0	0	0	0	0
07:00	22	48.2	42	6.1	0	0	0	9	7	5	1	0	0	0	0	0
08:00	33	49.3	43.3	6.8	0	0	1	8	14	7	2	1	0	0	0	0
09:00	103	48.8	41.3	7.6	0	3	1	39	33	20	7	0	0	0	0	0
10:00	202	47.1	41.9	5.7	0	0	0	75	90	28	7	1	1	0	0	0
11:00	199	45.8	40.2	6.6	0	1	7	93	70	21	3	4	0	0	0	0
12:00	236	47	41	6.5	0	1	5	100	87	34	5	3	1	0	0	0
13:00	223	47.1	40.7	6.7	0	0	12	89	81	33	6	2	0	0	0	0
14:00	234	45.9	40.8	6	0	1	4	98	97	29	4	1	0	0	0	0
15:00	207	47.8	42.3	6.6	0	0	2	72	93	23	10	4	3	0	0	0
16:00	128	49.4	42.3	6.6	0	0	1	51	40	24	11	1	0	0	0	0
17:00	121	48.7	42.2	6.1	0	0	1	44	46	21	9	0	0	0	0	0
18:00	102	48.8	41.8	7.3	0	1	3	37	34	20	5	2	0	0	0	0
19:00	89	52.2	44.4	7.8	0	1	0	23	33	16	9	6	1	0	0	0
20:00	66	50.4	44.1	7.4	0	0	2	17	18	21	6	1	1	0	0	0
21:00	39	52.4	45.6	7.1	0	0	1	6	13	11	6	2	0	0	0	0
22:00	31	47.9	41.4	7	0	0	1	13	10	5	1	1	0	0	0	0
23:00	9	-	47.1	7.1	0	0	0	1	4	1	2	1	0	0	0	0
12H,7-19	1810	47.6	41.4	6.5	0	7	37	715	692	265	70	19	5	0	0	0
16H,6-22	2026	48.2	41.7	6.7	0	8	41	767	766	316	93	28	7	0	0	0
18H,6-24	2066	48.2	41.7	6.7	0	8	42	781	780	322	96	30	7	0	0	0
24H,0-24	2150	48.3	41.7	6.7	0	8	45	818	803	338	99	32	7	0	0	0

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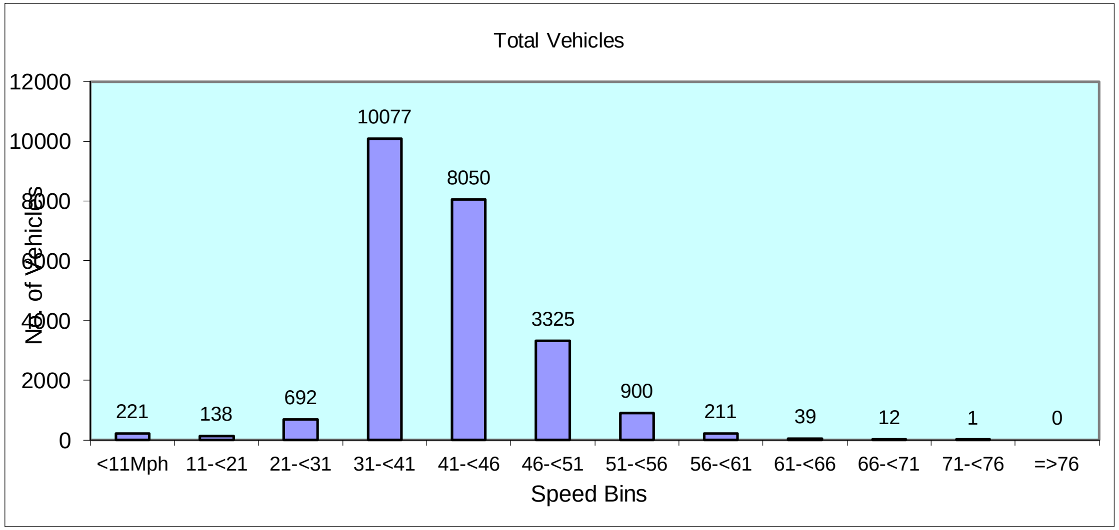
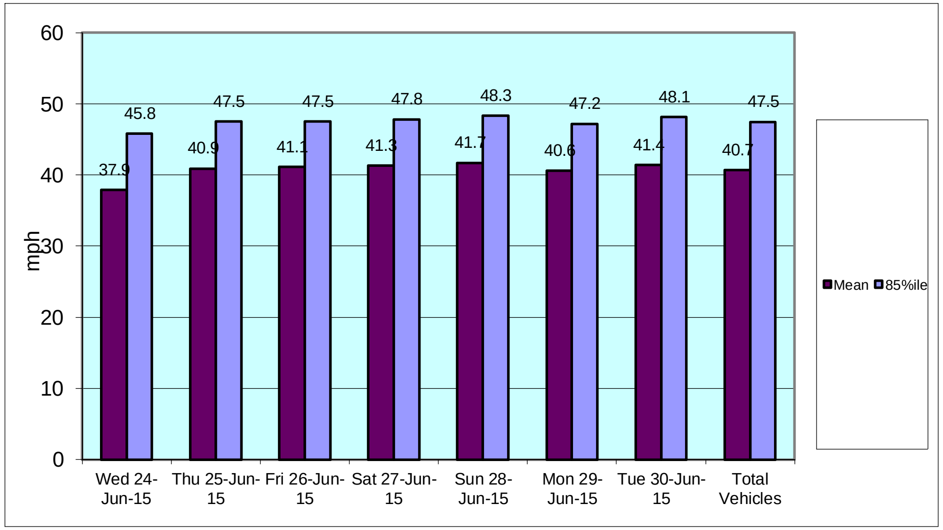
19028			RUDHEATH				Site No: 19028001			Location	Site 1, Griffiths Road, Rudheath (Warning Sign)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Northbound									
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<21**	**21-<31**	**31-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**61-<66**	**66-<71**	**71-<76**	**=>76**
Mon 29-Jun-15																
00:00	**8**	-	41	6.1	0	0	0	4	2	2	0	0	0	0	0	0
01:00	**4**	-	37.9	4.6	0	0	0	3	1	0	0	0	0	0	0	0
02:00	**4**	-	41	6.5	0	0	0	2	1	1	0	0	0	0	0	0
03:00	**7**	-	37.8	10.2	0	0	2	2	2	0	1	0	0	0	0	0
04:00	**10**	45	40	6.7	0	0	1	3	5	1	0	0	0	0	0	0
05:00	**37**	52.2	44.9	7.6	0	0	1	8	12	9	4	3	0	0	0	0
06:00	**78**	50	44.4	7.4	1	1	0	10	32	27	6	1	0	0	0	0
07:00	**189**	48.7	43	6.4	0	3	0	44	92	39	9	2	0	0	0	0
08:00	**286**	45.8	39.8	6.8	0	1	14	141	91	24	12	3	0	0	0	0
09:00	**275**	45.2	39.3	6	0	1	10	147	90	23	4	0	0	0	0	0
10:00	**217**	45.4	38.9	6.6	1	1	7	132	49	21	5	1	0	0	0	0
11:00	**229**	45.7	39.8	6.7	1	2	5	115	75	24	6	1	0	0	0	0
12:00	**265**	45.6	39.2	6.9	0	0	25	123	83	25	9	0	0	0	0	0
13:00	**250**	45.5	39.9	6.2	0	0	6	136	78	20	7	3	0	0	0	0
14:00	**203**	45.4	39.8	6.4	0	0	9	101	71	16	5	0	0	1	0	0
15:00	**272**	45.7	40.1	6.6	0	1	14	118	103	26	9	1	0	0	0	0
16:00	**293**	47.4	41	6.4	0	0	9	125	100	51	6	0	2	0	0	0
17:00	**318**	48.6	42.3	6.2	0	0	6	103	129	62	16	2	0	0	0	0
18:00	**236**	48.4	41.7	6.6	0	1	6	85	85	48	10	1	0	0	0	0
19:00	**160**	48.8	41	8.4	2	2	9	53	47	40	5	2	0	0	0	0
20:00	**88**	47.4	40.8	7.7	0	2	2	36	31	12	2	3	0	0	0	0
21:00	**64**	50.6	42.7	9	0	3	1	16	20	15	8	1	0	0	0	0
22:00	**35**	48.3	42.4	6.8	0	0	0	14	13	5	1	2	0	0	0	0
23:00	**15**	48.1	40.7	6.8	0	0	0	9	2	3	1	0	0	0	0	0
12H,7-19	**3033**	**46.5**	**40.4**	**6.6**	**2**	**10**	**111**	**1370**	**1046**	**379**	**98**	**14**	**2**	**1**	**0**	**0**
16H,6-22	**3423**	**47.1**	**40.6**	**6.8**	**5**	**18**	**123**	**1485**	**1176**	**473**	**119**	**21**	**2**	**1**	**0**	**0**
18H,6-24	**3473**	**47.1**	**40.6**	**6.8**	**5**	**18**	**123**	**1508**	**1191**	**481**	**121**	**23**	**2**	**1**	**0**	**0**
24H,0-24	**3543**	**47.2**	**40.6**	**6.8**	**5**	**18**	**127**	**1530**	**1214**	**494**	**126**	**26**	**2**	**1**	**0**	**0**

19028		RUDHEATH			Site No: 19028001			Location	Site 1, Griffiths Road, Rudheath (Warning Sign)							
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound											
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<21**	**21-<31**	**31-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**61-<66**	**66-<71**	**71-<76**	**=>76**
Tue 30-Jun-15																
00:00	**10**	51	43.5	7.6	0	0	0	4	2	2	2	0	0	0	0	0
01:00	**9**	-	40.4	6.1	0	0	0	5	2	2	0	0	0	0	0	0
02:00	**4**	-	39.8	4.9	0	0	0	2	2	0	0	0	0	0	0	0
03:00	**10**	43.5	38.8	5.3	0	0	0	7	2	1	0	0	0	0	0	0
04:00	**18**	50.7	42.4	11	0	1	2	3	2	7	3	0	0	0	0	0
05:00	**32**	49.7	44.4	6	0	0	0	7	13	9	2	1	0	0	0	0
06:00	**77**	51.5	44.8	8.1	0	2	1	11	30	20	9	3	1	0	0	0
07:00	**213**	48.6	42.4	6.6	0	3	2	62	89	48	7	2	0	0	0	0
08:00	**310**	48.4	42.4	6.5	0	2	5	91	139	54	15	3	0	1	0	0
09:00	**287**	45.8	40.1	6.6	0	2	9	137	100	29	6	3	1	0	0	0
10:00	**239**	45.7	39.8	6.2	0	0	9	123	75	26	5	1	0	0	0	0
11:00	**215**	45.9	40.2	6.6	0	0	6	112	66	20	7	3	1	0	0	0
12:00	**275**	46.6	40.7	5.9	0	0	3	132	93	42	1	4	0	0	0	0
13:00	**227**	45.7	40.3	6.1	0	0	6	110	81	20	9	1	0	0	0	0
14:00	**223**	45.5	39.2	6.9	0	3	16	99	79	23	3	0	0	0	0	0
15:00	**295**	47.7	40.5	7.1	0	2	12	133	89	43	14	1	1	0	0	0
16:00	**287**	48.5	42	6.3	0	1	2	108	105	55	14	2	0	0	0	0
17:00	**258**	49.6	43.2	6.3	0	0	4	73	96	63	20	2	0	0	0	0
18:00	**212**	49.4	43.5	6.3	0	0	2	55	92	45	12	5	1	0	0	0
19:00	**141**	49.2	41.7	8.4	1	2	4	50	45	27	9	2	0	0	1	0
20:00	**94**	49.4	42.6	6.6	0	0	1	34	31	20	6	2	0	0	0	0
21:00	**69**	49.5	41.9	8.1	0	2	0	27	20	13	5	2	0	0	0	0
22:00	**58**	49.8	42.6	7.2	0	0	2	20	17	13	5	1	0	0	0	0
23:00	**12**	52.8	41.8	9.7	0	0	1	5	3	0	2	1	0	0	0	0
12H,7-19	**3041**	**47.7**	**41.2**	**6.6**	**0**	**13**	**76**	**1235**	**1104**	**468**	**113**	**27**	**4**	**1**	**0**	**0**
16H,6-22	**3422**	**48**	**41.4**	**6.8**	**1**	**19**	**82**	**1357**	**1230**	**548**	**142**	**36**	**5**	**1**	**1**	**0**
18H,6-24	**3492**	**48.1**	**41.4**	**6.8**	**1**	**19**	**85**	**1382**	**1250**	**561**	**149**	**38**	**5**	**1**	**1**	**0**
24H,0-24	**3575**	**48.1**	**41.4**	**6.8**	**1**	**20**	**87**	**1410**	**1273**	**582**	**156**	**39**	**5**	**1**	**1**	**0**

19028			RUDHEATH				Site No: 19028001			Location	Site 1, Griffiths Road, Rudheath (Warning Sign)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Northbound									
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<21**	**21-<31**	**31-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**61-<66**	**66-<71**	**71-<76**	**=>76**
Daily Totals																
Wed 24-Jun-15	**4095**	45.8	37.9	9.6	213	42	184	1945	1150	440	93	21	6	1	0	0
Thu 25-Jun-15	**3488**	47.5	40.9	6.8	0	18	88	1546	1170	487	133	32	11	3	0	0
Fri 26-Jun-15	**3903**	47.5	41.1	6.6	1	19	95	1623	1403	571	157	27	2	5	0	0
Sat 27-Jun-15	**2912**	47.8	41.3	6.8	1	13	66	1205	1037	413	136	34	6	1	0	0
Sun 28-Jun-15	**2150**	48.3	41.7	6.7	0	8	45	818	803	338	99	32	7	0	0	0
Mon 29-Jun-15	**3543**	47.2	40.6	6.8	5	18	127	1530	1214	494	126	26	2	1	0	0
Tue 30-Jun-15	**3575**	48.1	41.4	6.8	1	20	87	1410	1273	582	156	39	5	1	1	0
Total Vehicles																
[--]	**23666**	47.5	40.7	7.2	221	138	692	10077	8050	3325	900	211	39	12	1	0





19028	RUDHEATH		Site No: 19028001 Channel: Northbound		Location	Site 1, Griffiths Road, Rudheath (Warning Sign)		
TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av
Week Begin: 24-Jun-15									
00:00	**8**	14	13	19	26	8	10	11	14
01:00	**7**	11	7	7	16	4	9	8	9
02:00	**5**	10	8	5	8	4	4	6	6
03:00	**5**	8	9	7	4	7	10	8	7
04:00	**19**	16	15	5	7	10	18	16	13
05:00	**45**	39	33	32	23	37	32	37	34
06:00	**119**	71	77	34	22	78	77	84	68
07:00	**404**	179	219	56	22	189	213	241	183
08:00	**385**	317	291	158	33	286	310	318	254
09:00	**349**	252	256	207	103	275	287	284	247
10:00	**354**	209	239	273	202	217	239	252	248
11:00	**279**	224	240	295	199	229	215	237	240
12:00	**251**	238	288	287	236	265	275	263	263
13:00	**234**	216	307	276	223	250	227	247	248
14:00	**217**	233	263	255	234	203	223	228	233
15:00	**264**	251	284	226	207	272	295	273	257
16:00	**287**	293	305	177	128	293	287	293	253
17:00	**311**	282	305	137	121	318	258	295	247
18:00	**222**	238	316	116	102	236	212	245	206
19:00	**133**	159	192	120	89	160	141	157	142
20:00	**86**	80	107	94	66	88	94	91	88
21:00	**52**	74	76	65	39	64	69	67	63
22:00	**41**	54	40	34	31	35	58	46	42
23:00	**18**	20	13	27	9	15	12	16	16
12H,7-19	**3557**	**2932**	**3313**	**2463**	**1810**	**3033**	**3041**	**3175**	**2878**
16H,6-22	**3947**	**3316**	**3765**	**2776**	**2026**	**3423**	**3422**	**3575**	**3239**
18H,6-24	**4006**	**3390**	**3818**	**2837**	**2066**	**3473**	**3492**	**3636**	**3297**
24H,0-24	**4095**	**3488**	**3903**	**2912**	**2150**	**3543**	**3575**	**3721**	**3381**
Am	**07:00**	**08:00**	**08:00**	**11:00**	**10:00**	**08:00**	**08:00**	**-**	**-**
Peak	**404**	**317**	**291**	**295**	**202**	**286**	**310**	**322**	**301**
Pm	**17:00**	**16:00**	**18:00**	**12:00**	**12:00**	**17:00**	**15:00**	**-**	**-**
Peak	**311**	**293**	**316**	**287**	**236**	**318**	**295**	**307**	**294**

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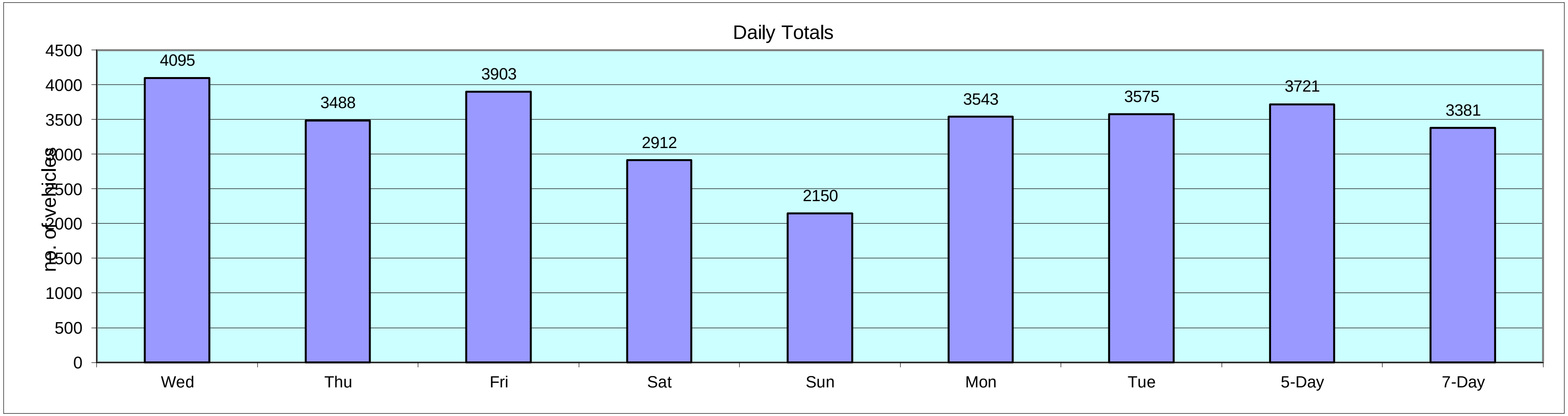
19028	RUDHEATH	Site No: 19028001 Channel: Northbound	Location	Site 1, Griffiths Road, Rudheath (Warning Sign)

TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av



19028 **RUDHEATH** **Site No: 19028001** **Location** **Site 1, Griffiths Road, Rudheath (Warning Sign)**

Wed 24-Jun-15 to Tue 30-Jun-15 **Channel: Southbound**

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Wed 24-Jun-15											
00:00	**11**	0	0.0	10	90.9	1	9.1	0	0.0	0	0.0
01:00	**4**	0	0.0	3	75.0	0	0.0	1	25.0	0	0.0
02:00	**8**	0	0.0	4	50.0	3	37.5	1	12.5	0	0.0
03:00	**8**	0	0.0	6	75.0	1	12.5	1	12.5	0	0.0
04:00	**21**	0	0.0	14	66.7	3	14.3	4	19.1	0	0.0
05:00	**40**	0	0.0	28	70.0	4	10.0	8	20.0	0	0.0
06:00	**102**	3	2.9	72	70.6	13	12.8	14	13.7	0	0.0
07:00	**217**	4	1.8	174	80.2	28	12.9	10	4.6	1	0.5
08:00	**345**	7	2.0	280	81.2	51	14.8	7	2.0	0	0.0
09:00	**226**	1	0.4	188	83.2	31	13.7	5	2.2	1	0.4
10:00	**201**	3	1.5	151	75.1	38	18.9	9	4.5	0	0.0
11:00	**240**	0	0.0	194	80.8	35	14.6	8	3.3	3	1.3
12:00	**279**	1	0.4	230	82.4	40	14.3	7	2.5	1	0.4
13:00	**304**	4	1.3	257	84.5	36	11.8	7	2.3	0	0.0
14:00	**296**	3	1.0	240	81.1	39	13.2	14	4.7	0	0.0
15:00	**397**	0	0.0	337	84.9	50	12.6	10	2.5	0	0.0
16:00	**447**	3	0.7	384	85.9	47	10.5	13	2.9	0	0.0
17:00	**501**	5	1.0	427	85.2	57	11.4	12	2.4	0	0.0
18:00	**432**	5	1.2	344	79.6	63	14.6	20	4.6	0	0.0
19:00	**252**	0	0.0	215	85.3	24	9.5	13	5.2	0	0.0
20:00	**87**	0	0.0	78	89.7	9	10.3	0	0.0	0	0.0
21:00	**83**	3	3.6	68	81.9	8	9.6	4	4.8	0	0.0
22:00	**63**	0	0.0	59	93.7	3	4.8	1	1.6	0	0.0
23:00	**30**	0	0.0	23	76.7	3	10.0	4	13.3	0	0.0
12H,7-19	**3885**	**36**	**0.9**	**3206**	**82.5**	**515**	**13.3**	**122**	**3.1**	**6**	**0.2**
16H,6-22	**4409**	**42**	**1.0**	**3639**	**82.5**	**569**	**12.9**	**153**	**3.5**	**6**	**0.1**
18H,6-24	**4502**	**42**	**0.9**	**3721**	**82.7**	**575**	**12.8**	**158**	**3.5**	**6**	**0.1**
24H,0-24	**4594**	**42**	**0.9**	**3786**	**82.4**	**587**	**12.8**	**173**	**3.8**	**6**	**0.1**

19028		RUDHEATH			Site No: 19028001		Location	Site 1, Griffiths Road, Rudheath (Warning Sign)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Southbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Thu 25-Jun-15											
00:00	**14**	0	0.0	12	85.7	1	7.1	1	7.1	0	0.0
01:00	**11**	0	0.0	7	63.6	1	9.1	3	27.3	0	0.0
02:00	**7**	0	0.0	2	28.6	3	42.9	2	28.6	0	0.0
03:00	**9**	0	0.0	5	55.6	2	22.2	2	22.2	0	0.0
04:00	**16**	1	6.3	10	62.5	2	12.5	3	18.8	0	0.0
05:00	**50**	2	4.0	39	78.0	4	8.0	5	10.0	0	0.0
06:00	**108**	3	2.8	83	76.9	12	11.1	10	9.3	0	0.0
07:00	**201**	5	2.5	168	83.6	24	11.9	4	2.0	0	0.0
08:00	**322**	2	0.6	262	81.4	48	14.9	10	3.1	0	0.0
09:00	**223**	1	0.5	176	78.9	39	17.5	5	2.2	2	0.9
10:00	**244**	1	0.4	189	77.5	44	18.0	10	4.1	0	0.0
11:00	**247**	2	0.8	201	81.4	42	17.0	2	0.8	0	0.0
12:00	**277**	1	0.4	238	85.9	33	11.9	5	1.8	0	0.0
13:00	**280**	1	0.4	222	79.3	44	15.7	12	4.3	1	0.4
14:00	**267**	2	0.8	216	80.9	40	15.0	9	3.4	0	0.0
15:00	**338**	1	0.3	273	80.8	55	16.3	9	2.7	0	0.0
16:00	**444**	3	0.7	371	83.6	62	14.0	7	1.6	1	0.2
17:00	**532**	3	0.6	470	88.4	50	9.4	9	1.7	0	0.0
18:00	**342**	9	2.6	295	86.3	34	9.9	4	1.2	0	0.0
19:00	**189**	1	0.5	166	87.8	19	10.1	3	1.6	0	0.0
20:00	**113**	1	0.9	105	92.9	6	5.3	1	0.9	0	0.0
21:00	**62**	0	0.0	56	90.3	5	8.1	1	1.6	0	0.0
22:00	**48**	2	4.2	37	77.1	3	6.3	6	12.5	0	0.0
23:00	**28**	0	0.0	22	78.6	2	7.1	4	14.3	0	0.0
12H,7-19	**3717**	**31**	**0.8**	**3081**	**82.9**	**515**	**13.9**	**86**	**2.3**	**4**	**0.1**
16H,6-22	**4189**	**36**	**0.9**	**3491**	**83.3**	**557**	**13.3**	**101**	**2.4**	**4**	**0.1**
18H,6-24	**4265**	**38**	**0.9**	**3550**	**83.2**	**562**	**13.2**	**111**	**2.6**	**4**	**0.1**
24H,0-24	**4372**	**41**	**0.9**	**3625**	**82.9**	**575**	**13.2**	**127**	**2.9**	**4**	**0.1**

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19028 **RUDHEATH** **Site No: 19028001** **Location** **Site 1, Griffiths Road, Rudheath (Warning Sign)**

Wed 24-Jun-15 to Tue 30-Jun-15 **Channel: Southbound**

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Fri 26-Jun-15											
00:00	**10**	0	0.0	7	70.0	2	20.0	1	10.0	0	0.0
01:00	**9**	1	11.1	2	22.2	3	33.3	3	33.3	0	0.0
02:00	**8**	0	0.0	5	62.5	1	12.5	2	25.0	0	0.0
03:00	**10**	0	0.0	9	90.0	0	0.0	1	10.0	0	0.0
04:00	**16**	3	18.8	8	50.0	1	6.3	4	25.0	0	0.0
05:00	**47**	0	0.0	42	89.4	0	0.0	5	10.6	0	0.0
06:00	**91**	1	1.1	70	76.9	10	11.0	10	11.0	0	0.0
07:00	**221**	5	2.3	167	75.6	33	14.9	16	7.2	0	0.0
08:00	**301**	0	0.0	235	78.1	53	17.6	12	4.0	1	0.3
09:00	**235**	0	0.0	189	80.4	40	17.0	6	2.6	0	0.0
10:00	**258**	0	0.0	201	77.9	45	17.4	12	4.7	0	0.0
11:00	**231**	0	0.0	183	79.2	38	16.5	9	3.9	1	0.4
12:00	**338**	0	0.0	284	84.0	47	13.9	7	2.1	0	0.0
13:00	**390**	1	0.3	325	83.3	58	14.9	5	1.3	1	0.3
14:00	**517**	0	0.0	436	84.3	66	12.8	15	2.9	0	0.0
15:00	**468**	1	0.2	389	83.1	69	14.7	9	1.9	0	0.0
16:00	**491**	3	0.6	409	83.3	71	14.5	7	1.4	1	0.2
17:00	**526**	3	0.6	465	88.4	53	10.1	5	1.0	0	0.0
18:00	**311**	2	0.6	270	86.8	34	10.9	5	1.6	0	0.0
19:00	**205**	2	1.0	175	85.4	20	9.8	8	3.9	0	0.0
20:00	**115**	2	1.7	103	89.6	6	5.2	4	3.5	0	0.0
21:00	**79**	1	1.3	73	92.4	5	6.3	0	0.0	0	0.0
22:00	**75**	0	0.0	67	89.3	5	6.7	3	4.0	0	0.0
23:00	**30**	0	0.0	28	93.3	2	6.7	0	0.0	0	0.0
12H,7-19	**4287**	**15**	**0.4**	**3553**	**82.9**	**607**	**14.2**	**108**	**2.5**	**4**	**0.1**
16H,6-22	**4777**	**21**	**0.4**	**3974**	**83.2**	**648**	**13.6**	**130**	**2.7**	**4**	**0.1**
18H,6-24	**4882**	**21**	**0.4**	**4069**	**83.4**	**655**	**13.4**	**133**	**2.7**	**4**	**0.1**
24H,0-24	**4982**	**25**	**0.5**	**4142**	**83.1**	**662**	**13.3**	**149**	**3.0**	**4**	**0.1**

19028 RUDHEATH Site No: 19028001 Location Site 1, Griffiths Road, Rudheath (Warning Sign)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Southbound

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sat 27-Jun-15											
00:00	**15**	0	0.0	12	80.0	2	13.3	1	6.7	0	0.0
01:00	**12**	0	0.0	8	66.7	2	16.7	2	16.7	0	0.0
02:00	**9**	0	0.0	9	100.0	0	0.0	0	0.0	0	0.0
03:00	**5**	0	0.0	3	60.0	2	40.0	0	0.0	0	0.0
04:00	**17**	0	0.0	15	88.2	1	5.9	1	5.9	0	0.0
05:00	**24**	1	4.2	20	83.3	0	0.0	3	12.5	0	0.0
06:00	**33**	0	0.0	20	60.6	8	24.2	5	15.2	0	0.0
07:00	**65**	0	0.0	44	67.7	17	26.2	4	6.2	0	0.0
08:00	**122**	3	2.5	93	76.2	20	16.4	6	4.9	0	0.0
09:00	**160**	2	1.3	127	79.4	28	17.5	3	1.9	0	0.0
10:00	**262**	3	1.2	227	86.6	24	9.2	8	3.1	0	0.0
11:00	**310**	2	0.7	280	90.3	22	7.1	6	1.9	0	0.0
12:00	**385**	1	0.3	348	90.4	30	7.8	6	1.6	0	0.0
13:00	**283**	6	2.1	245	86.6	27	9.5	5	1.8	0	0.0
14:00	**296**	4	1.4	264	89.2	25	8.5	3	1.0	0	0.0
15:00	**305**	1	0.3	277	90.8	26	8.5	1	0.3	0	0.0
16:00	**267**	1	0.4	239	89.5	26	9.7	1	0.4	0	0.0
17:00	**232**	3	1.3	211	91.0	14	6.0	4	1.7	0	0.0
18:00	**176**	2	1.1	157	89.2	14	8.0	3	1.7	0	0.0
19:00	**129**	0	0.0	116	89.9	9	7.0	4	3.1	0	0.0
20:00	**83**	1	1.2	76	91.6	6	7.2	0	0.0	0	0.0
21:00	**53**	0	0.0	45	84.9	6	11.3	2	3.8	0	0.0
22:00	**72**	1	1.4	67	93.1	4	5.6	0	0.0	0	0.0
23:00	**67**	0	0.0	64	95.5	3	4.5	0	0.0	0	0.0
12H,7-19	**2863**	**28**	**1.0**	**2512**	**87.7**	**273**	**9.5**	**50**	**1.8**	**0**	**0.0**
16H,6-22	**3161**	**29**	**0.9**	**2769**	**87.6**	**302**	**9.6**	**61**	**1.9**	**0**	**0.0**
18H,6-24	**3300**	**30**	**0.9**	**2900**	**87.9**	**309**	**9.4**	**61**	**1.9**	**0**	**0.0**
24H,0-24	**3382**	**31**	**0.9**	**2967**	**87.7**	**316**	**9.3**	**68**	**2.0**	**0**	**0.0**

19028	RUDHEATH				Site No: 19028001		Location	Site 1, Griffiths Road, Rudheath (Warning Sign)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Southbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sun 28-Jun-15											
00:00	**19**	0	0.0	18	94.7	0	0.0	1	5.3	0	0.0
01:00	**13**	0	0.0	11	84.6	2	15.4	0	0.0	0	0.0
02:00	**7**	0	0.0	4	57.1	0	0.0	3	42.9	0	0.0
03:00	**3**	0	0.0	1	33.3	1	33.3	1	33.3	0	0.0
04:00	**4**	0	0.0	3	75.0	0	0.0	1	25.0	0	0.0
05:00	**19**	0	0.0	17	89.5	0	0.0	2	10.5	0	0.0
06:00	**21**	0	0.0	15	71.4	3	14.3	3	14.3	0	0.0
07:00	**31**	0	0.0	20	64.5	7	22.6	4	12.9	0	0.0
08:00	**46**	0	0.0	41	89.1	4	8.7	1	2.2	0	0.0
09:00	**95**	4	4.2	75	79.0	15	15.8	1	1.1	0	0.0
10:00	**157**	2	1.3	132	84.1	21	13.4	2	1.3	0	0.0
11:00	**197**	4	2.0	170	86.3	20	10.2	3	1.5	0	0.0
12:00	**234**	3	1.3	209	89.3	20	8.6	2	0.9	0	0.0
13:00	**272**	2	0.7	251	92.3	16	5.9	3	1.1	0	0.0
14:00	**289**	2	0.7	270	93.4	16	5.5	1	0.4	0	0.0
15:00	**282**	4	1.4	260	92.2	17	6.0	1	0.4	0	0.0
16:00	**224**	0	0.0	216	96.4	5	2.2	3	1.3	0	0.0
17:00	**204**	1	0.5	188	92.2	12	5.9	3	1.5	0	0.0
18:00	**146**	3	2.1	127	87.0	12	8.2	4	2.7	0	0.0
19:00	**95**	0	0.0	90	94.7	5	5.3	0	0.0	0	0.0
20:00	**85**	1	1.2	78	91.8	4	4.7	2	2.4	0	0.0
21:00	**48**	0	0.0	45	93.8	2	4.2	1	2.1	0	0.0
22:00	**31**	2	6.5	25	80.7	3	9.7	1	3.2	0	0.0
23:00	**14**	0	0.0	12	85.7	1	7.1	1	7.1	0	0.0
12H,7-19	**2177**	**25**	**1.2**	**1959**	**90.0**	**165**	**7.6**	**28**	**1.3**	**0**	**0.0**
16H,6-22	**2426**	**26**	**1.1**	**2187**	**90.2**	**179**	**7.4**	**34**	**1.4**	**0**	**0.0**
18H,6-24	**2471**	**28**	**1.1**	**2224**	**90.0**	**183**	**7.4**	**36**	**1.5**	**0**	**0.0**
24H,0-24	**2536**	**28**	**1.1**	**2278**	**89.8**	**186**	**7.3**	**44**	**1.7**	**0**	**0.0**

19028	RUDHEATH				Site No: 19028001		Location	Site 1, Griffiths Road, Rudheath (Warning Sign)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Southbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Mon 29-Jun-15											
00:00	**10**	0	0.0	6	60.0	1	10.0	3	30.0	0	0.0
01:00	**8**	0	0.0	4	50.0	2	25.0	2	25.0	0	0.0
02:00	**5**	0	0.0	4	80.0	1	20.0	0	0.0	0	0.0
03:00	**11**	1	9.1	4	36.4	1	9.1	5	45.5	0	0.0
04:00	**12**	1	8.3	7	58.3	1	8.3	3	25.0	0	0.0
05:00	**67**	1	1.5	50	74.6	8	11.9	8	11.9	0	0.0
06:00	**107**	5	4.7	79	73.8	10	9.4	13	12.2	0	0.0
07:00	**223**	6	2.7	178	79.8	23	10.3	16	7.2	0	0.0
08:00	**346**	4	1.2	283	81.8	48	13.9	11	3.2	0	0.0
09:00	**276**	1	0.4	214	77.5	46	16.7	15	5.4	0	0.0
10:00	**238**	2	0.8	175	73.5	48	20.2	11	4.6	2	0.8
11:00	**222**	1	0.5	174	78.4	41	18.5	5	2.3	1	0.5
12:00	**300**	1	0.3	244	81.3	39	13.0	15	5.0	1	0.3
13:00	**281**	1	0.4	231	82.2	39	13.9	10	3.6	0	0.0
14:00	**268**	3	1.1	218	81.3	39	14.6	8	3.0	0	0.0
15:00	**328**	1	0.3	273	83.2	46	14.0	7	2.1	1	0.3
16:00	**398**	2	0.5	334	83.9	54	13.6	8	2.0	0	0.0
17:00	**455**	4	0.9	410	90.1	31	6.8	10	2.2	0	0.0
18:00	**280**	3	1.1	247	88.2	24	8.6	6	2.1	0	0.0
19:00	**176**	0	0.0	159	90.3	16	9.1	1	0.6	0	0.0
20:00	**91**	0	0.0	77	84.6	10	11.0	4	4.4	0	0.0
21:00	**76**	1	1.3	68	89.5	6	7.9	1	1.3	0	0.0
22:00	**61**	2	3.3	56	91.8	2	3.3	1	1.6	0	0.0
23:00	**22**	0	0.0	16	72.7	2	9.1	4	18.2	0	0.0
12H,7-19	**3615**	**29**	**0.8**	**2981**	**82.5**	**478**	**13.2**	**122**	**3.4**	**5**	**0.1**
16H,6-22	**4065**	**35**	**0.9**	**3364**	**82.8**	**520**	**12.8**	**141**	**3.5**	**5**	**0.1**
18H,6-24	**4148**	**37**	**0.9**	**3436**	**82.8**	**524**	**12.6**	**146**	**3.5**	**5**	**0.1**
24H,0-24	**4261**	**40**	**0.9**	**3511**	**82.4**	**538**	**12.6**	**167**	**3.9**	**5**	**0.1**

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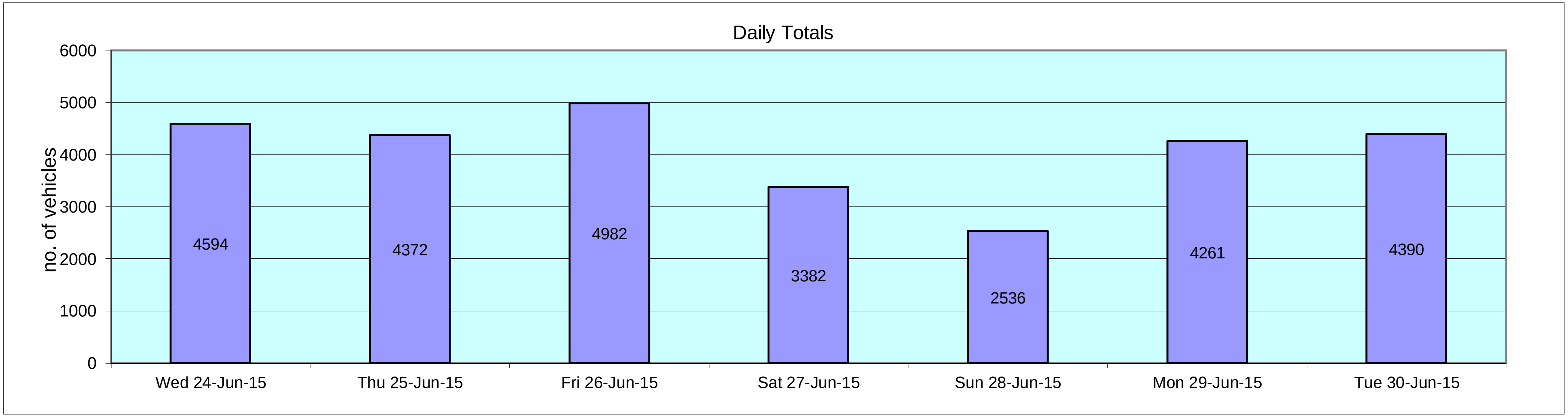
19028 **RUDHEATH** **Site No: 19028001** **Location** **Site 1, Griffiths Road, Rudheath (Warning Sign)**

Wed 24-Jun-15 to Tue 30-Jun-15 **Channel: Southbound**

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Tue 30-Jun-15											
00:00	**5**	0	0.0	5	100.0	0	0.0	0	0.0	0	0.0
01:00	**10**	0	0.0	7	70.0	1	10.0	2	20.0	0	0.0
02:00	**7**	0	0.0	4	57.1	0	0.0	3	42.9	0	0.0
03:00	**9**	0	0.0	4	44.4	2	22.2	3	33.3	0	0.0
04:00	**21**	0	0.0	13	61.9	3	14.3	5	23.8	0	0.0
05:00	**60**	1	1.7	46	76.7	5	8.3	8	13.3	0	0.0
06:00	**96**	6	6.3	72	75.0	8	8.3	10	10.4	0	0.0
07:00	**228**	3	1.3	175	76.8	37	16.2	13	5.7	0	0.0
08:00	**297**	2	0.7	250	84.2	41	13.8	4	1.4	0	0.0
09:00	**275**	3	1.1	199	72.4	63	22.9	10	3.6	0	0.0
10:00	**225**	3	1.3	171	76.0	43	19.1	8	3.6	0	0.0
11:00	**241**	2	0.8	189	78.4	43	17.8	6	2.5	1	0.4
12:00	**299**	3	1.0	245	81.9	41	13.7	9	3.0	1	0.3
13:00	**288**	1	0.4	230	79.9	45	15.6	12	4.2	0	0.0
14:00	**272**	1	0.4	215	79.0	44	16.2	12	4.4	0	0.0
15:00	**329**	2	0.6	281	85.4	37	11.3	9	2.7	0	0.0
16:00	**430**	5	1.2	369	85.8	49	11.4	7	1.6	0	0.0
17:00	**521**	9	1.7	461	88.5	42	8.1	9	1.7	0	0.0
18:00	**320**	3	0.9	279	87.2	31	9.7	7	2.2	0	0.0
19:00	**205**	2	1.0	181	88.3	21	10.2	1	0.5	0	0.0
20:00	**103**	4	3.9	87	84.5	12	11.7	0	0.0	0	0.0
21:00	**74**	1	1.4	66	89.2	4	5.4	3	4.1	0	0.0
22:00	**58**	2	3.5	52	89.7	1	1.7	3	5.2	0	0.0
23:00	**17**	0	0.0	14	82.4	3	17.7	0	0.0	0	0.0
12H,7-19	**3725**	**37**	**1.0**	**3064**	**82.3**	**516**	**13.9**	**106**	**2.9**	**2**	**0.1**
16H,6-22	**4203**	**50**	**1.2**	**3470**	**82.6**	**561**	**13.4**	**120**	**2.9**	**2**	**0.1**
18H,6-24	**4278**	**52**	**1.2**	**3536**	**82.7**	**565**	**13.2**	**123**	**2.9**	**2**	**0.1**
24H,0-24	**4390**	**53**	**1.2**	**3615**	**82.4**	**576**	**13.1**	**144**	**3.3**	**2**	**0.1**

19028	RUDHEATH	Site No: 19028001	Location	Site 1, Griffiths Road, Rudheath (Warning Sign)
Wed 24-Jun-15 to Tue 30-Jun-15		Channel: Southbound		

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Daily Totals											
Wed 24-Jun-15	**4594**	42	0.9	3786	82.4	587	12.8	173	3.8	6	0.1
Thu 25-Jun-15	**4372**	41	0.9	3625	82.9	575	13.2	127	2.9	4	0.1
Fri 26-Jun-15	**4982**	25	0.5	4142	83.1	662	13.3	149	3.0	4	0.1
Sat 27-Jun-15	**3382**	31	0.9	2967	87.7	316	9.3	68	2.0	0	0.0
Sun 28-Jun-15	**2536**	28	1.1	2278	89.8	186	7.3	44	1.7	0	0.0
Mon 29-Jun-15	**4261**	40	0.9	3511	82.4	538	12.6	167	3.9	5	0.1
Tue 30-Jun-15	**4390**	53	1.2	3615	82.4	576	13.1	144	3.3	2	0.1
Total Vehicles											
[--]	**28517**	260	0.9	23924	84.4	3440	11.7	872	2.9	21	0.1



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19028			RUDHEATH				Site No: 19028001			Location	Site 1, Griffiths Road, Rudheath (Warning Sign)				
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Southbound								
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<21**	**21-<31**	**31-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**61-<66**	**66-<71**	**71-<76**	**=>76**
Wed 24-Jun-15																
00:00	**11**	50.6	41	8.4	0	0	1	4	4	0	2	0	0	0	0	0
01:00	**4**	-	38.5	9.8	0	0	1	1	1	1	0	0	0	0	0	0
02:00	**8**	-	36	8.1	0	0	2	4	1	1	0	0	0	0	0	0
03:00	**8**	-	37.3	7	0	0	1	5	1	1	0	0	0	0	0	0
04:00	**21**	48.9	40	8.7	0	0	3	8	4	4	2	0	0	0	0	0
05:00	**40**	45.1	36.9	8	0	0	9	18	8	4	1	0	0	0	0	0
06:00	**102**	47.2	38.3	8.2	0	1	15	49	18	13	6	0	0	0	0	0
07:00	**217**	44.9	38.5	6.7	0	1	15	125	55	16	2	3	0	0	0	0
08:00	**345**	44.2	37.2	7.3	1	1	47	198	72	17	5	3	0	1	0	0
09:00	**226**	42.7	36.1	6.5	0	3	32	143	39	9	0	0	0	0	0	0
10:00	**201**	43.7	37.1	6.2	0	1	21	125	44	9	1	0	0	0	0	0
11:00	**240**	42.6	36.8	5.7	0	0	24	166	42	6	2	0	0	0	0	0
12:00	**279**	43.9	37.8	5.7	0	0	16	188	57	14	4	0	0	0	0	0
13:00	**304**	43.1	37.2	5.9	0	1	24	208	58	9	3	1	0	0	0	0
14:00	**296**	41.7	35.4	6.6	0	7	44	194	45	6	0	0	0	0	0	0
15:00	**397**	42.4	36	6.8	0	0	74	249	49	18	4	3	0	0	0	0
16:00	**447**	42.2	35.6	6.9	0	11	70	283	66	15	1	1	0	0	0	0
17:00	**501**	42.2	35.7	7.1	0	13	74	322	67	20	2	2	1	0	0	0
18:00	**432**	42.2	35.3	7	0	0	103	249	59	14	7	0	0	0	0	0
19:00	**252**	43.3	37	6.6	0	0	30	167	36	16	1	0	2	0	0	0
20:00	**87**	45.3	38.5	6.4	0	0	6	52	18	10	1	0	0	0	0	0
21:00	**83**	45.8	38.7	7.7	1	0	8	39	23	10	2	0	0	0	0	0
22:00	**63**	47.1	40.2	7.2	0	0	3	32	16	9	2	0	1	0	0	0
23:00	**30**	45.4	38.8	7.5	0	0	4	13	9	3	1	0	0	0	0	0
12H,7-19	**3885**	**43.1**	**36.4**	**6.7**	**1**	**38**	**544**	**2450**	**653**	**153**	**31**	**13**	**1**	**1**	**0**	**0**
16H,6-22	**4409**	**43.3**	**36.5**	**6.8**	**2**	**39**	**603**	**2757**	**748**	**202**	**41**	**13**	**3**	**1**	**0**	**0**
18H,6-24	**4502**	**43.4**	**36.6**	**6.8**	**2**	**39**	**610**	**2802**	**773**	**214**	**44**	**13**	**4**	**1**	**0**	**0**
24H,0-24	**4594**	**43.5**	**36.6**	**6.8**	**2**	**39**	**627**	**2842**	**792**	**225**	**49**	**13**	**4**	**1**	**0**	**0**

19028			RUDHEATH				Site No: 19028001			Location	Site 1, Griffiths Road, Rudheath (Warning Sign)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Southbound									
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<21**	**21-<31**	**31-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**61-<66**	**66-<71**	**71-<76**	**=>76**
Thu 25-Jun-15																
00:00	**14**	49.5	40.6	8.3	0	0	1	7	2	2	2	0	0	0	0	0
01:00	**11**	40.3	35.5	8.6	0	0	3	6	1	0	1	0	0	0	0	0
02:00	**7**	-	37.4	7.4	0	0	1	4	1	1	0	0	0	0	0	0
03:00	**9**	-	37.9	6.9	0	0	1	5	2	1	0	0	0	0	0	0
04:00	**16**	44.1	36.3	9.5	0	1	3	6	5	0	1	0	0	0	0	0
05:00	**50**	48.7	39.4	10.3	2	0	6	16	11	13	1	1	0	0	0	0
06:00	**108**	45.9	39.9	7.5	1	1	6	43	41	12	4	0	0	0	0	0
07:00	**201**	45.6	39.4	6.9	0	0	18	89	69	19	5	0	1	0	0	0
08:00	**322**	44.3	38.3	5.7	0	1	11	214	71	20	5	0	0	0	0	0
09:00	**223**	44	36.9	6.6	0	1	30	132	44	16	0	0	0	0	0	0
10:00	**244**	43	36.7	6.5	0	1	30	161	37	12	1	2	0	0	0	0
11:00	**247**	43.3	37.2	5.7	0	1	19	165	53	9	0	0	0	0	0	0
12:00	**277**	43.4	37.9	5.3	0	0	9	199	56	9	4	0	0	0	0	0
13:00	**280**	42.3	36.6	5.9	0	6	16	203	50	4	1	0	0	0	0	0
14:00	**267**	43	36.9	6	0	0	28	182	41	13	3	0	0	0	0	0
15:00	**338**	44	37.7	5.9	0	0	27	212	81	14	4	0	0	0	0	0
16:00	**444**	43	37.3	5.5	0	1	27	318	79	16	3	0	0	0	0	0
17:00	**532**	45	38.8	6.5	0	8	20	298	156	42	7	1	0	0	0	0
18:00	**342**	45	39.1	6.1	0	2	9	200	99	26	3	3	0	0	0	0
19:00	**189**	45.5	39.1	7.8	0	9	3	91	64	18	2	1	1	0	0	0
20:00	**113**	45.3	38.9	6.2	0	0	7	62	31	12	1	0	0	0	0	0
21:00	**62**	46.1	40.6	6.7	0	0	3	26	23	7	2	1	0	0	0	0
22:00	**48**	47.4	38.9	8.2	0	1	5	22	10	8	2	0	0	0	0	0
23:00	**28**	46.5	39.6	8.1	0	0	3	13	7	3	1	1	0	0	0	0
12H,7-19	**3717**	**44.1**	**37.8**	**6.1**	**0**	**21**	**244**	**2373**	**836**	**200**	**36**	**6**	**1**	**0**	**0**	**0**
16H,6-22	**4189**	**44.4**	**38**	**6.3**	**1**	**31**	**263**	**2595**	**995**	**249**	**45**	**8**	**2**	**0**	**0**	**0**
18H,6-24	**4265**	**44.4**	**38**	**6.3**	**1**	**32**	**271**	**2630**	**1012**	**260**	**48**	**9**	**2**	**0**	**0**	**0**
24H,0-24	**4372**	**44.5**	**38**	**6.4**	**3**	**33**	**286**	**2674**	**1034**	**277**	**53**	**10**	**2**	**0**	**0**	**0**

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19028			RUDHEATH					Site No: 19028001		Location	Site 1, Griffiths Road, Rudheath (Warning Sign)					
Wed 24-Jun-15 to Tue 30-Jun-15								Channel: Southbound								
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<21**	**21-<31**	**31-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**61-<66**	**66-<71**	**71-<76**	**=>76**
Fri 26-Jun-15																
00:00	**10**	49.3	42.3	10.7	0	0	1	4	1	3	0	0	1	0	0	0
01:00	**9**	-	38.5	13.2	0	1	2	1	1	3	1	0	0	0	0	0
02:00	**8**	-	36.3	10.4	0	0	3	2	2	0	1	0	0	0	0	0
03:00	**10**	44.3	37.5	7.8	0	0	2	4	3	1	0	0	0	0	0	0
04:00	**16**	48.8	34.6	14	1	2	3	4	2	2	2	0	0	0	0	0
05:00	**47**	46.3	41.2	6.1	0	0	2	16	21	7	1	0	0	0	0	0
06:00	**91**	45.8	39.2	7.3	0	1	8	41	28	10	3	0	0	0	0	0
07:00	**221**	44.6	38	6.6	0	0	23	125	54	16	2	1	0	0	0	0
08:00	**301**	43.6	36.6	6.7	0	0	49	178	54	16	4	0	0	0	0	0
09:00	**235**	43.2	37.3	6.2	0	1	19	159	46	7	1	1	0	1	0	0
10:00	**258**	42.3	36.8	5.7	0	0	23	186	39	8	1	1	0	0	0	0
11:00	**231**	43.7	36.9	6.5	0	0	34	134	51	10	2	0	0	0	0	0
12:00	**338**	43.6	37	6.6	0	3	38	210	70	12	4	1	0	0	0	0
13:00	**390**	42.6	37.1	5.3	0	0	24	287	61	17	1	0	0	0	0	0
14:00	**517**	40.7	36.3	4.9	0	1	35	415	56	9	1	0	0	0	0	0
15:00	**468**	43.2	37.3	5.8	0	0	36	326	80	22	3	1	0	0	0	0
16:00	**491**	41	36.5	5	0	0	36	381	66	8	0	0	0	0	0	0
17:00	**526**	42.6	36.9	5.6	0	8	27	380	99	12	0	0	0	0	0	0
18:00	**311**	45.4	39.6	6.1	0	0	11	168	97	26	8	1	0	0	0	0
19:00	**205**	45.8	39.7	6.8	0	0	10	109	57	21	5	2	0	1	0	0
20:00	**115**	47.6	40.4	6.3	0	0	2	62	27	20	4	0	0	0	0	0
21:00	**79**	48.1	41	7.7	0	1	3	33	25	11	3	3	0	0	0	0
22:00	**75**	45.1	38.3	6.6	0	0	6	45	15	7	2	0	0	0	0	0
23:00	**30**	45.1	39.7	5.7	0	0	1	15	11	3	0	0	0	0	0	0
12H,7-19	**4287**	**43.1**	**37.1**	**5.8**	**0**	**13**	**355**	**2949**	**773**	**163**	**27**	**6**	**0**	**1**	**0**	**0**
16H,6-22	**4777**	**43.6**	**37.4**	**6**	**0**	**15**	**378**	**3194**	**910**	**225**	**42**	**11**	**0**	**2**	**0**	**0**
18H,6-24	**4882**	**43.6**	**37.4**	**6**	**0**	**15**	**385**	**3254**	**936**	**235**	**44**	**11**	**0**	**2**	**0**	**0**
24H,0-24	**4982**	**43.8**	**37.4**	**6.1**	**1**	**18**	**398**	**3285**	**966**	**251**	**49**	**11**	**1**	**2**	**0**	**0**

19028			RUDHEATH				Site No: 19028001			Location	Site 1, Griffiths Road, Rudheath (Warning Sign)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Southbound									
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Sat 27-Jun-15																
00:00	15	47.6	40.7	7	0	0	1	6	4	4	0	0	0	0	0	0
01:00	12	52.8	44.1	10.6	0	0	1	4	1	3	2	0	1	0	0	0
02:00	9	-	37.1	6.6	0	0	1	6	1	1	0	0	0	0	0	0
03:00	5	-	32	6.2	0	0	2	3	0	0	0	0	0	0	0	0
04:00	17	45.8	39.5	10.2	0	1	0	10	3	1	1	0	1	0	0	0
05:00	24	45.9	38.8	8.7	0	1	3	7	9	4	0	0	0	0	0	0
06:00	33	44.9	38.6	7.1	0	0	4	15	11	2	1	0	0	0	0	0
07:00	65	45.2	39.4	5.8	0	0	2	36	20	6	1	0	0	0	0	0
08:00	122	45.5	38.8	7.4	1	0	9	66	30	10	5	1	0	0	0	0
09:00	160	45	39.3	6.3	0	1	4	91	49	10	2	3	0	0	0	0
10:00	262	43.5	37.5	6.2	0	4	9	189	41	14	4	1	0	0	0	0
11:00	310	44	37.7	6.3	0	4	16	207	60	16	7	0	0	0	0	0
12:00	385	44.6	38.6	5.7	0	0	11	251	89	28	5	1	0	0	0	0
13:00	283	44.2	37.6	6.6	1	1	26	171	64	16	4	0	0	0	0	0
14:00	296	44.8	39	5.8	0	1	8	177	86	18	6	0	0	0	0	0
15:00	305	43.7	37.7	5.5	0	0	19	201	71	13	1	0	0	0	0	0
16:00	267	45	38.9	5.9	0	0	11	159	71	23	2	1	0	0	0	0
17:00	232	44.8	38.7	5.7	0	0	8	144	59	19	2	0	0	0	0	0
18:00	176	45.5	39.8	5.7	0	0	3	96	56	17	4	0	0	0	0	0
19:00	129	45.3	39.6	6.1	0	0	3	74	37	10	4	1	0	0	0	0
20:00	83	45.7	40.5	6.6	0	0	3	37	32	8	1	1	1	0	0	0
21:00	53	45.1	38.8	6.1	0	0	3	30	14	6	0	0	0	0	0	0
22:00	72	42.7	37.3	7	0	1	5	52	8	3	1	2	0	0	0	0
23:00	67	43.9	36.7	7.4	0	1	10	38	13	3	2	0	0	0	0	0
12H,7-19	2863	44.6	38.4	6.1	2	11	126	1788	696	190	43	7	0	0	0	0
16H,6-22	3161	44.7	38.5	6.1	2	11	139	1944	790	216	49	9	1	0	0	0
18H,6-24	3300	44.7	38.5	6.2	2	13	154	2034	811	222	52	11	1	0	0	0
24H,0-24	3382	44.8	38.5	6.2	2	15	162	2070	829	235	55	11	3	0	0	0

19028			RUDHEATH				Site No: 19028001			Location	Site 1, Griffiths Road, Rudheath (Warning Sign)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Southbound									

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Sun 28-Jun-15																
00:00	**19**	45.1	39.9	7.5	0	0	2	7	7	2	1	0	0	0	0	0
01:00	**13**	44.6	40.6	6.9	0	0	0	7	5	0	0	1	0	0	0	0
02:00	**7**	-	34.6	9.4	0	0	3	2	1	1	0	0	0	0	0	0
03:00	**3**	-	40.2	7.6	0	0	0	2	0	1	0	0	0	0	0	0
04:00	**4**	-	37.9	4.6	0	0	0	3	1	0	0	0	0	0	0	0
05:00	**19**	44	38.5	5.7	0	0	1	11	6	1	0	0	0	0	0	0
06:00	**21**	43.4	37.9	5.4	0	0	1	14	5	1	0	0	0	0	0	0
07:00	**31**	47.8	40.4	7.7	0	0	4	9	10	8	0	0	0	0	0	0
08:00	**46**	45.1	39.4	6.8	0	0	4	20	18	2	2	0	0	0	0	0
09:00	**95**	44.5	37.8	6.9	1	1	4	61	19	8	1	0	0	0	0	0
10:00	**157**	45	38.9	5.8	0	1	4	93	44	14	1	0	0	0	0	0
11:00	**197**	43.5	37.6	6.3	0	3	7	142	30	11	3	0	1	0	0	0
12:00	**234**	44.9	39.2	5.6	0	0	7	134	74	16	3	0	0	0	0	0
13:00	**272**	44.5	38.4	5.7	0	0	13	168	72	17	2	0	0	0	0	0
14:00	**289**	44.5	38.2	6.2	0	1	21	170	76	18	2	1	0	0	0	0
15:00	**282**	44.1	38	6	0	0	19	180	65	13	4	1	0	0	0	0
16:00	**224**	44	37.9	5.8	0	0	14	145	51	11	3	0	0	0	0	0
17:00	**204**	45.7	39.8	6.4	0	0	11	97	69	22	4	1	0	0	0	0
18:00	**146**	46.2	39.6	6.4	0	0	4	87	32	17	5	1	0	0	0	0
19:00	**95**	45.6	38.7	7.4	0	0	9	53	20	8	3	2	0	0	0	0
20:00	**85**	45.9	40.6	6.2	0	0	2	40	30	10	2	1	0	0	0	0
21:00	**48**	48.9	40.4	7.8	0	0	4	22	9	9	4	0	0	0	0	0
22:00	**31**	43	36.5	6.4	0	0	5	18	7	1	0	0	0	0	0	0
23:00	**14**	45.3	38.5	7.5	0	0	2	6	4	2	0	0	0	0	0	0
12H,7-19	**2177**	**44.8**	**38.5**	**6.1**	**1**	**6**	**112**	**1306**	**560**	**157**	**30**	**4**	**1**	**0**	**0**	**0**
16H,6-22	**2426**	**44.9**	**38.7**	**6.2**	**1**	**6**	**128**	**1435**	**624**	**185**	**39**	**7**	**1**	**0**	**0**	**0**
18H,6-24	**2471**	**44.9**	**38.6**	**6.2**	**1**	**6**	**135**	**1459**	**635**	**188**	**39**	**7**	**1**	**0**	**0**	**0**
24H,0-24	**2536**	**44.9**	**38.6**	**6.3**	**1**	**6**	**141**	**1491**	**655**	**193**	**40**	**8**	**1**	**0**	**0**	**0**

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19028 RUDHEATH Site No: 19028001 Location Site 1, Griffiths Road, Rudheath (Warning Sign)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Southbound

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Mon 29-Jun-15																
00:00	**10**	43.5	37.8	9.7	0	0	2	5	2	0	0	1	0	0	0	0
01:00	**8**	-	36.9	8.4	0	0	2	3	2	1	0	0	0	0	0	0
02:00	**5**	-	35	9	0	0	2	1	2	0	0	0	0	0	0	0
03:00	**11**	38.7	31.7	9.1	0	1	4	5	0	1	0	0	0	0	0	0
04:00	**12**	43.8	34.2	11.2	1	0	3	4	3	1	0	0	0	0	0	0
05:00	**67**	47.4	39.7	8.4	0	1	9	21	22	12	1	1	0	0	0	0
06:00	**107**	46.7	38.9	8.6	1	0	16	41	31	11	6	1	0	0	0	0
07:00	**223**	44.5	38.2	6.2	1	0	14	131	61	15	1	0	0	0	0	0
08:00	**346**	43.9	37.3	6.4	0	2	35	212	77	16	4	0	0	0	0	0
09:00	**276**	43.7	37.1	6.5	0	3	28	170	61	10	4	0	0	0	0	0
10:00	**238**	43.1	36.8	6.4	0	1	28	155	43	8	1	2	0	0	0	0
11:00	**222**	42.9	37.3	5.2	0	0	12	161	40	9	0	0	0	0	0	0
12:00	**300**	43.1	36.7	6.1	0	0	37	196	51	14	2	0	0	0	0	0
13:00	**281**	43.4	37.7	5.4	0	0	13	196	61	8	2	1	0	0	0	0
14:00	**268**	43.5	37.4	5.8	0	0	21	183	46	16	2	0	0	0	0	0
15:00	**328**	44	37.7	6.2	0	0	28	206	75	12	5	2	0	0	0	0
16:00	**398**	44.3	38.1	6	0	0	27	243	102	22	2	2	0	0	0	0
17:00	**455**	44.8	39.2	5.9	0	1	13	261	148	23	5	3	0	1	0	0
18:00	**280**	44.8	39	5.7	0	1	8	164	85	18	4	0	0	0	0	0
19:00	**176**	45.6	40	5.7	0	0	1	97	56	18	3	1	0	0	0	0
20:00	**91**	46.9	40.5	6.9	0	0	3	46	26	10	5	0	1	0	0	0
21:00	**76**	46.6	39.7	7.3	0	1	3	40	19	9	3	1	0	0	0	0
22:00	**61**	44.8	37.9	7.3	0	1	5	37	11	4	3	0	0	0	0	0
23:00	**22**	44.7	37.7	8	0	1	2	10	7	2	0	0	0	0	0	0
12H,7-19	**3615**	**44.1**	**37.8**	**6.1**	**1**	**8**	**264**	**2278**	**850**	**171**	**32**	**10**	**0**	**1**	**0**	**0**
16H,6-22	**4065**	**44.3**	**38**	**6.2**	**2**	**9**	**287**	**2502**	**982**	**219**	**49**	**13**	**1**	**1**	**0**	**0**
18H,6-24	**4148**	**44.3**	**38**	**6.2**	**2**	**11**	**294**	**2549**	**1000**	**225**	**52**	**13**	**1**	**1**	**0**	**0**
24H,0-24	**4261**	**44.4**	**38**	**6.3**	**3**	**13**	**316**	**2588**	**1031**	**240**	**53**	**15**	**1**	**1**	**0**	**0**

19028			RUDHEATH				Site No: 19028001			Location	Site 1, Griffiths Road, Rudheath (Warning Sign)				
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Southbound								
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Tue 30-Jun-15																
00:00	**5**	-	44	6.3	0	0	0	1	3	0	1	0	0	0	0	0
01:00	**10**	43.5	35	8.6	0	0	4	2	4	0	0	0	0	0	0	0
02:00	**7**	-	40.3	8.8	0	0	1	2	3	0	1	0	0	0	0	0
03:00	**9**	-	29.1	9.9	0	2	3	3	1	0	0	0	0	0	0	0
04:00	**21**	42.4	35.4	6.8	0	0	5	11	5	0	0	0	0	0	0	0
05:00	**60**	46.8	39.3	8.4	0	1	9	18	21	9	2	0	0	0	0	0
06:00	**96**	45.3	39	6.9	0	0	7	52	26	7	2	2	0	0	0	0
07:00	**228**	44.8	38.3	6.4	0	1	18	128	61	17	3	0	0	0	0	0
08:00	**297**	44.9	39.2	5.8	0	0	13	155	107	20	1	1	0	0	0	0
09:00	**275**	43.8	37.5	5.9	0	1	20	179	60	14	1	0	0	0	0	0
10:00	**225**	42.9	36.9	6	1	0	19	158	34	12	1	0	0	0	0	0
11:00	**241**	43.3	37.4	6.1	0	2	15	165	48	7	3	0	1	0	0	0
12:00	**299**	43.3	37.2	6	0	2	24	200	59	12	2	0	0	0	0	0
13:00	**288**	43.6	37.1	6.1	0	0	32	182	59	13	2	0	0	0	0	0
14:00	**272**	43.1	37.1	5.8	0	0	25	183	55	7	1	1	0	0	0	0
15:00	**329**	43.3	37.3	5.8	0	0	26	225	60	15	3	0	0	0	0	0
16:00	**430**	43.8	37.3	6.4	0	6	35	266	102	18	2	1	0	0	0	0
17:00	**521**	44.6	38.7	5.9	0	1	30	280	180	26	4	0	0	0	0	0
18:00	**320**	45.4	39.2	6.3	0	1	15	176	91	30	6	1	0	0	0	0
19:00	**205**	46	39.6	7.3	2	0	12	95	65	28	2	0	0	1	0	0
20:00	**103**	44.9	39.1	5.9	0	0	3	62	28	8	1	1	0	0	0	0
21:00	**74**	46.3	39.1	7.4	0	0	6	41	15	7	4	1	0	0	0	0
22:00	**58**	44.4	38.1	6.5	0	0	5	35	13	3	2	0	0	0	0	0
23:00	**17**	44.7	39.5	6	0	0	0	11	4	1	1	0	0	0	0	0
12H,7-19	**3725**	**44.2**	**37.8**	**6.1**	**1**	**14**	**272**	**2297**	**916**	**191**	**29**	**4**	**1**	**0**	**0**	**0**
16H,6-22	**4203**	**44.4**	**38**	**6.2**	**3**	**14**	**300**	**2547**	**1050**	**241**	**38**	**8**	**1**	**1**	**0**	**0**
18H,6-24	**4278**	**44.4**	**38**	**6.2**	**3**	**14**	**305**	**2593**	**1067**	**245**	**41**	**8**	**1**	**1**	**0**	**0**
24H,0-24	**4390**	**44.4**	**38**	**6.3**	**3**	**17**	**327**	**2630**	**1104**	**254**	**45**	**8**	**1**	**1**	**0**	**0**

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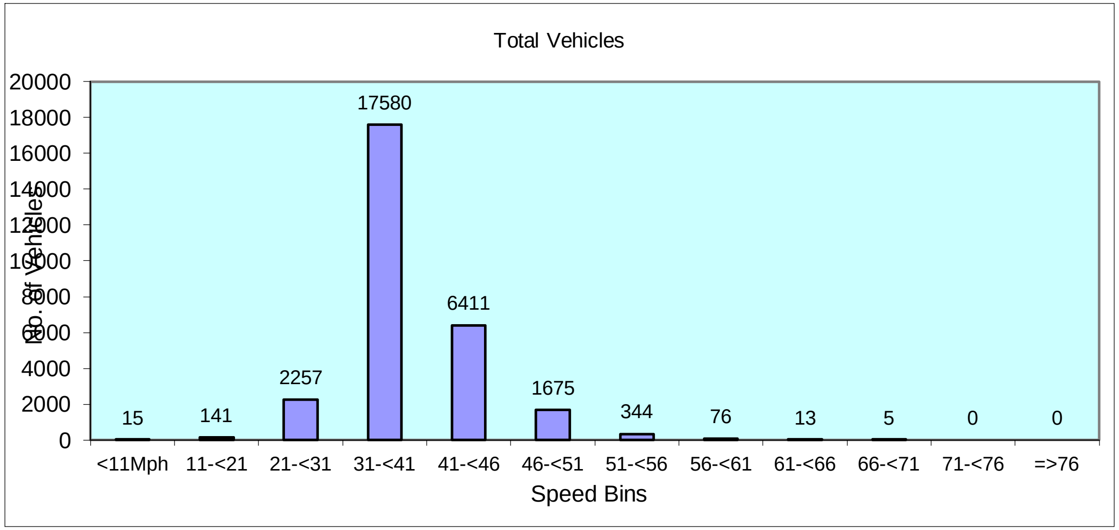
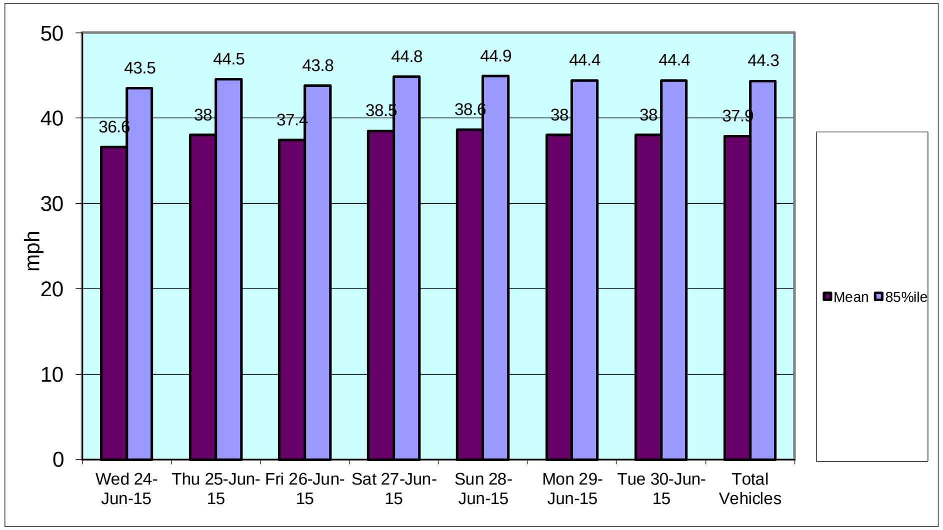
19028 **RUDHEATH** **Site No: 19028001** **Location Site 1, Griffiths Road, Rudheath (Warning Sign)**

Wed 24-Jun-15 to Tue 30-Jun-15 **Channel: Southbound**

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Daily Totals																
Wed 24-Jun-15	**4594**	43.5	36.6	6.8	2	39	627	2842	792	225	49	13	4	1	0	0
Thu 25-Jun-15	**4372**	44.5	38	6.4	3	33	286	2674	1034	277	53	10	2	0	0	0
Fri 26-Jun-15	**4982**	43.8	37.4	6.1	1	18	398	3285	966	251	49	11	1	2	0	0
Sat 27-Jun-15	**3382**	44.8	38.5	6.2	2	15	162	2070	829	235	55	11	3	0	0	0
Sun 28-Jun-15	**2536**	44.9	38.6	6.3	1	6	141	1491	655	193	40	8	1	0	0	0
Mon 29-Jun-15	**4261**	44.4	38	6.3	3	13	316	2588	1031	240	53	15	1	1	0	0
Tue 30-Jun-15	**4390**	44.4	38	6.3	3	17	327	2630	1104	254	45	8	1	1	0	0
Total Vehicles																
[--]	**28517**	44.3	37.9	6.3	15	141	2257	17580	6411	1675	344	76	13	5	0	0



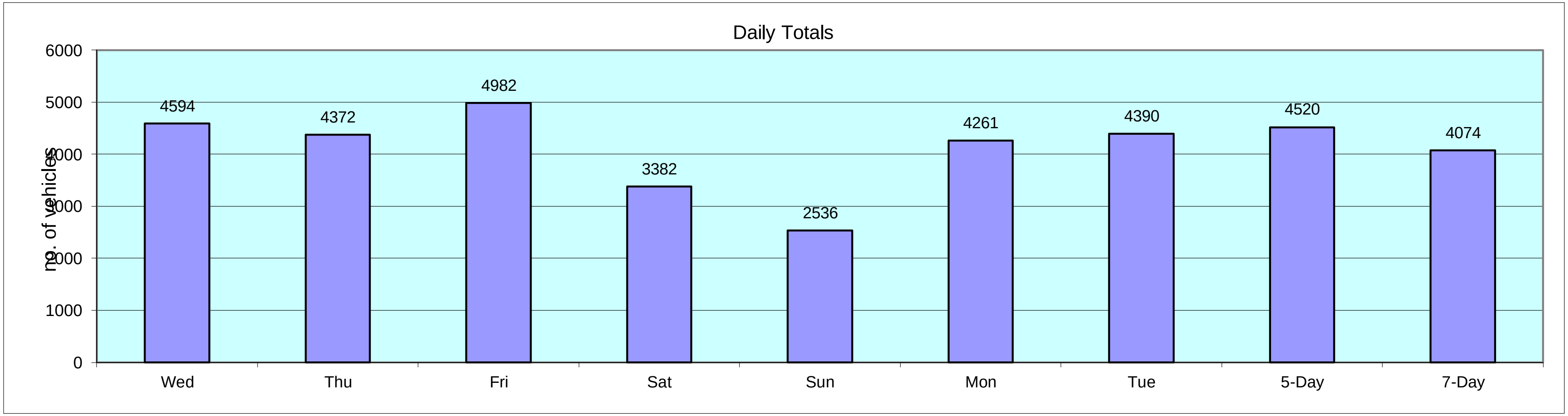


Data produced by
Axiom Traffic Ltd

19028	RUDHEATH		Site No: 19028001 Channel: Southbound		Location	Site 1, Griffiths Road, Rudheath (Warning Sign)		
TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av
Week Begin: 24-Jun-15									
00:00	**11**	14	10	15	19	10	5	10	12
01:00	**4**	11	9	12	13	8	10	8	10
02:00	**8**	7	8	9	7	5	7	7	7
03:00	**8**	9	10	5	3	11	9	9	8
04:00	**21**	16	16	17	4	12	21	17	15
05:00	**40**	50	47	24	19	67	60	53	44
06:00	**102**	108	91	33	21	107	96	101	80
07:00	**217**	201	221	65	31	223	228	218	169
08:00	**345**	322	301	122	46	346	297	322	254
09:00	**226**	223	235	160	95	276	275	247	213
10:00	**201**	244	258	262	157	238	225	233	226
11:00	**240**	247	231	310	197	222	241	236	241
12:00	**279**	277	338	385	234	300	299	299	302
13:00	**304**	280	390	283	272	281	288	309	300
14:00	**296**	267	517	296	289	268	272	324	315
15:00	**397**	338	468	305	282	328	329	372	350
16:00	**447**	444	491	267	224	398	430	442	386
17:00	**501**	532	526	232	204	455	521	507	424
18:00	**432**	342	311	176	146	280	320	337	287
19:00	**252**	189	205	129	95	176	205	205	179
20:00	**87**	113	115	83	85	91	103	102	97
21:00	**83**	62	79	53	48	76	74	75	68
22:00	**63**	48	75	72	31	61	58	61	58
23:00	**30**	28	30	67	14	22	17	25	30
12H,7-19	**3885**	**3717**	**4287**	**2863**	**2177**	**3615**	**3725**	**3846**	**3467**
16H,6-22	**4409**	**4189**	**4777**	**3161**	**2426**	**4065**	**4203**	**4329**	**3890**
18H,6-24	**4502**	**4265**	**4882**	**3300**	**2471**	**4148**	**4278**	**4415**	**3978**
24H,0-24	**4594**	**4372**	**4982**	**3382**	**2536**	**4261**	**4390**	**4520**	**4074**
Am	**08:00**	**08:00**	**08:00**	**11:00**	**11:00**	**08:00**	**08:00**	**-**	**-**
Peak	**345**	**322**	**301**	**310**	**197**	**346**	**297**	**322**	**303**
Pm	**17:00**	**17:00**	**17:00**	**12:00**	**14:00**	**17:00**	**17:00**	**-**	**-**
Peak	**501**	**532**	**526**	**385**	**289**	**455**	**521**	**507**	**458**

19028	RUDHEATH	Site No: 19028001	Location	Site 1, Griffiths Road, Rudheath (Warning Sign)
		Channel: Southbound		

TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av



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Site Access

19028		RUDHEATH JUNE 2015								
Site	**Location**	**Direction**	**Start Date**	**End Date**	**Posted Speed Limit (PSL)**	**Total Vehicles**	**5 Day Ave.**	**7 Day Ave.**	**Average 85%ile Speed**	**Average Mean Speed**
Site No: 19028002	Site 2, Access to Chemical Plant, Rudheath (Fence) SJ 68364 73800	Channel: Inbound	Wed 24-Jun-15	Tue 30-Jun-15	15	2060	374	294	28.9	23.3
		Channel: Outbound	Wed 24-Jun-15	Tue 30-Jun-15		2460	449	351	28.1	22.1

19028 **RUDHEATH** **Site No: 19028002** **Location** **Site 2, Access to Chemical Plant, Rudheath (Fence)**

Wed 24-Jun-15 to Tue 30-Jun-15 **Channel: Inbound**

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Wed 24-Jun-15											
00:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
01:00	**1**	0	0.0	0	0.0	0	0.0	1	100.0	0	0.0
02:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
03:00	**0**	0	-	0	-	0	-	0	-	0	-
04:00	**2**	0	0.0	1	50.0	0	0.0	1	50.0	0	0.0
05:00	**8**	0	0.0	6	75.0	0	0.0	2	25.0	0	0.0
06:00	**36**	3	8.3	29	80.6	1	2.8	3	8.3	0	0.0
07:00	**75**	4	5.3	60	80.0	7	9.3	4	5.3	0	0.0
08:00	**29**	0	0.0	20	69.0	3	10.3	6	20.7	0	0.0
09:00	**29**	0	0.0	11	37.9	8	27.6	9	31.0	1	3.5
10:00	**19**	0	0.0	7	36.8	8	42.1	4	21.1	0	0.0
11:00	**34**	1	2.9	17	50.0	6	17.7	10	29.4	0	0.0
12:00	**19**	0	0.0	8	42.1	6	31.6	5	26.3	0	0.0
13:00	**24**	0	0.0	14	58.3	6	25.0	4	16.7	0	0.0
14:00	**14**	0	0.0	9	64.3	1	7.1	4	28.6	0	0.0
15:00	**11**	0	0.0	1	9.1	5	45.5	5	45.5	0	0.0
16:00	**8**	1	12.5	4	50.0	1	12.5	2	25.0	0	0.0
17:00	**7**	0	0.0	3	42.9	0	0.0	4	57.1	0	0.0
18:00	**17**	1	5.9	13	76.5	1	5.9	2	11.8	0	0.0
19:00	**2**	0	0.0	0	0.0	0	0.0	2	100.0	0	0.0
20:00	**3**	0	0.0	2	66.7	0	0.0	1	33.3	0	0.0
21:00	**0**	0	-	0	-	0	-	0	-	0	-
22:00	**0**	0	-	0	-	0	-	0	-	0	-
23:00	**0**	0	-	0	-	0	-	0	-	0	-
12H,7-19	**286**	**7**	**2.5**	**167**	**58.4**	**52**	**18.2**	**59**	**20.6**	**1**	**0.4**
16H,6-22	**327**	**10**	**3.1**	**198**	**60.6**	**53**	**16.2**	**65**	**19.9**	**1**	**0.3**
18H,6-24	**327**	**10**	**3.1**	**198**	**60.6**	**53**	**16.2**	**65**	**19.9**	**1**	**0.3**
24H,0-24	**340**	**10**	**2.9**	**207**	**60.9**	**53**	**15.6**	**69**	**20.3**	**1**	**0.3**

19028		RUDHEATH			Site No: 19028002		Location	Site 2, Access to Chemical Plant, Rudheath (Fence)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Inbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Thu 25-Jun-15											
00:00	**0**	0	-	0	-	0	-	0	-	0	-
01:00	**1**	0	0.0	0	0.0	0	0.0	1	100.0	0	0.0
02:00	**0**	0	-	0	-	0	-	0	-	0	-
03:00	**3**	0	0.0	2	66.7	0	0.0	1	33.3	0	0.0
04:00	**0**	0	-	0	-	0	-	0	-	0	-
05:00	**9**	0	0.0	8	88.9	0	0.0	1	11.1	0	0.0
06:00	**34**	1	2.9	29	85.3	1	2.9	3	8.8	0	0.0
07:00	**69**	5	7.3	56	81.2	7	10.1	1	1.5	0	0.0
08:00	**33**	0	0.0	19	57.6	6	18.2	8	24.2	0	0.0
09:00	**29**	0	0.0	11	37.9	9	31.0	9	31.0	0	0.0
10:00	**23**	1	4.4	11	47.8	7	30.4	3	13.0	1	4.4
11:00	**34**	0	0.0	22	64.7	5	14.7	7	20.6	0	0.0
12:00	**27**	0	0.0	6	22.2	14	51.9	7	25.9	0	0.0
13:00	**27**	0	0.0	16	59.3	4	14.8	7	25.9	0	0.0
14:00	**27**	0	0.0	19	70.4	3	11.1	5	18.5	0	0.0
15:00	**11**	0	0.0	2	18.2	3	27.3	6	54.6	0	0.0
16:00	**9**	1	11.1	3	33.3	3	33.3	2	22.2	0	0.0
17:00	**8**	0	0.0	5	62.5	0	0.0	3	37.5	0	0.0
18:00	**19**	2	10.5	13	68.4	2	10.5	2	10.5	0	0.0
19:00	**1**	0	0.0	0	0.0	1	100.0	0	0.0	0	0.0
20:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
21:00	**2**	0	0.0	1	50.0	0	0.0	1	50.0	0	0.0
22:00	**2**	0	0.0	1	50.0	0	0.0	1	50.0	0	0.0
23:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
12H,7-19	**316**	**9**	**2.9**	**183**	**57.9**	**63**	**19.9**	**60**	**19.0**	**1**	**0.3**
16H,6-22	**354**	**10**	**2.8**	**214**	**60.5**	**65**	**18.4**	**64**	**18.1**	**1**	**0.3**
18H,6-24	**357**	**10**	**2.8**	**216**	**60.5**	**65**	**18.2**	**65**	**18.2**	**1**	**0.3**
24H,0-24	**370**	**10**	**2.7**	**226**	**61.1**	**65**	**17.6**	**68**	**18.4**	**1**	**0.3**

19028		RUDHEATH			Site No: 19028002		Location	Site 2, Access to Chemical Plant, Rudheath (Fence)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Inbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Fri 26-Jun-15											
00:00	**0**	0	-	0	-	0	-	0	-	0	-
01:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
02:00	**1**	0	0.0	0	0.0	0	0.0	1	100.0	0	0.0
03:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
04:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
05:00	**7**	0	0.0	6	85.7	0	0.0	1	14.3	0	0.0
06:00	**39**	1	2.6	30	76.9	3	7.7	5	12.8	0	0.0
07:00	**70**	3	4.3	49	70.0	11	15.7	6	8.6	1	1.4
08:00	**44**	1	2.3	23	52.3	11	25.0	9	20.5	0	0.0
09:00	**26**	0	0.0	11	42.3	8	30.8	5	19.2	2	7.7
10:00	**32**	0	0.0	15	46.9	7	21.9	10	31.3	0	0.0
11:00	**30**	0	0.0	14	46.7	8	26.7	8	26.7	0	0.0
12:00	**16**	0	0.0	7	43.8	5	31.3	4	25.0	0	0.0
13:00	**21**	0	0.0	8	38.1	7	33.3	6	28.6	0	0.0
14:00	**20**	0	0.0	9	45.0	5	25.0	6	30.0	0	0.0
15:00	**10**	0	0.0	3	30.0	0	0.0	7	70.0	0	0.0
16:00	**15**	1	6.7	4	26.7	1	6.7	9	60.0	0	0.0
17:00	**8**	1	12.5	3	37.5	2	25.0	2	25.0	0	0.0
18:00	**12**	1	8.3	10	83.3	1	8.3	0	0.0	0	0.0
19:00	**2**	0	0.0	1	50.0	1	50.0	0	0.0	0	0.0
20:00	**4**	0	0.0	3	75.0	1	25.0	0	0.0	0	0.0
21:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
22:00	**0**	0	-	0	-	0	-	0	-	0	-
23:00	**6**	0	0.0	3	50.0	1	16.7	2	33.3	0	0.0
12H,7-19	**304**	**7**	**2.3**	**156**	**51.3**	**66**	**21.7**	**72**	**23.7**	**3**	**1.0**
16H,6-22	**350**	**8**	**2.3**	**191**	**54.6**	**71**	**20.3**	**77**	**22.0**	**3**	**0.9**
18H,6-24	**356**	**8**	**2.3**	**194**	**54.5**	**72**	**20.2**	**79**	**22.2**	**3**	**0.8**
24H,0-24	**367**	**8**	**2.2**	**203**	**55.3**	**72**	**19.6**	**81**	**22.1**	**3**	**0.8**

19028	RUDHEATH	Site No: 19028002	Location	Site 2, Access to Chemical Plant, Rudheath (Fence)
Wed 24-Jun-15 to Tue 30-Jun-15		Channel: Inbound		

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sat 27-Jun-15											
00:00	**0**	0	-	0	-	0	-	0	-	0	-
01:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
02:00	**0**	0	-	0	-	0	-	0	-	0	-
03:00	**0**	0	-	0	-	0	-	0	-	0	-
04:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
05:00	**3**	0	0.0	3	100.0	0	0.0	0	0.0	0	0.0
06:00	**12**	0	0.0	9	75.0	2	16.7	1	8.3	0	0.0
07:00	**15**	0	0.0	9	60.0	4	26.7	2	13.3	0	0.0
08:00	**2**	0	0.0	1	50.0	0	0.0	1	50.0	0	0.0
09:00	**5**	0	0.0	1	20.0	0	0.0	4	80.0	0	0.0
10:00	**4**	0	0.0	2	50.0	1	25.0	1	25.0	0	0.0
11:00	**8**	0	0.0	3	37.5	2	25.0	3	37.5	0	0.0
12:00	**6**	0	0.0	4	66.7	2	33.3	0	0.0	0	0.0
13:00	**6**	0	0.0	4	66.7	1	16.7	1	16.7	0	0.0
14:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
15:00	**6**	0	0.0	5	83.3	0	0.0	1	16.7	0	0.0
16:00	**3**	0	0.0	2	66.7	0	0.0	1	33.3	0	0.0
17:00	**3**	0	0.0	3	100.0	0	0.0	0	0.0	0	0.0
18:00	**12**	0	0.0	10	83.3	1	8.3	1	8.3	0	0.0
19:00	**5**	0	0.0	5	100.0	0	0.0	0	0.0	0	0.0
20:00	**1**	0	0.0	0	0.0	1	100.0	0	0.0	0	0.0
21:00	**0**	0	-	0	-	0	-	0	-	0	-
22:00	**2**	0	0.0	1	50.0	0	0.0	1	50.0	0	0.0
23:00	**2**	0	0.0	1	50.0	1	50.0	0	0.0	0	0.0
12H,7-19	**71**	**0**	**0.0**	**45**	**63.4**	**11**	**15.5**	**15**	**21.1**	**0**	**0.0**
16H,6-22	**89**	**0**	**0.0**	**59**	**66.3**	**14**	**15.7**	**16**	**18.0**	**0**	**0.0**
18H,6-24	**93**	**0**	**0.0**	**61**	**65.6**	**15**	**16.1**	**17**	**18.3**	**0**	**0.0**
24H,0-24	**98**	**0**	**0.0**	**66**	**67.4**	**15**	**15.3**	**17**	**17.4**	**0**	**0.0**

19028	RUDHEATH				Site No: 19028002		Location	Site 2, Access to Chemical Plant, Rudheath (Fence)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Inbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sun 28-Jun-15											
00:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
01:00	**0**	0	-	0	-	0	-	0	-	0	-
02:00	**0**	0	-	0	-	0	-	0	-	0	-
03:00	**0**	0	-	0	-	0	-	0	-	0	-
04:00	**0**	0	-	0	-	0	-	0	-	0	-
05:00	**3**	0	0.0	2	66.7	0	0.0	1	33.3	0	0.0
06:00	**14**	0	0.0	13	92.9	1	7.1	0	0.0	0	0.0
07:00	**4**	0	0.0	1	25.0	1	25.0	2	50.0	0	0.0
08:00	**8**	0	0.0	7	87.5	0	0.0	1	12.5	0	0.0
09:00	**10**	0	0.0	8	80.0	1	10.0	1	10.0	0	0.0
10:00	**2**	0	0.0	2	100.0	0	0.0	0	0.0	0	0.0
11:00	**2**	0	0.0	0	0.0	0	0.0	2	100.0	0	0.0
12:00	**3**	0	0.0	2	66.7	0	0.0	1	33.3	0	0.0
13:00	**4**	0	0.0	2	50.0	0	0.0	2	50.0	0	0.0
14:00	**5**	0	0.0	5	100.0	0	0.0	0	0.0	0	0.0
15:00	**7**	0	0.0	7	100.0	0	0.0	0	0.0	0	0.0
16:00	**2**	0	0.0	2	100.0	0	0.0	0	0.0	0	0.0
17:00	**5**	0	0.0	4	80.0	1	20.0	0	0.0	0	0.0
18:00	**14**	0	0.0	11	78.6	2	14.3	1	7.1	0	0.0
19:00	**2**	0	0.0	2	100.0	0	0.0	0	0.0	0	0.0
20:00	**3**	0	0.0	1	33.3	2	66.7	0	0.0	0	0.0
21:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
22:00	**2**	0	0.0	1	50.0	0	0.0	1	50.0	0	0.0
23:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
12H,7-19	**66**	**0**	**0.0**	**51**	**77.3**	**5**	**7.6**	**10**	**15.2**	**0**	**0.0**
16H,6-22	**86**	**0**	**0.0**	**68**	**79.1**	**8**	**9.3**	**10**	**11.6**	**0**	**0.0**
18H,6-24	**89**	**0**	**0.0**	**70**	**78.7**	**8**	**9.0**	**11**	**12.4**	**0**	**0.0**
24H,0-24	**93**	**0**	**0.0**	**73**	**78.5**	**8**	**8.6**	**12**	**12.9**	**0**	**0.0**

19028		RUDHEATH			Site No: 19028002		Location	Site 2, Access to Chemical Plant, Rudheath (Fence)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Inbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Mon 29-Jun-15											
00:00	**0**	0	-	0	-	0	-	0	-	0	-
01:00	**2**	0	0.0	2	100.0	0	0.0	0	0.0	0	0.0
02:00	**0**	0	-	0	-	0	-	0	-	0	-
03:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
04:00	**1**	1	100.0	0	0.0	0	0.0	0	0.0	0	0.0
05:00	**7**	0	0.0	5	71.4	2	28.6	0	0.0	0	0.0
06:00	**45**	1	2.2	37	82.2	0	0.0	7	15.6	0	0.0
07:00	**88**	4	4.6	67	76.1	12	13.6	5	5.7	0	0.0
08:00	**44**	3	6.8	23	52.3	8	18.2	10	22.7	0	0.0
09:00	**26**	0	0.0	12	46.2	11	42.3	3	11.5	0	0.0
10:00	**15**	0	0.0	9	60.0	3	20.0	3	20.0	0	0.0
11:00	**27**	0	0.0	18	66.7	4	14.8	5	18.5	0	0.0
12:00	**29**	0	0.0	18	62.1	8	27.6	3	10.3	0	0.0
13:00	**15**	0	0.0	9	60.0	3	20.0	3	20.0	0	0.0
14:00	**17**	0	0.0	8	47.1	3	17.7	6	35.3	0	0.0
15:00	**13**	0	0.0	8	61.5	2	15.4	3	23.1	0	0.0
16:00	**11**	0	0.0	4	36.4	2	18.2	4	36.4	1	9.1
17:00	**2**	0	0.0	2	100.0	0	0.0	0	0.0	0	0.0
18:00	**14**	0	0.0	8	57.1	3	21.4	3	21.4	0	0.0
19:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
20:00	**3**	0	0.0	1	33.3	1	33.3	1	33.3	0	0.0
21:00	**1**	0	0.0	0	0.0	1	100.0	0	0.0	0	0.0
22:00	**3**	0	0.0	2	66.7	0	0.0	1	33.3	0	0.0
23:00	**3**	0	0.0	0	0.0	1	33.3	2	66.7	0	0.0
12H,7-19	**301**	**7**	**2.3**	**186**	**61.8**	**59**	**19.6**	**48**	**16.0**	**1**	**0.3**
16H,6-22	**351**	**8**	**2.3**	**225**	**64.1**	**61**	**17.4**	**56**	**16.0**	**1**	**0.3**
18H,6-24	**357**	**8**	**2.2**	**227**	**63.6**	**62**	**17.4**	**59**	**16.5**	**1**	**0.3**
24H,0-24	**368**	**9**	**2.5**	**235**	**63.9**	**64**	**17.4**	**59**	**16.0**	**1**	**0.3**

AXIOM Traffic Limited

Data produced by
Axiom Traffic Ltd

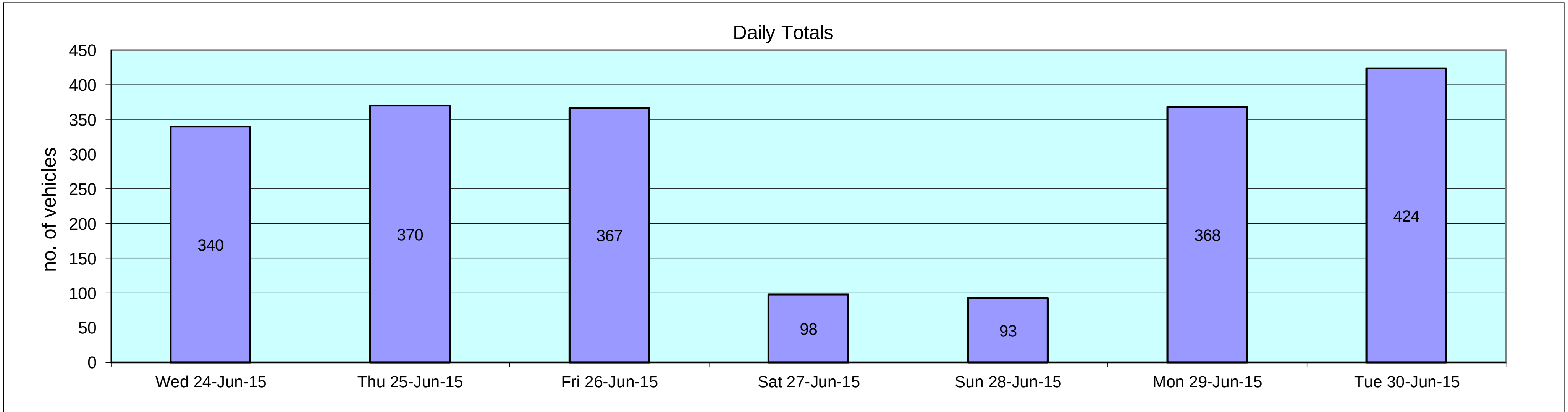
19028 RUDHEATH Site No: 19028002 Location Site 2, Access to Chemical Plant, Rudheath (Fence)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Inbound

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Tue 30-Jun-15											
00:00	**0**	0	-	0	-	0	-	0	-	0	-
01:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
02:00	**0**	0	-	0	-	0	-	0	-	0	-
03:00	**1**	0	0.0	0	0.0	0	0.0	1	100.0	0	0.0
04:00	**0**	0	-	0	-	0	-	0	-	0	-
05:00	**6**	0	0.0	5	83.3	1	16.7	0	0.0	0	0.0
06:00	**44**	3	6.8	32	72.7	2	4.6	7	15.9	0	0.0
07:00	**89**	2	2.3	63	70.8	12	13.5	12	13.5	0	0.0
08:00	**38**	1	2.6	22	57.9	7	18.4	8	21.1	0	0.0
09:00	**34**	0	0.0	20	58.8	9	26.5	5	14.7	0	0.0
10:00	**25**	0	0.0	9	36.0	8	32.0	8	32.0	0	0.0
11:00	**39**	0	0.0	27	69.2	9	23.1	3	7.7	0	0.0
12:00	**25**	0	0.0	16	64.0	7	28.0	2	8.0	0	0.0
13:00	**33**	0	0.0	19	57.6	5	15.2	9	27.3	0	0.0
14:00	**23**	0	0.0	8	34.8	8	34.8	7	30.4	0	0.0
15:00	**17**	0	0.0	6	35.3	5	29.4	6	35.3	0	0.0
16:00	**15**	1	6.7	7	46.7	2	13.3	5	33.3	0	0.0
17:00	**7**	0	0.0	3	42.9	0	0.0	4	57.1	0	0.0
18:00	**12**	0	0.0	9	75.0	1	8.3	2	16.7	0	0.0
19:00	**5**	0	0.0	5	100.0	0	0.0	0	0.0	0	0.0
20:00	**4**	0	0.0	2	50.0	1	25.0	1	25.0	0	0.0
21:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
22:00	**1**	0	0.0	0	0.0	1	100.0	0	0.0	0	0.0
23:00	**4**	0	0.0	1	25.0	1	25.0	2	50.0	0	0.0
12H,7-19	**357**	**4**	**1.1**	**209**	**58.5**	**73**	**20.5**	**71**	**19.9**	**0**	**0.0**
16H,6-22	**411**	**7**	**1.7**	**249**	**60.6**	**76**	**18.5**	**79**	**19.2**	**0**	**0.0**
18H,6-24	**416**	**7**	**1.7**	**250**	**60.1**	**78**	**18.8**	**81**	**19.5**	**0**	**0.0**
24H,0-24	**424**	**7**	**1.7**	**256**	**60.4**	**79**	**18.6**	**82**	**19.3**	**0**	**0.0**

19028	RUDHEATH	Site No: 19028002	Location	Site 2, Access to Chemical Plant, Rudheath (Fence)
Wed 24-Jun-15 to Tue 30-Jun-15		Channel: Inbound		

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Daily Totals											
Wed 24-Jun-15	**340**	10	2.9	207	60.9	53	15.6	69	20.3	1	0.3
Thu 25-Jun-15	**370**	10	2.7	226	61.1	65	17.6	68	18.4	1	0.3
Fri 26-Jun-15	**367**	8	2.2	203	55.3	72	19.6	81	22.1	3	0.8
Sat 27-Jun-15	**98**	0	0.0	66	67.4	15	15.3	17	17.4	0	0.0
Sun 28-Jun-15	**93**	0	0.0	73	78.5	8	8.6	12	12.9	0	0.0
Mon 29-Jun-15	**368**	9	2.5	235	63.9	64	17.4	59	16.0	1	0.3
Tue 30-Jun-15	**424**	7	1.7	256	60.4	79	18.6	82	19.3	0	0.0
Total Vehicles											
[--]	**2060**	44	1.7	1266	63.9	356	16.1	388	18.1	6	0.2



19028		RUDHEATH					Site No: 19028002			Location	Site 2, Access to Chemical Plant, Rudheath (Fence)				
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Inbound								
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<6Mph	6-<11	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	=>56

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<6Mph	6-<11	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	=>56
Wed 24-Jun-15																
00:00	1	-	28.5	-	0	0	0	0	0	1	0	0	0	0	0	0
01:00	1	-	23.5	-	0	0	0	0	1	0	0	0	0	0	0	0
02:00	1	-	23.5	-	0	0	0	0	1	0	0	0	0	0	0	0
03:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
04:00	2	-	16	3.5	0	0	1	1	0	0	0	0	0	0	0	0
05:00	8	-	24.1	4.4	0	0	0	2	3	3	0	0	0	0	0	0
06:00	36	30.7	25.7	5.7	0	1	0	6	9	15	5	0	0	0	0	0
07:00	75	30.5	25	5.6	0	1	1	17	20	27	9	0	0	0	0	0
08:00	29	28.6	23.8	4.6	0	0	1	6	13	8	1	0	0	0	0	0
09:00	29	25.8	23.3	3.7	0	0	0	6	19	3	1	0	0	0	0	0
10:00	19	28.8	22.2	6.4	0	0	3	6	5	3	2	0	0	0	0	0
11:00	34	28.1	22.6	5	0	0	2	12	11	8	1	0	0	0	0	0
12:00	19	25.4	21.7	4.7	0	0	2	6	8	3	0	0	0	0	0	0
13:00	24	25.9	22.7	3.8	0	0	0	8	12	4	0	0	0	0	0	0
14:00	14	25.4	21	4.9	0	0	2	5	5	2	0	0	0	0	0	0
15:00	11	25	21.7	4.3	0	0	1	3	6	1	0	0	0	0	0	0
16:00	8	-	26	7.6	0	0	1	0	4	1	1	1	0	0	0	0
17:00	7	-	21.4	5	0	0	1	2	3	1	0	0	0	0	0	0
18:00	17	30.9	25.6	5.8	0	0	1	2	6	5	3	0	0	0	0	0
19:00	2	-	23.5	1.8	0	0	0	0	2	0	0	0	0	0	0	0
20:00	3	-	20.2	5.9	0	0	1	0	2	0	0	0	0	0	0	0
21:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
12H,7-19	286	29.2	23.5	5.2	0	1	15	73	112	66	18	1	0	0	0	0
16H,6-22	327	29.4	23.7	5.3	0	2	16	79	125	81	23	1	0	0	0	0
18H,6-24	327	29.4	23.7	5.3	0	2	16	79	125	81	23	1	0	0	0	0
24H,0-24	340	29.4	23.7	5.3	0	2	17	82	130	85	23	1	0	0	0	0

19028 RUDHEATH Site No: 19028002 Location Site 2, Access to Chemical Plant, Rudheath (Fence)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Inbound

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<6Mph	6-<11	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	=>56
Thu 25-Jun-15																
00:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
01:00	1	-	23.5	-	0	0	0	0	1	0	0	0	0	0	0	0
02:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
03:00	3	-	23.5	5	0	0	0	1	1	1	0	0	0	0	0	0
04:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
05:00	9	-	22.9	4.2	0	0	0	3	4	2	0	0	0	0	0	0
06:00	34	29.7	25.4	4.8	0	0	1	2	18	10	2	1	0	0	0	0
07:00	69	30	24.7	5.1	0	0	3	11	29	19	7	0	0	0	0	0
08:00	33	26.5	21.8	5	0	1	2	10	14	6	0	0	0	0	0	0
09:00	29	26.2	22.3	4.6	0	0	3	6	15	5	0	0	0	0	0	0
10:00	23	24.8	19.6	5.6	0	2	3	8	8	2	0	0	0	0	0	0
11:00	34	27.9	22.6	5.2	0	1	2	8	14	9	0	0	0	0	0	0
12:00	27	26.5	21.8	5	0	0	4	6	12	5	0	0	0	0	0	0
13:00	27	25.8	21.5	5.4	0	2	1	7	13	4	0	0	0	0	0	0
14:00	27	24.6	20.7	3.8	0	0	1	15	9	2	0	0	0	0	0	0
15:00	11	25.6	22.1	4.2	0	0	0	5	4	2	0	0	0	0	0	0
16:00	9	-	23.5	6.2	0	0	1	2	3	2	1	0	0	0	0	0
17:00	8	-	21	4.9	0	0	0	6	0	2	0	0	0	0	0	0
18:00	19	29.3	25.6	3.7	0	0	0	1	10	7	1	0	0	0	0	0
19:00	1	-	18.5	-	0	0	0	1	0	0	0	0	0	0	0	0
20:00	1	-	28.5	-	0	0	0	0	0	1	0	0	0	0	0	0
21:00	2	-	21	3.5	0	0	0	1	1	0	0	0	0	0	0	0
22:00	2	-	26	3.5	0	0	0	0	1	1	0	0	0	0	0	0
23:00	1	-	23.5	-	0	0	0	0	1	0	0	0	0	0	0	0
12H,7-19	316	28	22.6	5.2	0	6	20	85	131	65	9	0	0	0	0	0
16H,6-22	354	28.3	22.8	5.2	0	6	21	89	150	76	11	1	0	0	0	0
18H,6-24	357	28.3	22.8	5.2	0	6	21	89	152	77	11	1	0	0	0	0
24H,0-24	370	28.3	22.9	5.1	0	6	21	93	158	80	11	1	0	0	0	0

19028			RUDHEATH				Site No: 19028002			Location	Site 2, Access to Chemical Plant, Rudheath (Fence)				
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Inbound								
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<6Mph	6-<11	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	=>56

Fri 26-Jun-15

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<6Mph	6-<11	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	=>56
00:00	**0**	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
01:00	**1**	-	28.5	-	0	0	0	0	0	1	0	0	0	0	0	0
02:00	**1**	-	18.5	-	0	0	0	1	0	0	0	0	0	0	0	0
03:00	**1**	-	23.5	-	0	0	0	0	1	0	0	0	0	0	0	0
04:00	**1**	-	28.5	-	0	0	0	0	0	1	0	0	0	0	0	0
05:00	**7**	-	26.4	5.1	0	0	0	0	5	0	2	0	0	0	0	0
06:00	**39**	28.8	23.6	5	0	0	3	7	16	12	1	0	0	0	0	0
07:00	**70**	29.1	23.6	5.3	0	1	3	15	30	16	5	0	0	0	0	0
08:00	**44**	28.5	22.8	5.2	0	0	4	12	15	12	1	0	0	0	0	0
09:00	**26**	27	22.5	4.9	0	0	0	12	9	3	2	0	0	0	0	0
10:00	**32**	27.7	22.9	4.9	0	0	1	11	13	5	2	0	0	0	0	0
11:00	**30**	26	21	6.1	0	1	3	14	7	2	3	0	0	0	0	0
12:00	**16**	27.8	21.9	6.1	0	0	3	4	5	3	1	0	0	0	0	0
13:00	**21**	29.1	24	5.4	0	0	2	3	8	7	1	0	0	0	0	0
14:00	**20**	25.4	22.3	3.9	0	0	1	5	12	2	0	0	0	0	0	0
15:00	**10**	24.8	21	4.4	0	0	1	4	4	1	0	0	0	0	0	0
16:00	**15**	21.6	18.5	4.8	0	1	2	9	2	1	0	0	0	0	0	0
17:00	**8**	-	24.1	5.1	0	0	0	2	4	1	1	0	0	0	0	0
18:00	**12**	29.9	26	4.7	0	0	0	2	3	6	1	0	0	0	0	0
19:00	**2**	-	23.5	1.8	0	0	0	0	2	0	0	0	0	0	0	0
20:00	**4**	-	24.8	2.8	0	0	0	0	3	1	0	0	0	0	0	0
21:00	**1**	-	23.5	-	0	0	0	0	1	0	0	0	0	0	0	0
22:00	**0**	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
23:00	**6**	-	22.7	5.1	0	0	1	0	4	1	0	0	0	0	0	0
12H,7-19	**304**	**28.5**	**22.7**	**5.3**	**0**	**3**	**20**	**93**	**112**	**59**	**17**	**0**	**0**	**0**	**0**	**0**
16H,6-22	**350**	**28.6**	**22.8**	**5.3**	**0**	**3**	**23**	**100**	**134**	**72**	**18**	**0**	**0**	**0**	**0**	**0**
18H,6-24	**356**	**28.5**	**22.8**	**5.2**	**0**	**3**	**24**	**100**	**138**	**73**	**18**	**0**	**0**	**0**	**0**	**0**
24H,0-24	**367**	**28.6**	**22.9**	**5.3**	**0**	**3**	**24**	**101**	**144**	**75**	**20**	**0**	**0**	**0**	**0**	**0**

19028		RUDHEATH					Site No: 19028002			Location	Site 2, Access to Chemical Plant, Rudheath (Fence)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Inbound									
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<6Mph	6-<11	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	=>56
Sat 27-Jun-15																
00:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
01:00	1	-	28.5	-	0	0	0	0	0	1	0	0	0	0	0	0
02:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
04:00	1	-	28.5	-	0	0	0	0	0	1	0	0	0	0	0	0
05:00	3	-	23.5	5	0	0	0	1	1	1	0	0	0	0	0	0
06:00	12	30.3	26	4.7	0	0	0	1	6	3	2	0	0	0	0	0
07:00	15	31.6	27.2	5.7	0	0	0	2	4	6	2	1	0	0	0	0
08:00	2	-	21	3.5	0	0	0	1	1	0	0	0	0	0	0	0
09:00	5	-	24.5	5.6	0	0	0	1	3	0	1	0	0	0	0	0
10:00	4	-	27.3	6.4	0	0	0	1	0	2	1	0	0	0	0	0
11:00	8	-	25.4	5.5	0	0	0	2	2	3	1	0	0	0	0	0
12:00	6	-	21.8	3	0	0	0	2	4	0	0	0	0	0	0	0
13:00	6	-	23.5	4.7	0	0	0	2	2	2	0	0	0	0	0	0
14:00	1	-	23.5	-	0	0	0	0	1	0	0	0	0	0	0	0
15:00	6	-	23.5	3.4	0	0	0	1	4	1	0	0	0	0	0	0
16:00	3	-	23.5	1.7	0	0	0	0	3	0	0	0	0	0	0	0
17:00	3	-	26.8	3.1	0	0	0	0	1	2	0	0	0	0	0	0
18:00	12	28.1	23.5	4.5	0	0	0	4	4	4	0	0	0	0	0	0
19:00	5	-	22.5	2.6	0	0	0	1	4	0	0	0	0	0	0	0
20:00	1	-	23.5	-	0	0	0	0	1	0	0	0	0	0	0	0
21:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
22:00	2	-	23.5	7.1	0	0	0	1	0	1	0	0	0	0	0	0
23:00	2	-	26	3.5	0	0	0	0	1	1	0	0	0	0	0	0
12H,7-19	71	29.7	24.7	4.9	0	0	0	16	29	20	5	1	0	0	0	0
16H,6-22	89	29.7	24.7	4.8	0	0	0	18	40	23	7	1	0	0	0	0
18H,6-24	93	29.7	24.7	4.7	0	0	0	19	41	25	7	1	0	0	0	0
24H,0-24	98	29.7	24.8	4.7	0	0	0	20	42	28	7	1	0	0	0	0

AXIOM Traffic Limited

Data produced by Axiom Traffic Ltd

19028 RUDHEATH Site No: 19028002 Location Site 2, Access to Chemical Plant, Rudheath (Fence)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Inbound

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<6Mph	6-<11	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	=>56
Sun 28-Jun-15																
00:00	1	-	23.5	-	0	0	0	0	1	0	0	0	0	0	0	0
01:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
05:00	3	-	18.5	8.8	0	0	2	0	0	1	0	0	0	0	0	0
06:00	14	30.3	24.9	5.5	0	0	0	4	4	4	2	0	0	0	0	0
07:00	4	-	23.5	4.2	0	0	0	1	2	1	0	0	0	0	0	0
08:00	8	-	23.5	3	0	0	0	1	6	1	0	0	0	0	0	0
09:00	10	20.3	18	3.2	0	0	2	7	1	0	0	0	0	0	0	0
10:00	2	-	21	10.6	0	0	1	0	0	1	0	0	0	0	0	0
11:00	2	-	26	3.5	0	0	0	0	1	1	0	0	0	0	0	0
12:00	3	-	23.5	5	0	0	0	1	1	1	0	0	0	0	0	0
13:00	4	-	21	3.2	0	0	0	2	2	0	0	0	0	0	0	0
14:00	5	-	23.5	1.6	0	0	0	0	5	0	0	0	0	0	0	0
15:00	7	-	20.6	3.1	0	0	0	4	3	0	0	0	0	0	0	0
16:00	2	-	21	3.5	0	0	0	1	1	0	0	0	0	0	0	0
17:00	5	-	28.5	3.7	0	0	0	0	1	3	1	0	0	0	0	0
18:00	14	31.7	25.3	5.9	0	0	0	4	4	3	3	0	0	0	0	0
19:00	2	-	21	3.5	0	0	0	1	1	0	0	0	0	0	0	0
20:00	3	-	23.5	1.7	0	0	0	0	3	0	0	0	0	0	0	0
21:00	1	-	23.5	-	0	0	0	0	1	0	0	0	0	0	0	0
22:00	2	-	26	10.6	0	0	0	1	0	0	1	0	0	0	0	0
23:00	1	-	23.5	-	0	0	0	0	1	0	0	0	0	0	0	0
12H,7-19	66	28.1	22.9	5	0	0	3	21	27	11	4	0	0	0	0	0
16H,6-22	86	28.5	23.2	5	0	0	3	26	36	15	6	0	0	0	0	0
18H,6-24	89	28.7	23.3	5	0	0	3	27	37	15	7	0	0	0	0	0
24H,0-24	93	28.7	23.1	5.2	0	0	5	27	38	16	7	0	0	0	0	0

19028	RUDHEATH	Site No: 19028002	Location	Site 2, Access to Chemical Plant, Rudheath (Fence)
Wed 24-Jun-15 to Tue 30-Jun-15		Channel: Inbound		

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<6Mph	6-<11	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	=>56
Mon 29-Jun-15																
00:00	**0**	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
01:00	**2**	-	26	3.5	0	0	0	0	1	1	0	0	0	0	0	0
02:00	**0**	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
03:00	**1**	-	18.5	-	0	0	0	1	0	0	0	0	0	0	0	0
04:00	**1**	-	8.5	-	0	1	0	0	0	0	0	0	0	0	0	0
05:00	**7**	-	22.8	3.7	0	0	0	2	4	1	0	0	0	0	0	0
06:00	**45**	30.7	25.8	5.2	0	0	0	10	10	19	6	0	0	0	0	0
07:00	**88**	29.8	24.2	5.7	0	0	7	18	26	31	5	1	0	0	0	0
08:00	**44**	26.8	21.6	5.9	1	1	3	14	17	6	2	0	0	0	0	0
09:00	**26**	26.6	20.8	5.5	0	1	3	10	7	5	0	0	0	0	0	0
10:00	**15**	29.1	22.5	6.2	0	0	1	7	3	2	2	0	0	0	0	0
11:00	**27**	27.8	21.8	5.2	0	0	3	10	7	7	0	0	0	0	0	0
12:00	**29**	26.3	21.1	6.2	0	1	5	8	10	3	2	0	0	0	0	0
13:00	**15**	25.5	22.2	5	0	0	1	5	7	1	1	0	0	0	0	0
14:00	**17**	25.3	21.7	3.8	0	0	0	8	7	2	0	0	0	0	0	0
15:00	**13**	25	22	3.5	0	0	0	5	7	1	0	0	0	0	0	0
16:00	**11**	25	21.7	4.3	0	0	1	3	6	1	0	0	0	0	0	0
17:00	**2**	-	28.5	1.8	0	0	0	0	0	2	0	0	0	0	0	0
18:00	**14**	30.3	24.6	5.8	0	0	0	5	3	4	2	0	0	0	0	0
19:00	**1**	-	28.5	-	0	0	0	0	0	1	0	0	0	0	0	0
20:00	**3**	-	26.8	5.9	0	0	0	0	2	0	1	0	0	0	0	0
21:00	**1**	-	28.5	-	0	0	0	0	0	1	0	0	0	0	0	0
22:00	**3**	-	23.5	1.7	0	0	0	0	3	0	0	0	0	0	0	0
23:00	**3**	-	25.2	3.1	0	0	0	0	2	1	0	0	0	0	0	0
12H,7-19	**301**	**28.6**	**22.5**	**5.6**	**1**	**3**	**24**	**93**	**100**	**65**	**14**	**1**	**0**	**0**	**0**	**0**
16H,6-22	**351**	**29.2**	**23**	**5.6**	**1**	**3**	**24**	**103**	**112**	**86**	**21**	**1**	**0**	**0**	**0**	**0**
18H,6-24	**357**	**29.2**	**23.1**	**5.6**	**1**	**3**	**24**	**103**	**117**	**87**	**21**	**1**	**0**	**0**	**0**	**0**
24H,0-24	**368**	**29.1**	**23**	**5.6**	**1**	**4**	**24**	**106**	**122**	**89**	**21**	**1**	**0**	**0**	**0**	**0**

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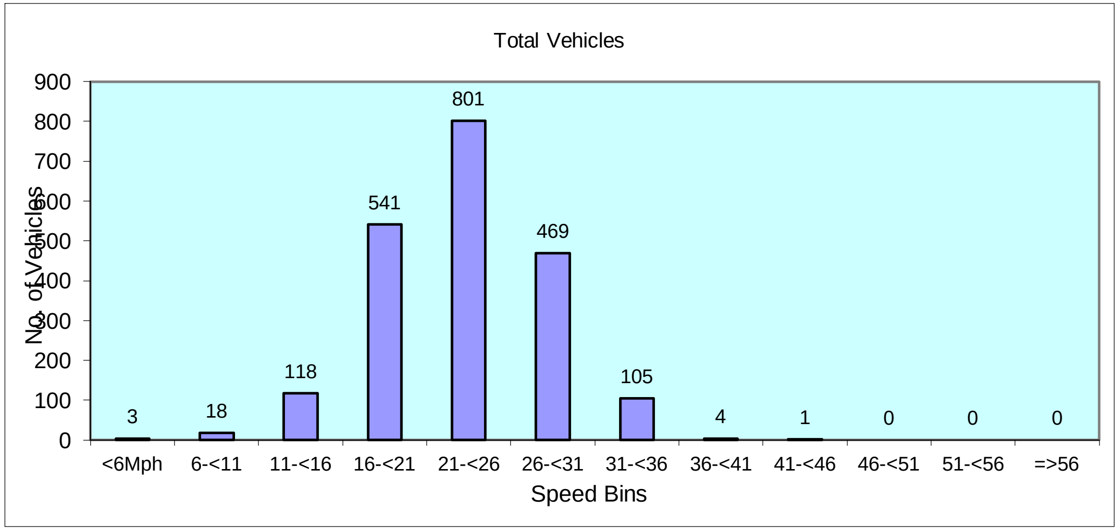
19028			RUDHEATH				Site No: 19028002			Location	Site 2, Access to Chemical Plant, Rudheath (Fence)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Inbound									

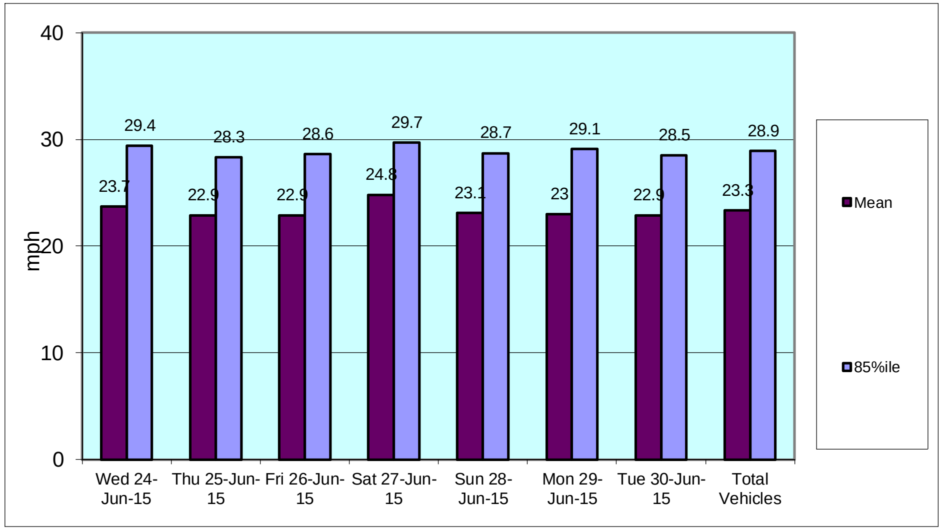
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<6Mph	6-<11	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	=>56
Tue 30-Jun-15																
00:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
01:00	1	-	28.5	-	0	0	0	0	0	1	0	0	0	0	0	0
02:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
03:00	1	-	18.5	-	0	0	0	1	0	0	0	0	0	0	0	0
04:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
05:00	6	-	25.2	3	0	0	0	0	4	2	0	0	0	0	0	0
06:00	44	30.3	24.8	6.5	0	0	3	11	9	16	4	0	1	0	0	0
07:00	89	29.3	24.2	4.9	0	0	4	17	35	29	4	0	0	0	0	0
08:00	38	29.2	23.4	5.5	0	0	2	11	15	6	4	0	0	0	0	0
09:00	34	27.2	23.2	4.1	0	0	0	10	17	6	1	0	0	0	0	0
10:00	25	25.7	21.7	4.5	0	0	2	9	10	4	0	0	0	0	0	0
11:00	39	28.4	23.1	5.1	0	1	2	8	16	12	0	0	0	0	0	0
12:00	25	25	19.9	5.7	0	2	4	6	11	2	0	0	0	0	0	0
13:00	33	25.4	22.6	4.5	0	0	2	8	18	4	1	0	0	0	0	0
14:00	23	24.4	20	4.4	0	0	3	12	6	2	0	0	0	0	0	0
15:00	17	24.3	20.6	4.9	0	0	2	8	6	0	1	0	0	0	0	0
16:00	15	25.5	21.8	4.7	0	0	2	3	8	2	0	0	0	0	0	0
17:00	7	-	21.4	6.5	0	0	1	3	2	0	1	0	0	0	0	0
18:00	12	29.4	26	3.7	0	0	0	1	4	7	0	0	0	0	0	0
19:00	5	-	23.5	3.7	0	0	0	1	3	1	0	0	0	0	0	0
20:00	4	-	14.2	10.9	2	0	0	0	2	0	0	0	0	0	0	0
21:00	1	-	28.5	-	0	0	0	0	0	1	0	0	0	0	0	0
22:00	1	-	28.5	-	0	0	0	0	0	1	0	0	0	0	0	0
23:00	4	-	19.8	2.8	0	0	0	3	1	0	0	0	0	0	0	0
12H,7-19	357	28.2	22.7	5	0	3	24	96	148	74	12	0	0	0	0	0
16H,6-22	411	28.5	22.9	5.4	2	3	27	108	162	92	16	0	1	0	0	0
18H,6-24	416	28.5	22.9	5.3	2	3	27	111	163	93	16	0	1	0	0	0
24H,0-24	424	28.5	22.9	5.3	2	3	27	112	167	96	16	0	1	0	0	0

19028 **RUDHEATH** **Site No: 19028002** **Location Site 2, Access to Chemical Plant, Rudheath (Fence)**

Wed 24-Jun-15 to Tue 30-Jun-15 **Channel: Inbound**

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<6Mph	6-<11	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	=>56
Daily Totals																
Wed 24-Jun-15	**340**	29.4	23.7	5.3	0	2	17	82	130	85	23	1	0	0	0	0
Thu 25-Jun-15	**370**	28.3	22.9	5.1	0	6	21	93	158	80	11	1	0	0	0	0
Fri 26-Jun-15	**367**	28.6	22.9	5.3	0	3	24	101	144	75	20	0	0	0	0	0
Sat 27-Jun-15	**98**	29.7	24.8	4.7	0	0	0	20	42	28	7	1	0	0	0	0
Sun 28-Jun-15	**93**	28.7	23.1	5.2	0	0	5	27	38	16	7	0	0	0	0	0
Mon 29-Jun-15	**368**	29.1	23	5.6	1	4	24	106	122	89	21	1	0	0	0	0
Tue 30-Jun-15	**424**	28.5	22.9	5.3	2	3	27	112	167	96	16	0	1	0	0	0
Total Vehicles																
[--]	**2060**	28.9	23.3	5.2	3	18	118	541	801	469	105	4	1	0	0	0





19028	RUDHEATH			Site No: 19028002 Channel: Inbound		Location	Site 2, Access to Chemical Plant, Rudheath (Fence)		
TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av
Week Begin: 24-Jun-15									
00:00	**1**	0	0	0	1	0	0	0	0
01:00	**1**	1	1	1	0	2	1	1	1
02:00	**1**	0	1	0	0	0	0	0	0
03:00	**0**	3	1	0	0	1	1	1	1
04:00	**2**	0	1	1	0	1	0	1	1
05:00	**8**	9	7	3	3	7	6	7	6
06:00	**36**	34	39	12	14	45	44	40	32
07:00	**75**	69	70	15	4	88	89	78	59
08:00	**29**	33	44	2	8	44	38	38	28
09:00	**29**	29	26	5	10	26	34	29	23
10:00	**19**	23	32	4	2	15	25	23	17
11:00	**34**	34	30	8	2	27	39	33	25
12:00	**19**	27	16	6	3	29	25	23	18
13:00	**24**	27	21	6	4	15	33	24	19
14:00	**14**	27	20	1	5	17	23	20	15
15:00	**11**	11	10	6	7	13	17	12	11
16:00	**8**	9	15	3	2	11	15	12	9
17:00	**7**	8	8	3	5	2	7	6	6
18:00	**17**	19	12	12	14	14	12	15	14
19:00	**2**	1	2	5	2	1	5	2	3
20:00	**3**	1	4	1	3	3	4	3	3
21:00	**0**	2	1	0	1	1	1	1	1
22:00	**0**	2	0	2	2	3	1	1	1
23:00	**0**	1	6	2	1	3	4	3	2
12H,7-19	**286**	**316**	**304**	**71**	**66**	**301**	**357**	**313**	**243**
16H,6-22	**327**	**354**	**350**	**89**	**86**	**351**	**411**	**359**	**281**
18H,6-24	**327**	**357**	**356**	**93**	**89**	**357**	**416**	**363**	**285**
24H,0-24	**340**	**370**	**367**	**98**	**93**	**368**	**424**	**374**	**294**
Am	**07:00**	**07:00**	**07:00**	**07:00**	**06:00**	**07:00**	**07:00**	**-**	**-**
Peak	**75**	**69**	**70**	**15**	**14**	**88**	**89**	**78**	**60**
Pm	**13:00**	**14:00**	**13:00**	**18:00**	**18:00**	**12:00**	**13:00**	**-**	**-**
Peak	**24**	**27**	**21**	**12**	**14**	**29**	**33**	**27**	**23**

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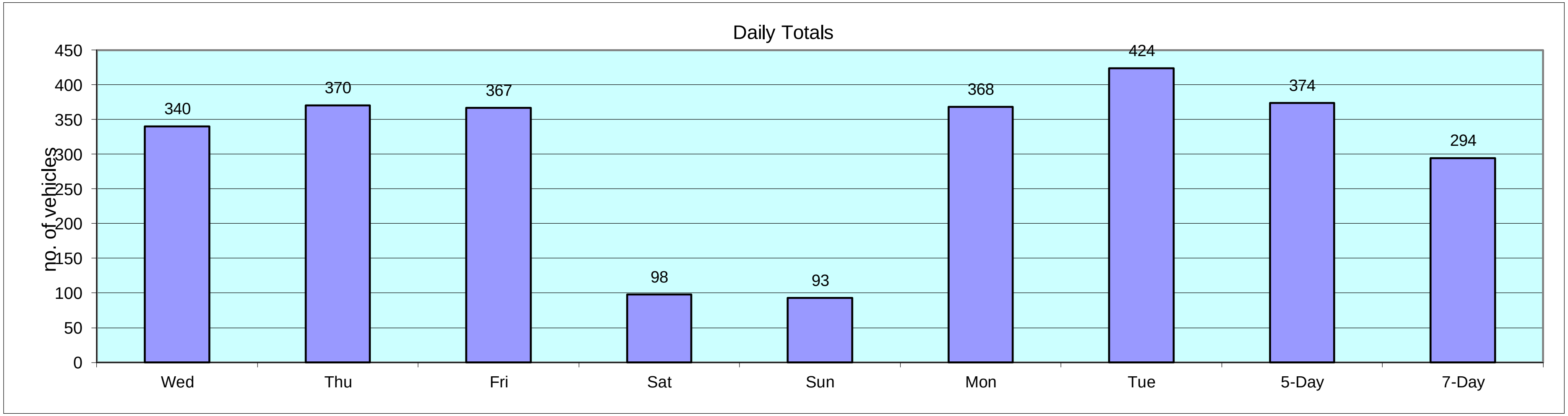
19028	RUDHEATH	Site No: 19028002 Channel: Inbound	Location	Site 2, Access to Chemical Plant, Rudheath (Fence)

TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av



19028		RUDHEATH			Site No: 19028002		Location	Site 2, Access to Chemical Plant, Rudheath (Fence)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Outbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Wed 24-Jun-15											
00:00	**3**	0	0.0	1	33.3	0	0.0	2	66.7	0	0.0
01:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
02:00	**2**	0	0.0	0	0.0	0	0.0	2	100.0	0	0.0
03:00	**0**	0	-	0	-	0	-	0	-	0	-
04:00	**3**	0	0.0	1	33.3	0	0.0	2	66.7	0	0.0
05:00	**4**	0	0.0	2	50.0	1	25.0	1	25.0	0	0.0
06:00	**20**	2	10.0	12	60.0	2	10.0	4	20.0	0	0.0
07:00	**9**	1	11.1	5	55.6	1	11.1	2	22.2	0	0.0
08:00	**17**	1	5.9	9	52.9	5	29.4	2	11.8	0	0.0
09:00	**32**	0	0.0	16	50.0	8	25.0	7	21.9	1	3.1
10:00	**29**	0	0.0	20	69.0	2	6.9	7	24.1	0	0.0
11:00	**34**	1	2.9	22	64.7	7	20.6	4	11.8	0	0.0
12:00	**36**	1	2.8	20	55.6	8	22.2	7	19.4	0	0.0
13:00	**28**	0	0.0	17	60.7	4	14.3	6	21.4	1	3.6
14:00	**30**	1	3.3	21	70.0	3	10.0	5	16.7	0	0.0
15:00	**53**	3	5.7	36	67.9	6	11.3	8	15.1	0	0.0
16:00	**56**	1	1.8	42	75.0	10	17.9	3	5.4	0	0.0
17:00	**18**	0	0.0	16	88.9	1	5.6	1	5.6	0	0.0
18:00	**20**	2	10.0	16	80.0	2	10.0	0	0.0	0	0.0
19:00	**9**	1	11.1	3	33.3	1	11.1	4	44.4	0	0.0
20:00	**8**	0	0.0	5	62.5	0	0.0	2	25.0	1	12.5
21:00	**0**	0	-	0	-	0	-	0	-	0	-
22:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
23:00	**0**	0	-	0	-	0	-	0	-	0	-
12H,7-19	**362**	**11**	**3.0**	**240**	**66.3**	**57**	**15.8**	**52**	**14.4**	**2**	**0.6**
16H,6-22	**399**	**14**	**3.5**	**260**	**65.2**	**60**	**15.0**	**62**	**15.5**	**3**	**0.8**
18H,6-24	**400**	**14**	**3.5**	**261**	**65.3**	**60**	**15.0**	**62**	**15.5**	**3**	**0.8**
24H,0-24	**413**	**14**	**3.4**	**266**	**64.4**	**61**	**14.8**	**69**	**16.7**	**3**	**0.7**

19028 **RUDHEATH** **Site No: 19028002** **Location** **Site 2, Access to Chemical Plant, Rudheath (Fence)**

Wed 24-Jun-15 to Tue 30-Jun-15 **Channel: Outbound**

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Thu 25-Jun-15											
00:00	**0**	0	-	0	-	0	-	0	-	0	-
01:00	**0**	0	-	0	-	0	-	0	-	0	-
02:00	**1**	0	0.0	0	0.0	0	0.0	1	100.0	0	0.0
03:00	**1**	0	0.0	0	0.0	0	0.0	1	100.0	0	0.0
04:00	**3**	0	0.0	1	33.3	0	0.0	2	66.7	0	0.0
05:00	**5**	0	0.0	3	60.0	0	0.0	2	40.0	0	0.0
06:00	**18**	2	11.1	15	83.3	0	0.0	1	5.6	0	0.0
07:00	**8**	1	12.5	5	62.5	1	12.5	1	12.5	0	0.0
08:00	**26**	1	3.9	9	34.6	9	34.6	7	26.9	0	0.0
09:00	**22**	0	0.0	9	40.9	7	31.8	6	27.3	0	0.0
10:00	**25**	0	0.0	12	48.0	8	32.0	4	16.0	1	4.0
11:00	**37**	1	2.7	19	51.4	10	27.0	7	18.9	0	0.0
12:00	**28**	0	0.0	15	53.6	7	25.0	6	21.4	0	0.0
13:00	**32**	0	0.0	23	71.9	5	15.6	4	12.5	0	0.0
14:00	**36**	2	5.6	26	72.2	5	13.9	3	8.3	0	0.0
15:00	**62**	3	4.8	41	66.1	10	16.1	8	12.9	0	0.0
16:00	**54**	2	3.7	40	74.1	6	11.1	5	9.3	1	1.9
17:00	**18**	0	0.0	14	77.8	1	5.6	3	16.7	0	0.0
18:00	**23**	0	0.0	18	78.3	1	4.4	4	17.4	0	0.0
19:00	**5**	1	20.0	2	40.0	2	40.0	0	0.0	0	0.0
20:00	**12**	0	0.0	11	91.7	0	0.0	1	8.3	0	0.0
21:00	**0**	0	-	0	-	0	-	0	-	0	-
22:00	**4**	0	0.0	0	0.0	0	0.0	4	100.0	0	0.0
23:00	**2**	0	0.0	2	100.0	0	0.0	0	0.0	0	0.0
12H,7-19	**371**	**10**	**2.7**	**231**	**62.3**	**70**	**18.9**	**58**	**15.6**	**2**	**0.5**
16H,6-22	**406**	**13**	**3.2**	**259**	**63.8**	**72**	**17.7**	**60**	**14.8**	**2**	**0.5**
18H,6-24	**412**	**13**	**3.2**	**261**	**63.4**	**72**	**17.5**	**64**	**15.5**	**2**	**0.5**
24H,0-24	**422**	**13**	**3.1**	**265**	**62.8**	**72**	**17.1**	**70**	**16.6**	**2**	**0.5**

19028 RUDHEATH Site No: 19028002 Location Site 2, Access to Chemical Plant, Rudheath (Fence)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Outbound

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Fri 26-Jun-15											
00:00	**0**	0	-	0	-	0	-	0	-	0	-
01:00	**0**	0	-	0	-	0	-	0	-	0	-
02:00	**0**	0	-	0	-	0	-	0	-	0	-
03:00	**3**	0	0.0	1	33.3	0	0.0	2	66.7	0	0.0
04:00	**4**	0	0.0	0	0.0	0	0.0	4	100.0	0	0.0
05:00	**4**	0	0.0	1	25.0	0	0.0	3	75.0	0	0.0
06:00	**26**	4	15.4	17	65.4	3	11.5	2	7.7	0	0.0
07:00	**12**	0	0.0	7	58.3	2	16.7	3	25.0	0	0.0
08:00	**23**	1	4.4	8	34.8	9	39.1	5	21.7	0	0.0
09:00	**35**	0	0.0	19	54.3	5	14.3	11	31.4	0	0.0
10:00	**41**	1	2.4	20	48.8	10	24.4	9	22.0	1	2.4
11:00	**35**	2	5.7	10	28.6	14	40.0	9	25.7	0	0.0
12:00	**32**	0	0.0	20	62.5	5	15.6	7	21.9	0	0.0
13:00	**22**	0	0.0	14	63.6	5	22.7	3	13.6	0	0.0
14:00	**35**	3	8.6	20	57.1	4	11.4	8	22.9	0	0.0
15:00	**52**	1	1.9	37	71.2	8	15.4	6	11.5	0	0.0
16:00	**34**	2	5.9	29	85.3	1	2.9	2	5.9	0	0.0
17:00	**26**	0	0.0	15	57.7	4	15.4	7	26.9	0	0.0
18:00	**28**	0	0.0	25	89.3	2	7.1	1	3.6	0	0.0
19:00	**3**	1	33.3	2	66.7	0	0.0	0	0.0	0	0.0
20:00	**13**	1	7.7	12	92.3	0	0.0	0	0.0	0	0.0
21:00	**2**	0	0.0	0	0.0	0	0.0	2	100.0	0	0.0
22:00	**1**	0	0.0	0	0.0	0	0.0	1	100.0	0	0.0
23:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
12H,7-19	**375**	**10**	**2.7**	**224**	**59.7**	**69**	**18.4**	**71**	**18.9**	**1**	**0.3**
16H,6-22	**419**	**16**	**3.8**	**255**	**60.9**	**72**	**17.2**	**75**	**17.9**	**1**	**0.2**
18H,6-24	**421**	**16**	**3.8**	**256**	**60.8**	**72**	**17.1**	**76**	**18.1**	**1**	**0.2**
24H,0-24	**432**	**16**	**3.7**	**258**	**59.7**	**72**	**16.7**	**85**	**19.7**	**1**	**0.2**

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Data produced by Axiom Traffic Ltd

19028	RUDHEATH	Site No: 19028002	Location	Site 2, Access to Chemical Plant, Rudheath (Fence)
Wed 24-Jun-15 to Tue 30-Jun-15		Channel: Outbound		

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sat 27-Jun-15											
00:00	**5**	0	0.0	0	0.0	0	0.0	5	100.0	0	0.0
01:00	**0**	0	-	0	-	0	-	0	-	0	-
02:00	**0**	0	-	0	-	0	-	0	-	0	-
03:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
04:00	**0**	0	-	0	-	0	-	0	-	0	-
05:00	**3**	0	0.0	3	100.0	0	0.0	0	0.0	0	0.0
06:00	**11**	2	18.2	8	72.7	1	9.1	0	0.0	0	0.0
07:00	**4**	0	0.0	3	75.0	1	25.0	0	0.0	0	0.0
08:00	**9**	0	0.0	6	66.7	0	0.0	3	33.3	0	0.0
09:00	**4**	0	0.0	2	50.0	2	50.0	0	0.0	0	0.0
10:00	**4**	0	0.0	3	75.0	1	25.0	0	0.0	0	0.0
11:00	**12**	0	0.0	6	50.0	2	16.7	4	33.3	0	0.0
12:00	**12**	0	0.0	9	75.0	2	16.7	1	8.3	0	0.0
13:00	**1**	0	0.0	0	0.0	1	100.0	0	0.0	0	0.0
14:00	**2**	0	0.0	1	50.0	0	0.0	1	50.0	0	0.0
15:00	**10**	0	0.0	10	100.0	0	0.0	0	0.0	0	0.0
16:00	**11**	0	0.0	8	72.7	2	18.2	1	9.1	0	0.0
17:00	**4**	0	0.0	2	50.0	0	0.0	2	50.0	0	0.0
18:00	**11**	0	0.0	10	90.9	1	9.1	0	0.0	0	0.0
19:00	**4**	0	0.0	3	75.0	1	25.0	0	0.0	0	0.0
20:00	**2**	0	0.0	1	50.0	0	0.0	1	50.0	0	0.0
21:00	**0**	0	-	0	-	0	-	0	-	0	-
22:00	**0**	0	-	0	-	0	-	0	-	0	-
23:00	**3**	0	0.0	1	33.3	1	33.3	1	33.3	0	0.0
12H,7-19	**84**	**0**	**0.0**	**60**	**71.4**	**12**	**14.3**	**12**	**14.3**	**0**	**0.0**
16H,6-22	**101**	**2**	**2.0**	**72**	**71.3**	**14**	**13.9**	**13**	**12.9**	**0**	**0.0**
18H,6-24	**104**	**2**	**1.9**	**73**	**70.2**	**15**	**14.4**	**14**	**13.5**	**0**	**0.0**
24H,0-24	**113**	**2**	**1.8**	**77**	**68.1**	**15**	**13.3**	**19**	**16.8**	**0**	**0.0**

19028		RUDHEATH			Site No: 19028002		Location	Site 2, Access to Chemical Plant, Rudheath (Fence)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Outbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sun 28-Jun-15											
00:00	**2**	0	0.0	1	50.0	0	0.0	1	50.0	0	0.0
01:00	**0**	0	-	0	-	0	-	0	-	0	-
02:00	**0**	0	-	0	-	0	-	0	-	0	-
03:00	**0**	0	-	0	-	0	-	0	-	0	-
04:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
05:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
06:00	**14**	0	0.0	11	78.6	0	0.0	3	21.4	0	0.0
07:00	**5**	0	0.0	3	60.0	1	20.0	1	20.0	0	0.0
08:00	**3**	0	0.0	1	33.3	0	0.0	2	66.7	0	0.0
09:00	**5**	0	0.0	1	20.0	1	20.0	3	60.0	0	0.0
10:00	**3**	0	0.0	2	66.7	0	0.0	1	33.3	0	0.0
11:00	**5**	0	0.0	0	0.0	0	0.0	5	100.0	0	0.0
12:00	**3**	0	0.0	2	66.7	0	0.0	1	33.3	0	0.0
13:00	**3**	0	0.0	2	66.7	0	0.0	1	33.3	0	0.0
14:00	**8**	0	0.0	8	100.0	0	0.0	0	0.0	0	0.0
15:00	**4**	0	0.0	4	100.0	0	0.0	0	0.0	0	0.0
16:00	**16**	0	0.0	12	75.0	2	12.5	2	12.5	0	0.0
17:00	**5**	0	0.0	5	100.0	0	0.0	0	0.0	0	0.0
18:00	**15**	0	0.0	15	100.0	0	0.0	0	0.0	0	0.0
19:00	**3**	0	0.0	2	66.7	0	0.0	1	33.3	0	0.0
20:00	**2**	0	0.0	0	0.0	2	100.0	0	0.0	0	0.0
21:00	**2**	0	0.0	2	100.0	0	0.0	0	0.0	0	0.0
22:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
23:00	**1**	0	0.0	0	0.0	0	0.0	1	100.0	0	0.0
12H,7-19	**75**	**0**	**0.0**	**55**	**73.3**	**4**	**5.3**	**16**	**21.3**	**0**	**0.0**
16H,6-22	**96**	**0**	**0.0**	**70**	**72.9**	**6**	**6.3**	**20**	**20.8**	**0**	**0.0**
18H,6-24	**98**	**0**	**0.0**	**71**	**72.5**	**6**	**6.1**	**21**	**21.4**	**0**	**0.0**
24H,0-24	**102**	**0**	**0.0**	**74**	**72.6**	**6**	**5.9**	**22**	**21.6**	**0**	**0.0**

AXIOM Traffic Limited

Data produced by
Axiom Traffic Ltd

19028		RUDHEATH			Site No: 19028002		Location	Site 2, Access to Chemical Plant, Rudheath (Fence)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Outbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Mon 29-Jun-15											
00:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
01:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
02:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
03:00	**0**	0	-	0	-	0	-	0	-	0	-
04:00	**2**	0	0.0	0	0.0	0	0.0	2	100.0	0	0.0
05:00	**9**	0	0.0	5	55.6	2	22.2	2	22.2	0	0.0
06:00	**12**	1	8.3	9	75.0	2	16.7	0	0.0	0	0.0
07:00	**14**	1	7.1	8	57.1	0	0.0	5	35.7	0	0.0
08:00	**28**	2	7.1	14	50.0	7	25.0	5	17.9	0	0.0
09:00	**30**	0	0.0	15	50.0	8	26.7	7	23.3	0	0.0
10:00	**32**	1	3.1	18	56.3	6	18.8	7	21.9	0	0.0
11:00	**24**	0	0.0	16	66.7	5	20.8	3	12.5	0	0.0
12:00	**45**	1	2.2	31	68.9	11	24.4	2	4.4	0	0.0
13:00	**33**	0	0.0	25	75.8	5	15.2	3	9.1	0	0.0
14:00	**21**	2	9.5	12	57.1	6	28.6	1	4.8	0	0.0
15:00	**48**	2	4.2	41	85.4	5	10.4	0	0.0	0	0.0
16:00	**79**	1	1.3	61	77.2	11	13.9	5	6.3	1	1.3
17:00	**15**	0	0.0	13	86.7	2	13.3	0	0.0	0	0.0
18:00	**25**	0	0.0	23	92.0	0	0.0	2	8.0	0	0.0
19:00	**8**	2	25.0	4	50.0	1	12.5	1	12.5	0	0.0
20:00	**12**	0	0.0	10	83.3	2	16.7	0	0.0	0	0.0
21:00	**1**	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0
22:00	**0**	0	-	0	-	0	-	0	-	0	-
23:00	**3**	0	0.0	1	33.3	1	33.3	1	33.3	0	0.0
12H,7-19	**394**	**10**	**2.5**	**277**	**70.3**	**66**	**16.8**	**40**	**10.2**	**1**	**0.3**
16H,6-22	**427**	**13**	**3.0**	**301**	**70.5**	**71**	**16.6**	**41**	**9.6**	**1**	**0.2**
18H,6-24	**430**	**13**	**3.0**	**302**	**70.2**	**72**	**16.7**	**42**	**9.8**	**1**	**0.2**
24H,0-24	**444**	**13**	**2.9**	**310**	**69.8**	**74**	**16.7**	**46**	**10.4**	**1**	**0.2**

19028 **RUDHEATH** **Site No: 19028002** **Location** **Site 2, Access to Chemical Plant, Rudheath (Fence)**

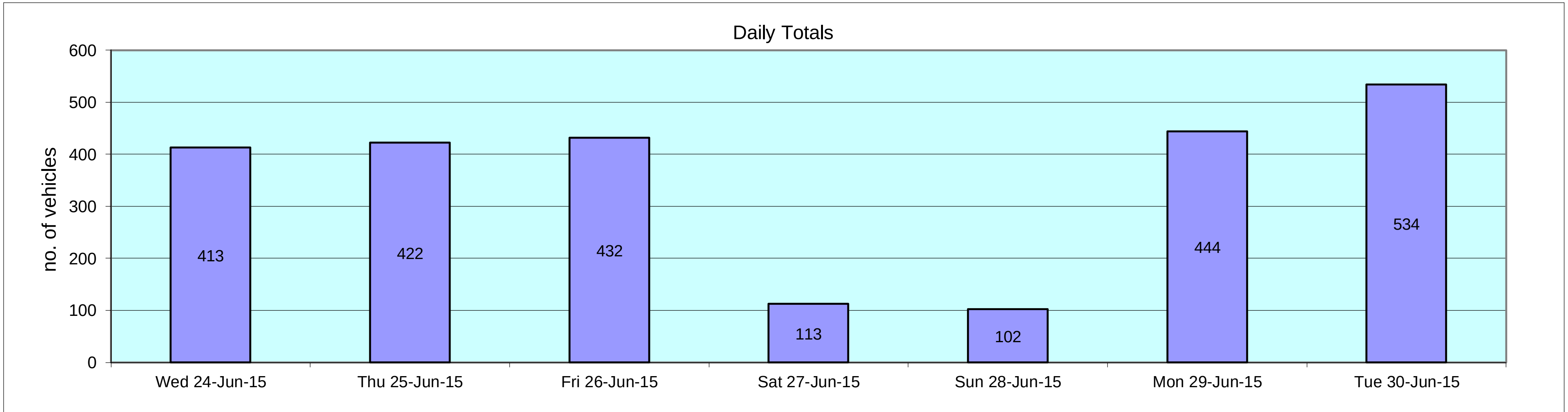
Wed 24-Jun-15 to Tue 30-Jun-15 **Channel: Outbound**

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Tue 30-Jun-15											
00:00	**2**	0	0.0	1	50.0	0	0.0	1	50.0	0	0.0
01:00	**0**	0	-	0	-	0	-	0	-	0	-
02:00	**3**	0	0.0	1	33.3	1	33.3	1	33.3	0	0.0
03:00	**2**	1	50.0	1	50.0	0	0.0	0	0.0	0	0.0
04:00	**0**	0	-	0	-	0	-	0	-	0	-
05:00	**6**	0	0.0	3	50.0	1	16.7	2	33.3	0	0.0
06:00	**14**	2	14.3	9	64.3	3	21.4	0	0.0	0	0.0
07:00	**21**	1	4.8	9	42.9	5	23.8	6	28.6	0	0.0
08:00	**33**	1	3.0	20	60.6	8	24.2	4	12.1	0	0.0
09:00	**31**	2	6.5	21	67.7	5	16.1	3	9.7	0	0.0
10:00	**44**	0	0.0	32	72.7	6	13.6	6	13.6	0	0.0
11:00	**43**	3	7.0	24	55.8	10	23.3	6	14.0	0	0.0
12:00	**35**	0	0.0	25	71.4	7	20.0	2	5.7	1	2.9
13:00	**32**	0	0.0	26	81.3	4	12.5	2	6.3	0	0.0
14:00	**36**	2	5.6	18	50.0	8	22.2	8	22.2	0	0.0
15:00	**85**	5	5.9	62	72.9	15	17.7	3	3.5	0	0.0
16:00	**75**	0	0.0	65	86.7	7	9.3	3	4.0	0	0.0
17:00	**22**	0	0.0	19	86.4	2	9.1	1	4.6	0	0.0
18:00	**23**	1	4.4	19	82.6	1	4.4	2	8.7	0	0.0
19:00	**13**	0	0.0	10	76.9	1	7.7	2	15.4	0	0.0
20:00	**7**	0	0.0	5	71.4	1	14.3	1	14.3	0	0.0
21:00	**4**	0	0.0	2	50.0	0	0.0	2	50.0	0	0.0
22:00	**1**	0	0.0	0	0.0	1	100.0	0	0.0	0	0.0
23:00	**2**	0	0.0	2	100.0	0	0.0	0	0.0	0	0.0
12H,7-19	**480**	**15**	**3.1**	**340**	**70.8**	**78**	**16.3**	**46**	**9.6**	**1**	**0.2**
16H,6-22	**518**	**17**	**3.3**	**366**	**70.7**	**83**	**16.0**	**51**	**9.9**	**1**	**0.2**
18H,6-24	**521**	**17**	**3.3**	**368**	**70.6**	**84**	**16.1**	**51**	**9.8**	**1**	**0.2**
24H,0-24	**534**	**18**	**3.4**	**374**	**70.0**	**86**	**16.1**	**55**	**10.3**	**1**	**0.2**

19028 RUDHEATH Site No: 19028002 Location Site 2, Access to Chemical Plant, Rudheath (Fence)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Outbound

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Daily Totals											
Wed 24-Jun-15	**413**	14	3.4	266	64.4	61	14.8	69	16.7	3	0.7
Thu 25-Jun-15	**422**	13	3.1	265	62.8	72	17.1	70	16.6	2	0.5
Fri 26-Jun-15	**432**	16	3.7	258	59.7	72	16.7	85	19.7	1	0.2
Sat 27-Jun-15	**113**	2	1.8	77	68.1	15	13.3	19	16.8	0	0.0
Sun 28-Jun-15	**102**	0	0.0	74	72.6	6	5.9	22	21.6	0	0.0
Mon 29-Jun-15	**444**	13	2.9	310	69.8	74	16.7	46	10.4	1	0.2
Tue 30-Jun-15	**534**	18	3.4	374	70.0	86	16.1	55	10.3	1	0.2
Total Vehicles											
[--]	**2460**	76	2.6	1624	66.8	386	14.3	366	16.0	8	0.3



19028 RUDHEATH Site No: 19028002 Location Site 2, Access to Chemical Plant, Rudheath (Fence)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Outbound

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<6Mph	6-<11	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	=>56
Wed 24-Jun-15																
00:00	3	-	25.2	7.6	0	0	0	1	1	0	1	0	0	0	0	0
01:00	1	-	23.5	-	0	0	0	0	1	0	0	0	0	0	0	0
02:00	2	-	21	3.5	0	0	0	1	1	0	0	0	0	0	0	0
03:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
04:00	3	-	20.2	3.1	0	0	0	2	1	0	0	0	0	0	0	0
05:00	4	-	17.3	10.4	0	2	0	0	1	1	0	0	0	0	0	0
06:00	20	25.2	21.5	4.9	0	0	3	5	9	3	0	0	0	0	0	0
07:00	9	-	20.2	6.7	0	0	3	2	3	0	1	0	0	0	0	0
08:00	17	27.2	21.4	4.9	0	0	1	9	3	4	0	0	0	0	0	0
09:00	32	26.6	20.8	5.4	0	1	4	12	9	6	0	0	0	0	0	0
10:00	29	27	20.9	5.6	0	0	7	7	9	6	0	0	0	0	0	0
11:00	34	25.3	20.7	4.9	0	1	3	14	12	4	0	0	0	0	0	0
12:00	36	25	20.6	5	0	0	7	11	15	2	1	0	0	0	0	0
13:00	28	24.6	20.6	4	0	0	3	11	13	1	0	0	0	0	0	0
14:00	30	24.5	20.2	4.6	0	2	1	13	13	1	0	0	0	0	0	0
15:00	53	30.5	23.9	6.2	0	0	5	14	13	14	7	0	0	0	0	0
16:00	56	30	25.3	5.1	0	0	3	7	17	25	4	0	0	0	0	0
17:00	18	29.8	25.4	5.1	0	0	1	2	5	9	1	0	0	0	0	0
18:00	20	32.9	27	5.8	0	0	0	3	6	6	4	1	0	0	0	0
19:00	9	-	19.6	6.2	0	0	3	3	1	2	0	0	0	0	0	0
20:00	8	-	23.5	6.6	0	0	1	2	2	2	1	0	0	0	0	0
21:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
22:00	1	-	18.5	-	0	0	0	1	0	0	0	0	0	0	0	0
23:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
12H,7-19	362	28.7	22.5	5.7	0	4	38	105	118	78	18	1	0	0	0	0
16H,6-22	399	28.6	22.4	5.7	0	4	45	115	130	85	19	1	0	0	0	0
18H,6-24	400	28.6	22.4	5.7	0	4	45	116	130	85	19	1	0	0	0	0
24H,0-24	413	28.6	22.3	5.7	0	6	45	120	135	86	20	1	0	0	0	0

19028			RUDHEATH				Site No: 19028002			Location	Site 2, Access to Chemical Plant, Rudheath (Fence)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Outbound									
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<6Mph	6-<11	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	=>56
Thu 25-Jun-15																
00:00	**0**	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
01:00	**0**	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
02:00	**1**	-	18.5	-	0	0	0	1	0	0	0	0	0	0	0	0
03:00	**1**	-	18.5	-	0	0	0	1	0	0	0	0	0	0	0	0
04:00	**3**	-	20.2	3.1	0	0	0	2	1	0	0	0	0	0	0	0
05:00	**5**	-	20.5	3.1	0	0	0	3	2	0	0	0	0	0	0	0
06:00	**18**	28.3	23.5	4.4	0	0	0	6	6	6	0	0	0	0	0	0
07:00	**8**	-	21.6	6.6	0	0	2	2	1	3	0	0	0	0	0	0
08:00	**26**	26.6	21.4	5.1	0	0	4	8	9	5	0	0	0	0	0	0
09:00	**22**	25.6	22.1	4.1	0	0	1	7	11	3	0	0	0	0	0	0
10:00	**25**	25.7	21.1	4.8	0	0	3	10	8	4	0	0	0	0	0	0
11:00	**37**	25.3	20.4	5.5	0	0	10	8	15	3	1	0	0	0	0	0
12:00	**28**	27.1	22.1	5.1	0	0	4	6	12	6	0	0	0	0	0	0
13:00	**32**	27.9	23.8	4.8	0	0	1	6	17	7	0	1	0	0	0	0
14:00	**36**	26.1	21.7	4.4	0	0	2	15	13	6	0	0	0	0	0	0
15:00	**62**	25.8	20.4	5.6	0	2	10	23	18	7	2	0	0	0	0	0
16:00	**54**	29.8	24.1	6.8	3	0	3	5	17	23	3	0	0	0	0	0
17:00	**18**	28.7	22.9	5.6	0	0	2	5	4	7	0	0	0	0	0	0
18:00	**23**	28.2	21.3	6.3	0	1	4	6	5	7	0	0	0	0	0	0
19:00	**5**	-	24.5	6.6	0	0	1	0	1	3	0	0	0	0	0	0
20:00	**12**	25.3	21.4	4.7	0	0	1	5	4	2	0	0	0	0	0	0
21:00	**0**	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
22:00	**4**	-	19.8	2.8	0	0	0	3	1	0	0	0	0	0	0	0
23:00	**2**	-	23.5	1.8	0	0	0	0	2	0	0	0	0	0	0	0
12H,7-19	**371**	**28**	**21.9**	**5.6**	**3**	**3**	**46**	**101**	**130**	**81**	**6**	**1**	**0**	**0**	**0**	**0**
16H,6-22	**406**	**28**	**22**	**5.5**	**3**	**3**	**48**	**112**	**141**	**92**	**6**	**1**	**0**	**0**	**0**	**0**
18H,6-24	**412**	**28**	**22**	**5.5**	**3**	**3**	**48**	**115**	**144**	**92**	**6**	**1**	**0**	**0**	**0**	**0**
24H,0-24	**422**	**27.9**	**21.9**	**5.5**	**3**	**3**	**48**	**122**	**147**	**92**	**6**	**1**	**0**	**0**	**0**	**0**

19028		RUDHEATH					Site No: 19028002			Location	Site 2, Access to Chemical Plant, Rudheath (Fence)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Outbound									
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<6Mph**	**6-<11**	**11-<16**	**16-<21**	**21-<26**	**26-<31**	**31-<36**	**36-<41**	**41-<46**	**46-<51**	**51-<56**	**=>56**
Fri 26-Jun-15																
00:00	**0**	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
01:00	**0**	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
02:00	**0**	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
03:00	**3**	-	18.5	1.7	0	0	0	3	0	0	0	0	0	0	0	0
04:00	**4**	-	18.5	1.6	0	0	0	4	0	0	0	0	0	0	0	0
05:00	**4**	-	16	3.2	0	0	2	2	0	0	0	0	0	0	0	0
06:00	**26**	26.6	23.1	4	0	0	1	5	15	5	0	0	0	0	0	0
07:00	**12**	25.3	21.4	4.7	0	0	1	5	4	2	0	0	0	0	0	0
08:00	**23**	25.2	21.5	4.2	0	0	2	7	12	2	0	0	0	0	0	0
09:00	**35**	24.8	19.5	5.2	0	1	8	12	11	3	0	0	0	0	0	0
10:00	**41**	25.8	20.1	6.1	1	1	8	12	13	5	1	0	0	0	0	0
11:00	**35**	25.4	21.8	3.7	0	0	0	16	15	4	0	0	0	0	0	0
12:00	**32**	28.1	22.3	5.3	0	0	4	9	10	9	0	0	0	0	0	0
13:00	**22**	26.3	22.4	5.1	0	0	2	6	10	3	1	0	0	0	0	0
14:00	**35**	28	23.1	4.7	0	0	1	11	14	8	1	0	0	0	0	0
15:00	**52**	29.6	24.2	5.5	0	1	2	11	16	19	3	0	0	0	0	0
16:00	**34**	29.8	24.8	5.3	0	0	2	6	9	15	2	0	0	0	0	0
17:00	**26**	27.3	22.3	4.8	0	0	2	8	10	6	0	0	0	0	0	0
18:00	**28**	30	25.5	5.3	0	0	2	3	7	14	2	0	0	0	0	0
19:00	**3**	-	20.2	11.6	0	0	2	0	0	0	1	0	0	0	0	0
20:00	**13**	28.6	24.7	4.8	0	0	1	0	8	3	1	0	0	0	0	0
21:00	**2**	-	18.5	1.8	0	0	0	2	0	0	0	0	0	0	0	0
22:00	**1**	-	28.5	-	0	0	0	0	0	1	0	0	0	0	0	0
23:00	**1**	-	23.5	-	0	0	0	0	1	0	0	0	0	0	0	0
12H,7-19	**375**	**28.4**	**22.5**	**5.3**	**1**	**3**	**34**	**106**	**131**	**90**	**10**	**0**	**0**	**0**	**0**	**0**
16H,6-22	**419**	**28.4**	**22.5**	**5.3**	**1**	**3**	**38**	**113**	**154**	**98**	**12**	**0**	**0**	**0**	**0**	**0**
18H,6-24	**421**	**28.4**	**22.6**	**5.3**	**1**	**3**	**38**	**113**	**155**	**99**	**12**	**0**	**0**	**0**	**0**	**0**
24H,0-24	**432**	**28.3**	**22.4**	**5.3**	**1**	**3**	**40**	**122**	**155**	**99**	**12**	**0**	**0**	**0**	**0**	**0**

19028			RUDHEATH				Site No: 19028002			Location	Site 2, Access to Chemical Plant, Rudheath (Fence)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Outbound									
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<6Mph	6-<11	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	=>56
Sat 27-Jun-15																
00:00	5	-	17.5	2.6	0	0	1	4	0	0	0	0	0	0	0	0
01:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
03:00	1	-	23.5	-	0	0	0	0	1	0	0	0	0	0	0	0
04:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
05:00	3	-	23.5	1.7	0	0	0	0	3	0	0	0	0	0	0	0
06:00	11	29.6	24.9	5.2	0	0	0	3	3	4	1	0	0	0	0	0
07:00	4	-	23.5	4.2	0	0	0	1	2	1	0	0	0	0	0	0
08:00	9	-	21.3	4.6	0	0	0	6	1	2	0	0	0	0	0	0
09:00	4	-	21	5.2	0	0	0	3	0	1	0	0	0	0	0	0
10:00	4	-	27.3	2.8	0	0	0	0	1	3	0	0	0	0	0	0
11:00	12	28.8	23.1	6	0	0	1	4	3	3	1	0	0	0	0	0
12:00	12	28.7	22.7	6.1	0	0	2	3	2	5	0	0	0	0	0	0
13:00	1	-	23.5	-	0	0	0	0	1	0	0	0	0	0	0	0
14:00	2	-	18.5	1.8	0	0	0	2	0	0	0	0	0	0	0	0
15:00	10	29.3	25.5	4.5	0	0	0	2	2	6	0	0	0	0	0	0
16:00	11	28.3	23	4.9	0	0	0	5	2	4	0	0	0	0	0	0
17:00	4	-	21	6.5	0	0	1	1	1	1	0	0	0	0	0	0
18:00	11	27.4	24	3.8	0	0	0	2	6	3	0	0	0	0	0	0
19:00	4	-	18.5	9.1	0	1	1	0	1	1	0	0	0	0	0	0
20:00	2	-	23.5	1.8	0	0	0	0	2	0	0	0	0	0	0	0
21:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
23:00	3	-	25.2	3.1	0	0	0	0	2	1	0	0	0	0	0	0
12H,7-19	84	28.9	23.1	5	0	0	4	29	21	29	1	0	0	0	0	0
16H,6-22	101	29	23.2	5.3	0	1	5	32	27	34	2	0	0	0	0	0
18H,6-24	104	29	23.2	5.2	0	1	5	32	29	35	2	0	0	0	0	0
24H,0-24	113	28.8	23	5.2	0	1	6	36	33	35	2	0	0	0	0	0

AXIOM Traffic Limited

Data produced by Axiom Traffic Ltd

19028		RUDHEATH					Site No: 19028002			Location	Site 2, Access to Chemical Plant, Rudheath (Fence)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Outbound									
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<6Mph	6-<11	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	=>56
Sun 28-Jun-15																
00:00	2	-	28.5	1.8	0	0	0	0	0	2	0	0	0	0	0	0
01:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
04:00	1	-	28.5	-	0	0	0	0	0	1	0	0	0	0	0	0
05:00	1	-	28.5	-	0	0	0	0	0	1	0	0	0	0	0	0
06:00	14	26.7	21.7	5.6	0	0	3	2	6	3	0	0	0	0	0	0
07:00	5	-	21.5	3.1	0	0	0	2	3	0	0	0	0	0	0	0
08:00	3	-	21.8	5.9	0	0	0	2	0	1	0	0	0	0	0	0
09:00	5	-	22.5	4.4	0	0	0	2	2	1	0	0	0	0	0	0
10:00	3	-	16.8	3.1	0	0	1	2	0	0	0	0	0	0	0	0
11:00	5	-	17.5	4.4	0	0	2	2	1	0	0	0	0	0	0	0
12:00	3	-	20.2	7.6	0	0	1	1	0	1	0	0	0	0	0	0
13:00	3	-	21.8	3.1	0	0	0	1	2	0	0	0	0	0	0	0
14:00	8	-	17.9	2.3	0	0	1	7	0	0	0	0	0	0	0	0
15:00	4	-	18.5	1.6	0	0	0	4	0	0	0	0	0	0	0	0
16:00	16	25.3	21.3	7.2	0	0	4	4	6	0	1	1	0	0	0	0
17:00	5	-	20.5	7.7	0	0	2	1	0	2	0	0	0	0	0	0
18:00	15	29	23.8	5	0	0	0	6	2	7	0	0	0	0	0	0
19:00	3	-	20.2	7.6	0	0	1	1	0	1	0	0	0	0	0	0
20:00	2	-	23.5	1.8	0	0	0	0	2	0	0	0	0	0	0	0
21:00	2	-	26	3.5	0	0	0	0	1	1	0	0	0	0	0	0
22:00	1	-	23.5	-	0	0	0	0	1	0	0	0	0	0	0	0
23:00	1	-	28.5	-	0	0	0	0	0	1	0	0	0	0	0	0
12H,7-19	75	26.9	20.9	5.5	0	0	11	34	16	12	1	1	0	0	0	0
16H,6-22	96	27.2	21.2	5.5	0	0	15	37	25	17	1	1	0	0	0	0
18H,6-24	98	27.3	21.3	5.5	0	0	15	37	26	18	1	1	0	0	0	0
24H,0-24	102	27.9	21.5	5.6	0	0	15	37	26	22	1	1	0	0	0	0

19028 RUDHEATH Site No: 19028002 Location Site 2, Access to Chemical Plant, Rudheath (Fence)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Outbound

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<6Mph	6-<11	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	=>56
Mon 29-Jun-15																
00:00	**1**	-	28.5	-	0	0	0	0	0	1	0	0	0	0	0	0
01:00	**1**	-	28.5	-	0	0	0	0	0	1	0	0	0	0	0	0
02:00	**1**	-	18.5	-	0	0	0	1	0	0	0	0	0	0	0	0
03:00	**0**	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
04:00	**2**	-	21	3.5	0	0	0	1	1	0	0	0	0	0	0	0
05:00	**9**	-	23.5	2.8	0	0	0	1	7	1	0	0	0	0	0	0
06:00	**12**	28.1	23.9	4.2	0	0	0	3	5	4	0	0	0	0	0	0
07:00	**14**	26.7	19.9	5.5	0	0	3	7	1	3	0	0	0	0	0	0
08:00	**28**	24.3	19.9	4.3	0	0	5	11	11	1	0	0	0	0	0	0
09:00	**30**	22.3	19.2	3.9	0	0	4	20	4	2	0	0	0	0	0	0
10:00	**32**	23.6	18.7	4.7	0	0	10	13	7	2	0	0	0	0	0	0
11:00	**24**	27.6	22.5	4.6	0	0	1	9	8	6	0	0	0	0	0	0
12:00	**45**	25.8	21.3	5.9	0	3	3	14	18	5	2	0	0	0	0	0
13:00	**33**	25.4	20.8	5.5	0	0	7	10	11	4	1	0	0	0	0	0
14:00	**21**	26.4	23.3	3.6	0	0	0	5	12	4	0	0	0	0	0	0
15:00	**48**	29.4	23.5	5.6	0	0	4	13	13	15	3	0	0	0	0	0
16:00	**79**	28.3	23.1	5.3	0	2	5	14	38	17	3	0	0	0	0	0
17:00	**15**	28.3	23.5	4.8	0	0	1	3	6	5	0	0	0	0	0	0
18:00	**25**	30.5	25.9	5.6	0	0	1	5	3	13	3	0	0	0	0	0
19:00	**8**	-	14.9	8.2	1	2	2	1	1	1	0	0	0	0	0	0
20:00	**12**	28.7	23.9	4.7	0	0	0	4	3	5	0	0	0	0	0	0
21:00	**1**	-	23.5	-	0	0	0	0	1	0	0	0	0	0	0	0
22:00	**0**	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
23:00	**3**	-	20.2	5.9	0	0	1	0	2	0	0	0	0	0	0	0
12H,7-19	**394**	**27.9**	**21.9**	**5.4**	**0**	**5**	**44**	**124**	**132**	**77**	**12**	**0**	**0**	**0**	**0**	**0**
16H,6-22	**427**	**28**	**21.9**	**5.5**	**1**	**7**	**46**	**132**	**142**	**87**	**12**	**0**	**0**	**0**	**0**	**0**
18H,6-24	**430**	**28**	**21.9**	**5.5**	**1**	**7**	**47**	**132**	**144**	**87**	**12**	**0**	**0**	**0**	**0**	**0**
24H,0-24	**444**	**27.9**	**21.9**	**5.5**	**1**	**7**	**47**	**135**	**152**	**90**	**12**	**0**	**0**	**0**	**0**	**0**

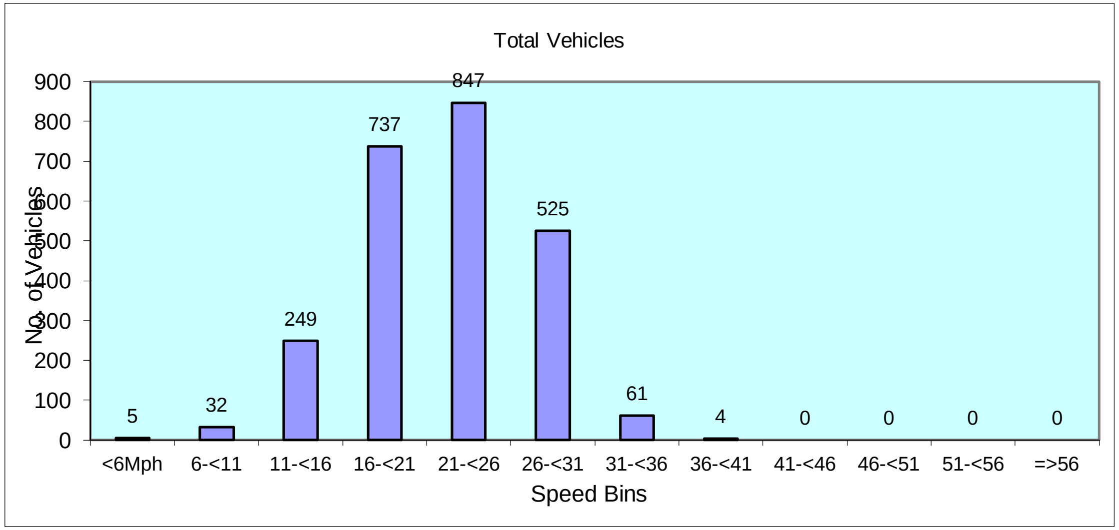
19028			RUDHEATH				Site No: 19028002			Location	Site 2, Access to Chemical Plant, Rudheath (Fence)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Outbound									
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<6Mph**	**6-<11**	**11-<16**	**16-<21**	**21-<26**	**26-<31**	**31-<36**	**36-<41**	**41-<46**	**46-<51**	**51-<56**	**=>56**
Tue 30-Jun-15																
00:00	**2**	-	13.5	1.8	0	0	2	0	0	0	0	0	0	0	0	0
01:00	**0**	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
02:00	**3**	-	21.8	3.1	0	0	0	1	2	0	0	0	0	0	0	0
03:00	**2**	-	18.5	1.8	0	0	0	2	0	0	0	0	0	0	0	0
04:00	**0**	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
05:00	**6**	-	23.5	3.4	0	0	0	1	4	1	0	0	0	0	0	0
06:00	**14**	27.8	23.9	4.4	0	0	1	1	8	4	0	0	0	0	0	0
07:00	**21**	23.8	20.2	3.6	0	0	1	13	6	1	0	0	0	0	0	0
08:00	**33**	25.6	21.7	4.9	0	1	3	7	18	4	0	0	0	0	0	0
09:00	**31**	24.7	20.3	4.2	0	0	3	17	8	3	0	0	0	0	0	0
10:00	**44**	25.7	21.1	5.1	0	0	9	9	20	6	0	0	0	0	0	0
11:00	**43**	25.4	20.7	4.9	0	1	5	16	16	5	0	0	0	0	0	0
12:00	**35**	24.5	20.5	3.8	0	0	1	22	9	3	0	0	0	0	0	0
13:00	**32**	24.2	18.5	5.9	0	5	3	13	9	2	0	0	0	0	0	0
14:00	**36**	24	18.2	5.4	0	3	10	10	12	1	0	0	0	0	0	0
15:00	**85**	28.7	22.9	5.1	0	0	6	27	26	24	2	0	0	0	0	0
16:00	**75**	28.6	23.8	4.5	0	0	4	11	37	22	1	0	0	0	0	0
17:00	**22**	28.7	24.2	4.4	0	0	0	5	10	6	1	0	0	0	0	0
18:00	**23**	31.1	26.3	5.6	0	0	0	4	7	8	3	1	0	0	0	0
19:00	**13**	29.6	24.3	6.5	0	1	0	2	4	5	1	0	0	0	0	0
20:00	**7**	-	22.8	7.4	0	1	0	1	2	3	0	0	0	0	0	0
21:00	**4**	-	23.5	6	0	0	0	2	0	2	0	0	0	0	0	0
22:00	**1**	-	28.5	-	0	0	0	0	0	1	0	0	0	0	0	0
23:00	**2**	-	21	3.5	0	0	0	1	1	0	0	0	0	0	0	0
12H,7-19	**480**	**27.2**	**21.7**	**5.2**	**0**	**10**	**45**	**154**	**178**	**85**	**7**	**1**	**0**	**0**	**0**	**0**
16H,6-22	**518**	**27.5**	**21.9**	**5.3**	**0**	**12**	**46**	**160**	**192**	**99**	**8**	**1**	**0**	**0**	**0**	**0**
18H,6-24	**521**	**27.5**	**21.9**	**5.3**	**0**	**12**	**46**	**161**	**193**	**100**	**8**	**1**	**0**	**0**	**0**	**0**
24H,0-24	**534**	**27.5**	**21.8**	**5.3**	**0**	**12**	**48**	**165**	**199**	**101**	**8**	**1**	**0**	**0**	**0**	**0**

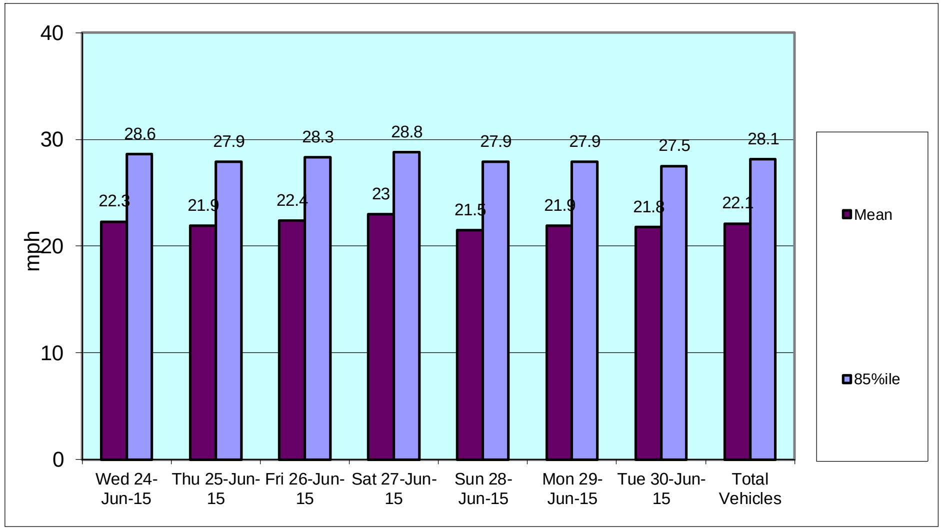
AXIOM Traffic Limited

Data produced by
Axiom Traffic Ltd

19028			RUDHEATH					Site No: 19028002			Location	Site 2, Access to Chemical Plant, Rudheath (Fence)				
Wed 24-Jun-15 to Tue 30-Jun-15								Channel: Outbound								

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<6Mph	6-<11	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	=>56
Daily Totals																
Wed 24-Jun-15	**413**	28.6	22.3	5.7	0	6	45	120	135	86	20	1	0	0	0	0
Thu 25-Jun-15	**422**	27.9	21.9	5.5	3	3	48	122	147	92	6	1	0	0	0	0
Fri 26-Jun-15	**432**	28.3	22.4	5.3	1	3	40	122	155	99	12	0	0	0	0	0
Sat 27-Jun-15	**113**	28.8	23	5.2	0	1	6	36	33	35	2	0	0	0	0	0
Sun 28-Jun-15	**102**	27.9	21.5	5.6	0	0	15	37	26	22	1	1	0	0	0	0
Mon 29-Jun-15	**444**	27.9	21.9	5.5	1	7	47	135	152	90	12	0	0	0	0	0
Tue 30-Jun-15	**534**	27.5	21.8	5.3	0	12	48	165	199	101	8	1	0	0	0	0
Total Vehicles																
[--]	**2460**	28.1	22.1	5.4	5	32	249	737	847	525	61	4	0	0	0	0

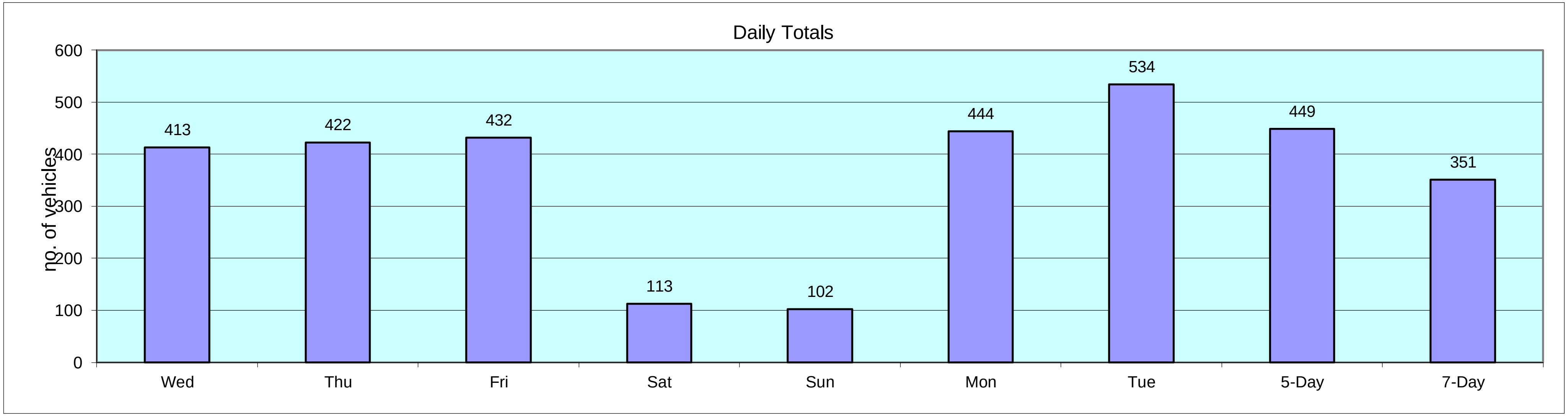




19028	RUDHEATH		Site No: 19028002 Channel: Outbound		Location	Site 2, Access to Chemical Plant, Rudheath (Fence)		
TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av
Week Begin: 24-Jun-15									
00:00	**3**	0	0	5	2	1	2	1	2
01:00	**1**	0	0	0	0	1	0	0	0
02:00	**2**	1	0	0	0	1	3	1	1
03:00	**0**	1	3	1	0	0	2	1	1
04:00	**3**	3	4	0	1	2	0	2	2
05:00	**4**	5	4	3	1	9	6	6	5
06:00	**20**	18	26	11	14	12	14	18	16
07:00	**9**	8	12	4	5	14	21	13	10
08:00	**17**	26	23	9	3	28	33	25	20
09:00	**32**	22	35	4	5	30	31	30	23
10:00	**29**	25	41	4	3	32	44	34	25
11:00	**34**	37	35	12	5	24	43	35	27
12:00	**36**	28	32	12	3	45	35	35	27
13:00	**28**	32	22	1	3	33	32	29	22
14:00	**30**	36	35	2	8	21	36	32	24
15:00	**53**	62	52	10	4	48	85	60	45
16:00	**56**	54	34	11	16	79	75	60	46
17:00	**18**	18	26	4	5	15	22	20	15
18:00	**20**	23	28	11	15	25	23	24	21
19:00	**9**	5	3	4	3	8	13	8	6
20:00	**8**	12	13	2	2	12	7	10	8
21:00	**0**	0	2	0	2	1	4	1	1
22:00	**1**	4	1	0	1	0	1	1	1
23:00	**0**	2	1	3	1	3	2	2	2
12H,7-19	**362**	**371**	**375**	**84**	**75**	**394**	**480**	**396**	**306**
16H,6-22	**399**	**406**	**419**	**101**	**96**	**427**	**518**	**434**	**338**
18H,6-24	**400**	**412**	**421**	**104**	**98**	**430**	**521**	**437**	**341**
24H,0-24	**413**	**422**	**432**	**113**	**102**	**444**	**534**	**449**	**351**
Am	**11:00**	**11:00**	**10:00**	**11:00**	**06:00**	**10:00**	**10:00**	**-**	**-**
Peak	**34**	**37**	**41**	**12**	**14**	**32**	**44**	**38**	**31**
Pm	**16:00**	**15:00**	**15:00**	**12:00**	**16:00**	**16:00**	**15:00**	**-**	**-**
Peak	**56**	**62**	**52**	**12**	**16**	**79**	**85**	**67**	**52**

19028	RUDHEATH	Site No: 19028002 Channel: Outbound	Location	Site 2, Access to Chemical Plant, Rudheath (Fence)

TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av




South of Site Access

19028		RUDHEATH JUNE 2015								
Site	**Location**	**Direction**	**Start Date**	**End Date**	**Posted Speed Limit (PSL)**	**Total Vehicles**	**5 Day Ave.**	**7 Day Ave.**	**Average 85%ile Speed**	**Average Mean Speed**
Site No: 19028003	Site 3, Griffiths Road, Rudheath (Fence) SJ 68380 73726	Channel: Northbound	Wed 24-Jun-15	Tue 30-Jun-15	60	24417	3851	3488	53.1	45.2
		Channel: Southbound	Wed 24-Jun-15	Tue 30-Jun-15		29433	4681	4205	52.7	44.8

44.979

	7 day average			5 day average		
7 day ave	northbound	southbound	Two Way	northbound	southbound	Two Way
00:00	48.3	48.2	48.2	47.2	48.6	47.9
01:00	42.8	47.6	45.2	43.2	45.6	44.4
02:00	46.2	44.1	45.2	44.8	43.7	44.2
03:00	44.2	42.6	43.4	44.2	41.6	42.9
04:00	46.3	46.6	46.4	47.5	46.6	47.1
05:00	47.2	46.5	46.9	47.2	46.8	47.0
06:00	44.9	44.5	44.7	45.3	45.1	45.2
07:00	44.2	46.3	45.2	43.5	45.6	44.6
08:00	45.4	45.1	45.3	44.7	44.0	44.4
09:00	43.4	44.1	43.7	42.6	43.0	42.8
10:00	43.6	43.6	43.6	42.3	42.8	42.6
11:00	43.7	43.6	43.6	43.1	43.1	43.1
12:00	45.1	44.5	44.8	44.8	43.5	44.1
13:00	44.8	44.3	44.5	44.4	43.8	44.1
14:00	44.8	43.7	44.3	44.3	42.7	43.5
15:00	45.1	43.6	44.3	44.5	42.7	43.6
16:00	45.6	43.7	44.6	44.9	42.5	43.7
17:00	47.1	45.3	46.2	47.2	44.5	45.8
18:00	46.5	46.5	46.5	46.5	45.8	46.1
19:00	47.2	47.5	47.4	47.0	47.4	47.2
20:00	47.5	48.0	47.7	47.3	47.5	47.4
21:00	47.5	48.9	48.2	47.0	49.0	48.0
22:00	47.2	47.5	47.3	47.4	47.7	47.6
23:00	47.4	46.1	46.7	45.6	46.7	46.2
12H,7-19	44.9	44.4	44.6	44.4	43.6	44.0
16H,6-22	45.1	44.7	44.9	44.6	44.0	44.3
18H,6-24	45.1	44.7	44.9	44.7	44.0	44.4
24H,0-24	45.2	44.8	45.0	44.7	44.1	44.4

19028		RUDHEATH			Site No: 19028003		Location	Site 3, Griffiths Road, Rudheath (Fence)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound						

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Wed 24-Jun-15											
00:00	**9**	0	0.0	7	77.8	1	11.1	1	11.1	0	0.0
01:00	**7**	0	0.0	3	42.9	1	14.3	3	42.9	0	0.0
02:00	**4**	0	0.0	3	75.0	1	25.0	0	0.0	0	0.0
03:00	**5**	0	0.0	3	60.0	1	20.0	1	20.0	0	0.0
04:00	**18**	0	0.0	12	66.7	3	16.7	3	16.7	0	0.0
05:00	**48**	0	0.0	29	60.4	9	18.8	10	20.8	0	0.0
06:00	**146**	3	2.1	116	79.5	18	12.3	9	6.2	0	0.0
07:00	**453**	7	1.6	375	82.8	57	12.6	13	2.9	1	0.2
08:00	**444**	2	0.5	373	84.0	54	12.2	15	3.4	0	0.0
09:00	**426**	2	0.5	369	86.6	38	8.9	16	3.8	1	0.2
10:00	**369**	2	0.5	323	87.5	32	8.7	11	3.0	1	0.3
11:00	**290**	3	1.0	235	81.0	35	12.1	17	5.9	0	0.0
12:00	**254**	2	0.8	203	79.9	35	13.8	13	5.1	1	0.4
13:00	**240**	0	0.0	209	87.1	25	10.4	6	2.5	0	0.0
14:00	**222**	2	0.9	185	83.3	26	11.7	9	4.1	0	0.0
15:00	**242**	2	0.8	202	83.5	25	10.3	12	5.0	1	0.4
16:00	**274**	5	1.8	236	86.1	27	9.9	6	2.2	0	0.0
17:00	**313**	2	0.6	278	88.8	26	8.3	7	2.2	0	0.0
18:00	**215**	5	2.3	190	88.4	11	5.1	9	4.2	0	0.0
19:00	**138**	2	1.5	125	90.6	4	2.9	7	5.1	0	0.0
20:00	**81**	1	1.2	66	81.5	7	8.6	6	7.4	1	1.2
21:00	**54**	2	3.7	47	87.0	2	3.7	3	5.6	0	0.0
22:00	**39**	1	2.6	35	89.7	3	7.7	0	0.0	0	0.0
23:00	**20**	0	0.0	17	85.0	1	5.0	2	10.0	0	0.0
12H,7-19	**3742**	**34**	**0.9**	**3178**	**84.9**	**391**	**10.5**	**134**	**3.6**	**5**	**0.1**
16H,6-22	**4161**	**42**	**1.0**	**3532**	**84.9**	**422**	**10.1**	**159**	**3.8**	**6**	**0.1**
18H,6-24	**4220**	**43**	**1.0**	**3584**	**84.9**	**426**	**10.1**	**161**	**3.8**	**6**	**0.1**
24H,0-24	**4311**	**43**	**1.0**	**3641**	**84.5**	**442**	**10.3**	**179**	**4.2**	**6**	**0.1**

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Axiom Traffic Ltd

19028	RUDHEATH	Site No: 19028003	Location	Site 3, Griffiths Road, Rudheath (Fence)
Wed 24-Jun-15 to Tue 30-Jun-15		Channel: Northbound		

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Thu 25-Jun-15											
00:00	**14**	1	7.1	8	57.1	2	14.3	3	21.4	0	0.0
01:00	**13**	1	7.7	5	38.5	4	30.8	3	23.1	0	0.0
02:00	**7**	0	0.0	3	42.9	1	14.3	3	42.9	0	0.0
03:00	**10**	0	0.0	7	70.0	1	10.0	2	20.0	0	0.0
04:00	**12**	0	0.0	9	75.0	1	8.3	2	16.7	0	0.0
05:00	**41**	0	0.0	31	75.6	3	7.3	7	17.1	0	0.0
06:00	**96**	1	1.0	81	84.4	10	10.4	4	4.2	0	0.0
07:00	**228**	8	3.5	191	83.8	26	11.4	3	1.3	0	0.0
08:00	**311**	2	0.6	259	83.3	41	13.2	9	2.9	0	0.0
09:00	**252**	6	2.4	200	79.4	35	13.9	11	4.4	0	0.0
10:00	**215**	0	0.0	174	80.9	31	14.4	9	4.2	1	0.5
11:00	**230**	5	2.2	193	83.9	24	10.4	8	3.5	0	0.0
12:00	**237**	0	0.0	198	83.5	26	11.0	13	5.5	0	0.0
13:00	**239**	2	0.8	200	83.7	25	10.5	12	5.0	0	0.0
14:00	**232**	2	0.9	191	82.3	26	11.2	13	5.6	0	0.0
15:00	**244**	1	0.4	200	82.0	31	12.7	12	4.9	0	0.0
16:00	**285**	2	0.7	248	87.0	23	8.1	11	3.9	1	0.4
17:00	**287**	1	0.4	258	89.9	16	5.6	12	4.2	0	0.0
18:00	**242**	4	1.7	217	89.7	11	4.6	9	3.7	1	0.4
19:00	**155**	1	0.7	141	91.0	10	6.5	3	1.9	0	0.0
20:00	**74**	2	2.7	66	89.2	4	5.4	2	2.7	0	0.0
21:00	**72**	2	2.8	61	84.7	4	5.6	5	6.9	0	0.0
22:00	**56**	0	0.0	45	80.4	2	3.6	9	16.1	0	0.0
23:00	**19**	0	0.0	17	89.5	1	5.3	1	5.3	0	0.0
12H,7-19	**3002**	**33**	**1.1**	**2529**	**84.2**	**315**	**10.5**	**122**	**4.1**	**3**	**0.1**
16H,6-22	**3399**	**39**	**1.2**	**2878**	**84.7**	**343**	**10.1**	**136**	**4.0**	**3**	**0.1**
18H,6-24	**3474**	**39**	**1.1**	**2940**	**84.6**	**346**	**10.0**	**146**	**4.2**	**3**	**0.1**
24H,0-24	**3571**	**41**	**1.2**	**3003**	**84.1**	**358**	**10.0**	**166**	**4.7**	**3**	**0.1**

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19028		RUDHEATH			Site No: 19028003		Location	Site 3, Griffiths Road, Rudheath (Fence)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Fri 26-Jun-15											
00:00	**13**	0	0.0	10	76.9	1	7.7	2	15.4	0	0.0
01:00	**8**	0	0.0	5	62.5	2	25.0	1	12.5	0	0.0
02:00	**9**	0	0.0	6	66.7	1	11.1	2	22.2	0	0.0
03:00	**9**	0	0.0	6	66.7	1	11.1	2	22.2	0	0.0
04:00	**15**	0	0.0	10	66.7	2	13.3	3	20.0	0	0.0
05:00	**36**	0	0.0	32	88.9	1	2.8	3	8.3	0	0.0
06:00	**101**	2	2.0	80	79.2	10	9.9	9	8.9	0	0.0
07:00	**264**	2	0.8	224	84.9	30	11.4	7	2.7	1	0.4
08:00	**313**	3	1.0	251	80.2	47	15.0	12	3.8	0	0.0
09:00	**257**	1	0.4	215	83.7	26	10.1	13	5.1	2	0.8
10:00	**245**	1	0.4	195	79.6	35	14.3	14	5.7	0	0.0
11:00	**243**	0	0.0	195	80.3	37	15.2	11	4.5	0	0.0
12:00	**289**	3	1.0	247	85.5	28	9.7	11	3.8	0	0.0
13:00	**318**	0	0.0	270	84.9	31	9.8	17	5.4	0	0.0
14:00	**280**	4	1.4	239	85.4	27	9.6	10	3.6	0	0.0
15:00	**288**	2	0.7	240	83.3	36	12.5	10	3.5	0	0.0
16:00	**309**	7	2.3	255	82.5	30	9.7	17	5.5	0	0.0
17:00	**308**	0	0.0	281	91.2	19	6.2	7	2.3	1	0.3
18:00	**316**	0	0.0	283	89.6	25	7.9	8	2.5	0	0.0
19:00	**189**	0	0.0	169	89.4	13	6.9	7	3.7	0	0.0
20:00	**102**	1	1.0	96	94.1	2	2.0	3	2.9	0	0.0
21:00	**74**	0	0.0	70	94.6	2	2.7	2	2.7	0	0.0
22:00	**39**	0	0.0	35	89.7	3	7.7	1	2.6	0	0.0
23:00	**16**	0	0.0	10	62.5	3	18.8	3	18.8	0	0.0
12H,7-19	**3430**	**23**	**0.7**	**2895**	**84.4**	**371**	**10.8**	**137**	**4.0**	**4**	**0.1**
16H,6-22	**3896**	**26**	**0.7**	**3310**	**85.0**	**398**	**10.2**	**158**	**4.1**	**4**	**0.1**
18H,6-24	**3951**	**26**	**0.7**	**3355**	**84.9**	**404**	**10.2**	**162**	**4.1**	**4**	**0.1**
24H,0-24	**4041**	**26**	**0.6**	**3424**	**84.7**	**412**	**10.2**	**175**	**4.3**	**4**	**0.1**

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19028 **RUDHEATH** **Site No: 19028003** **Location** **Site 3, Griffiths Road, Rudheath (Fence)**

Wed 24-Jun-15 to Tue 30-Jun-15 **Channel: Northbound**

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sat 27-Jun-15											
00:00	**20**	0	0.0	16	80.0	3	15.0	1	5.0	0	0.0
01:00	**8**	0	0.0	6	75.0	0	0.0	2	25.0	0	0.0
02:00	**5**	0	0.0	4	80.0	0	0.0	1	20.0	0	0.0
03:00	**7**	0	0.0	2	28.6	2	28.6	3	42.9	0	0.0
04:00	**6**	0	0.0	5	83.3	0	0.0	1	16.7	0	0.0
05:00	**33**	0	0.0	29	87.9	0	0.0	4	12.1	0	0.0
06:00	**42**	0	0.0	34	81.0	2	4.8	6	14.3	0	0.0
07:00	**73**	2	2.7	52	71.2	15	20.6	4	5.5	0	0.0
08:00	**153**	2	1.3	119	77.8	18	11.8	14	9.2	0	0.0
09:00	**209**	2	1.0	186	89.0	15	7.2	6	2.9	0	0.0
10:00	**273**	2	0.7	247	90.5	22	8.1	2	0.7	0	0.0
11:00	**305**	2	0.7	275	90.2	21	6.9	7	2.3	0	0.0
12:00	**278**	0	0.0	253	91.0	20	7.2	5	1.8	0	0.0
13:00	**272**	4	1.5	248	91.2	15	5.5	5	1.8	0	0.0
14:00	**268**	5	1.9	246	91.8	14	5.2	3	1.1	0	0.0
15:00	**214**	9	4.2	191	89.3	10	4.7	4	1.9	0	0.0
16:00	**181**	5	2.8	164	90.6	10	5.5	2	1.1	0	0.0
17:00	**142**	5	3.5	128	90.1	7	4.9	2	1.4	0	0.0
18:00	**119**	2	1.7	112	94.1	3	2.5	2	1.7	0	0.0
19:00	**119**	1	0.8	112	94.1	5	4.2	1	0.8	0	0.0
20:00	**94**	1	1.1	89	94.7	4	4.3	0	0.0	0	0.0
21:00	**68**	5	7.4	61	89.7	2	2.9	0	0.0	0	0.0
22:00	**36**	1	2.8	32	88.9	2	5.6	1	2.8	0	0.0
23:00	**28**	0	0.0	25	89.3	3	10.7	0	0.0	0	0.0
12H,7-19	**2487**	**40**	**1.6**	**2221**	**89.3**	**170**	**6.8**	**56**	**2.3**	**0**	**0.0**
16H,6-22	**2810**	**47**	**1.7**	**2517**	**89.6**	**183**	**6.5**	**63**	**2.2**	**0**	**0.0**
18H,6-24	**2874**	**48**	**1.7**	**2574**	**89.6**	**188**	**6.5**	**64**	**2.2**	**0**	**0.0**
24H,0-24	**2953**	**48**	**1.6**	**2636**	**89.3**	**193**	**6.5**	**76**	**2.6**	**0**	**0.0**

19028	RUDHEATH				Site No: 19028003		Location		Site 3, Griffiths Road, Rudheath (Fence)		
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sun 28-Jun-15											
00:00	**25**	1	4.0	22	88.0	1	4.0	1	4.0	0	0.0
01:00	**16**	0	0.0	14	87.5	2	12.5	0	0.0	0	0.0
02:00	**8**	0	0.0	7	87.5	0	0.0	1	12.5	0	0.0
03:00	**4**	0	0.0	3	75.0	1	25.0	0	0.0	0	0.0
04:00	**8**	0	0.0	6	75.0	0	0.0	2	25.0	0	0.0
05:00	**24**	1	4.2	21	87.5	1	4.2	1	4.2	0	0.0
06:00	**30**	1	3.3	26	86.7	2	6.7	1	3.3	0	0.0
07:00	**24**	0	0.0	19	79.2	2	8.3	3	12.5	0	0.0
08:00	**36**	1	2.8	32	88.9	1	2.8	2	5.6	0	0.0
09:00	**111**	3	2.7	95	85.6	10	9.0	3	2.7	0	0.0
10:00	**206**	1	0.5	190	92.2	13	6.3	2	1.0	0	0.0
11:00	**203**	2	1.0	188	92.6	8	3.9	5	2.5	0	0.0
12:00	**242**	3	1.2	225	93.0	7	2.9	7	2.9	0	0.0
13:00	**232**	0	0.0	218	94.0	9	3.9	5	2.2	0	0.0
14:00	**237**	4	1.7	220	92.8	12	5.1	1	0.4	0	0.0
15:00	**215**	2	0.9	203	94.4	7	3.3	3	1.4	0	0.0
16:00	**127**	4	3.2	118	92.9	2	1.6	3	2.4	0	0.0
17:00	**118**	2	1.7	110	93.2	3	2.5	3	2.5	0	0.0
18:00	**106**	1	0.9	95	89.6	7	6.6	3	2.8	0	0.0
19:00	**88**	3	3.4	79	89.8	1	1.1	5	5.7	0	0.0
20:00	**66**	1	1.5	57	86.4	5	7.6	3	4.6	0	0.0
21:00	**40**	1	2.5	33	82.5	4	10.0	2	5.0	0	0.0
22:00	**33**	1	3.0	26	78.8	2	6.1	4	12.1	0	0.0
23:00	**9**	0	0.0	8	88.9	0	0.0	1	11.1	0	0.0
12H,7-19	**1857**	**23**	**1.2**	**1713**	**92.3**	**81**	**4.4**	**40**	**2.2**	**0**	**0.0**
16H,6-22	**2081**	**29**	**1.4**	**1908**	**91.7**	**93**	**4.5**	**51**	**2.5**	**0**	**0.0**
18H,6-24	**2123**	**30**	**1.4**	**1942**	**91.5**	**95**	**4.5**	**56**	**2.6**	**0**	**0.0**
24H,0-24	**2208**	**32**	**1.5**	**2015**	**91.3**	**100**	**4.5**	**61**	**2.8**	**0**	**0.0**

19028			RUDHEATH		Site No: 19028003		Location		Site 3, Griffiths Road, Rudheath (Fence)		
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Mon 29-Jun-15											
00:00	**8**	0	0.0	7	87.5	1	12.5	0	0.0	0	0.0
01:00	**4**	0	0.0	2	50.0	1	25.0	1	25.0	0	0.0
02:00	**5**	0	0.0	4	80.0	0	0.0	1	20.0	0	0.0
03:00	**7**	0	0.0	5	71.4	0	0.0	2	28.6	0	0.0
04:00	**10**	0	0.0	9	90.0	1	10.0	0	0.0	0	0.0
05:00	**36**	1	2.8	31	86.1	1	2.8	3	8.3	0	0.0
06:00	**98**	1	1.0	90	91.8	4	4.1	3	3.1	0	0.0
07:00	**259**	4	1.5	229	88.4	19	7.3	7	2.7	0	0.0
08:00	**305**	4	1.3	252	82.6	33	10.8	16	5.3	0	0.0
09:00	**278**	1	0.4	226	81.3	45	16.2	6	2.2	0	0.0
10:00	**210**	3	1.4	174	82.9	22	10.5	8	3.8	3	1.4
11:00	**235**	1	0.4	198	84.3	23	9.8	13	5.5	0	0.0
12:00	**268**	1	0.4	214	79.9	41	15.3	12	4.5	0	0.0
13:00	**258**	1	0.4	215	83.3	32	12.4	10	3.9	0	0.0
14:00	**210**	1	0.5	163	77.6	37	17.6	9	4.3	0	0.0
15:00	**259**	2	0.8	213	82.2	34	13.1	10	3.9	0	0.0
16:00	**281**	4	1.4	237	84.3	29	10.3	10	3.6	1	0.4
17:00	**314**	2	0.6	288	91.7	17	5.4	7	2.2	0	0.0
18:00	**235**	2	0.9	209	88.9	12	5.1	12	5.1	0	0.0
19:00	**159**	5	3.1	140	88.1	12	7.6	2	1.3	0	0.0
20:00	**83**	3	3.6	69	83.1	6	7.2	5	6.0	0	0.0
21:00	**64**	7	10.9	53	82.8	2	3.1	2	3.1	0	0.0
22:00	**35**	0	0.0	32	91.4	1	2.9	2	5.7	0	0.0
23:00	**17**	0	0.0	15	88.2	1	5.9	1	5.9	0	0.0
12H,7-19	**3112**	**26**	**0.8**	**2618**	**84.1**	**344**	**11.1**	**120**	**3.9**	**4**	**0.1**
16H,6-22	**3516**	**42**	**1.2**	**2970**	**84.5**	**368**	**10.5**	**132**	**3.8**	**4**	**0.1**
18H,6-24	**3568**	**42**	**1.2**	**3017**	**84.6**	**370**	**10.4**	**135**	**3.8**	**4**	**0.1**
24H,0-24	**3638**	**43**	**1.2**	**3075**	**84.5**	**374**	**10.3**	**142**	**3.9**	**4**	**0.1**

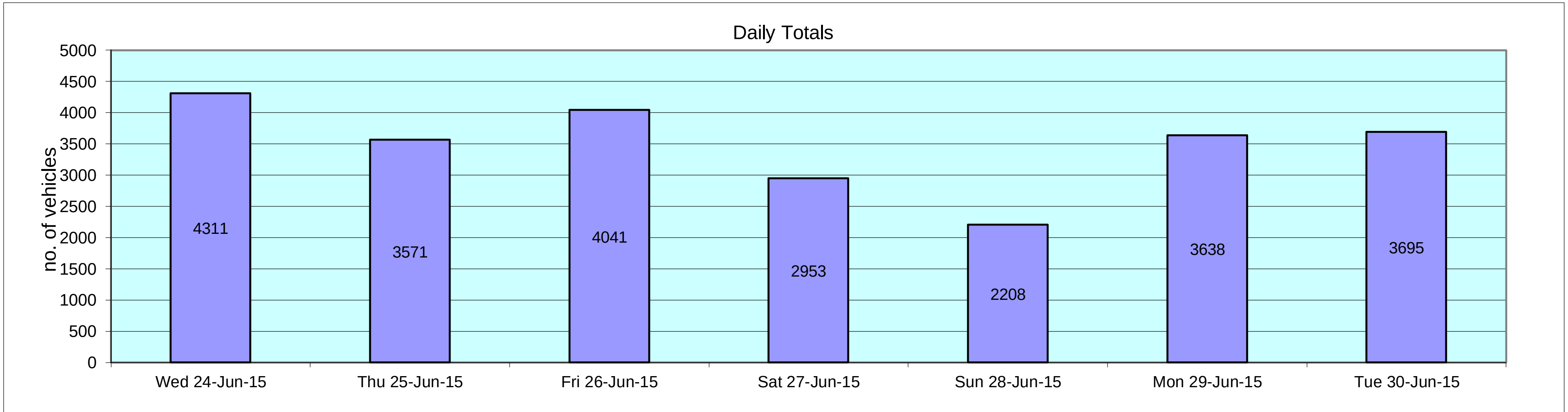
19028 RUDHEATH Site No: 19028003 Location Site 3, Griffiths Road, Rudheath (Fence)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Northbound

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Tue 30-Jun-15											
00:00	**10**	0	0.0	7	70.0	1	10.0	2	20.0	0	0.0
01:00	**10**	0	0.0	7	70.0	0	0.0	3	30.0	0	0.0
02:00	**4**	0	0.0	2	50.0	0	0.0	2	50.0	0	0.0
03:00	**10**	1	10.0	3	30.0	2	20.0	4	40.0	0	0.0
04:00	**18**	1	5.6	12	66.7	1	5.6	4	22.2	0	0.0
05:00	**33**	0	0.0	31	93.9	0	0.0	2	6.1	0	0.0
06:00	**105**	2	1.9	87	82.9	6	5.7	10	9.5	0	0.0
07:00	**273**	3	1.1	231	84.6	24	8.8	14	5.1	1	0.4
08:00	**309**	5	1.6	265	85.8	31	10.0	8	2.6	0	0.0
09:00	**306**	2	0.7	248	81.1	49	16.0	7	2.3	0	0.0
10:00	**244**	1	0.4	206	84.4	25	10.3	12	4.9	0	0.0
11:00	**228**	1	0.4	184	80.7	28	12.3	13	5.7	2	0.9
12:00	**276**	2	0.7	229	83.0	37	13.4	7	2.5	1	0.4
13:00	**236**	2	0.9	176	74.6	41	17.4	16	6.8	1	0.4
14:00	**227**	2	0.9	177	78.0	31	13.7	16	7.1	1	0.4
15:00	**275**	5	1.8	219	79.6	37	13.5	13	4.7	1	0.4
16:00	**284**	4	1.4	240	84.5	27	9.5	13	4.6	0	0.0
17:00	**256**	3	1.2	222	86.7	19	7.4	12	4.7	0	0.0
18:00	**215**	1	0.5	196	91.2	12	5.6	6	2.8	0	0.0
19:00	**140**	4	2.9	118	84.3	11	7.9	7	5.0	0	0.0
20:00	**94**	2	2.1	80	85.1	8	8.5	4	4.3	0	0.0
21:00	**69**	5	7.3	59	85.5	3	4.4	2	2.9	0	0.0
22:00	**58**	2	3.5	45	77.6	7	12.1	4	6.9	0	0.0
23:00	**15**	1	6.7	10	66.7	2	13.3	2	13.3	0	0.0
12H,7-19	**3129**	**31**	**1.0**	**2593**	**82.9**	**361**	**11.5**	**137**	**4.4**	**7**	**0.2**
16H,6-22	**3537**	**44**	**1.2**	**2937**	**83.0**	**389**	**11.0**	**160**	**4.5**	**7**	**0.2**
18H,6-24	**3610**	**47**	**1.3**	**2992**	**82.9**	**398**	**11.0**	**166**	**4.6**	**7**	**0.2**
24H,0-24	**3695**	**49**	**1.3**	**3054**	**82.7**	**402**	**10.9**	**183**	**5.0**	**7**	**0.2**

19028	RUDHEATH	Site No: 19028003	Location	Site 3, Griffiths Road, Rudheath (Fence)
Wed 24-Jun-15 to Tue 30-Jun-15		Channel: Northbound		

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Daily Totals											
Wed 24-Jun-15	**4311**	43	1.0	3641	84.5	442	10.3	179	4.2	6	0.1
Thu 25-Jun-15	**3571**	41	1.2	3003	84.1	358	10.0	166	4.7	3	0.1
Fri 26-Jun-15	**4041**	26	0.6	3424	84.7	412	10.2	175	4.3	4	0.1
Sat 27-Jun-15	**2953**	48	1.6	2636	89.3	193	6.5	76	2.6	0	0.0
Sun 28-Jun-15	**2208**	32	1.5	2015	91.3	100	4.5	61	2.8	0	0.0
Mon 29-Jun-15	**3638**	43	1.2	3075	84.5	374	10.3	142	3.9	4	0.1
Tue 30-Jun-15	**3695**	49	1.3	3054	82.7	402	10.9	183	5.0	7	0.2
Total Vehicles											
[--]	**24417**	282	1.2	20848	85.9	2281	9.0	982	3.9	24	0.1



19028			RUDHEATH				Site No: 19028003			Location	Site 3, Griffiths Road, Rudheath (Fence)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Northbound									

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Wed 24-Jun-15																
00:00	**9**	-	47.9	11	0	0	1	1	0	3	3	0	1	0	0	0
01:00	**7**	-	43.9	13.3	0	0	1	2	2	0	0	1	1	0	0	0
02:00	**4**	-	47.3	4.9	0	0	0	0	2	1	1	0	0	0	0	0
03:00	**5**	-	46	7.6	0	0	0	1	2	0	2	0	0	0	0	0
04:00	**18**	54	46.1	8	0	0	0	5	3	5	3	2	0	0	0	0
05:00	**48**	53.2	40.1	11.4	0	0	12	14	8	5	3	5	1	0	0	0
06:00	**146**	54.8	43.9	9.7	0	0	9	49	31	24	14	13	5	1	0	0
07:00	**453**	49.2	41.9	7.1	0	2	13	170	142	91	28	6	1	0	0	0
08:00	**444**	50	42.6	8.1	0	2	25	128	146	96	33	7	5	1	1	0
09:00	**426**	48	37.2	10.8	5	40	54	139	94	74	20	0	0	0	0	0
10:00	**369**	48.5	40.9	7.6	0	3	21	150	108	62	18	6	1	0	0	0
11:00	**290**	49.9	42.7	7.8	0	3	12	83	95	68	21	6	2	0	0	0
12:00	**254**	52.9	44.9	8.3	0	0	12	52	76	62	36	12	2	1	1	0
13:00	**240**	52.7	44.6	8.2	0	1	7	58	74	53	31	11	3	2	0	0
14:00	**222**	52.1	45	7.6	0	0	3	54	68	58	24	12	1	1	1	0
15:00	**242**	52	44.5	7.8	0	0	5	66	69	61	21	17	2	1	0	0
16:00	**274**	50.7	44.2	7.4	0	2	3	65	103	63	24	11	2	0	1	0
17:00	**313**	54.1	46.3	7.9	0	1	9	49	83	82	68	18	2	0	1	0
18:00	**215**	53.2	45.7	8	0	2	7	29	69	61	33	9	5	0	0	0
19:00	**138**	53.5	46.3	7.5	0	0	3	22	36	45	22	8	1	1	0	0
20:00	**81**	54.6	47.6	8.1	0	1	0	9	23	23	17	5	2	0	1	0
21:00	**54**	54.7	46.1	8.9	0	0	2	12	13	8	14	3	2	0	0	0
22:00	**39**	56.8	47.6	9.9	0	0	1	9	6	9	7	4	1	2	0	0
23:00	**20**	54.8	46.1	8.1	0	0	0	5	4	8	0	2	1	0	0	0
12H,7-19	**3742**	**50.7**	**42.9**	**8.6**	**5**	**56**	**171**	**1043**	**1127**	**831**	**357**	**115**	**26**	**6**	**5**	**0**
16H,6-22	**4161**	**51**	**43.2**	**8.6**	**5**	**57**	**185**	**1135**	**1230**	**931**	**424**	**144**	**36**	**8**	**6**	**0**
18H,6-24	**4220**	**51**	**43.2**	**8.6**	**5**	**57**	**186**	**1149**	**1240**	**948**	**431**	**150**	**38**	**10**	**6**	**0**
24H,0-24	**4311**	**51.1**	**43.2**	**8.7**	**5**	**57**	**200**	**1172**	**1257**	**962**	**443**	**158**	**41**	**10**	**6**	**0**

19028 RUDHEATH Site No: 19028003 Location Site 3, Griffiths Road, Rudheath (Fence)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Northbound

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Thu 25-Jun-15																
00:00	14	50.4	46.2	8.1	0	0	0	3	4	5	0	1	1	0	0	0
01:00	13	48.8	42.2	10	0	0	2	3	3	3	1	1	0	0	0	0
02:00	7	-	35.6	5.7	0	0	1	5	1	0	0	0	0	0	0	0
03:00	10	46	42	10	0	0	1	3	4	1	0	0	1	0	0	0
04:00	12	54.9	50.4	7.1	0	0	0	1	2	2	6	0	1	0	0	0
05:00	41	58	48.3	10.7	0	0	1	8	9	8	6	6	1	0	1	1
06:00	96	55.6	45.8	9.5	0	0	2	28	19	21	12	11	1	1	0	1
07:00	228	53.7	44.9	8.7	0	0	8	68	35	64	34	15	3	0	1	0
08:00	311	53.3	45.3	8.6	0	3	15	51	82	89	53	14	2	1	1	0
09:00	252	51.1	43.7	8.9	0	2	15	65	59	72	26	9	2	0	2	0
10:00	215	50.8	43.4	9.3	1	2	10	61	55	55	18	9	2	0	0	2
11:00	230	49.5	42	8	0	1	15	71	79	42	17	1	3	1	0	0
12:00	237	51.4	44.8	8.3	0	0	9	52	73	65	22	9	4	1	1	1
13:00	239	50.7	42.6	9.3	0	2	23	59	72	50	20	9	1	2	1	0
14:00	232	50.5	42.9	8.3	0	1	14	64	77	45	22	6	1	2	0	0
15:00	244	51.3	44.4	7.5	0	1	7	54	76	67	30	7	2	0	0	0
16:00	285	52.5	45	7.8	0	1	7	64	77	84	30	19	3	0	0	0
17:00	287	55.2	47.2	7.9	0	0	9	35	70	90	47	31	4	1	0	0
18:00	242	54.8	46.7	8.6	0	1	5	44	59	62	45	18	5	1	2	0
19:00	155	56.6	47.6	9.9	0	4	2	20	37	38	28	19	3	3	0	1
20:00	74	58.7	47.7	10.1	0	1	0	18	14	12	11	12	5	1	0	0
21:00	72	53.6	45.8	7.5	0	0	2	13	20	18	15	4	0	0	0	0
22:00	56	55.3	44.8	11.2	0	2	3	13	9	15	6	6	1	0	1	0
23:00	19	56.8	47.6	8.8	0	0	0	5	3	3	4	4	0	0	0	0
12H,7-19	3002	52.5	44.5	8.5	1	14	137	688	814	785	364	147	32	9	8	3
16H,6-22	3399	53.1	44.8	8.7	1	19	143	767	904	874	430	193	41	14	8	5
18H,6-24	3474	53.2	44.8	8.7	1	21	146	785	916	892	440	203	42	14	9	5
24H,0-24	3571	53.3	44.8	8.8	1	21	151	808	939	911	453	211	46	14	10	6

AXIOM Traffic Limited

Data produced by
Axiom Traffic Ltd

19028		RUDHEATH					Site No: 19028003			Location	Site 3, Griffiths Road, Rudheath (Fence)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Northbound									
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Fri 26-Jun-15																
00:00	13	58.8	49.3	13.3	0	0	0	4	3	0	2	2	1	0	0	1
01:00	8	-	40.7	7.4	0	0	0	5	1	1	1	0	0	0	0	0
02:00	9	-	50.2	15	0	0	1	1	2	1	1	0	2	0	1	0
03:00	9	-	46.8	8.7	0	0	0	2	3	1	1	2	0	0	0	0
04:00	15	56.4	45.8	9.9	0	0	1	3	4	2	2	3	0	0	0	0
05:00	36	61.1	50	9.8	0	0	0	6	7	7	7	3	5	0	1	0
06:00	101	55	44.8	10.1	0	0	8	29	12	22	18	9	2	1	0	0
07:00	264	51.9	44	8.4	0	0	15	68	65	70	32	10	3	1	0	0
08:00	313	53.2	45.3	8.6	0	1	12	62	93	81	38	17	5	2	1	1
09:00	257	51.6	43.2	8.8	0	1	21	64	71	57	31	8	4	0	0	0
10:00	245	48.9	40.9	8.7	1	3	22	79	80	39	14	5	2	0	0	0
11:00	243	50.1	42.8	8	0	0	13	75	75	52	19	7	0	1	1	0
12:00	289	52	44.7	8.4	0	1	13	61	75	87	41	4	5	0	1	1
13:00	318	53.5	45.8	7.8	0	0	13	42	111	79	49	19	4	0	1	0
14:00	280	52.7	45.5	8.3	0	1	8	58	71	88	34	10	8	0	2	0
15:00	288	52.3	43.6	9.3	0	3	18	74	78	62	35	10	5	1	2	0
16:00	309	49.8	42.5	8.1	0	1	24	79	98	80	19	5	2	1	0	0
17:00	308	52.3	45.9	7	0	0	7	40	113	92	37	14	3	2	0	0
18:00	316	54.2	46.3	8.1	1	0	6	54	89	80	60	19	5	1	0	1
19:00	189	55.1	48.1	6.5	0	0	0	17	56	57	37	20	2	0	0	0
20:00	102	58.9	49.3	9.4	0	0	1	15	24	20	17	16	4	4	1	0
21:00	74	55.3	48.8	6.6	0	0	0	6	18	23	18	7	2	0	0	0
22:00	39	55.4	49.9	7.4	0	0	0	4	4	15	11	2	2	1	0	0
23:00	16	54.9	46.3	12.7	0	0	1	5	2	2	4	1	0	0	0	1
12H,7-19	3430	52.1	44.3	8.4	2	11	172	756	1019	867	409	128	46	9	8	3
16H,6-22	3896	52.8	44.7	8.5	2	11	181	823	1129	989	499	180	56	14	9	3
18H,6-24	3951	52.8	44.8	8.5	2	11	182	832	1135	1006	514	183	58	15	9	4
24H,0-24	4041	53	44.9	8.6	2	11	184	853	1155	1018	528	193	66	15	11	5

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19028 RUDHEATH Site No: 19028003 Location Site 3, Griffiths Road, Rudheath (Fence)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Northbound

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Sat 27-Jun-15																
00:00	**20**	63.5	53.5	10.8	0	0	0	2	3	4	3	2	5	0	0	1
01:00	**8**	-	38.5	9.3	0	0	2	2	2	2	0	0	0	0	0	0
02:00	**5**	-	49	12.1	0	0	0	1	1	2	0	0	0	1	0	0
03:00	**7**	-	42.4	6.6	0	0	0	3	1	3	0	0	0	0	0	0
04:00	**6**	-	44.8	14	0	0	1	2	0	0	1	2	0	0	0	0
05:00	**33**	59	49.1	10.2	0	0	2	4	6	4	8	6	3	0	0	0
06:00	**42**	55.2	44.4	10.5	0	0	1	18	7	5	5	3	2	0	1	0
07:00	**73**	53.3	45.9	8.4	0	0	3	14	15	23	14	3	0	0	1	0
08:00	**153**	54.6	45.9	9	0	0	7	31	39	34	26	10	3	3	0	0
09:00	**209**	53.5	46.3	8.2	0	1	5	27	74	55	30	11	2	2	1	1
10:00	**273**	52.3	46	6.9	0	0	2	48	81	92	33	15	1	0	0	1
11:00	**305**	51.8	44.5	7.4	0	0	6	74	109	64	35	11	6	0	0	0
12:00	**278**	52.7	45.9	6.9	0	0	0	48	102	73	37	14	3	0	0	1
13:00	**272**	53.1	45.9	8	0	2	9	38	75	89	42	10	6	1	0	0
14:00	**268**	53.3	45.5	8	0	0	5	59	83	63	38	9	10	0	1	0
15:00	**214**	53.6	46.2	8.1	0	2	7	24	68	63	34	10	5	1	0	0
16:00	**181**	53.1	46.7	7	0	1	3	13	67	57	30	6	3	0	1	0
17:00	**142**	55.3	47.6	7.7	0	0	1	21	37	39	26	13	3	2	0	0
18:00	**119**	57.3	48.3	8.5	0	0	0	20	25	39	14	10	8	3	0	0
19:00	**119**	53.5	45.7	8.6	0	1	3	23	31	34	17	8	1	0	0	1
20:00	**94**	57.7	47.1	11.7	0	5	0	15	23	17	16	10	5	1	1	1
21:00	**68**	56.4	47.6	9.6	0	0	1	12	19	18	7	4	4	2	0	1
22:00	**36**	55.1	46.8	10.2	0	0	3	5	5	13	5	2	2	1	0	0
23:00	**28**	53.9	49.1	10	0	0	0	3	7	11	4	1	0	0	0	2
12H,7-19	**2487**	**53.5**	**46**	**7.8**	**0**	**6**	**48**	**417**	**775**	**691**	**359**	**122**	**50**	**12**	**4**	**3**
16H,6-22	**2810**	**53.7**	**46.1**	**8.1**	**0**	**12**	**53**	**485**	**855**	**765**	**404**	**147**	**62**	**15**	**6**	**6**
18H,6-24	**2874**	**53.7**	**46.1**	**8.1**	**0**	**12**	**56**	**493**	**867**	**789**	**413**	**150**	**64**	**16**	**6**	**8**
24H,0-24	**2953**	**53.9**	**46.2**	**8.2**	**0**	**12**	**61**	**507**	**880**	**804**	**425**	**160**	**72**	**17**	**6**	**9**

19028			RUDHEATH				Site No: 19028003		Location	Site 3, Griffiths Road, Rudheath (Fence)						
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Northbound									
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<21**	**21-<31**	**31-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**61-<66**	**66-<71**	**71-<76**	**=>76**
Sun 28-Jun-15																
00:00	**25**	54.6	48.5	7.3	0	0	0	4	3	8	8	1	1	0	0	0
01:00	**16**	50.3	45.2	5.9	0	0	0	3	5	6	2	0	0	0	0	0
02:00	**8**	-	50.1	15.7	0	0	1	0	3	1	1	0	1	0	0	1
03:00	**4**	-	46	11.9	0	0	0	2	0	0	1	1	0	0	0	0
04:00	**8**	-	41.3	11.2	0	0	2	1	2	1	2	0	0	0	0	0
05:00	**24**	53.4	45.5	9.5	0	0	3	2	4	9	4	2	0	0	0	0
06:00	**30**	51	43.3	9.8	0	0	2	11	5	7	2	1	2	0	0	0
07:00	**24**	53.1	45.8	7.1	0	0	0	6	5	6	7	0	0	0	0	0
08:00	**36**	57.8	48.2	10.4	0	0	1	7	5	12	3	6	0	1	0	1
09:00	**111**	53	44.8	8.8	0	3	4	16	36	28	17	7	0	0	0	0
10:00	**206**	53.7	47.6	7.5	0	0	0	23	64	71	31	9	3	2	0	3
11:00	**203**	52.8	45.8	7.2	0	0	5	31	64	61	31	8	3	0	0	0
12:00	**242**	52.3	45.5	7.7	0	1	2	46	84	64	32	9	1	0	1	2
13:00	**232**	52.4	45.6	7.6	0	1	6	34	78	70	28	12	1	1	1	0
14:00	**237**	52.8	46.6	6.9	0	1	0	33	72	83	33	9	4	2	0	0
15:00	**215**	54.6	47.3	8.1	0	0	5	28	55	69	35	12	8	2	0	1
16:00	**127**	56.2	48	7.8	0	0	0	16	37	42	12	12	4	4	0	0
17:00	**118**	53	46.6	6.9	0	0	0	19	35	41	12	8	3	0	0	0
18:00	**106**	52.9	45.2	7.8	0	1	1	22	34	26	15	6	0	1	0	0
19:00	**88**	55.6	49.6	8.9	0	1	0	6	20	28	21	5	3	2	0	2
20:00	**66**	55.6	48.8	7.5	0	0	1	5	17	18	16	5	4	0	0	0
21:00	**40**	58.8	49.9	10.2	0	0	2	3	8	8	8	8	2	0	0	1
22:00	**33**	54.3	46.4	8.3	0	0	0	8	9	6	7	2	0	1	0	0
23:00	**9**	-	54.6	8.6	0	0	0	0	2	1	2	2	1	1	0	0
12H,7-19	**1857**	**53.4**	**46.4**	**7.7**	**0**	**7**	**24**	**281**	**569**	**573**	**256**	**98**	**27**	**13**	**2**	**7**
16H,6-22	**2081**	**53.8**	**46.6**	**7.9**	**0**	**8**	**29**	**306**	**619**	**634**	**303**	**117**	**38**	**15**	**2**	**10**
18H,6-24	**2123**	**53.9**	**46.6**	**7.9**	**0**	**8**	**29**	**314**	**630**	**641**	**312**	**121**	**39**	**17**	**2**	**10**
24H,0-24	**2208**	**53.9**	**46.6**	**8**	**0**	**8**	**35**	**326**	**647**	**666**	**330**	**125**	**41**	**17**	**2**	**11**

19028		RUDHEATH					Site No: 19028003		Location	Site 3, Griffiths Road, Rudheath (Fence)						
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Northbound									

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Mon 29-Jun-15																
00:00	**8**	-	45.7	6.6	0	0	0	1	4	2	0	1	0	0	0	0
01:00	**4**	-	45.4	7.5	0	0	0	1	1	1	1	0	0	0	0	0
02:00	**5**	-	45	17.1	0	1	0	0	1	0	2	1	0	0	0	0
03:00	**7**	-	44.6	9.4	0	0	0	3	1	1	1	1	0	0	0	0
04:00	**10**	56	47	8.3	0	0	0	2	3	2	1	2	0	0	0	0
05:00	**36**	56.1	48.4	10.3	0	0	2	6	5	5	12	4	1	0	1	0
06:00	**98**	56.4	47	9.9	0	0	4	21	20	17	20	10	3	2	1	0
07:00	**259**	52.3	44.1	8.4	0	1	11	73	57	68	37	8	4	0	0	0
08:00	**305**	51.7	44.3	8.8	0	2	18	61	91	83	28	16	4	0	1	1
09:00	**278**	50.5	44.2	7.4	0	1	9	63	84	87	24	7	3	0	0	0
10:00	**210**	50.7	43.6	8.2	0	0	9	62	58	52	16	8	4	1	0	0
11:00	**235**	51.7	43.9	8.7	0	4	9	52	80	51	23	12	3	1	0	0
12:00	**268**	52	44.1	8.5	0	2	17	53	80	69	31	15	1	0	0	0
13:00	**258**	50.6	45	7.5	0	0	6	52	78	90	21	6	2	1	1	1
14:00	**210**	52.8	45.3	8.2	0	0	7	42	64	55	28	6	5	2	1	0
15:00	**259**	51.8	44.3	8.7	0	2	20	38	87	68	31	6	6	1	0	0
16:00	**281**	53.4	45.8	8.3	0	1	11	42	84	80	43	12	6	0	2	0
17:00	**314**	55.4	48.6	6.9	0	0	0	28	82	98	67	32	4	1	1	1
18:00	**235**	53.4	45.9	7.5	0	0	4	46	62	69	38	13	2	1	0	0
19:00	**159**	53.6	46.5	8.4	0	1	7	17	42	52	30	5	4	0	0	1
20:00	**83**	51.9	44.5	8.8	0	2	4	12	25	25	12	2	1	0	0	0
21:00	**64**	56.9	47.6	10.3	0	2	1	9	10	20	10	11	0	0	0	1
22:00	**35**	55.4	46.5	9.5	0	0	1	7	12	4	6	2	2	1	0	0
23:00	**17**	54	46.7	8.2	0	0	0	4	4	3	5	0	1	0	0	0
12H,7-19	**3112**	**52.6**	**45**	**8.2**	**0**	**13**	**121**	**612**	**907**	**870**	**387**	**141**	**44**	**8**	**6**	**3**
16H,6-22	**3516**	**52.9**	**45.1**	**8.3**	**0**	**18**	**137**	**671**	**1004**	**984**	**459**	**169**	**52**	**10**	**7**	**5**
18H,6-24	**3568**	**53**	**45.2**	**8.3**	**0**	**18**	**138**	**682**	**1020**	**991**	**470**	**171**	**55**	**11**	**7**	**5**
24H,0-24	**3638**	**53.1**	**45.2**	**8.4**	**0**	**19**	**140**	**695**	**1035**	**1002**	**487**	**180**	**56**	**11**	**8**	**5**

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19028 RUDHEATH Site No: 19028003 Location Site 3, Griffiths Road, Rudheath (Fence)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Northbound

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Tue 30-Jun-15																
00:00	10	58.5	46.8	11.8	0	0	1	2	1	3	0	2	1	0	0	0
01:00	10	49.3	43.8	6.5	0	0	0	3	3	3	1	0	0	0	0	0
02:00	4	-	46	5.2	0	0	0	0	3	0	1	0	0	0	0	0
03:00	10	46	41.5	5.5	0	0	0	4	4	2	0	0	0	0	0	0
04:00	18	62.3	48.4	13.2	0	1	0	4	1	5	2	1	3	1	0	0
05:00	33	57.4	49	8.7	0	0	0	5	6	11	5	2	3	1	0	0
06:00	105	55.4	45.1	11.3	0	1	9	27	15	21	18	6	5	2	0	1
07:00	273	51.4	42.5	8.5	0	0	25	79	66	58	40	4	1	0	0	0
08:00	309	54.2	46.2	8.8	0	2	15	42	75	101	43	24	3	2	2	0
09:00	306	50.9	44.5	7.9	0	2	12	60	91	97	30	11	1	2	0	0
10:00	244	50.3	42.9	8.3	0	1	19	54	87	54	19	7	2	1	0	0
11:00	228	52.1	44.1	8.6	0	0	14	56	58	59	30	4	6	1	0	0
12:00	276	53.4	45.6	8	0	0	7	60	68	82	36	19	2	1	1	0
13:00	236	51.6	43.9	8.9	0	0	20	46	74	57	26	6	5	1	0	1
14:00	227	50.4	43	8	0	0	16	59	66	58	22	3	3	0	0	0
15:00	275	53.2	45.5	7.8	0	1	3	59	83	69	42	13	2	2	1	0
16:00	284	54.6	46.8	8	0	1	6	42	75	86	43	20	10	1	0	0
17:00	256	55.5	47.8	8.4	0	1	10	25	52	81	54	24	8	1	0	0
18:00	215	55.1	47.7	7.9	0	1	2	29	47	73	37	19	4	2	1	0
19:00	140	54.6	46.7	8.9	0	2	0	26	35	42	19	9	4	2	0	1
20:00	94	54.5	47.2	7.6	0	0	1	12	31	25	15	5	4	1	0	0
21:00	69	56.1	46.8	9.1	0	2	0	10	17	22	7	9	2	0	0	0
22:00	58	58.8	48.3	10.2	0	0	0	12	16	11	7	5	3	3	0	1
23:00	15	57.3	41.2	13.4	0	0	4	4	2	2	0	1	2	0	0	0
12H,7-19	3129	53.1	45.1	8.4	0	9	149	611	842	875	422	154	47	14	5	1
16H,6-22	3537	53.3	45.2	8.6	0	14	159	686	940	985	481	183	62	19	5	3
18H,6-24	3610	53.4	45.3	8.6	0	14	163	702	958	998	488	189	67	22	5	4
24H,0-24	3695	53.4	45.3	8.6	0	15	164	720	976	1022	497	194	74	24	5	4

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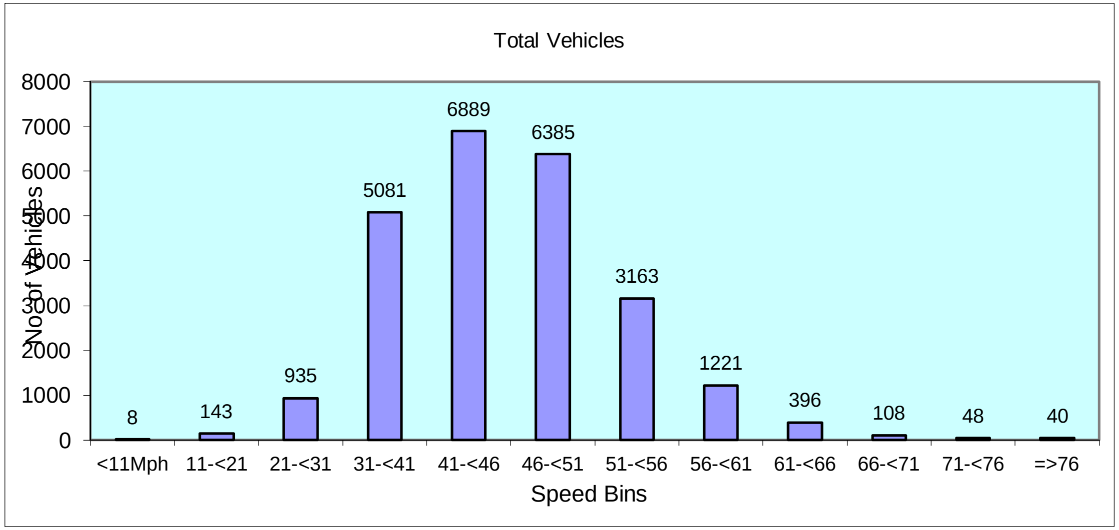
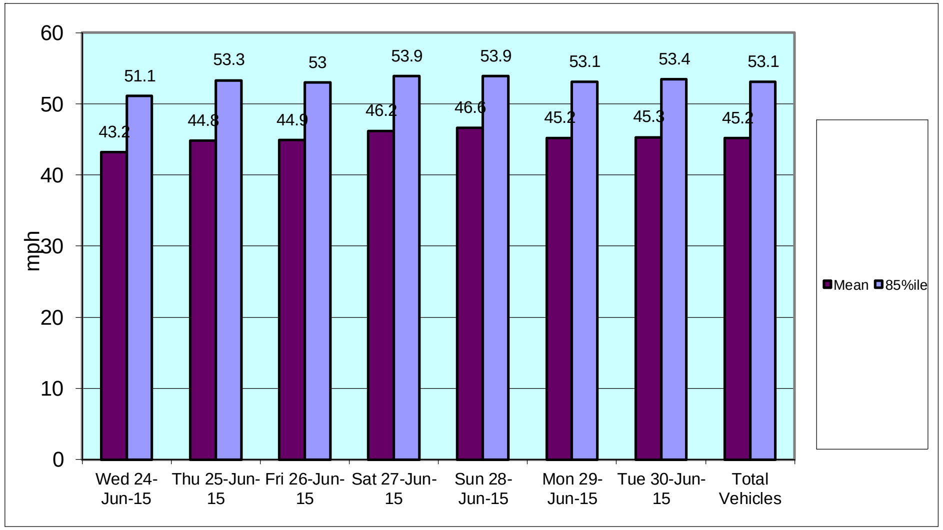
19028 RUDHEATH **Site No: 19028003** **Location** **Site 3, Griffiths Road, Rudheath (Fence)**

Wed 24-Jun-15 to Tue 30-Jun-15 **Channel: Northbound**

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Daily Totals																
Wed 24-Jun-15	**4311**	51.1	43.2	8.7	5	57	200	1172	1257	962	443	158	41	10	6	0
Thu 25-Jun-15	**3571**	53.3	44.8	8.8	1	21	151	808	939	911	453	211	46	14	10	6
Fri 26-Jun-15	**4041**	53	44.9	8.6	2	11	184	853	1155	1018	528	193	66	15	11	5
Sat 27-Jun-15	**2953**	53.9	46.2	8.2	0	12	61	507	880	804	425	160	72	17	6	9
Sun 28-Jun-15	**2208**	53.9	46.6	8	0	8	35	326	647	666	330	125	41	17	2	11
Mon 29-Jun-15	**3638**	53.1	45.2	8.4	0	19	140	695	1035	1002	487	180	56	11	8	5
Tue 30-Jun-15	**3695**	53.4	45.3	8.6	0	15	164	720	976	1022	497	194	74	24	5	4
Total Vehicles																
[--]	**24417**	53.1	45.2	8.5	8	143	935	5081	6889	6385	3163	1221	396	108	48	40

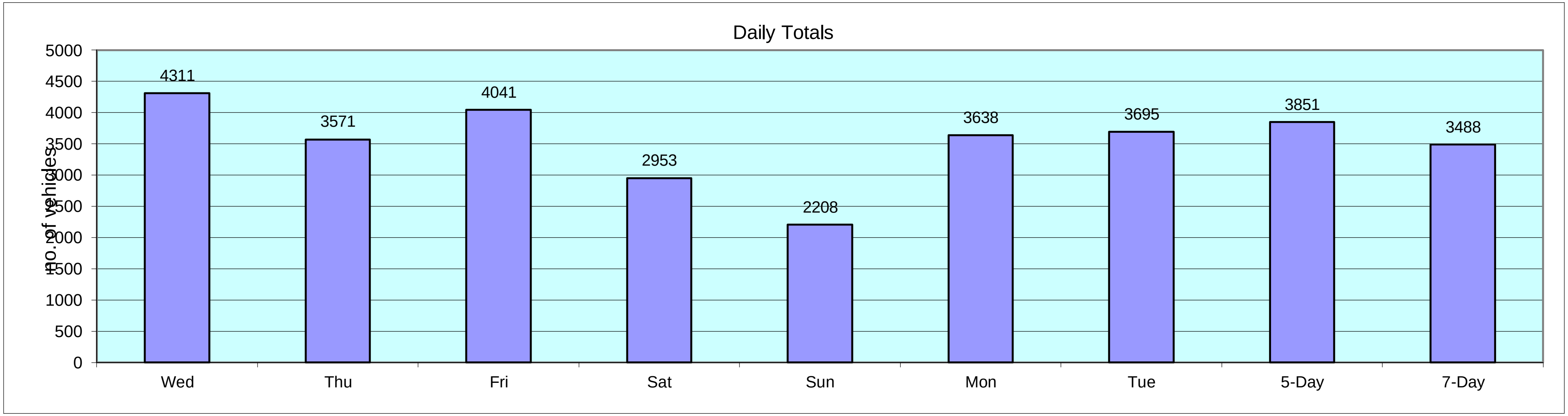




19028	RUDHEATH			Site No: 19028003 Channel: Northbound		Location	Site 3, Griffiths Road, Rudheath (Fence)		
TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av
Week Begin: 24-Jun-15									
00:00	**9**	14	13	20	25	8	10	11	14
01:00	**7**	13	8	8	16	4	10	8	9
02:00	**4**	7	9	5	8	5	4	6	6
03:00	**5**	10	9	7	4	7	10	8	7
04:00	**18**	12	15	6	8	10	18	15	12
05:00	**48**	41	36	33	24	36	33	39	36
06:00	**146**	96	101	42	30	98	105	109	88
07:00	**453**	228	264	73	24	259	273	295	225
08:00	**444**	311	313	153	36	305	309	336	267
09:00	**426**	252	257	209	111	278	306	304	263
10:00	**369**	215	245	273	206	210	244	257	252
11:00	**290**	230	243	305	203	235	228	245	248
12:00	**254**	237	289	278	242	268	276	265	263
13:00	**240**	239	318	272	232	258	236	258	256
14:00	**222**	232	280	268	237	210	227	234	239
15:00	**242**	244	288	214	215	259	275	262	248
16:00	**274**	285	309	181	127	281	284	287	249
17:00	**313**	287	308	142	118	314	256	296	248
18:00	**215**	242	316	119	106	235	215	245	207
19:00	**138**	155	189	119	88	159	140	156	141
20:00	**81**	74	102	94	66	83	94	87	85
21:00	**54**	72	74	68	40	64	69	67	63
22:00	**39**	56	39	36	33	35	58	45	42
23:00	**20**	19	16	28	9	17	15	17	18
12H,7-19	**3742**	**3002**	**3430**	**2487**	**1857**	**3112**	**3129**	**3283**	**2966**
16H,6-22	**4161**	**3399**	**3896**	**2810**	**2081**	**3516**	**3537**	**3702**	**3343**
18H,6-24	**4220**	**3474**	**3951**	**2874**	**2123**	**3568**	**3610**	**3765**	**3403**
24H,0-24	**4311**	**3571**	**4041**	**2953**	**2208**	**3638**	**3695**	**3851**	**3488**
Am	**07:00**	**08:00**	**08:00**	**11:00**	**10:00**	**08:00**	**08:00**	**-**	**-**
Peak	**453**	**311**	**313**	**305**	**206**	**305**	**309**	**338**	**315**
Pm	**17:00**	**17:00**	**13:00**	**12:00**	**12:00**	**17:00**	**16:00**	**-**	**-**
Peak	**313**	**287**	**318**	**278**	**242**	**314**	**284**	**303**	**291**

19028	RUDHEATH	Site No: 19028003	Location	Site 3, Griffiths Road, Rudheath (Fence)
		Channel: Northbound		

TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av



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19028	RUDHEATH				Site No: 19028003		Location		Site 3, Griffiths Road, Rudheath (Fence)		
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Southbound						

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Wed 24-Jun-15											
00:00	**14**	0	0.0	11	78.6	1	7.1	2	14.3	0	0.0
01:00	**4**	0	0.0	3	75.0	0	0.0	1	25.0	0	0.0
02:00	**7**	0	0.0	3	42.9	2	28.6	2	28.6	0	0.0
03:00	**8**	0	0.0	7	87.5	0	0.0	1	12.5	0	0.0
04:00	**20**	0	0.0	13	65.0	3	15.0	4	20.0	0	0.0
05:00	**41**	0	0.0	29	70.7	4	9.8	8	19.5	0	0.0
06:00	**108**	2	1.9	76	70.4	16	14.8	14	13.0	0	0.0
07:00	**192**	2	1.0	156	81.3	23	12.0	10	5.2	1	0.5
08:00	**356**	6	1.7	289	81.2	48	13.5	13	3.7	0	0.0
09:00	**286**	2	0.7	238	83.2	34	11.9	11	3.9	1	0.4
10:00	**211**	4	1.9	156	73.9	42	19.9	9	4.3	0	0.0
11:00	**250**	1	0.4	198	79.2	30	12.0	19	7.6	2	0.8
12:00	**296**	1	0.3	245	82.8	39	13.2	10	3.4	1	0.3
13:00	**300**	4	1.3	252	84.0	33	11.0	9	3.0	2	0.7
14:00	**299**	2	0.7	241	80.6	43	14.4	13	4.4	0	0.0
15:00	**426**	2	0.5	360	84.5	51	12.0	13	3.1	0	0.0
16:00	**490**	3	0.6	420	85.7	50	10.2	16	3.3	1	0.2
17:00	**506**	4	0.8	443	87.6	51	10.1	8	1.6	0	0.0
18:00	**461**	5	1.1	378	82.0	61	13.2	17	3.7	0	0.0
19:00	**254**	0	0.0	215	84.7	27	10.6	12	4.7	0	0.0
20:00	**89**	0	0.0	78	87.6	9	10.1	1	1.1	1	1.1
21:00	**87**	3	3.5	75	86.2	6	6.9	3	3.5	0	0.0
22:00	**64**	0	0.0	60	93.8	4	6.3	0	0.0	0	0.0
23:00	**29**	0	0.0	21	72.4	4	13.8	4	13.8	0	0.0
12H,7-19	**4073**	**36**	**0.9**	**3376**	**82.9**	**505**	**12.4**	**148**	**3.6**	**8**	**0.2**
16H,6-22	**4611**	**41**	**0.9**	**3820**	**82.9**	**563**	**12.2**	**178**	**3.9**	**9**	**0.2**
18H,6-24	**4704**	**41**	**0.9**	**3901**	**82.9**	**571**	**12.1**	**182**	**3.9**	**9**	**0.2**
24H,0-24	**4798**	**41**	**0.9**	**3967**	**82.7**	**581**	**12.1**	**200**	**4.2**	**9**	**0.2**

19028	RUDHEATH				Site No: 19028003		Location	Site 3, Griffiths Road, Rudheath (Fence)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Southbound						

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Thu 25-Jun-15											
00:00	**12**	0	0.0	9	75.0	1	8.3	2	16.7	0	0.0
01:00	**9**	0	0.0	4	44.4	1	11.1	4	44.4	0	0.0
02:00	**8**	0	0.0	2	25.0	3	37.5	3	37.5	0	0.0
03:00	**8**	0	0.0	3	37.5	3	37.5	2	25.0	0	0.0
04:00	**17**	1	5.9	10	58.8	2	11.8	4	23.5	0	0.0
05:00	**53**	1	1.9	43	81.1	4	7.6	5	9.4	0	0.0
06:00	**103**	2	1.9	77	74.8	11	10.7	13	12.6	0	0.0
07:00	**184**	3	1.6	157	85.3	20	10.9	3	1.6	1	0.5
08:00	**337**	2	0.6	277	82.2	45	13.4	13	3.9	0	0.0
09:00	**232**	2	0.9	184	79.3	35	15.1	9	3.9	2	0.9
10:00	**251**	1	0.4	192	76.5	44	17.5	13	5.2	1	0.4
11:00	**267**	3	1.1	213	79.8	40	15.0	11	4.1	0	0.0
12:00	**284**	1	0.4	235	82.8	36	12.7	12	4.2	0	0.0
13:00	**289**	1	0.4	227	78.6	46	15.9	14	4.8	1	0.4
14:00	**282**	3	1.1	226	80.1	43	15.3	10	3.6	0	0.0
15:00	**361**	2	0.6	295	81.7	53	14.7	11	3.1	0	0.0
16:00	**472**	3	0.6	407	86.2	44	9.3	16	3.4	2	0.4
17:00	**539**	4	0.7	480	89.1	40	7.4	15	2.8	0	0.0
18:00	**361**	7	1.9	317	87.8	30	8.3	7	1.9	0	0.0
19:00	**190**	1	0.5	170	89.5	18	9.5	1	0.5	0	0.0
20:00	**119**	1	0.8	110	92.4	5	4.2	3	2.5	0	0.0
21:00	**65**	0	0.0	62	95.4	2	3.1	1	1.5	0	0.0
22:00	**51**	2	3.9	39	76.5	3	5.9	7	13.7	0	0.0
23:00	**28**	0	0.0	22	78.6	2	7.1	4	14.3	0	0.0
12H,7-19	**3859**	**32**	**0.8**	**3210**	**83.2**	**476**	**12.3**	**134**	**3.5**	**7**	**0.2**
16H,6-22	**4336**	**36**	**0.8**	**3629**	**83.7**	**512**	**11.8**	**152**	**3.5**	**7**	**0.2**
18H,6-24	**4415**	**38**	**0.9**	**3690**	**83.6**	**517**	**11.7**	**163**	**3.7**	**7**	**0.2**
24H,0-24	**4522**	**40**	**0.9**	**3761**	**83.2**	**531**	**11.7**	**183**	**4.1**	**7**	**0.2**

19028		RUDHEATH			Site No: 19028003		Location	Site 3, Griffiths Road, Rudheath (Fence)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Southbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Fri 26-Jun-15											
00:00	**10**	0	0.0	8	80.0	1	10.0	1	10.0	0	0.0
01:00	**9**	1	11.1	2	22.2	3	33.3	3	33.3	0	0.0
02:00	**8**	0	0.0	5	62.5	1	12.5	2	25.0	0	0.0
03:00	**10**	0	0.0	8	80.0	0	0.0	2	20.0	0	0.0
04:00	**19**	1	5.3	12	63.2	1	5.3	5	26.3	0	0.0
05:00	**52**	2	3.9	44	84.6	1	1.9	5	9.6	0	0.0
06:00	**96**	1	1.0	73	76.0	11	11.5	11	11.5	0	0.0
07:00	**215**	4	1.9	164	76.3	33	15.4	14	6.5	0	0.0
08:00	**305**	1	0.3	244	80.0	44	14.4	14	4.6	2	0.7
09:00	**249**	0	0.0	201	80.7	36	14.5	12	4.8	0	0.0
10:00	**279**	0	0.0	220	78.9	42	15.1	15	5.4	2	0.7
11:00	**239**	2	0.8	184	77.0	39	16.3	13	5.4	1	0.4
12:00	**350**	0	0.0	295	84.3	43	12.3	12	3.4	0	0.0
13:00	**391**	1	0.3	329	84.1	52	13.3	8	2.1	1	0.3
14:00	**537**	3	0.6	450	83.8	71	13.2	13	2.4	0	0.0
15:00	**492**	2	0.4	414	84.2	67	13.6	9	1.8	0	0.0
16:00	**510**	3	0.6	433	84.9	66	12.9	7	1.4	1	0.2
17:00	**536**	2	0.4	471	87.9	53	9.9	10	1.9	0	0.0
18:00	**328**	1	0.3	293	89.3	26	7.9	8	2.4	0	0.0
19:00	**204**	2	1.0	175	85.8	22	10.8	5	2.5	0	0.0
20:00	**124**	2	1.6	111	89.5	7	5.7	4	3.2	0	0.0
21:00	**78**	1	1.3	72	92.3	3	3.9	2	2.6	0	0.0
22:00	**77**	0	0.0	69	89.6	4	5.2	4	5.2	0	0.0
23:00	**32**	0	0.0	30	93.8	2	6.3	0	0.0	0	0.0
12H,7-19	**4431**	**19**	**0.4**	**3698**	**83.5**	**572**	**12.9**	**135**	**3.1**	**7**	**0.2**
16H,6-22	**4933**	**25**	**0.5**	**4129**	**83.7**	**615**	**12.5**	**157**	**3.2**	**7**	**0.1**
18H,6-24	**5042**	**25**	**0.5**	**4228**	**83.9**	**621**	**12.3**	**161**	**3.2**	**7**	**0.1**
24H,0-24	**5150**	**29**	**0.6**	**4307**	**83.6**	**628**	**12.2**	**179**	**3.5**	**7**	**0.1**

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19028		RUDHEATH			Site No: 19028003		Location		Site 3, Griffiths Road, Rudheath (Fence)		
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Southbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sat 27-Jun-15											
00:00	**17**	0	0.0	13	76.5	1	5.9	3	17.7	0	0.0
01:00	**12**	0	0.0	8	66.7	2	16.7	2	16.7	0	0.0
02:00	**6**	0	0.0	5	83.3	0	0.0	1	16.7	0	0.0
03:00	**6**	0	0.0	4	66.7	2	33.3	0	0.0	0	0.0
04:00	**19**	0	0.0	18	94.7	1	5.3	0	0.0	0	0.0
05:00	**26**	1	3.9	22	84.6	0	0.0	3	11.5	0	0.0
06:00	**39**	0	0.0	30	76.9	5	12.8	4	10.3	0	0.0
07:00	**68**	0	0.0	49	72.1	15	22.1	4	5.9	0	0.0
08:00	**130**	3	2.3	97	74.6	19	14.6	11	8.5	0	0.0
09:00	**165**	2	1.2	136	82.4	24	14.6	3	1.8	0	0.0
10:00	**260**	3	1.2	229	88.1	20	7.7	8	3.1	0	0.0
11:00	**315**	2	0.6	283	89.8	22	7.0	8	2.5	0	0.0
12:00	**389**	2	0.5	362	93.1	21	5.4	4	1.0	0	0.0
13:00	**295**	6	2.0	263	89.2	23	7.8	3	1.0	0	0.0
14:00	**294**	4	1.4	264	89.8	24	8.2	2	0.7	0	0.0
15:00	**314**	4	1.3	282	89.8	25	8.0	3	1.0	0	0.0
16:00	**273**	1	0.4	249	91.2	21	7.7	2	0.7	0	0.0
17:00	**225**	3	1.3	209	92.9	13	5.8	0	0.0	0	0.0
18:00	**180**	3	1.7	165	91.7	10	5.6	2	1.1	0	0.0
19:00	**133**	0	0.0	122	91.7	7	5.3	4	3.0	0	0.0
20:00	**85**	1	1.2	79	92.9	4	4.7	1	1.2	0	0.0
21:00	**54**	0	0.0	49	90.7	5	9.3	0	0.0	0	0.0
22:00	**73**	1	1.4	70	95.9	2	2.7	0	0.0	0	0.0
23:00	**68**	0	0.0	62	91.2	4	5.9	2	2.9	0	0.0
12H,7-19	**2908**	**33**	**1.1**	**2588**	**89.0**	**237**	**8.2**	**50**	**1.7**	**0**	**0.0**
16H,6-22	**3219**	**34**	**1.1**	**2868**	**89.1**	**258**	**8.0**	**59**	**1.8**	**0**	**0.0**
18H,6-24	**3360**	**35**	**1.0**	**3000**	**89.3**	**264**	**7.9**	**61**	**1.8**	**0**	**0.0**
24H,0-24	**3446**	**36**	**1.0**	**3070**	**89.1**	**270**	**7.8**	**70**	**2.0**	**0**	**0.0**

19028 **RUDHEATH** **Site No: 19028003** **Location** **Site 3, Griffiths Road, Rudheath (Fence)**

Wed 24-Jun-15 to Tue 30-Jun-15 **Channel: Southbound**

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sun 28-Jun-15											
00:00	**21**	0	0.0	19	90.5	0	0.0	2	9.5	0	0.0
01:00	**13**	0	0.0	10	76.9	3	23.1	0	0.0	0	0.0
02:00	**7**	0	0.0	4	57.1	0	0.0	3	42.9	0	0.0
03:00	**3**	0	0.0	1	33.3	1	33.3	1	33.3	0	0.0
04:00	**6**	0	0.0	3	50.0	0	0.0	3	50.0	0	0.0
05:00	**18**	0	0.0	16	88.9	0	0.0	2	11.1	0	0.0
06:00	**30**	0	0.0	25	83.3	2	6.7	3	10.0	0	0.0
07:00	**33**	0	0.0	23	69.7	5	15.2	5	15.2	0	0.0
08:00	**47**	0	0.0	40	85.1	5	10.6	2	4.3	0	0.0
09:00	**99**	4	4.0	78	78.8	15	15.2	2	2.0	0	0.0
10:00	**157**	1	0.6	136	86.6	19	12.1	1	0.6	0	0.0
11:00	**201**	5	2.5	176	87.6	15	7.5	5	2.5	0	0.0
12:00	**231**	3	1.3	211	91.3	14	6.1	3	1.3	0	0.0
13:00	**271**	2	0.7	252	93.0	12	4.4	5	1.9	0	0.0
14:00	**289**	2	0.7	270	93.4	13	4.5	4	1.4	0	0.0
15:00	**281**	4	1.4	263	93.6	11	3.9	3	1.1	0	0.0
16:00	**237**	0	0.0	228	96.2	4	1.7	5	2.1	0	0.0
17:00	**211**	2	1.0	197	93.4	9	4.3	3	1.4	0	0.0
18:00	**153**	4	2.6	139	90.9	6	3.9	4	2.6	0	0.0
19:00	**96**	0	0.0	89	92.7	6	6.3	1	1.0	0	0.0
20:00	**82**	1	1.2	76	92.7	4	4.9	1	1.2	0	0.0
21:00	**50**	0	0.0	46	92.0	3	6.0	1	2.0	0	0.0
22:00	**33**	2	6.1	27	81.8	3	9.1	1	3.0	0	0.0
23:00	**14**	0	0.0	11	78.6	1	7.1	2	14.3	0	0.0
12H,7-19	**2210**	**27**	**1.2**	**2013**	**91.1**	**128**	**5.8**	**42**	**1.9**	**0**	**0.0**
16H,6-22	**2468**	**28**	**1.1**	**2249**	**91.1**	**143**	**5.8**	**48**	**1.9**	**0**	**0.0**
18H,6-24	**2515**	**30**	**1.2**	**2287**	**90.9**	**147**	**5.8**	**51**	**2.0**	**0**	**0.0**
24H,0-24	**2583**	**30**	**1.2**	**2340**	**90.6**	**151**	**5.9**	**62**	**2.4**	**0**	**0.0**

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19028 **RUDHEATH** **Site No: 19028003** **Location** **Site 3, Griffiths Road, Rudheath (Fence)**

Wed 24-Jun-15 to Tue 30-Jun-15 **Channel: Southbound**

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Mon 29-Jun-15											
00:00	**11**	0	0.0	8	72.7	0	0.0	3	27.3	0	0.0
01:00	**7**	0	0.0	3	42.9	1	14.3	3	42.9	0	0.0
02:00	**5**	0	0.0	4	80.0	1	20.0	0	0.0	0	0.0
03:00	**10**	1	10.0	2	20.0	1	10.0	6	60.0	0	0.0
04:00	**12**	0	0.0	8	66.7	0	0.0	4	33.3	0	0.0
05:00	**63**	1	1.6	44	69.8	6	9.5	12	19.1	0	0.0
06:00	**92**	3	3.3	72	78.3	5	5.4	12	13.0	0	0.0
07:00	**213**	5	2.4	176	82.6	23	10.8	9	4.2	0	0.0
08:00	**336**	5	1.5	282	83.9	37	11.0	12	3.6	0	0.0
09:00	**280**	1	0.4	222	79.3	41	14.6	16	5.7	0	0.0
10:00	**244**	4	1.6	176	72.1	49	20.1	13	5.3	2	0.8
11:00	**232**	2	0.9	175	75.4	45	19.4	9	3.9	1	0.4
12:00	**316**	0	0.0	266	84.2	36	11.4	13	4.1	1	0.3
13:00	**283**	1	0.4	235	83.0	37	13.1	10	3.5	0	0.0
14:00	**269**	6	2.2	216	80.3	39	14.5	8	3.0	0	0.0
15:00	**348**	2	0.6	288	82.8	51	14.7	7	2.0	0	0.0
16:00	**430**	5	1.2	362	84.2	47	10.9	15	3.5	1	0.2
17:00	**469**	6	1.3	427	91.0	30	6.4	6	1.3	0	0.0
18:00	**288**	5	1.7	255	88.5	22	7.6	6	2.1	0	0.0
19:00	**175**	0	0.0	157	89.7	15	8.6	3	1.7	0	0.0
20:00	**105**	0	0.0	94	89.5	7	6.7	4	3.8	0	0.0
21:00	**77**	1	1.3	71	92.2	5	6.5	0	0.0	0	0.0
22:00	**60**	2	3.3	55	91.7	2	3.3	1	1.7	0	0.0
23:00	**23**	0	0.0	18	78.3	0	0.0	5	21.7	0	0.0
12H,7-19	**3708**	**42**	**1.1**	**3080**	**83.1**	**457**	**12.3**	**124**	**3.3**	**5**	**0.1**
16H,6-22	**4157**	**46**	**1.1**	**3474**	**83.6**	**489**	**11.8**	**143**	**3.4**	**5**	**0.1**
18H,6-24	**4240**	**48**	**1.1**	**3547**	**83.7**	**491**	**11.6**	**149**	**3.5**	**5**	**0.1**
24H,0-24	**4348**	**50**	**1.2**	**3616**	**83.2**	**500**	**11.5**	**177**	**4.1**	**5**	**0.1**

AXIOM Traffic Limited

Data produced by
Axiom Traffic Ltd

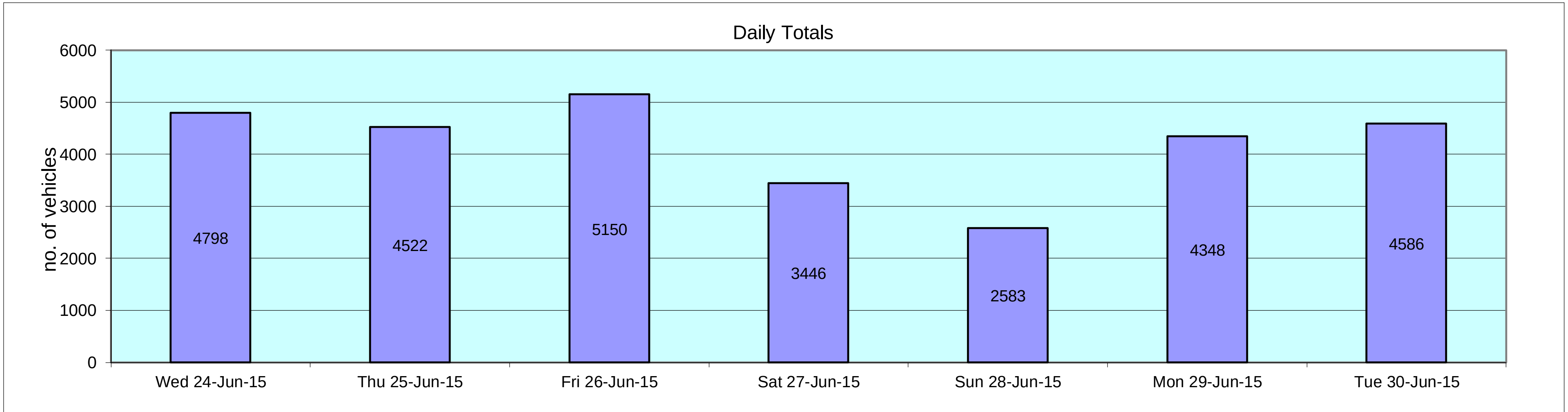
19028 RUDHEATH Site No: 19028003 Location Site 3, Griffiths Road, Rudheath (Fence)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Southbound

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Tue 30-Jun-15											
00:00	**6**	0	0.0	5	83.3	0	0.0	1	16.7	0	0.0
01:00	**9**	0	0.0	6	66.7	1	11.1	2	22.2	0	0.0
02:00	**10**	0	0.0	5	50.0	1	10.0	4	40.0	0	0.0
03:00	**10**	1	10.0	3	30.0	3	30.0	3	30.0	0	0.0
04:00	**21**	0	0.0	13	61.9	3	14.3	5	23.8	0	0.0
05:00	**61**	1	1.6	46	75.4	3	4.9	11	18.0	0	0.0
06:00	**93**	5	5.4	68	73.1	10	10.8	10	10.8	0	0.0
07:00	**222**	4	1.8	180	81.1	28	12.6	10	4.5	0	0.0
08:00	**319**	2	0.6	260	81.5	44	13.8	13	4.1	0	0.0
09:00	**280**	5	1.8	212	75.7	52	18.6	11	3.9	0	0.0
10:00	**241**	3	1.2	191	79.3	36	14.9	11	4.6	0	0.0
11:00	**264**	3	1.1	212	80.3	40	15.2	8	3.0	1	0.4
12:00	**311**	1	0.3	251	80.7	42	13.5	15	4.8	2	0.6
13:00	**293**	3	1.0	231	78.8	44	15.0	15	5.1	0	0.0
14:00	**286**	3	1.1	217	75.9	49	17.1	16	5.6	1	0.4
15:00	**363**	4	1.1	304	83.8	42	11.6	13	3.6	0	0.0
16:00	**464**	4	0.9	406	87.5	41	8.8	13	2.8	0	0.0
17:00	**531**	10	1.9	472	88.9	37	7.0	12	2.3	0	0.0
18:00	**333**	4	1.2	296	88.9	25	7.5	8	2.4	0	0.0
19:00	**203**	2	1.0	182	89.7	16	7.9	3	1.5	0	0.0
20:00	**111**	5	4.5	95	85.6	11	9.9	0	0.0	0	0.0
21:00	**77**	1	1.3	69	89.6	4	5.2	3	3.9	0	0.0
22:00	**59**	3	5.1	51	86.4	2	3.4	3	5.1	0	0.0
23:00	**19**	0	0.0	16	84.2	3	15.8	0	0.0	0	0.0
12H,7-19	**3907**	**46**	**1.2**	**3232**	**82.7**	**480**	**12.3**	**145**	**3.7**	**4**	**0.1**
16H,6-22	**4391**	**59**	**1.3**	**3646**	**83.0**	**521**	**11.9**	**161**	**3.7**	**4**	**0.1**
18H,6-24	**4469**	**62**	**1.4**	**3713**	**83.1**	**526**	**11.8**	**164**	**3.7**	**4**	**0.1**
24H,0-24	**4586**	**64**	**1.4**	**3791**	**82.7**	**537**	**11.7**	**190**	**4.1**	**4**	**0.1**

19028	RUDHEATH	Site No: 19028003	Location	Site 3, Griffiths Road, Rudheath (Fence)
Wed 24-Jun-15 to Tue 30-Jun-15		Channel: Southbound		

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Daily Totals											
Wed 24-Jun-15	**4798**	41	0.9	3967	82.7	581	12.1	200	4.2	9	0.2
Thu 25-Jun-15	**4522**	40	0.9	3761	83.2	531	11.7	183	4.1	7	0.2
Fri 26-Jun-15	**5150**	29	0.6	4307	83.6	628	12.2	179	3.5	7	0.1
Sat 27-Jun-15	**3446**	36	1.0	3070	89.1	270	7.8	70	2.0	0	0.0
Sun 28-Jun-15	**2583**	30	1.2	2340	90.6	151	5.9	62	2.4	0	0.0
Mon 29-Jun-15	**4348**	50	1.2	3616	83.2	500	11.5	177	4.1	5	0.1
Tue 30-Jun-15	**4586**	64	1.4	3791	82.7	537	11.7	190	4.1	4	0.1
Total Vehicles											
[--]	**29433**	290	1.0	24852	85.0	3198	10.4	1061	3.5	32	0.1



19028			RUDHEATH				Site No: 19028003			Location	Site 3, Griffiths Road, Rudheath (Fence)				
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Southbound								
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Wed 24-Jun-15																
00:00	**14**	62	45.6	17.3	0	2	1	1	2	2	3	0	2	0	1	0
01:00	**4**	-	47.9	16.9	0	0	1	0	1	0	0	1	1	0	0	0
02:00	**7**	-	44.6	10.7	0	0	0	3	2	0	1	0	1	0	0	0
03:00	**8**	-	43.5	5.5	0	0	0	2	3	3	0	0	0	0	0	0
04:00	**20**	59.8	50.3	11	0	0	1	3	2	3	5	3	2	1	0	0
05:00	**41**	52.7	42.9	10.5	0	2	1	13	9	8	4	3	1	0	0	0
06:00	**108**	55.7	44.7	11.8	0	4	8	22	21	27	10	7	7	0	2	0
07:00	**192**	54	46.2	8.8	0	1	6	30	59	49	30	11	1	3	0	2
08:00	**356**	53.1	45	8.8	0	4	4	94	95	89	39	19	6	4	1	1
09:00	**286**	50.4	42.5	8.7	0	4	19	83	74	71	22	12	1	0	0	0
10:00	**211**	50.9	42.6	9.9	0	10	7	56	63	44	17	9	4	1	0	0
11:00	**250**	49	41.1	8.7	0	7	19	75	78	55	10	4	2	0	0	0
12:00	**296**	50.7	43.2	8.7	0	9	9	68	99	70	28	11	2	0	0	0
13:00	**300**	50.9	43.6	8.4	0	4	10	81	83	77	30	10	5	0	0	0
14:00	**299**	50.4	42.2	8.8	0	5	20	88	86	62	23	14	1	0	0	0
15:00	**426**	48.8	40.5	8.7	0	6	35	172	117	56	24	11	2	3	0	0
16:00	**490**	48.8	40.8	8	0	8	23	205	130	90	25	6	3	0	0	0
17:00	**506**	49.8	41.3	9.7	0	25	30	138	163	98	31	17	3	0	1	0
18:00	**461**	50	42.1	7.9	0	1	13	193	125	74	34	14	6	1	0	0
19:00	**254**	51.3	43.4	8.4	0	5	6	61	103	39	28	10	0	1	0	1
20:00	**89**	53.5	46.8	7.5	0	1	1	10	24	31	16	4	2	0	0	0
21:00	**87**	55	46.5	9.1	0	1	1	17	23	21	13	6	4	0	1	0
22:00	**64**	56.8	49.4	7.9	0	0	0	7	15	15	16	6	4	1	0	0
23:00	**29**	53.7	46.6	7.6	0	0	0	6	7	9	4	2	1	0	0	0
12H,7-19	**4073**	**50.4**	**42.3**	**8.8**	**0**	**84**	**195**	**1283**	**1172**	**835**	**313**	**138**	**36**	**12**	**2**	**3**
16H,6-22	**4611**	**50.6**	**42.6**	**8.9**	**0**	**95**	**211**	**1393**	**1343**	**953**	**380**	**165**	**49**	**13**	**5**	**4**
18H,6-24	**4704**	**50.7**	**42.7**	**8.9**	**0**	**95**	**211**	**1406**	**1365**	**977**	**400**	**173**	**54**	**14**	**5**	**4**
24H,0-24	**4798**	**50.8**	**42.8**	**9**	**0**	**99**	**215**	**1428**	**1384**	**993**	**413**	**180**	**61**	**15**	**6**	**4**

19028		RUDHEATH		Site No: 19028003			Location	Site 3, Griffiths Road, Rudheath (Fence)								
Wed 24-Jun-15 to Tue 30-Jun-15				Channel: Southbound												
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Thu 25-Jun-15																
00:00	**12**	69.5	51.8	13.9	0	0	0	2	4	0	3	0	1	0	1	1
01:00	**9**	-	44.9	9.1	0	0	0	3	2	3	0	0	1	0	0	0
02:00	**8**	-	42.3	12.7	0	1	0	1	4	0	1	1	0	0	0	0
03:00	**8**	-	44.8	9.5	0	0	1	1	1	3	2	0	0	0	0	0
04:00	**17**	55.9	45.1	14.2	0	2	0	3	3	2	4	2	0	1	0	0
05:00	**53**	59	50.7	10.4	0	2	0	3	7	11	18	6	4	1	1	0
06:00	**103**	56.7	45.9	10.9	0	3	5	23	15	19	20	15	2	1	0	0
07:00	**184**	54.7	47.7	7.8	0	0	1	32	30	63	40	12	3	2	1	0
08:00	**337**	52.2	43.6	9.4	0	10	15	69	118	65	38	15	4	2	1	0
09:00	**232**	53.6	44.3	8.8	1	1	8	63	59	46	36	16	2	0	0	0
10:00	**251**	51.7	43.1	9.7	0	8	11	67	68	55	28	10	2	0	1	1
11:00	**267**	50.8	42.4	8.8	0	7	14	73	79	56	33	4	1	0	0	0
12:00	**284**	50.1	43.1	7.8	0	4	7	81	85	77	22	7	0	1	0	0
13:00	**289**	50.3	43.2	8.6	0	12	6	51	117	68	30	3	1	1	0	0
14:00	**282**	49.6	42.1	9	0	9	15	69	110	50	13	11	5	0	0	0
15:00	**361**	50.5	42.4	9	0	9	20	100	102	84	37	5	2	1	1	0
16:00	**472**	50.2	43.2	8.5	0	5	34	89	168	126	36	9	1	2	0	2
17:00	**539**	51.1	45	7.2	0	4	5	107	180	161	60	12	9	1	0	0
18:00	**361**	53.3	45.9	8.6	0	5	12	42	119	107	47	19	7	0	1	2
19:00	**190**	55	47.1	9.8	0	9	2	11	45	70	30	18	2	2	0	1
20:00	**119**	55.1	47.2	8.5	0	1	3	15	32	29	25	10	3	1	0	0
21:00	**65**	57.3	48.8	9.1	0	0	1	10	11	18	13	7	3	1	1	0
22:00	**51**	55.3	47.2	11.3	0	2	3	4	10	11	15	1	4	1	0	0
23:00	**28**	59.3	47.2	12	0	0	0	11	3	5	3	2	2	1	0	1
12H,7-19	**3859**	**51.2**	**43.8**	**8.7**	**1**	**74**	**148**	**843**	**1235**	**958**	**420**	**123**	**37**	**10**	**5**	**5**
16H,6-22	**4336**	**52**	**44.2**	**8.8**	**1**	**87**	**159**	**902**	**1338**	**1094**	**508**	**173**	**47**	**15**	**6**	**6**
18H,6-24	**4415**	**52.2**	**44.2**	**8.9**	**1**	**89**	**162**	**917**	**1351**	**1110**	**526**	**176**	**53**	**17**	**6**	**7**
24H,0-24	**4522**	**52.4**	**44.3**	**9**	**1**	**94**	**163**	**930**	**1372**	**1129**	**554**	**185**	**59**	**19**	**8**	**8**

19028			RUDHEATH				Site No: 19028003			Location	Site 3, Griffiths Road, Rudheath (Fence)				
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Southbound								
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<21**	**21-<31**	**31-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**61-<66**	**66-<71**	**71-<76**	**=>76**
Fri 26-Jun-15																
00:00	**10**	-	55.5	15.2	0	0	0	2	0	3	0	2	1	0	0	2
01:00	**9**	-	48.2	18	0	1	1	1	0	0	2	2	1	1	0	0
02:00	**8**	-	41.9	10.2	0	0	0	5	1	1	0	0	1	0	0	0
03:00	**10**	51	42.8	11.4	0	1	0	2	2	3	2	0	0	0	0	0
04:00	**19**	57.6	43.9	15.8	0	3	0	4	1	6	1	2	0	2	0	0
05:00	**52**	55.7	47.7	10.1	0	1	3	4	9	16	11	5	2	1	0	0
06:00	**96**	54.9	44.9	11.1	0	2	11	15	14	26	17	7	3	1	0	0
07:00	**215**	52.5	45.3	8.9	0	6	3	38	53	74	27	10	2	1	1	0
08:00	**305**	50.6	43.3	8.3	0	3	7	102	80	72	23	13	3	2	0	0
09:00	**249**	50.9	42.8	9.3	0	7	12	68	68	57	28	7	0	0	1	1
10:00	**279**	50.5	42.3	9	0	5	20	76	89	52	22	12	3	0	0	0
11:00	**239**	50.3	43.4	8.1	0	1	12	64	61	75	17	7	1	0	1	0
12:00	**350**	51.6	44.3	7.7	0	2	7	86	116	81	39	14	5	0	0	0
13:00	**391**	50	43.5	6.8	0	1	8	100	152	89	32	8	1	0	0	0
14:00	**537**	49.4	42.3	7.5	0	5	25	152	203	105	38	7	1	1	0	0
15:00	**492**	50.6	43.2	8.1	0	6	23	122	157	118	54	8	4	0	0	0
16:00	**510**	49	42.9	6.8	0	1	17	128	218	115	20	7	3	1	0	0
17:00	**536**	50.6	43.3	7.8	0	8	14	146	164	135	57	11	0	1	0	0
18:00	**328**	55.1	46.6	8.8	0	2	9	59	77	81	62	26	9	3	0	0
19:00	**204**	55.8	49.1	8.3	0	0	0	22	44	73	35	17	7	1	0	5
20:00	**124**	59	48.3	9.9	0	1	5	13	29	34	17	10	13	1	1	0
21:00	**78**	60.5	51.9	10.9	0	1	0	8	13	14	18	13	2	5	2	2
22:00	**77**	54.9	47.5	8.4	0	0	0	13	21	24	9	4	5	0	0	1
23:00	**32**	54.7	47.9	6.9	0	0	1	1	10	11	5	4	0	0	0	0
12H,7-19	**4431**	**50.7**	**43.5**	**8**	**0**	**47**	**157**	**1141**	**1438**	**1054**	**419**	**130**	**32**	**9**	**3**	**1**
16H,6-22	**4933**	**51.3**	**44**	**8.4**	**0**	**51**	**173**	**1199**	**1538**	**1201**	**506**	**177**	**57**	**17**	**6**	**8**
18H,6-24	**5042**	**51.4**	**44**	**8.4**	**0**	**51**	**174**	**1213**	**1569**	**1236**	**520**	**185**	**62**	**17**	**6**	**9**
24H,0-24	**5150**	**51.6**	**44.1**	**8.5**	**0**	**57**	**178**	**1231**	**1582**	**1265**	**536**	**196**	**67**	**21**	**6**	**11**

19028		RUDHEATH			Site No: 19028003			Location	Site 3, Griffiths Road, Rudheath (Fence)							
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Southbound											

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Sat 27-Jun-15																
00:00	17	60.9	46.6	14	0	2	0	1	3	6	1	1	3	0	0	0
01:00	12	64.5	54.5	12.6	0	0	0	1	4	0	0	4	1	1	0	1
02:00	6	-	46.8	9.9	0	0	0	2	1	0	2	1	0	0	0	0
03:00	6	-	41.4	10.6	0	0	1	2	0	2	1	0	0	0	0	0
04:00	19	65.1	51.3	13	0	0	0	5	2	3	2	3	1	2	0	1
05:00	26	55	46.4	12.2	0	1	3	2	3	6	7	2	2	0	0	0
06:00	39	56.5	44.9	12.3	0	1	6	5	6	5	9	6	1	0	0	0
07:00	68	57.7	48.2	9.6	0	0	4	6	13	24	7	10	2	1	1	0
08:00	130	55.2	46.4	10.1	0	4	1	22	35	33	18	9	5	2	0	1
09:00	165	54.6	47.2	8.4	0	2	1	20	53	36	39	8	4	0	1	1
10:00	260	50.8	44.7	7.8	0	2	7	44	100	70	25	7	2	2	0	1
11:00	315	52.9	45	8.8	0	8	6	55	97	83	49	11	4	0	2	0
12:00	389	53.4	46.6	7.1	0	1	1	55	136	103	70	12	6	4	1	0
13:00	295	51.7	45.2	7.3	1	0	2	63	89	90	36	9	3	2	0	0
14:00	294	53	46.2	7.7	0	5	1	35	102	88	46	9	7	0	1	0
15:00	314	51.6	46	6.7	0	2	2	43	97	118	40	8	3	1	0	0
16:00	273	54.5	47.3	8	0	1	2	37	80	79	46	17	6	3	0	2
17:00	225	53.6	46.5	7.2	0	0	2	37	65	72	28	15	6	0	0	0
18:00	180	57	48.2	9.5	0	1	7	18	40	56	27	17	8	5	0	1
19:00	133	55	47.5	8.4	0	0	1	20	42	28	27	7	4	2	2	0
20:00	85	57.7	48.4	8.2	0	0	2	9	23	20	12	17	2	0	0	0
21:00	54	57.2	48.9	8.8	0	0	1	5	15	14	9	6	2	1	1	0
22:00	73	52.8	46.1	8.9	0	1	0	15	19	24	7	3	3	0	0	1
23:00	68	53.8	44.1	10	0	0	8	13	18	11	13	2	3	0	0	0
12H,7-19	2908	53.5	46.2	8	1	26	36	435	907	852	431	132	56	20	6	6
16H,6-22	3219	53.8	46.4	8.1	1	27	46	474	993	919	488	168	65	23	9	6
18H,6-24	3360	53.8	46.3	8.2	1	28	54	502	1030	954	508	173	71	23	9	7
24H,0-24	3446	54	46.4	8.3	1	31	58	515	1043	971	521	184	78	26	9	9

19028			RUDHEATH				Site No: 19028003			Location	Site 3, Griffiths Road, Rudheath (Fence)		
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Southbound						
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Sun 28-Jun-15																
00:00	**21**	55.4	47.3	9.1	0	0	1	3	5	4	5	2	1	0	0	0
01:00	**13**	53.8	51	9	0	0	0	1	2	4	4	1	0	0	1	0
02:00	**7**	-	43.9	9.3	0	0	0	3	2	0	1	1	0	0	0	0
03:00	**3**	-	48.5	5	0	0	0	0	1	1	1	0	0	0	0	0
04:00	**6**	-	41.8	13.3	0	0	2	0	1	2	0	1	0	0	0	0
05:00	**18**	53.3	45.4	7.2	0	0	0	4	7	2	4	1	0	0	0	0
06:00	**30**	52	40.6	11.4	0	1	7	3	9	4	5	1	0	0	0	0
07:00	**33**	57.9	47.9	10.1	0	0	1	7	6	6	6	4	2	1	0	0
08:00	**47**	56.5	49.2	8.2	0	1	0	3	5	23	7	5	3	0	0	0
09:00	**99**	54.3	46	9.5	0	2	3	14	29	29	10	8	3	0	0	1
10:00	**157**	54	46.2	8	0	1	1	31	44	38	30	8	2	2	0	0
11:00	**201**	50.9	44.4	8.6	0	3	9	33	73	53	17	10	2	0	0	1
12:00	**231**	53.6	47.4	6.5	0	1	0	22	66	84	44	9	5	0	0	0
13:00	**271**	52.2	45.7	6.9	0	1	1	46	94	80	33	13	2	1	0	0
14:00	**289**	53.1	46.1	7.2	0	2	1	48	86	90	43	16	2	1	0	0
15:00	**281**	52.8	45.4	7.4	0	1	4	58	81	78	46	10	3	0	0	0
16:00	**237**	53.8	45.8	8.1	0	1	5	45	69	65	28	20	2	1	1	0
17:00	**211**	55.3	48.1	8.2	0	1	2	27	45	68	42	14	6	6	0	0
18:00	**153**	54.9	48	8.2	0	0	4	19	31	42	43	9	1	3	1	0
19:00	**96**	55.4	48.1	8.2	0	0	2	12	22	25	23	8	2	2	0	0
20:00	**82**	56.9	50.2	8	0	0	0	7	17	21	23	7	5	0	2	0
21:00	**50**	58	48.7	9.4	0	0	1	9	7	13	10	5	4	1	0	0
22:00	**33**	53.8	47.9	7.6	0	0	0	4	9	10	8	1	0	0	1	0
23:00	**14**	54.5	44.8	9.9	0	0	1	4	2	3	2	2	0	0	0	0
12H,7-19	**2210**	**53.8**	**46.3**	**7.8**	**0**	**14**	**31**	**353**	**629**	**656**	**349**	**126**	**33**	**15**	**2**	**2**
16H,6-22	**2468**	**54.1**	**46.5**	**8**	**0**	**15**	**41**	**384**	**684**	**719**	**410**	**147**	**44**	**18**	**4**	**2**
18H,6-24	**2515**	**54.1**	**46.5**	**8**	**0**	**15**	**42**	**392**	**695**	**732**	**420**	**150**	**44**	**18**	**5**	**2**
24H,0-24	**2583**	**54.2**	**46.5**	**8**	**0**	**15**	**45**	**403**	**713**	**745**	**435**	**156**	**45**	**18**	**6**	**2**

AXIOM Traffic Limited

Data produced by Axiom Traffic Ltd

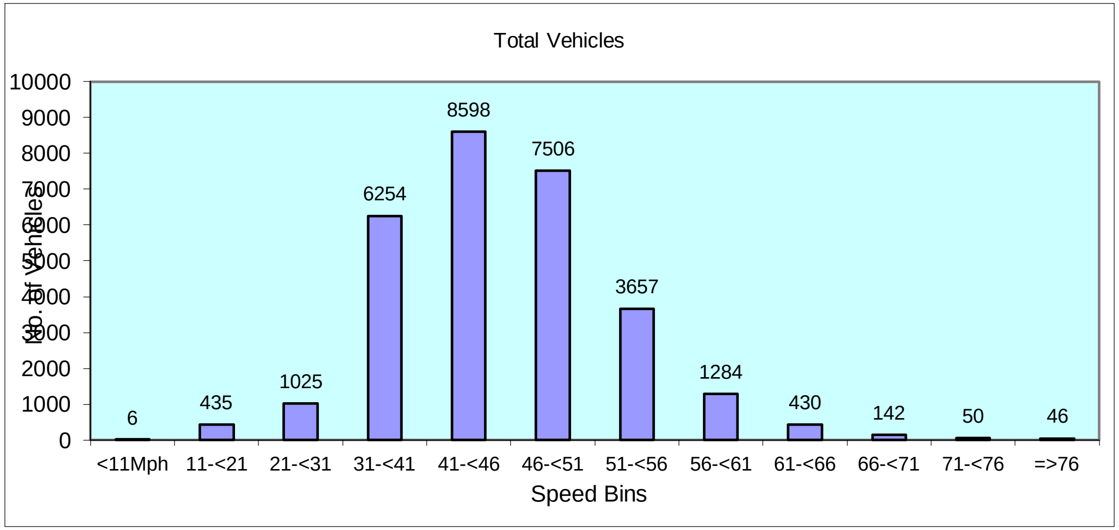
19028			RUDHEATH				Site No: 19028003			Location	Site 3, Griffiths Road, Rudheath (Fence)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Southbound									
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<21**	**21-<31**	**31-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**61-<66**	**66-<71**	**71-<76**	**=>76**
Mon 29-Jun-15																
00:00	**11**	58.1	45.5	12.5	0	0	2	1	2	3	0	2	1	0	0	0
01:00	**7**	-	41.7	11.7	0	0	1	2	3	0	0	0	1	0	0	0
02:00	**5**	-	45.5	9.8	0	0	0	2	0	2	0	1	0	0	0	0
03:00	**10**	51	40.3	11.2	0	1	0	4	2	1	2	0	0	0	0	0
04:00	**12**	57.8	46	11.4	0	0	1	3	2	2	1	2	1	0	0	0
05:00	**63**	57.7	48	11.4	0	2	2	8	14	9	16	6	3	2	1	0
06:00	**92**	55.9	45.7	10.5	0	1	6	23	9	24	15	11	2	0	1	0
07:00	**213**	52.9	44.6	8	0	0	7	56	54	50	36	7	3	0	0	0
08:00	**336**	51	44.1	8.5	0	5	15	69	90	107	39	6	3	1	1	0
09:00	**280**	51.8	42.9	9.8	0	10	18	66	71	67	35	11	0	1	1	0
10:00	**244**	51.9	43.5	9.2	0	6	17	45	73	60	34	6	3	0	0	0
11:00	**232**	52.5	44.9	7.8	0	0	12	40	72	62	36	9	1	0	0	0
12:00	**316**	50.9	43.6	8	0	3	7	90	100	70	34	6	5	0	1	0
13:00	**283**	50.6	44	7.3	0	1	8	65	94	78	30	5	1	1	0	0
14:00	**269**	52.2	44.2	8.1	0	2	7	75	68	67	37	11	1	1	0	0
15:00	**348**	51.9	44.6	7.9	0	1	11	80	101	95	42	14	2	1	1	0
16:00	**430**	51	42.1	10.1	1	16	36	107	104	101	45	14	6	0	0	0
17:00	**469**	52.7	46.8	7.1	0	2	5	54	124	192	64	17	7	2	1	1
18:00	**288**	53.7	46.7	7.9	0	3	3	38	75	105	37	21	4	1	0	1
19:00	**175**	54.8	48.4	7.4	0	1	0	15	46	58	37	12	2	2	2	0
20:00	**105**	56.3	47.1	9.9	0	3	3	12	23	30	17	12	4	1	0	0
21:00	**77**	55.7	49	9	0	1	0	8	18	19	20	4	6	0	0	1
22:00	**60**	56.5	47.2	10.2	0	1	0	12	13	20	4	5	2	2	0	1
23:00	**23**	53.6	43.5	10.2	0	0	3	5	5	5	2	3	0	0	0	0
12H,7-19	**3708**	**52**	**44.4**	**8.5**	**1**	**49**	**146**	**785**	**1026**	**1054**	**469**	**127**	**36**	**8**	**5**	**2**
16H,6-22	**4157**	**52.5**	**44.7**	**8.6**	**1**	**55**	**155**	**843**	**1122**	**1185**	**558**	**166**	**50**	**11**	**8**	**3**
18H,6-24	**4240**	**52.6**	**44.7**	**8.6**	**1**	**56**	**158**	**860**	**1140**	**1210**	**564**	**174**	**52**	**13**	**8**	**4**
24H,0-24	**4348**	**52.7**	**44.8**	**8.7**	**1**	**59**	**164**	**880**	**1163**	**1227**	**583**	**185**	**58**	**15**	**9**	**4**

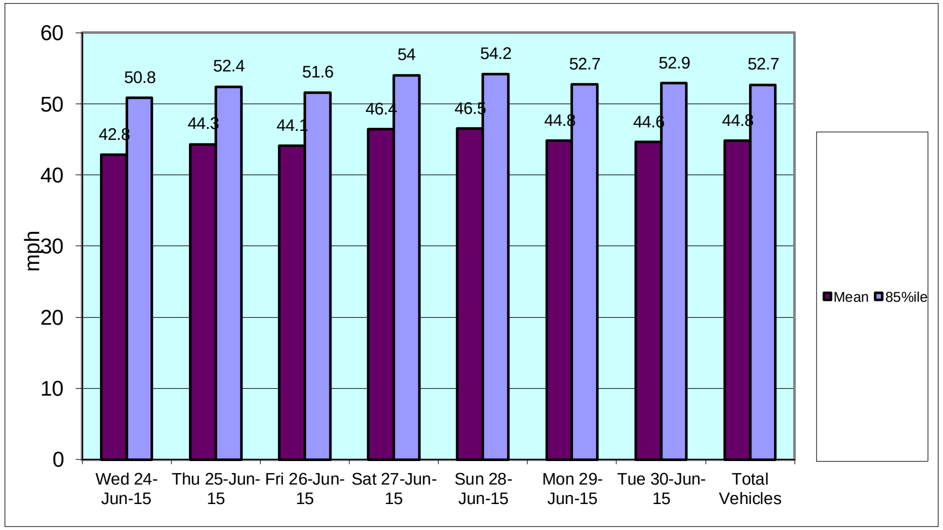
19028			RUDHEATH				Site No: 19028003			Location	Site 3, Griffiths Road, Rudheath (Fence)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Southbound									
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<21**	**21-<31**	**31-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**61-<66**	**66-<71**	**71-<76**	**=>76**
Tue 30-Jun-15																
00:00	**6**	-	44.8	16	0	1	0	0	2	1	1	0	1	0	0	0
01:00	**9**	-	45.2	6.2	0	0	0	2	2	4	1	0	0	0	0	0
02:00	**10**	56	44	14.6	0	0	3	1	1	0	3	1	1	0	0	0
03:00	**10**	46	36.8	9.8	0	0	3	4	1	1	1	0	0	0	0	0
04:00	**21**	55.2	47.5	8.1	0	0	0	4	5	5	4	2	1	0	0	0
05:00	**61**	56.8	44.7	11.9	0	2	5	14	11	10	8	8	1	2	0	0
06:00	**93**	54.4	44.5	10.3	0	0	12	14	24	21	11	8	2	0	1	0
07:00	**222**	53.5	44.3	9.2	0	4	12	48	54	50	41	12	1	0	0	0
08:00	**319**	52.2	44.1	9	1	9	9	64	89	87	50	6	3	1	0	0
09:00	**280**	50.7	42.7	9.7	0	13	14	56	93	66	26	6	6	0	0	0
10:00	**241**	50.9	42.5	9.2	0	8	14	56	77	50	28	7	1	0	0	0
11:00	**264**	50.5	43.7	8.2	0	5	10	46	107	62	25	7	1	0	0	1
12:00	**311**	50.6	43.1	8.6	0	8	11	74	107	70	30	8	2	1	0	0
13:00	**293**	51.8	44.6	8.6	0	3	10	63	85	82	35	9	2	2	0	2
14:00	**286**	51.1	42.6	9.5	0	9	20	62	97	54	33	6	3	2	0	0
15:00	**363**	50.4	42.9	8.4	0	2	28	83	123	81	31	11	3	1	0	0
16:00	**464**	51.1	43.6	9	0	7	25	111	130	120	49	10	8	3	1	0
17:00	**531**	53.3	46.1	7.8	1	3	12	73	156	164	91	21	6	3	1	0
18:00	**333**	55.3	47.7	7.9	0	2	3	42	78	104	63	33	5	1	1	1
19:00	**203**	56.9	48.8	8.7	0	3	2	21	32	66	43	27	6	3	0	0
20:00	**111**	55.6	47.9	10.6	1	0	4	12	26	38	14	6	3	4	0	3
21:00	**77**	58	48.8	10.4	0	1	3	6	19	19	15	5	4	4	1	0
22:00	**59**	53.9	47.2	8	0	0	0	9	19	17	8	3	1	1	1	0
23:00	**19**	57.6	48.5	12.6	0	0	2	2	3	4	4	2	1	0	0	1
12H,7-19	**3907**	**52.1**	**44.2**	**8.8**	**2**	**73**	**168**	**778**	**1196**	**990**	**502**	**136**	**41**	**14**	**3**	**4**
16H,6-22	**4391**	**52.7**	**44.6**	**9**	**3**	**77**	**189**	**831**	**1297**	**1134**	**585**	**182**	**56**	**25**	**5**	**7**
18H,6-24	**4469**	**52.8**	**44.6**	**9**	**3**	**77**	**191**	**842**	**1319**	**1155**	**597**	**187**	**58**	**26**	**6**	**8**
24H,0-24	**4586**	**52.9**	**44.6**	**9.1**	**3**	**80**	**202**	**867**	**1341**	**1176**	**615**	**198**	**62**	**28**	**6**	**8**

19028 RUDHEATH Site No: 19028003 Location Site 3, Griffiths Road, Rudheath (Fence)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Southbound

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Daily Totals																
Wed 24-Jun-15	**4798**	50.8	42.8	9	0	99	215	1428	1384	993	413	180	61	15	6	4
Thu 25-Jun-15	**4522**	52.4	44.3	9	1	94	163	930	1372	1129	554	185	59	19	8	8
Fri 26-Jun-15	**5150**	51.6	44.1	8.5	0	57	178	1231	1582	1265	536	196	67	21	6	11
Sat 27-Jun-15	**3446**	54	46.4	8.3	1	31	58	515	1043	971	521	184	78	26	9	9
Sun 28-Jun-15	**2583**	54.2	46.5	8	0	15	45	403	713	745	435	156	45	18	6	2
Mon 29-Jun-15	**4348**	52.7	44.8	8.7	1	59	164	880	1163	1227	583	185	58	15	9	4
Tue 30-Jun-15	**4586**	52.9	44.6	9.1	3	80	202	867	1341	1176	615	198	62	28	6	8
Total Vehicles																
[--]	**29433**	52.7	44.8	8.7	6	435	1025	6254	8598	7506	3657	1284	430	142	50	46

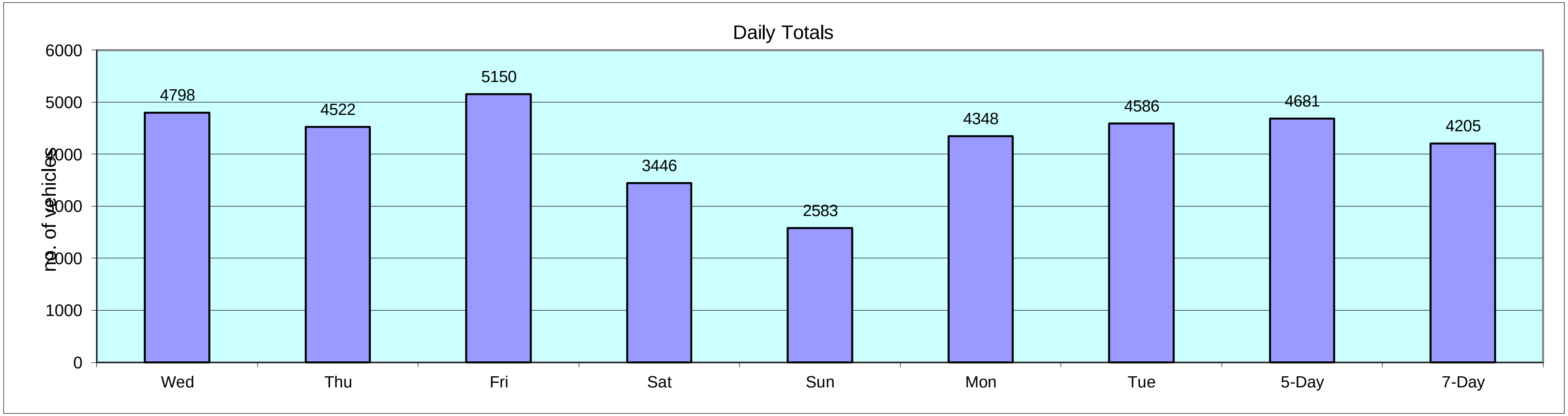




19028	RUDHEATH			Site No: 19028003 Channel: Southbound		Location	Site 3, Griffiths Road, Rudheath (Fence)		
TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av
Week Begin: 24-Jun-15									
00:00	**14**	12	10	17	21	11	6	11	13
01:00	**4**	9	9	12	13	7	9	8	9
02:00	**7**	8	8	6	7	5	10	8	7
03:00	**8**	8	10	6	3	10	10	9	8
04:00	**20**	17	19	19	6	12	21	18	16
05:00	**41**	53	52	26	18	63	61	54	45
06:00	**108**	103	96	39	30	92	93	98	80
07:00	**192**	184	215	68	33	213	222	205	161
08:00	**356**	337	305	130	47	336	319	331	261
09:00	**286**	232	249	165	99	280	280	265	227
10:00	**211**	251	279	260	157	244	241	245	235
11:00	**250**	267	239	315	201	232	264	250	253
12:00	**296**	284	350	389	231	316	311	311	311
13:00	**300**	289	391	295	271	283	293	311	303
14:00	**299**	282	537	294	289	269	286	335	322
15:00	**426**	361	492	314	281	348	363	398	369
16:00	**490**	472	510	273	237	430	464	473	411
17:00	**506**	539	536	225	211	469	531	516	431
18:00	**461**	361	328	180	153	288	333	354	301
19:00	**254**	190	204	133	96	175	203	205	179
20:00	**89**	119	124	85	82	105	111	110	102
21:00	**87**	65	78	54	50	77	77	77	70
22:00	**64**	51	77	73	33	60	59	62	60
23:00	**29**	28	32	68	14	23	19	26	30
12H,7-19	**4073**	**3859**	**4431**	**2908**	**2210**	**3708**	**3907**	**3996**	**3585**
16H,6-22	**4611**	**4336**	**4933**	**3219**	**2468**	**4157**	**4391**	**4486**	**4016**
18H,6-24	**4704**	**4415**	**5042**	**3360**	**2515**	**4240**	**4469**	**4574**	**4106**
24H,0-24	**4798**	**4522**	**5150**	**3446**	**2583**	**4348**	**4586**	**4681**	**4205**
Am	**08:00**	**08:00**	**08:00**	**11:00**	**11:00**	**08:00**	**08:00**	**-**	**-**
Peak	**356**	**337**	**305**	**315**	**201**	**336**	**319**	**331**	**310**
Pm	**17:00**	**17:00**	**14:00**	**12:00**	**14:00**	**17:00**	**17:00**	**-**	**-**
Peak	**506**	**539**	**537**	**389**	**289**	**469**	**531**	**516**	**466**

19028	RUDHEATH	Site No: 19028003	Location	Site 3, Griffiths Road, Rudheath (Fence)
		Channel: Southbound		

TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av



Griffiths Road North of A556

19028		RUDHEATH JUNE 2015								
Site	Location	Direction	Start Date	End Date	Posted Speed Limit (PSL)	Total Vehicles	5 Day Ave.	7 Day Ave.	Average 85%ile Speed	Average Mean Speed
Site No: 19028004	Site 4, Griffiths Road, Rudheath (Crematorium SP) SJ 68471 72835	Channel: Northbound	Wed 24-Jun-15	Tue 30-Jun-15	40	46855	7328	6694	38.7	32.1
		Channel: Southbound	Wed 24-Jun-15	Tue 30-Jun-15		52641	8280	7520	38.0	30.7

19028		RUDHEATH			Site No: 19028004		Location		Site 4, Griffiths Road, Rudheath (Crematorium SP)		
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Wed 24-Jun-15											
00:00	**19**	2	10.5	15	79.0	1	5.3	1	5.3	0	0.0
01:00	**22**	0	0.0	17	77.3	2	9.1	3	13.6	0	0.0
02:00	**24**	2	8.3	20	83.3	2	8.3	0	0.0	0	0.0
03:00	**17**	0	0.0	15	88.2	1	5.9	1	5.9	0	0.0
04:00	**37**	1	2.7	32	86.5	2	5.4	2	5.4	0	0.0
05:00	**83**	2	2.4	70	84.3	3	3.6	8	9.6	0	0.0
06:00	**220**	6	2.7	178	80.9	26	11.8	10	4.6	0	0.0
07:00	**594**	5	0.8	500	84.2	77	13.0	12	2.0	0	0.0
08:00	**614**	2	0.3	519	84.5	68	11.1	24	3.9	1	0.2
09:00	**659**	4	0.6	563	85.4	66	10.0	23	3.5	3	0.5
10:00	**585**	4	0.7	490	83.8	68	11.6	20	3.4	3	0.5
11:00	**476**	1	0.2	395	83.0	57	12.0	22	4.6	1	0.2
12:00	**460**	5	1.1	392	85.2	46	10.0	15	3.3	2	0.4
13:00	**439**	3	0.7	383	87.2	41	9.3	12	2.7	0	0.0
14:00	**454**	5	1.1	377	83.0	56	12.3	16	3.5	0	0.0
15:00	**513**	8	1.6	446	86.9	40	7.8	16	3.1	3	0.6
16:00	**590**	10	1.7	515	87.3	56	9.5	9	1.5	0	0.0
17:00	**723**	7	1.0	661	91.4	40	5.5	15	2.1	0	0.0
18:00	**522**	8	1.5	488	93.5	19	3.6	7	1.3	0	0.0
19:00	**338**	2	0.6	315	93.2	17	5.0	4	1.2	0	0.0
20:00	**187**	3	1.6	169	90.4	12	6.4	2	1.1	1	0.5
21:00	**140**	4	2.9	121	86.4	12	8.6	3	2.1	0	0.0
22:00	**86**	2	2.3	83	96.5	1	1.2	0	0.0	0	0.0
23:00	**58**	0	0.0	51	87.9	5	8.6	2	3.5	0	0.0
12H,7-19	**6629**	**62**	**0.9**	**5729**	**86.4**	**634**	**9.6**	**191**	**2.9**	**13**	**0.2**
16H,6-22	**7514**	**77**	**1.0**	**6512**	**86.7**	**701**	**9.3**	**210**	**2.8**	**14**	**0.2**
18H,6-24	**7658**	**79**	**1.0**	**6646**	**86.8**	**707**	**9.2**	**212**	**2.8**	**14**	**0.2**
24H,0-24	**7860**	**86**	**1.1**	**6815**	**86.7**	**718**	**9.1**	**227**	**2.9**	**14**	**0.2**

19028	RUDHEATH	Site No: 19028004	Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)
Wed 24-Jun-15 to Tue 30-Jun-15		Channel: Northbound		

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Thu 25-Jun-15											
00:00	**31**	2	6.5	26	83.9	1	3.2	2	6.5	0	0.0
01:00	**27**	2	7.4	22	81.5	2	7.4	1	3.7	0	0.0
02:00	**25**	0	0.0	23	92.0	1	4.0	1	4.0	0	0.0
03:00	**22**	1	4.6	17	77.3	2	9.1	2	9.1	0	0.0
04:00	**24**	2	8.3	19	79.2	0	0.0	3	12.5	0	0.0
05:00	**75**	4	5.3	59	78.7	5	6.7	7	9.3	0	0.0
06:00	**164**	1	0.6	133	81.1	20	12.2	10	6.1	0	0.0
07:00	**375**	6	1.6	313	83.5	41	10.9	14	3.7	1	0.3
08:00	**495**	3	0.6	431	87.1	49	9.9	12	2.4	0	0.0
09:00	**509**	3	0.6	438	86.1	48	9.4	18	3.5	2	0.4
10:00	**398**	0	0.0	339	85.2	45	11.3	12	3.0	2	0.5
11:00	**424**	4	0.9	357	84.2	48	11.3	15	3.5	0	0.0
12:00	**449**	0	0.0	397	88.4	38	8.5	12	2.7	2	0.5
13:00	**435**	3	0.7	371	85.3	47	10.8	14	3.2	0	0.0
14:00	**463**	8	1.7	386	83.4	47	10.2	19	4.1	3	0.7
15:00	**475**	5	1.1	409	86.1	48	10.1	11	2.3	2	0.4
16:00	**563**	4	0.7	486	86.3	54	9.6	17	3.0	2	0.4
17:00	**653**	2	0.3	597	91.4	36	5.5	17	2.6	1	0.2
18:00	**528**	11	2.1	485	91.9	21	4.0	10	1.9	1	0.2
19:00	**342**	5	1.5	309	90.4	23	6.7	5	1.5	0	0.0
20:00	**218**	6	2.8	191	87.6	20	9.2	1	0.5	0	0.0
21:00	**175**	7	4.0	153	87.4	10	5.7	5	2.9	0	0.0
22:00	**141**	2	1.4	125	88.7	8	5.7	6	4.3	0	0.0
23:00	**62**	1	1.6	58	93.6	1	1.6	2	3.2	0	0.0
12H,7-19	**5767**	**49**	**0.9**	**5009**	**86.9**	**522**	**9.1**	**171**	**3.0**	**16**	**0.3**
16H,6-22	**6666**	**68**	**1.0**	**5795**	**86.9**	**595**	**8.9**	**192**	**2.9**	**16**	**0.2**
18H,6-24	**6869**	**71**	**1.0**	**5978**	**87.0**	**604**	**8.8**	**200**	**2.9**	**16**	**0.2**
24H,0-24	**7073**	**82**	**1.2**	**6144**	**86.9**	**615**	**8.7**	**216**	**3.1**	**16**	**0.2**

19028		RUDHEATH			Site No: 19028004		Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Fri 26-Jun-15											
00:00	**27**	1	3.7	22	81.5	2	7.4	2	7.4	0	0.0
01:00	**23**	0	0.0	20	87.0	2	8.7	1	4.4	0	0.0
02:00	**17**	1	5.9	13	76.5	1	5.9	2	11.8	0	0.0
03:00	**19**	1	5.3	15	79.0	1	5.3	2	10.5	0	0.0
04:00	**27**	4	14.8	18	66.7	3	11.1	2	7.4	0	0.0
05:00	**74**	4	5.4	63	85.1	4	5.4	3	4.1	0	0.0
06:00	**184**	7	3.8	156	84.8	13	7.1	8	4.4	0	0.0
07:00	**378**	2	0.5	334	88.4	36	9.5	6	1.6	0	0.0
08:00	**499**	2	0.4	426	85.4	59	11.8	12	2.4	0	0.0
09:00	**476**	3	0.6	387	81.3	60	12.6	25	5.3	1	0.2
10:00	**493**	2	0.4	403	81.7	62	12.6	25	5.1	1	0.2
11:00	**516**	4	0.8	453	87.8	52	10.1	7	1.4	0	0.0
12:00	**598**	6	1.0	520	87.0	50	8.4	20	3.3	2	0.3
13:00	**682**	4	0.6	594	87.1	61	8.9	21	3.1	2	0.3
14:00	**578**	5	0.9	510	88.2	48	8.3	15	2.6	0	0.0
15:00	**547**	3	0.6	481	87.9	49	9.0	14	2.6	0	0.0
16:00	**500**	8	1.6	445	89.0	33	6.6	14	2.8	0	0.0
17:00	**660**	7	1.1	611	92.6	28	4.2	11	1.7	3	0.5
18:00	**602**	6	1.0	554	92.0	33	5.5	8	1.3	1	0.2
19:00	**358**	2	0.6	324	90.5	25	7.0	7	2.0	0	0.0
20:00	**229**	5	2.2	205	89.5	15	6.6	3	1.3	1	0.4
21:00	**154**	3	2.0	140	90.9	7	4.6	4	2.6	0	0.0
22:00	**132**	2	1.5	120	90.9	8	6.1	2	1.5	0	0.0
23:00	**73**	0	0.0	64	87.7	5	6.9	4	5.5	0	0.0
12H,7-19	**6529**	**52**	**0.8**	**5718**	**87.6**	**571**	**8.8**	**178**	**2.7**	**10**	**0.2**
16H,6-22	**7454**	**69**	**0.9**	**6543**	**87.8**	**631**	**8.5**	**200**	**2.7**	**11**	**0.2**
18H,6-24	**7659**	**71**	**0.9**	**6727**	**87.8**	**644**	**8.4**	**206**	**2.7**	**11**	**0.1**
24H,0-24	**7846**	**82**	**1.1**	**6878**	**87.7**	**657**	**8.4**	**218**	**2.8**	**11**	**0.1**

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19028		RUDHEATH			Site No: 19028004		Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sat 27-Jun-15											
00:00	**46**	2	4.4	39	84.8	4	8.7	1	2.2	0	0.0
01:00	**19**	0	0.0	16	84.2	1	5.3	2	10.5	0	0.0
02:00	**30**	0	0.0	28	93.3	1	3.3	1	3.3	0	0.0
03:00	**23**	1	4.4	15	65.2	4	17.4	3	13.0	0	0.0
04:00	**20**	4	20.0	15	75.0	0	0.0	1	5.0	0	0.0
05:00	**63**	4	6.4	55	87.3	1	1.6	3	4.8	0	0.0
06:00	**80**	2	2.5	71	88.8	2	2.5	5	6.3	0	0.0
07:00	**143**	1	0.7	115	80.4	22	15.4	4	2.8	1	0.7
08:00	**321**	2	0.6	278	86.6	30	9.4	11	3.4	0	0.0
09:00	**401**	5	1.3	363	90.5	27	6.7	5	1.3	1	0.3
10:00	**506**	4	0.8	465	91.9	31	6.1	6	1.2	0	0.0
11:00	**517**	3	0.6	465	89.9	40	7.7	9	1.7	0	0.0
12:00	**480**	3	0.6	435	90.6	30	6.3	12	2.5	0	0.0
13:00	**469**	8	1.7	425	90.6	27	5.8	8	1.7	1	0.2
14:00	**477**	10	2.1	430	90.2	30	6.3	7	1.5	0	0.0
15:00	**411**	11	2.7	379	92.2	18	4.4	3	0.7	0	0.0
16:00	**396**	10	2.5	360	90.9	22	5.6	4	1.0	0	0.0
17:00	**341**	11	3.2	308	90.3	21	6.2	1	0.3	0	0.0
18:00	**294**	9	3.1	262	89.1	16	5.4	7	2.4	0	0.0
19:00	**253**	2	0.8	232	91.7	14	5.5	5	2.0	0	0.0
20:00	**181**	6	3.3	164	90.6	10	5.5	1	0.6	0	0.0
21:00	**134**	4	3.0	122	91.0	7	5.2	1	0.8	0	0.0
22:00	**99**	2	2.0	91	91.9	5	5.1	1	1.0	0	0.0
23:00	**80**	0	0.0	75	93.8	5	6.3	0	0.0	0	0.0
12H,7-19	**4756**	**77**	**1.6**	**4285**	**90.1**	**314**	**6.6**	**77**	**1.6**	**3**	**0.1**
16H,6-22	**5404**	**91**	**1.7**	**4874**	**90.2**	**347**	**6.4**	**89**	**1.7**	**3**	**0.1**
18H,6-24	**5583**	**93**	**1.7**	**5040**	**90.3**	**357**	**6.4**	**90**	**1.6**	**3**	**0.1**
24H,0-24	**5784**	**104**	**1.8**	**5208**	**90.0**	**368**	**6.4**	**101**	**1.8**	**3**	**0.1**

19028	RUDHEATH	Site No: 19028004	Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)
Wed 24-Jun-15 to Tue 30-Jun-15		Channel: Northbound		

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sun 28-Jun-15											
00:00	**59**	2	3.4	50	84.8	5	8.5	1	1.7	1	1.7
01:00	**36**	0	0.0	31	86.1	5	13.9	0	0.0	0	0.0
02:00	**34**	1	2.9	31	91.2	1	2.9	1	2.9	0	0.0
03:00	**12**	0	0.0	11	91.7	1	8.3	0	0.0	0	0.0
04:00	**25**	1	4.0	23	92.0	1	4.0	0	0.0	0	0.0
05:00	**41**	4	9.8	34	82.9	2	4.9	1	2.4	0	0.0
06:00	**48**	2	4.2	39	81.3	5	10.4	2	4.2	0	0.0
07:00	**72**	0	0.0	64	88.9	6	8.3	2	2.8	0	0.0
08:00	**101**	1	1.0	92	91.1	7	6.9	1	1.0	0	0.0
09:00	**219**	3	1.4	196	89.5	16	7.3	4	1.8	0	0.0
10:00	**349**	1	0.3	326	93.4	19	5.4	3	0.9	0	0.0
11:00	**369**	3	0.8	345	93.5	13	3.5	8	2.2	0	0.0
12:00	**421**	4	1.0	387	91.9	21	5.0	9	2.1	0	0.0
13:00	**431**	4	0.9	403	93.5	13	3.0	11	2.6	0	0.0
14:00	**420**	5	1.2	401	95.5	13	3.1	1	0.2	0	0.0
15:00	**380**	6	1.6	361	95.0	11	2.9	2	0.5	0	0.0
16:00	**289**	5	1.7	262	90.7	15	5.2	7	2.4	0	0.0
17:00	**288**	7	2.4	263	91.3	12	4.2	6	2.1	0	0.0
18:00	**246**	4	1.6	222	90.2	15	6.1	5	2.0	0	0.0
19:00	**199**	5	2.5	181	91.0	8	4.0	5	2.5	0	0.0
20:00	**155**	4	2.6	140	90.3	7	4.5	4	2.6	0	0.0
21:00	**117**	2	1.7	107	91.5	6	5.1	2	1.7	0	0.0
22:00	**79**	0	0.0	69	87.3	6	7.6	3	3.8	1	1.3
23:00	**39**	0	0.0	36	92.3	2	5.1	1	2.6	0	0.0
12H,7-19	**3585**	**43**	**1.2**	**3322**	**92.7**	**161**	**4.5**	**59**	**1.7**	**0**	**0.0**
16H,6-22	**4104**	**56**	**1.4**	**3789**	**92.3**	**187**	**4.6**	**72**	**1.8**	**0**	**0.0**
18H,6-24	**4222**	**56**	**1.3**	**3894**	**92.2**	**195**	**4.6**	**76**	**1.8**	**1**	**0.0**
24H,0-24	**4429**	**64**	**1.5**	**4074**	**92.0**	**210**	**4.7**	**79**	**1.8**	**2**	**0.1**

19028 RUDHEATH Site No: 19028004 Location Site 4, Griffiths Road, Rudheath (Crematorium SP)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Northbound

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Mon 29-Jun-15											
00:00	**24**	0	0.0	21	87.5	3	12.5	0	0.0	0	0.0
01:00	**7**	0	0.0	5	71.4	1	14.3	1	14.3	0	0.0
02:00	**25**	1	4.0	24	96.0	0	0.0	0	0.0	0	0.0
03:00	**25**	2	8.0	19	76.0	2	8.0	2	8.0	0	0.0
04:00	**17**	0	0.0	16	94.1	1	5.9	0	0.0	0	0.0
05:00	**64**	3	4.7	57	89.1	3	4.7	1	1.6	0	0.0
06:00	**171**	3	1.8	150	87.7	14	8.2	3	1.8	1	0.6
07:00	**350**	6	1.7	302	86.3	33	9.4	9	2.6	0	0.0
08:00	**481**	7	1.5	408	84.8	50	10.4	15	3.1	1	0.2
09:00	**484**	4	0.8	411	84.9	61	12.6	8	1.7	0	0.0
10:00	**378**	2	0.5	310	82.0	52	13.8	12	3.2	2	0.5
11:00	**430**	6	1.4	354	82.3	53	12.3	14	3.3	3	0.7
12:00	**444**	5	1.1	359	80.9	62	14.0	15	3.4	3	0.7
13:00	**473**	0	0.0	397	83.9	53	11.2	23	4.9	0	0.0
14:00	**456**	7	1.5	371	81.4	61	13.4	16	3.5	1	0.2
15:00	**496**	3	0.6	429	86.5	45	9.1	18	3.6	1	0.2
16:00	**607**	9	1.5	528	87.0	46	7.6	23	3.8	1	0.2
17:00	**719**	10	1.4	649	90.3	42	5.8	18	2.5	0	0.0
18:00	**515**	7	1.4	464	90.1	27	5.2	16	3.1	1	0.2
19:00	**303**	6	2.0	273	90.1	19	6.3	5	1.7	0	0.0
20:00	**212**	3	1.4	184	86.8	19	9.0	6	2.8	0	0.0
21:00	**149**	6	4.0	132	88.6	8	5.4	3	2.0	0	0.0
22:00	**98**	0	0.0	94	95.9	3	3.1	1	1.0	0	0.0
23:00	**49**	0	0.0	41	83.7	6	12.2	2	4.1	0	0.0
12H,7-19	**5833**	**66**	**1.1**	**4982**	**85.4**	**585**	**10.0**	**187**	**3.2**	**13**	**0.2**
16H,6-22	**6668**	**84**	**1.3**	**5721**	**85.8**	**645**	**9.7**	**204**	**3.1**	**14**	**0.2**
18H,6-24	**6815**	**84**	**1.2**	**5856**	**85.9**	**654**	**9.6**	**207**	**3.0**	**14**	**0.2**
24H,0-24	**6977**	**90**	**1.3**	**5998**	**86.0**	**664**	**9.5**	**211**	**3.0**	**14**	**0.2**

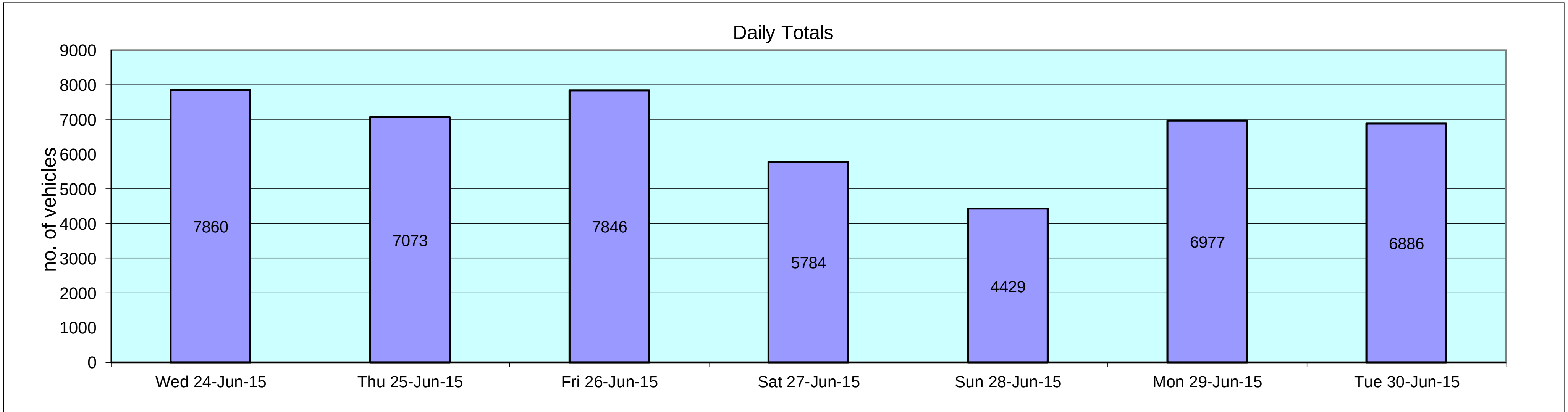
AXIOM Traffic Limited

Data produced by Axiom Traffic Ltd

19028		RUDHEATH			Site No: 19028004		Location		Site 4, Griffiths Road, Rudheath (Crematorium SP)		
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Tue 30-Jun-15											
00:00	**14**	1	7.1	10	71.4	1	7.1	2	14.3	0	0.0
01:00	**16**	0	0.0	11	68.8	2	12.5	3	18.8	0	0.0
02:00	**21**	2	9.5	16	76.2	1	4.8	2	9.5	0	0.0
03:00	**28**	0	0.0	21	75.0	3	10.7	4	14.3	0	0.0
04:00	**35**	1	2.9	29	82.9	3	8.6	2	5.7	0	0.0
05:00	**62**	2	3.2	56	90.3	0	0.0	4	6.5	0	0.0
06:00	**183**	4	2.2	151	82.5	17	9.3	11	6.0	0	0.0
07:00	**405**	4	1.0	353	87.2	33	8.2	15	3.7	0	0.0
08:00	**411**	5	1.2	356	86.6	35	8.5	14	3.4	1	0.2
09:00	**482**	3	0.6	388	80.5	78	16.2	13	2.7	0	0.0
10:00	**438**	4	0.9	378	86.3	41	9.4	12	2.7	3	0.7
11:00	**415**	3	0.7	344	82.9	46	11.1	19	4.6	3	0.7
12:00	**474**	8	1.7	392	82.7	59	12.5	12	2.5	3	0.6
13:00	**416**	4	1.0	343	82.5	54	13.0	14	3.4	1	0.2
14:00	**434**	3	0.7	362	83.4	46	10.6	21	4.8	2	0.5
15:00	**495**	3	0.6	421	85.1	55	11.1	15	3.0	1	0.2
16:00	**592**	7	1.2	514	86.8	57	9.6	13	2.2	1	0.2
17:00	**643**	6	0.9	589	91.6	34	5.3	14	2.2	0	0.0
18:00	**496**	0	0.0	452	91.1	34	6.9	10	2.0	0	0.0
19:00	**289**	3	1.0	259	89.6	22	7.6	5	1.7	0	0.0
20:00	**209**	1	0.5	189	90.4	14	6.7	5	2.4	0	0.0
21:00	**158**	0	0.0	151	95.6	5	3.2	2	1.3	0	0.0
22:00	**126**	0	0.0	114	90.5	9	7.1	3	2.4	0	0.0
23:00	**44**	0	0.0	40	90.9	2	4.6	2	4.6	0	0.0
12H,7-19	**5701**	**50**	**0.9**	**4892**	**85.8**	**572**	**10.0**	**172**	**3.0**	**15**	**0.3**
16H,6-22	**6540**	**58**	**0.9**	**5642**	**86.3**	**630**	**9.6**	**195**	**3.0**	**15**	**0.2**
18H,6-24	**6710**	**58**	**0.9**	**5796**	**86.4**	**641**	**9.6**	**200**	**3.0**	**15**	**0.2**
24H,0-24	**6886**	**64**	**0.9**	**5939**	**86.3**	**651**	**9.5**	**217**	**3.2**	**15**	**0.2**

19028	RUDHEATH	Site No: 19028004	Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)
Wed 24-Jun-15 to Tue 30-Jun-15		Channel: Northbound		

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Daily Totals											
Wed 24-Jun-15	**7860**	86	1.1	6815	86.7	718	9.1	227	2.9	14	0.2
Thu 25-Jun-15	**7073**	82	1.2	6144	86.9	615	8.7	216	3.1	16	0.2
Fri 26-Jun-15	**7846**	82	1.1	6878	87.7	657	8.4	218	2.8	11	0.1
Sat 27-Jun-15	**5784**	104	1.8	5208	90.0	368	6.4	101	1.8	3	0.1
Sun 28-Jun-15	**4429**	64	1.5	4074	92.0	210	4.7	79	1.8	2	0.1
Mon 29-Jun-15	**6977**	90	1.3	5998	86.0	664	9.5	211	3.0	14	0.2
Tue 30-Jun-15	**6886**	64	0.9	5939	86.3	651	9.5	217	3.2	15	0.2
Total Vehicles											
[--]	**46855**	572	1.3	41056	87.9	3883	8.0	1269	2.6	75	0.2



19028		RUDHEATH					Site No: 19028004		Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)						
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Northbound									
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	56-<61	=>61
Wed 24-Jun-15																
00:00	**19**	41.8	38	4.3	0	0	0	0	1	4	10	4	0	0	0	0
01:00	**22**	43.2	37.6	6.1	0	0	0	1	2	4	9	5	1	0	0	0
02:00	**24**	43.4	37.5	8.4	1	0	0	0	3	2	11	6	0	1	0	0
03:00	**17**	40.3	36.7	5.2	0	0	0	0	2	5	8	1	1	0	0	0
04:00	**37**	42.2	36.5	6.9	1	0	0	0	1	17	11	4	3	0	0	0
05:00	**83**	41.5	35.5	7.3	0	1	1	6	16	10	35	10	3	1	0	0
06:00	**220**	40.3	34.3	6.7	0	4	3	15	32	77	64	18	7	0	0	0
07:00	**594**	37.5	31.1	6.2	1	7	22	84	152	207	106	14	0	1	0	0
08:00	**614**	35	27.5	7.6	9	52	68	86	175	164	53	7	0	0	0	0
09:00	**659**	35.2	28.3	7.3	16	29	55	105	186	203	56	7	2	0	0	0
10:00	**585**	36.8	30.7	6.4	1	11	23	104	120	223	89	11	3	0	0	0
11:00	**476**	36.4	31.9	5.4	0	2	12	41	126	218	59	16	2	0	0	0
12:00	**460**	37.2	31.1	6.3	3	7	17	50	124	171	77	10	1	0	0	0
13:00	**439**	36.9	31.6	5.8	2	4	15	32	126	181	67	10	2	0	0	0
14:00	**454**	36.4	30.4	6.6	3	8	23	64	130	153	59	12	1	1	0	0
15:00	**513**	37.5	31.2	6.4	5	3	24	48	152	178	85	17	0	1	0	0
16:00	**590**	36.5	30.6	6.3	3	12	24	70	181	202	82	15	1	0	0	0
17:00	**723**	36.3	29.8	7.3	2	35	61	84	183	244	92	16	4	2	0	0
18:00	**522**	37.9	32.1	6	2	4	16	34	148	207	87	20	2	2	0	0
19:00	**338**	39.6	33.9	6	0	5	5	19	52	133	100	21	3	0	0	0
20:00	**187**	40.1	34.4	6.2	1	1	3	10	26	67	61	17	0	1	0	0
21:00	**140**	40.3	34.3	7	0	1	3	14	19	44	44	11	2	1	1	0
22:00	**86**	42.8	36.6	6.9	0	2	1	1	7	25	32	13	4	1	0	0
23:00	**58**	39.2	33.5	5.9	0	0	2	3	12	21	17	2	1	0	0	0
12H,7-19	**6629**	**36.5**	**30.4**	**6.7**	**47**	**174**	**360**	**802**	**1803**	**2351**	**912**	**155**	**18**	**7**	**0**	**0**
16H,6-22	**7514**	**37.3**	**30.8**	**6.8**	**48**	**185**	**374**	**860**	**1932**	**2672**	**1181**	**222**	**30**	**9**	**1**	**0**
18H,6-24	**7658**	**37.5**	**30.9**	**6.8**	**48**	**187**	**377**	**864**	**1951**	**2718**	**1230**	**237**	**35**	**10**	**1**	**0**
24H,0-24	**7860**	**37.7**	**31.1**	**6.9**	**50**	**188**	**378**	**871**	**1976**	**2760**	**1314**	**267**	**43**	**12**	**1**	**0**

AXIOM Traffic Limited

Data produced by
Axiom Traffic Ltd

19028 RUDHEATH Site No: 19028004 Location Site 4, Griffiths Road, Rudheath (Crematorium SP)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Northbound

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	56-<61	=>61
Thu 25-Jun-15																
00:00	**31**	42.9	37.4	6.4	0	0	0	0	3	12	9	5	1	0	1	0
01:00	**27**	43.5	37.2	7.3	0	1	0	0	3	5	11	5	2	0	0	0
02:00	**25**	39.1	33.9	5.7	0	0	0	1	7	9	6	1	1	0	0	0
03:00	**22**	42.5	37.4	5.9	0	0	0	1	2	4	10	4	1	0	0	0
04:00	**24**	42.5	35.6	10.2	1	2	0	0	0	5	11	3	2	0	0	0
05:00	**75**	43.6	36.4	7.8	0	3	1	2	7	17	24	18	2	1	0	0
06:00	**164**	41.2	36.5	5.4	0	1	0	4	18	40	75	24	2	0	0	0
07:00	**375**	38.3	30.4	8	7	15	26	49	70	119	69	18	2	0	0	0
08:00	**495**	36.6	30.1	7.6	18	11	26	52	125	180	69	11	3	0	0	0
09:00	**509**	36.8	28.7	8.5	10	47	50	35	135	144	72	12	4	0	0	0
10:00	**398**	36.6	30.8	6.2	0	7	23	33	131	137	55	11	1	0	0	0
11:00	**424**	37.9	32.4	5.7	3	3	4	28	110	181	82	10	2	1	0	0
12:00	**449**	37.7	31.9	5.8	1	1	13	45	117	177	82	10	2	1	0	0
13:00	**435**	37.9	31.1	6.8	2	14	20	41	111	147	89	11	0	0	0	0
14:00	**463**	37.5	31.6	6	4	3	6	50	139	169	73	17	2	0	0	0
15:00	**475**	37.7	31.7	6.8	4	10	14	33	134	184	73	18	3	0	0	2
16:00	**563**	37.5	30.4	7.4	4	22	42	64	128	190	94	15	3	1	0	0
17:00	**653**	38.5	31.5	7.2	4	11	39	68	159	208	132	23	6	1	2	0
18:00	**528**	39	30.9	8.7	20	28	26	41	90	171	122	26	4	0	0	0
19:00	**342**	39.9	34.3	6	1	1	7	14	52	140	97	22	8	0	0	0
20:00	**218**	40.9	35.6	6.5	1	1	1	4	36	72	71	25	2	4	0	1
21:00	**175**	39.3	33.8	6.2	0	2	5	8	25	77	47	7	3	1	0	0
22:00	**141**	40.3	34.1	7.1	1	1	5	6	25	49	38	10	5	1	0	0
23:00	**62**	42.9	36.5	7.5	0	1	1	0	11	14	21	11	2	0	0	1
12H,7-19	**5767**	**37.8**	**30.9**	**7.2**	**77**	**172**	**289**	**539**	**1449**	**2007**	**1012**	**182**	**32**	**4**	**2**	**2**
16H,6-22	**6666**	**38.4**	**31.5**	**7.2**	**79**	**177**	**302**	**569**	**1580**	**2336**	**1302**	**260**	**47**	**9**	**2**	**3**
18H,6-24	**6869**	**38.5**	**31.6**	**7.2**	**80**	**179**	**308**	**575**	**1616**	**2399**	**1361**	**281**	**54**	**10**	**2**	**4**
24H,0-24	**7073**	**38.7**	**31.7**	**7.3**	**81**	**185**	**309**	**579**	**1638**	**2451**	**1432**	**317**	**63**	**11**	**3**	**4**

19028			RUDHEATH				Site No: 19028004			Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Northbound									

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	56-<61	=>61
Fri 26-Jun-15																
00:00	**27**	44.4	38.7	8.1	0	0	0	1	2	8	6	8	0	1	0	1
01:00	**23**	46.1	40.9	8.3	0	0	0	0	1	6	6	6	2	0	1	1
02:00	**17**	50.9	40.3	7.2	0	0	0	0	0	5	7	2	0	3	0	0
03:00	**19**	39.7	34.8	6.8	0	0	1	1	2	5	9	0	1	0	0	0
04:00	**27**	41.6	33.5	10.2	1	3	0	0	1	10	7	4	1	0	0	0
05:00	**74**	43.5	37	8.2	1	1	2	1	6	15	30	13	3	1	0	1
06:00	**184**	42.3	34.9	7.2	1	2	3	11	32	46	52	34	3	0	0	0
07:00	**378**	38.5	32.4	6.1	1	3	13	31	82	151	80	15	2	0	0	0
08:00	**499**	37.1	30.8	6.7	4	7	20	77	121	179	73	15	1	2	0	0
09:00	**476**	37.7	31.5	6.6	3	9	20	48	109	188	79	16	4	0	0	0
10:00	**493**	35.8	29.1	7.5	8	30	31	56	152	148	59	7	1	0	1	0
11:00	**516**	35.9	30.7	6	5	2	24	47	184	179	63	9	3	0	0	0
12:00	**598**	36.3	31.2	5.9	1	4	21	74	159	245	74	15	4	1	0	0
13:00	**682**	35.4	28.9	7	4	24	62	119	195	201	57	15	5	0	0	0
14:00	**578**	35.9	30.4	6.4	1	11	38	67	159	221	67	10	2	2	0	0
15:00	**547**	36.1	29.6	7.1	5	19	49	62	148	180	73	10	1	0	0	0
16:00	**500**	35.5	29.1	6.7	4	16	33	70	191	122	51	12	1	0	0	0
17:00	**660**	35.6	30.3	6	5	9	31	69	218	249	70	7	2	0	0	0
18:00	**602**	39.2	31.9	7	4	5	23	72	155	183	107	45	8	0	0	0
19:00	**358**	40.7	35.2	6.3	0	2	8	14	43	121	124	37	7	1	1	0
20:00	**229**	40.3	34.7	6.5	0	2	4	12	31	86	69	18	5	1	1	0
21:00	**154**	41.6	36.6	6.3	0	1	1	3	16	45	62	20	1	4	1	0
22:00	**132**	40.7	35.8	6.2	0	0	0	6	16	50	42	12	4	0	2	0
23:00	**73**	41.3	34.4	6.6	0	0	2	5	11	29	14	10	2	0	0	0
12H,7-19	**6529**	**36.5**	**30.4**	**6.7**	**45**	**139**	**365**	**792**	**1873**	**2246**	**853**	**176**	**34**	**5**	**1**	**0**
16H,6-22	**7454**	**37.7**	**31**	**6.9**	**46**	**146**	**381**	**832**	**1995**	**2544**	**1160**	**285**	**50**	**11**	**4**	**0**
18H,6-24	**7659**	**37.8**	**31.2**	**6.9**	**46**	**146**	**383**	**843**	**2022**	**2623**	**1216**	**307**	**56**	**11**	**6**	**0**
24H,0-24	**7846**	**38.1**	**31.3**	**7**	**48**	**150**	**386**	**846**	**2034**	**2672**	**1281**	**340**	**63**	**16**	**7**	**3**

Data produced by
Axiom Traffic Ltd

19028		RUDHEATH			Site No: 19028004			Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)							
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound											

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	56-<61	=>61
Sat 27-Jun-15																
00:00	**46**	44.1	38.1	6.9	0	1	0	1	2	10	19	9	3	1	0	0
01:00	**19**	42.1	37.7	5	0	0	0	0	1	6	8	3	1	0	0	0
02:00	**30**	43	38.2	5.4	0	0	0	0	4	3	16	5	2	0	0	0
03:00	**23**	39.4	33.5	7.3	1	0	0	1	4	7	9	1	0	0	0	0
04:00	**20**	41.8	32.8	12.3	2	2	0	0	0	7	5	3	0	1	0	0
05:00	**63**	44.9	37.1	8.9	1	2	1	2	6	10	17	18	6	0	0	0
06:00	**80**	44.1	37.8	6.7	0	1	0	2	3	26	25	17	4	1	1	0
07:00	**143**	40.9	35.3	6.4	0	2	1	6	19	47	47	18	2	1	0	0
08:00	**321**	40.3	33	7.5	1	6	17	26	62	93	78	33	4	1	0	0
09:00	**401**	39.1	33.2	6.4	1	1	15	29	68	172	89	18	5	2	0	1
10:00	**506**	38.4	32.1	6.4	5	10	6	44	117	197	107	19	1	0	0	0
11:00	**517**	35.5	29.6	6.5	5	12	39	55	177	167	54	8	0	0	0	0
12:00	**480**	35.7	30.2	5.9	2	8	15	74	149	171	58	2	1	0	0	0
13:00	**469**	38.8	32.5	6.4	1	6	15	45	92	178	110	19	2	1	0	0
14:00	**477**	38.9	32.8	6.1	0	1	18	38	102	183	108	22	5	0	0	0
15:00	**411**	38.9	33.2	5.6	0	2	3	27	97	163	98	15	5	1	0	0
16:00	**396**	38.4	32.1	6.9	1	12	16	26	80	165	75	14	6	1	0	0
17:00	**341**	39.7	33.7	6.3	1	1	8	25	59	126	94	22	4	1	0	0
18:00	**294**	40.6	34.9	6.5	0	4	3	20	31	106	92	30	6	2	0	0
19:00	**253**	39.7	34.3	5.6	0	1	1	15	36	113	66	15	6	0	0	0
20:00	**181**	40.5	35.6	6.9	1	3	2	3	21	60	71	12	4	3	0	1
21:00	**134**	40.1	34.8	6.6	0	1	3	4	19	54	40	9	2	0	1	1
22:00	**99**	42.3	37.1	6.5	0	0	0	1	12	31	37	10	6	0	1	1
23:00	**80**	40.5	35.3	6	1	0	0	1	13	28	27	8	2	0	0	0
12H,7-19	**4756**	**38.8**	**32.4**	**6.6**	**17**	**65**	**156**	**415**	**1053**	**1768**	**1010**	**220**	**41**	**10**	**0**	**1**
16H,6-22	**5404**	**39.1**	**32.7**	**6.6**	**18**	**71**	**162**	**439**	**1132**	**2021**	**1212**	**273**	**57**	**14**	**2**	**3**
18H,6-24	**5583**	**39.2**	**32.8**	**6.6**	**19**	**71**	**162**	**441**	**1157**	**2080**	**1276**	**291**	**65**	**14**	**3**	**4**
24H,0-24	**5784**	**39.4**	**33**	**6.7**	**23**	**76**	**163**	**445**	**1174**	**2123**	**1350**	**330**	**77**	**16**	**3**	**4**

19028		RUDHEATH			Site No: 19028004			Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)							
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound											
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<16**	**16-<21**	**21-<26**	**26-<31**	**31-<36**	**36-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**=>61**
Sun 28-Jun-15																
00:00	**59**	44.5	37.7	8	0	0	1	0	9	16	16	11	4	0	0	2
01:00	**36**	42.7	38.2	4.2	0	0	0	0	1	9	17	9	0	0	0	0
02:00	**34**	40.8	36.5	8	1	0	0	0	3	13	12	1	2	2	0	0
03:00	**12**	39.5	36	6	0	0	0	0	2	5	3	1	1	0	0	0
04:00	**25**	36.8	31.3	6.4	1	0	0	1	9	9	5	0	0	0	0	0
05:00	**41**	42	35.9	8	0	1	3	1	1	9	18	7	0	1	0	0
06:00	**48**	41.9	37.7	5	0	0	0	0	5	9	25	7	2	0	0	0
07:00	**72**	40.4	34.8	6.2	0	0	2	4	10	22	26	7	1	0	0	0
08:00	**101**	41.5	36.9	5.9	0	1	1	2	7	25	48	14	2	1	0	0
09:00	**219**	39.4	33.2	6.1	0	1	5	20	41	79	58	14	1	0	0	0
10:00	**349**	39.5	34.6	5.2	0	1	3	9	43	174	95	17	5	2	0	0
11:00	**369**	39.4	33.2	6.6	1	7	11	21	68	134	105	19	2	0	1	0
12:00	**421**	38	32.6	5.7	2	3	8	32	81	198	83	13	1	0	0	0
13:00	**431**	37.4	32.2	5.7	1	3	10	34	99	200	67	14	2	1	0	0
14:00	**420**	39.2	33.4	5.7	0	4	5	19	101	164	100	24	2	1	0	0
15:00	**380**	39.4	33.9	5.5	0	2	4	20	64	170	93	23	4	0	0	0
16:00	**289**	39.8	33.1	7.3	0	5	15	27	44	95	77	20	5	0	1	0
17:00	**288**	39.9	33.8	6.3	1	0	6	25	53	90	88	21	4	0	0	0
18:00	**246**	40.2	34.5	6	0	1	3	11	42	95	68	20	4	2	0	0
19:00	**199**	41.3	36.1	6.4	0	1	3	6	21	64	72	25	4	2	0	1
20:00	**155**	41.7	36.1	6.9	1	2	1	7	9	50	58	22	2	2	1	0
21:00	**117**	40.7	36.5	5.5	0	0	0	2	8	47	45	11	2	0	2	0
22:00	**79**	40.4	35.4	5.5	0	1	0	2	10	27	30	9	0	0	0	0
23:00	**39**	44.3	38	7.3	0	0	1	2	0	12	11	10	1	2	0	0
12H,7-19	**3585**	**39.4**	**33.5**	**6.1**	**5**	**28**	**73**	**224**	**653**	**1446**	**908**	**206**	**33**	**7**	**2**	**0**
16H,6-22	**4104**	**39.7**	**33.9**	**6.2**	**6**	**31**	**77**	**239**	**696**	**1616**	**1108**	**271**	**43**	**11**	**5**	**1**
18H,6-24	**4222**	**39.8**	**33.9**	**6.2**	**6**	**32**	**78**	**243**	**706**	**1655**	**1149**	**290**	**44**	**13**	**5**	**1**
24H,0-24	**4429**	**39.9**	**34**	**6.3**	**8**	**33**	**82**	**245**	**731**	**1716**	**1220**	**319**	**51**	**16**	**5**	**3**

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19028		RUDHEATH					Site No: 19028004			Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Northbound									
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<16**	**16-<21**	**21-<26**	**26-<31**	**31-<36**	**36-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**=>61**
Mon 29-Jun-15																
00:00	**24**	39.7	36	6.9	0	0	0	1	2	11	8	0	1	0	1	0
01:00	**7**	-	34.2	7.4	0	0	0	1	1	3	0	2	0	0	0	0
02:00	**25**	44.1	38.3	7.6	1	0	0	0	1	4	8	11	0	0	0	0
03:00	**25**	40.7	34.1	7.8	1	0	0	0	8	4	8	4	0	0	0	0
04:00	**17**	45.9	40.3	5.7	0	0	0	0	1	2	7	4	3	0	0	0
05:00	**64**	43.3	36.9	6.9	0	0	2	2	8	10	26	13	2	1	0	0
06:00	**171**	43.5	36.9	6.7	0	1	3	8	11	47	57	36	6	2	0	0
07:00	**350**	39.1	33.4	5.6	0	1	7	20	75	139	89	17	1	1	0	0
08:00	**481**	37.8	31.5	6.4	1	10	18	45	125	180	83	17	1	1	0	0
09:00	**484**	37.4	31.2	6.4	2	12	22	38	133	179	89	8	1	0	0	0
10:00	**378**	37.8	30.7	7.4	8	11	19	33	105	120	68	13	0	1	0	0
11:00	**430**	38.4	32.4	6.2	0	7	16	30	92	174	94	16	0	1	0	0
12:00	**444**	36.5	30.2	6.6	1	10	35	54	122	148	64	10	0	0	0	0
13:00	**473**	37.9	32	5.9	2	1	11	50	122	180	92	12	3	0	0	0
14:00	**456**	35.9	28.7	7.7	5	35	43	52	115	140	59	7	0	0	0	0
15:00	**496**	37.1	29.8	7.3	1	12	64	56	118	153	76	13	3	0	0	0
16:00	**607**	37.1	30.5	6.9	3	18	39	74	148	211	98	15	1	0	0	0
17:00	**719**	37.4	30.2	7.3	7	26	49	90	180	226	120	16	4	1	0	0
18:00	**515**	39.1	32	7.4	4	14	29	46	99	158	139	23	2	1	0	0
19:00	**303**	39.8	34.1	5.9	1	0	4	21	50	106	100	19	1	1	0	0
20:00	**212**	40.8	35.3	6.3	0	0	4	9	29	74	67	21	5	3	0	0
21:00	**149**	39.8	33.5	7.5	1	3	4	14	20	52	42	7	5	0	1	0
22:00	**98**	40.6	36	5.6	0	0	0	2	10	42	31	10	1	1	1	0
23:00	**49**	40.5	35.9	5.6	0	0	0	2	4	20	17	3	3	0	0	0
12H,7-19	**5833**	**37.8**	**30.9**	**6.9**	**34**	**157**	**352**	**588**	**1434**	**2008**	**1071**	**167**	**16**	**6**	**0**	**0**
16H,6-22	**6668**	**38.4**	**31.4**	**7**	**36**	**161**	**367**	**640**	**1544**	**2287**	**1337**	**250**	**33**	**12**	**1**	**0**
18H,6-24	**6815**	**38.4**	**31.5**	**7**	**36**	**161**	**367**	**644**	**1558**	**2349**	**1385**	**263**	**37**	**13**	**2**	**0**
24H,0-24	**6977**	**38.6**	**31.7**	**7.1**	**38**	**161**	**369**	**648**	**1579**	**2383**	**1442**	**297**	**43**	**14**	**3**	**0**

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19028			RUDHEATH				Site No: 19028004		Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)						
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Northbound									
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<16**	**16-<21**	**21-<26**	**26-<31**	**31-<36**	**36-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**=>61**
Tue 30-Jun-15																
00:00	**14**	40.4	34.6	7.5	0	0	0	2	3	2	5	1	1	0	0	0
01:00	**16**	40.1	36.9	3.8	0	0	0	0	1	4	10	1	0	0	0	0
02:00	**21**	43.4	37.3	5.4	0	0	0	0	1	10	4	5	1	0	0	0
03:00	**28**	41.4	36.7	5.3	0	0	0	0	4	8	11	4	1	0	0	0
04:00	**35**	43.9	37.5	7.3	0	1	0	2	1	7	13	9	2	0	0	0
05:00	**62**	43.2	36.7	7.8	1	1	2	1	4	11	27	12	3	0	0	0
06:00	**183**	42.4	35.9	6.5	1	0	2	6	28	52	58	28	8	0	0	0
07:00	**405**	38	29.4	8.4	11	21	35	63	74	111	73	16	1	0	0	0
08:00	**411**	37	30.8	6.2	2	3	23	45	121	142	67	8	0	0	0	0
09:00	**482**	36.6	30.5	6.8	3	11	41	40	123	183	67	13	1	0	0	0
10:00	**438**	36.7	30.6	6.9	4	8	36	42	105	168	61	12	1	1	0	0
11:00	**415**	38.1	32	6.3	2	3	16	34	106	159	76	15	4	0	0	0
12:00	**474**	36.2	30.5	6.7	3	16	20	57	122	182	64	8	1	1	0	0
13:00	**416**	37	30.7	6.9	2	8	21	56	116	139	57	13	3	0	0	1
14:00	**434**	37.4	30.2	7.3	5	14	29	60	104	136	73	11	2	0	0	0
15:00	**495**	37.7	31.5	6.5	2	7	26	47	114	194	88	16	0	0	1	0
16:00	**592**	38.1	31.7	6.2	2	5	18	71	156	202	115	20	3	0	0	0
17:00	**643**	37.3	30.2	7.5	10	20	50	77	140	223	100	19	3	1	0	0
18:00	**496**	38.5	32.7	5.7	0	1	13	40	115	196	111	16	3	1	0	0
19:00	**289**	40.1	33.7	7	1	2	12	20	47	96	81	23	5	2	0	0
20:00	**209**	40	34.2	6.1	0	0	5	17	28	77	63	15	4	0	0	0
21:00	**158**	40.7	34.9	7.1	0	2	4	10	19	51	51	12	8	1	0	0
22:00	**126**	39.9	34.4	6.1	0	0	2	3	31	43	35	8	2	2	0	0
23:00	**44**	41.8	35.9	6.5	0	1	0	0	7	14	14	6	2	0	0	0
12H,7-19	**5701**	**37.5**	**30.9**	**6.9**	**46**	**117**	**328**	**632**	**1396**	**2035**	**952**	**167**	**22**	**4**	**1**	**1**
16H,6-22	**6540**	**38.2**	**31.4**	**7**	**48**	**121**	**351**	**685**	**1518**	**2311**	**1205**	**245**	**47**	**7**	**1**	**1**
18H,6-24	**6710**	**38.3**	**31.5**	**7**	**48**	**122**	**353**	**688**	**1556**	**2368**	**1254**	**259**	**51**	**9**	**1**	**1**
24H,0-24	**6886**	**38.5**	**31.6**	**7**	**49**	**124**	**355**	**693**	**1570**	**2410**	**1324**	**291**	**59**	**9**	**1**	**1**

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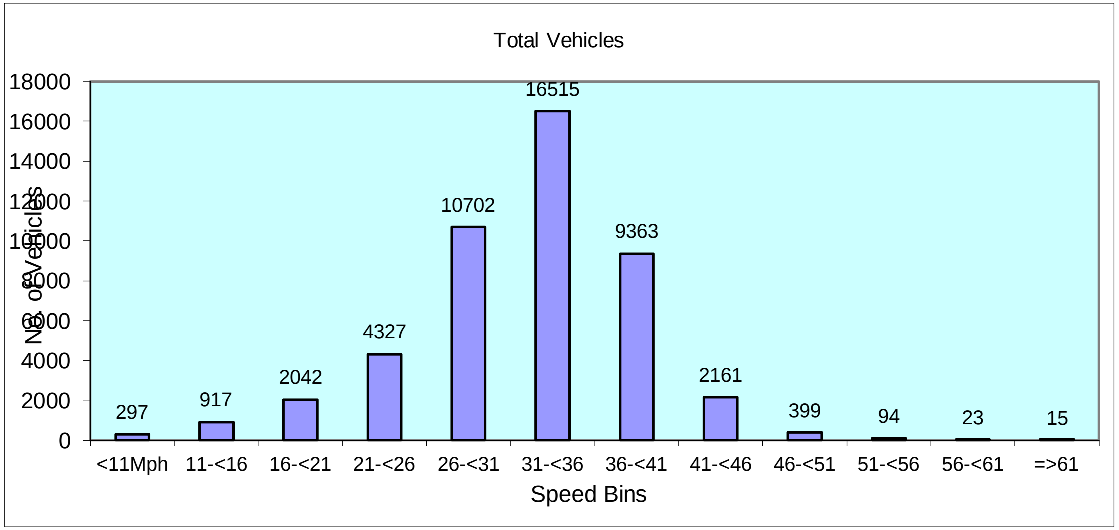
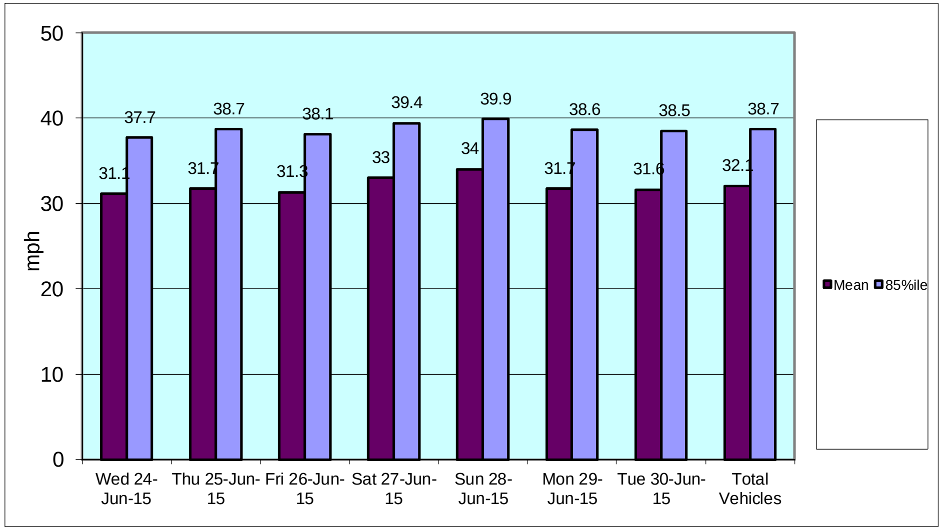
19028		RUDHEATH				Site No: 19028004			Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)					
Wed 24-Jun-15 to Tue 30-Jun-15						Channel: Northbound									

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	56-<61	=>61
Daily Totals																
Wed 24-Jun-15	**7860**	37.7	31.1	6.9	50	188	378	871	1976	2760	1314	267	43	12	1	0
Thu 25-Jun-15	**7073**	38.7	31.7	7.3	81	185	309	579	1638	2451	1432	317	63	11	3	4
Fri 26-Jun-15	**7846**	38.1	31.3	7	48	150	386	846	2034	2672	1281	340	63	16	7	3
Sat 27-Jun-15	**5784**	39.4	33	6.7	23	76	163	445	1174	2123	1350	330	77	16	3	4
Sun 28-Jun-15	**4429**	39.9	34	6.3	8	33	82	245	731	1716	1220	319	51	16	5	3
Mon 29-Jun-15	**6977**	38.6	31.7	7.1	38	161	369	648	1579	2383	1442	297	43	14	3	0
Tue 30-Jun-15	**6886**	38.5	31.6	7	49	124	355	693	1570	2410	1324	291	59	9	1	1
Total Vehicles																
[--]	**46855**	38.7	32.1	6.9	297	917	2042	4327	10702	16515	9363	2161	399	94	23	15





Data produced by
Axiom Traffic Ltd

19028	RUDHEATH		Site No: 19028004 Channel: Northbound		Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)		
TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av
Week Begin: 24-Jun-15									
00:00	**19**	31	27	46	59	24	14	23	31
01:00	**22**	27	23	19	36	7	16	19	21
02:00	**24**	25	17	30	34	25	21	22	25
03:00	**17**	22	19	23	12	25	28	22	21
04:00	**37**	24	27	20	25	17	35	28	26
05:00	**83**	75	74	63	41	64	62	72	66
06:00	**220**	164	184	80	48	171	183	184	150
07:00	**594**	375	378	143	72	350	405	420	331
08:00	**614**	495	499	321	101	481	411	500	417
09:00	**659**	509	476	401	219	484	482	522	461
10:00	**585**	398	493	506	349	378	438	458	450
11:00	**476**	424	516	517	369	430	415	452	450
12:00	**460**	449	598	480	421	444	474	485	475
13:00	**439**	435	682	469	431	473	416	489	478
14:00	**454**	463	578	477	420	456	434	477	469
15:00	**513**	475	547	411	380	496	495	505	474
16:00	**590**	563	500	396	289	607	592	570	505
17:00	**723**	653	660	341	288	719	643	680	575
18:00	**522**	528	602	294	246	515	496	533	458
19:00	**338**	342	358	253	199	303	289	326	297
20:00	**187**	218	229	181	155	212	209	211	199
21:00	**140**	175	154	134	117	149	158	155	147
22:00	**86**	141	132	99	79	98	126	117	109
23:00	**58**	62	73	80	39	49	44	57	58
12H,7-19	**6629**	**5767**	**6529**	**4756**	**3585**	**5833**	**5701**	**6092**	**5543**
16H,6-22	**7514**	**6666**	**7454**	**5404**	**4104**	**6668**	**6540**	**6968**	**6336**
18H,6-24	**7658**	**6869**	**7659**	**5583**	**4222**	**6815**	**6710**	**7142**	**6502**
24H,0-24	**7860**	**7073**	**7846**	**5784**	**4429**	**6977**	**6886**	**7328**	**6694**
Am	**09:00**	**09:00**	**11:00**	**11:00**	**11:00**	**09:00**	**09:00**	**-**	**-**
Peak	**659**	**509**	**516**	**517**	**369**	**484**	**482**	**530**	**505**
Pm	**17:00**	**17:00**	**13:00**	**12:00**	**13:00**	**17:00**	**17:00**	**-**	**-**
Peak	**723**	**653**	**682**	**480**	**431**	**719**	**643**	**684**	**619**

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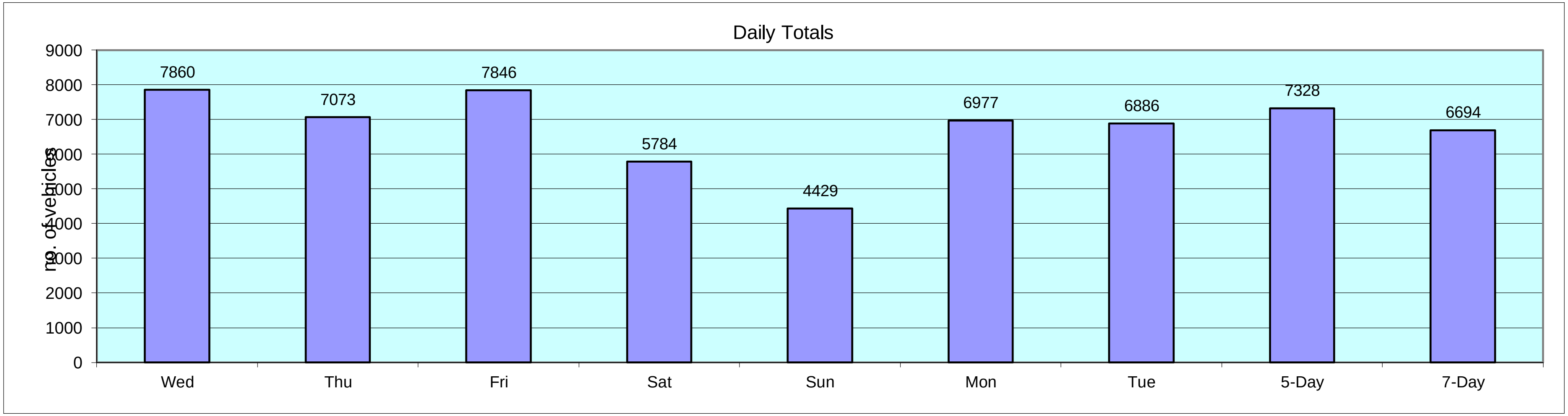
19028	RUDHEATH	Site No: 19028004 Channel: Northbound	Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)					
TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av



19028		RUDHEATH			Site No: 19028004		Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Southbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Wed 24-Jun-15											
00:00	**29**	0	0.0	24	82.8	3	10.3	2	6.9	0	0.0
01:00	**11**	0	0.0	9	81.8	1	9.1	1	9.1	0	0.0
02:00	**14**	0	0.0	9	64.3	3	21.4	2	14.3	0	0.0
03:00	**11**	0	0.0	8	72.7	1	9.1	2	18.2	0	0.0
04:00	**48**	0	0.0	38	79.2	6	12.5	4	8.3	0	0.0
05:00	**140**	10	7.1	111	79.3	11	7.9	8	5.7	0	0.0
06:00	**301**	3	1.0	253	84.1	29	9.6	15	5.0	1	0.3
07:00	**544**	11	2.0	458	84.2	59	10.9	14	2.6	2	0.4
08:00	**742**	10	1.4	653	88.0	62	8.4	14	1.9	3	0.4
09:00	**524**	6	1.2	440	84.0	55	10.5	21	4.0	2	0.4
10:00	**435**	4	0.9	350	80.5	64	14.7	16	3.7	1	0.2
11:00	**482**	1	0.2	399	82.8	58	12.0	20	4.2	4	0.8
12:00	**540**	2	0.4	448	83.0	68	12.6	20	3.7	2	0.4
13:00	**508**	2	0.4	418	82.3	65	12.8	20	3.9	3	0.6
14:00	**521**	6	1.2	415	79.7	71	13.6	28	5.4	1	0.2
15:00	**638**	2	0.3	531	83.2	78	12.2	22	3.5	5	0.8
16:00	**689**	5	0.7	586	85.1	73	10.6	24	3.5	1	0.2
17:00	**712**	11	1.5	610	85.7	71	10.0	19	2.7	1	0.1
18:00	**646**	6	0.9	543	84.1	79	12.2	17	2.6	1	0.2
19:00	**424**	3	0.7	371	87.5	32	7.6	17	4.0	1	0.2
20:00	**194**	1	0.5	176	90.7	13	6.7	3	1.6	1	0.5
21:00	**164**	5	3.1	147	89.6	8	4.9	4	2.4	0	0.0
22:00	**96**	0	0.0	87	90.6	8	8.3	1	1.0	0	0.0
23:00	**49**	1	2.0	40	81.6	5	10.2	3	6.1	0	0.0
12H,7-19	**6981**	**66**	**1.0**	**5851**	**83.8**	**803**	**11.5**	**235**	**3.4**	**26**	**0.4**
16H,6-22	**8064**	**78**	**1.0**	**6798**	**84.3**	**885**	**11.0**	**274**	**3.4**	**29**	**0.4**
18H,6-24	**8209**	**79**	**1.0**	**6925**	**84.4**	**898**	**10.9**	**278**	**3.4**	**29**	**0.4**
24H,0-24	**8462**	**89**	**1.1**	**7124**	**84.2**	**923**	**10.9**	**297**	**3.5**	**29**	**0.3**

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19028		RUDHEATH			Site No: 19028004		Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Southbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Thu 25-Jun-15											
00:00	**27**	0	0.0	22	81.5	3	11.1	2	7.4	0	0.0
01:00	**10**	0	0.0	5	50.0	1	10.0	4	40.0	0	0.0
02:00	**19**	0	0.0	12	63.2	3	15.8	4	21.1	0	0.0
03:00	**14**	0	0.0	9	64.3	2	14.3	3	21.4	0	0.0
04:00	**43**	1	2.3	35	81.4	3	7.0	4	9.3	0	0.0
05:00	**165**	9	5.5	137	83.0	14	8.5	5	3.0	0	0.0
06:00	**261**	7	2.7	220	84.3	20	7.7	14	5.4	0	0.0
07:00	**547**	9	1.7	468	85.6	59	10.8	10	1.8	1	0.2
08:00	**646**	6	0.9	555	85.9	66	10.2	18	2.8	1	0.2
09:00	**454**	5	1.1	378	83.3	57	12.6	12	2.6	2	0.4
10:00	**476**	6	1.3	379	79.6	70	14.7	19	4.0	2	0.4
11:00	**458**	4	0.9	366	79.9	72	15.7	14	3.1	2	0.4
12:00	**506**	3	0.6	436	86.2	54	10.7	13	2.6	0	0.0
13:00	**508**	2	0.4	423	83.3	62	12.2	19	3.7	2	0.4
14:00	**481**	2	0.4	389	80.9	68	14.1	22	4.6	0	0.0
15:00	**574**	5	0.9	472	82.2	79	13.8	17	3.0	1	0.2
16:00	**735**	3	0.4	629	85.6	77	10.5	22	3.0	4	0.5
17:00	**726**	3	0.4	647	89.1	63	8.7	13	1.8	0	0.0
18:00	**558**	12	2.2	490	87.8	43	7.7	12	2.2	1	0.2
19:00	**335**	4	1.2	297	88.7	26	7.8	8	2.4	0	0.0
20:00	**230**	1	0.4	210	91.3	16	7.0	3	1.3	0	0.0
21:00	**147**	9	6.1	128	87.1	9	6.1	1	0.7	0	0.0
22:00	**109**	1	0.9	97	89.0	5	4.6	6	5.5	0	0.0
23:00	**47**	1	2.1	36	76.6	6	12.8	4	8.5	0	0.0
12H,7-19	**6669**	**60**	**0.9**	**5632**	**84.5**	**770**	**11.6**	**191**	**2.9**	**16**	**0.2**
16H,6-22	**7642**	**81**	**1.1**	**6487**	**84.9**	**841**	**11.0**	**217**	**2.8**	**16**	**0.2**
18H,6-24	**7798**	**83**	**1.1**	**6620**	**84.9**	**852**	**10.9**	**227**	**2.9**	**16**	**0.2**
24H,0-24	**8076**	**93**	**1.2**	**6840**	**84.7**	**878**	**10.9**	**249**	**3.1**	**16**	**0.2**

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19028		RUDHEATH			Site No: 19028004		Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Southbound						

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Fri 26-Jun-15											
00:00	**19**	0	0.0	15	79.0	2	10.5	2	10.5	0	0.0
01:00	**12**	0	0.0	6	50.0	3	25.0	3	25.0	0	0.0
02:00	**13**	0	0.0	8	61.5	3	23.1	2	15.4	0	0.0
03:00	**14**	0	0.0	12	85.7	0	0.0	2	14.3	0	0.0
04:00	**39**	0	0.0	30	76.9	3	7.7	6	15.4	0	0.0
05:00	**164**	9	5.5	147	89.6	5	3.1	3	1.8	0	0.0
06:00	**261**	6	2.3	217	83.1	26	10.0	11	4.2	1	0.4
07:00	**579**	7	1.2	496	85.7	55	9.5	19	3.3	2	0.4
08:00	**715**	5	0.7	614	85.9	68	9.5	26	3.6	2	0.3
09:00	**469**	0	0.0	393	83.8	59	12.6	17	3.6	0	0.0
10:00	**462**	6	1.3	374	81.0	58	12.6	20	4.3	4	0.9
11:00	**440**	1	0.2	373	84.8	52	11.8	12	2.7	2	0.5
12:00	**567**	4	0.7	490	86.4	57	10.1	15	2.7	1	0.2
13:00	**587**	4	0.7	494	84.2	66	11.2	18	3.1	5	0.9
14:00	**760**	4	0.5	648	85.3	81	10.7	26	3.4	1	0.1
15:00	**723**	5	0.7	611	84.5	85	11.8	19	2.6	3	0.4
16:00	**777**	8	1.0	671	86.4	70	9.0	26	3.4	2	0.3
17:00	**760**	5	0.7	666	87.6	62	8.2	25	3.3	2	0.3
18:00	**524**	3	0.6	472	90.1	40	7.6	8	1.5	1	0.2
19:00	**383**	6	1.6	335	87.5	33	8.6	9	2.4	0	0.0
20:00	**217**	1	0.5	194	89.4	19	8.8	3	1.4	0	0.0
21:00	**131**	1	0.8	117	89.3	9	6.9	4	3.1	0	0.0
22:00	**131**	0	0.0	121	92.4	7	5.3	3	2.3	0	0.0
23:00	**67**	0	0.0	66	98.5	1	1.5	0	0.0	0	0.0
12H,7-19	**7363**	**52**	**0.7**	**6302**	**85.6**	**753**	**10.2**	**231**	**3.1**	**25**	**0.3**
16H,6-22	**8355**	**66**	**0.8**	**7165**	**85.8**	**840**	**10.1**	**258**	**3.1**	**26**	**0.3**
18H,6-24	**8553**	**66**	**0.8**	**7352**	**86.0**	**848**	**9.9**	**261**	**3.1**	**26**	**0.3**
24H,0-24	**8814**	**75**	**0.9**	**7570**	**85.9**	**864**	**9.8**	**279**	**3.2**	**26**	**0.3**

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19028	RUDHEATH				Site No: 19028004		Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Southbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sat 27-Jun-15											
00:00	**32**	1	3.1	26	81.3	3	9.4	2	6.3	0	0.0
01:00	**27**	3	11.1	20	74.1	3	11.1	1	3.7	0	0.0
02:00	**18**	0	0.0	15	83.3	1	5.6	2	11.1	0	0.0
03:00	**17**	0	0.0	13	76.5	4	23.5	0	0.0	0	0.0
04:00	**32**	2	6.3	28	87.5	1	3.1	1	3.1	0	0.0
05:00	**97**	6	6.2	88	90.7	1	1.0	2	2.1	0	0.0
06:00	**108**	4	3.7	87	80.6	12	11.1	5	4.6	0	0.0
07:00	**181**	0	0.0	149	82.3	26	14.4	5	2.8	1	0.6
08:00	**262**	6	2.3	205	78.2	39	14.9	12	4.6	0	0.0
09:00	**363**	4	1.1	298	82.1	49	13.5	12	3.3	0	0.0
10:00	**476**	8	1.7	421	88.5	36	7.6	11	2.3	0	0.0
11:00	**593**	7	1.2	547	92.2	30	5.1	9	1.5	0	0.0
12:00	**621**	7	1.1	562	90.5	42	6.8	10	1.6	0	0.0
13:00	**539**	12	2.2	484	89.8	36	6.7	5	0.9	2	0.4
14:00	**454**	10	2.2	412	90.8	28	6.2	4	0.9	0	0.0
15:00	**503**	11	2.2	438	87.1	46	9.2	8	1.6	0	0.0
16:00	**485**	5	1.0	441	90.9	33	6.8	6	1.2	0	0.0
17:00	**447**	7	1.6	408	91.3	26	5.8	6	1.3	0	0.0
18:00	**364**	4	1.1	335	92.0	23	6.3	2	0.6	0	0.0
19:00	**253**	2	0.8	227	89.7	19	7.5	5	2.0	0	0.0
20:00	**168**	1	0.6	149	88.7	17	10.1	1	0.6	0	0.0
21:00	**118**	2	1.7	96	81.4	19	16.1	1	0.9	0	0.0
22:00	**110**	2	1.8	106	96.4	2	1.8	0	0.0	0	0.0
23:00	**102**	0	0.0	95	93.1	6	5.9	1	1.0	0	0.0
12H,7-19	**5288**	**81**	**1.5**	**4700**	**88.9**	**414**	**7.8**	**90**	**1.7**	**3**	**0.1**
16H,6-22	**5935**	**90**	**1.5**	**5259**	**88.6**	**481**	**8.1**	**102**	**1.7**	**3**	**0.1**
18H,6-24	**6147**	**92**	**1.5**	**5460**	**88.8**	**489**	**8.0**	**103**	**1.7**	**3**	**0.1**
24H,0-24	**6370**	**104**	**1.6**	**5650**	**88.7**	**502**	**7.9**	**111**	**1.7**	**3**	**0.1**

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19028	RUDHEATH			Site No: 19028004		Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)				
Wed 24-Jun-15 to Tue 30-Jun-15				Channel: Southbound							
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sun 28-Jun-15											
00:00	**52**	0	0.0	44	84.6	7	13.5	1	1.9	0	0.0
01:00	**24**	2	8.3	20	83.3	2	8.3	0	0.0	0	0.0
02:00	**20**	0	0.0	14	70.0	3	15.0	3	15.0	0	0.0
03:00	**10**	0	0.0	7	70.0	2	20.0	1	10.0	0	0.0
04:00	**17**	1	5.9	14	82.4	0	0.0	2	11.8	0	0.0
05:00	**57**	1	1.8	54	94.7	0	0.0	2	3.5	0	0.0
06:00	**62**	1	1.6	49	79.0	7	11.3	5	8.1	0	0.0
07:00	**98**	1	1.0	77	78.6	12	12.2	7	7.1	1	1.0
08:00	**109**	1	0.9	95	87.2	10	9.2	3	2.8	0	0.0
09:00	**218**	9	4.1	178	81.7	27	12.4	4	1.8	0	0.0
10:00	**314**	2	0.6	278	88.5	30	9.6	4	1.3	0	0.0
11:00	**392**	8	2.0	347	88.5	25	6.4	12	3.1	0	0.0
12:00	**467**	4	0.9	429	91.9	31	6.6	3	0.6	0	0.0
13:00	**467**	7	1.5	419	89.7	31	6.6	10	2.1	0	0.0
14:00	**476**	5	1.1	443	93.1	22	4.6	6	1.3	0	0.0
15:00	**473**	6	1.3	433	91.5	29	6.1	5	1.1	0	0.0
16:00	**451**	2	0.4	425	94.2	18	4.0	6	1.3	0	0.0
17:00	**319**	6	1.9	282	88.4	22	6.9	9	2.8	0	0.0
18:00	**285**	3	1.1	261	91.6	18	6.3	3	1.1	0	0.0
19:00	**207**	1	0.5	190	91.8	13	6.3	3	1.5	0	0.0
20:00	**147**	5	3.4	131	89.1	9	6.1	2	1.4	0	0.0
21:00	**94**	0	0.0	90	95.7	4	4.3	0	0.0	0	0.0
22:00	**80**	2	2.5	71	88.8	7	8.8	0	0.0	0	0.0
23:00	**31**	0	0.0	24	77.4	5	16.1	2	6.5	0	0.0
12H,7-19	**4069**	**54**	**1.3**	**3667**	**90.1**	**275**	**6.8**	**72**	**1.8**	**1**	**0.0**
16H,6-22	**4579**	**61**	**1.3**	**4127**	**90.1**	**308**	**6.7**	**82**	**1.8**	**1**	**0.0**
18H,6-24	**4690**	**63**	**1.3**	**4222**	**90.0**	**320**	**6.8**	**84**	**1.8**	**1**	**0.0**
24H,0-24	**4870**	**67**	**1.4**	**4375**	**89.8**	**334**	**6.9**	**93**	**1.9**	**1**	**0.0**

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Data produced by
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19028	RUDHEATH			Site No: 19028004		Location		Site 4, Griffiths Road, Rudheath (Crematorium SP)			
Wed 24-Jun-15 to Tue 30-Jun-15				Channel: Southbound							

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Mon 29-Jun-15											
00:00	**21**	0	0.0	18	85.7	1	4.8	2	9.5	0	0.0
01:00	**17**	0	0.0	11	64.7	4	23.5	2	11.8	0	0.0
02:00	**15**	0	0.0	12	80.0	2	13.3	1	6.7	0	0.0
03:00	**21**	1	4.8	14	66.7	2	9.5	4	19.1	0	0.0
04:00	**38**	1	2.6	29	76.3	3	7.9	5	13.2	0	0.0
05:00	**173**	6	3.5	143	82.7	11	6.4	13	7.5	0	0.0
06:00	**242**	7	2.9	196	81.0	29	12.0	10	4.1	0	0.0
07:00	**555**	11	2.0	462	83.2	63	11.4	18	3.2	1	0.2
08:00	**667**	9	1.4	567	85.0	62	9.3	28	4.2	1	0.2
09:00	**479**	4	0.8	379	79.1	71	14.8	24	5.0	1	0.2
10:00	**460**	10	2.2	355	77.2	78	17.0	15	3.3	2	0.4
11:00	**448**	1	0.2	356	79.5	70	15.6	14	3.1	7	1.6
12:00	**527**	8	1.5	433	82.2	60	11.4	23	4.4	3	0.6
13:00	**490**	1	0.2	407	83.1	57	11.6	22	4.5	3	0.6
14:00	**526**	4	0.8	427	81.2	79	15.0	16	3.0	0	0.0
15:00	**561**	4	0.7	467	83.2	73	13.0	16	2.9	1	0.2
16:00	**632**	6	1.0	535	84.7	65	10.3	26	4.1	0	0.0
17:00	**652**	11	1.7	578	88.7	48	7.4	14	2.2	1	0.2
18:00	**500**	5	1.0	446	89.2	41	8.2	8	1.6	0	0.0
19:00	**330**	4	1.2	294	89.1	25	7.6	7	2.1	0	0.0
20:00	**204**	2	1.0	176	86.3	20	9.8	6	2.9	0	0.0
21:00	**166**	0	0.0	151	91.0	13	7.8	2	1.2	0	0.0
22:00	**97**	2	2.1	88	90.7	6	6.2	1	1.0	0	0.0
23:00	**42**	1	2.4	35	83.3	3	7.1	3	7.1	0	0.0
12H,7-19	**6497**	**74**	**1.1**	**5412**	**83.3**	**767**	**11.8**	**224**	**3.5**	**20**	**0.3**
16H,6-22	**7439**	**87**	**1.2**	**6229**	**83.7**	**854**	**11.5**	**249**	**3.4**	**20**	**0.3**
18H,6-24	**7578**	**90**	**1.2**	**6352**	**83.8**	**863**	**11.4**	**253**	**3.3**	**20**	**0.3**
24H,0-24	**7863**	**98**	**1.3**	**6579**	**83.7**	**886**	**11.3**	**280**	**3.6**	**20**	**0.3**

Data produced by
Axiom Traffic Ltd

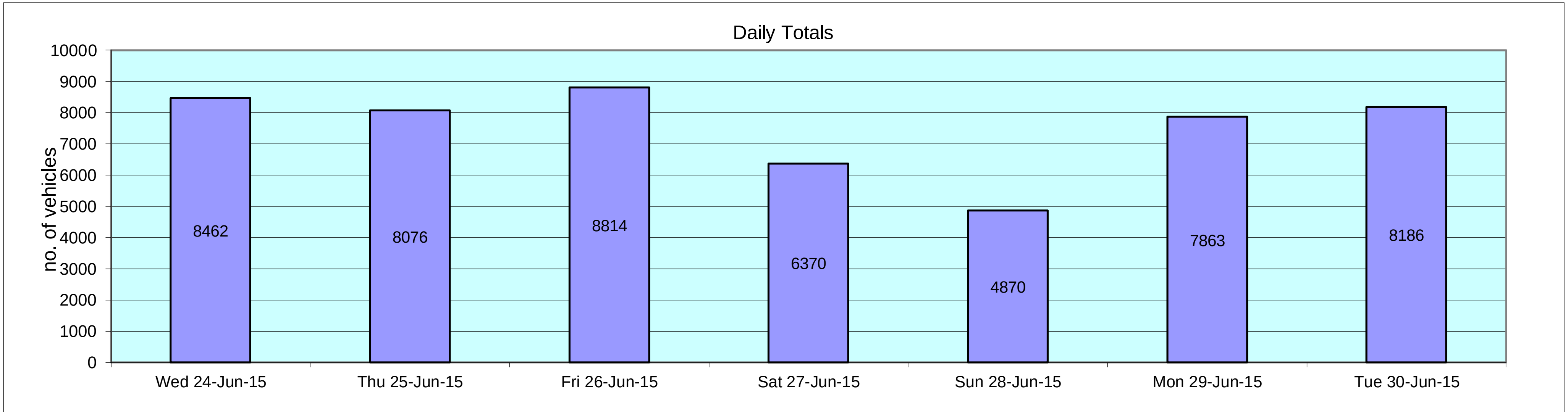
19028		RUDHEATH			Site No: 19028004		Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Southbound						

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Tue 30-Jun-15											
00:00	**15**	0	0.0	13	86.7	1	6.7	1	6.7	0	0.0
01:00	**14**	1	7.1	9	64.3	2	14.3	2	14.3	0	0.0
02:00	**12**	0	0.0	6	50.0	0	0.0	6	50.0	0	0.0
03:00	**19**	0	0.0	13	68.4	3	15.8	3	15.8	0	0.0
04:00	**49**	1	2.0	34	69.4	9	18.4	5	10.2	0	0.0
05:00	**168**	6	3.6	146	86.9	6	3.6	10	6.0	0	0.0
06:00	**247**	9	3.6	200	81.0	23	9.3	14	5.7	1	0.4
07:00	**559**	10	1.8	472	84.4	62	11.1	15	2.7	0	0.0
08:00	**712**	5	0.7	607	85.3	67	9.4	25	3.5	8	1.1
09:00	**509**	8	1.6	392	77.0	83	16.3	25	4.9	1	0.2
10:00	**457**	6	1.3	363	79.4	66	14.4	19	4.2	3	0.7
11:00	**501**	3	0.6	405	80.8	71	14.2	19	3.8	3	0.6
12:00	**509**	4	0.8	420	82.5	61	12.0	24	4.7	0	0.0
13:00	**531**	3	0.6	445	83.8	60	11.3	22	4.1	1	0.2
14:00	**542**	5	0.9	427	78.8	80	14.8	29	5.4	1	0.2
15:00	**554**	5	0.9	460	83.0	70	12.6	18	3.3	1	0.2
16:00	**634**	5	0.8	539	85.0	69	10.9	21	3.3	0	0.0
17:00	**693**	10	1.4	621	89.6	42	6.1	20	2.9	0	0.0
18:00	**529**	6	1.1	480	90.7	37	7.0	6	1.1	0	0.0
19:00	**383**	10	2.6	329	85.9	37	9.7	7	1.8	0	0.0
20:00	**229**	4	1.8	202	88.2	22	9.6	1	0.4	0	0.0
21:00	**173**	5	2.9	154	89.0	8	4.6	6	3.5	0	0.0
22:00	**108**	6	5.6	95	88.0	4	3.7	3	2.8	0	0.0
23:00	**39**	2	5.1	34	87.2	3	7.7	0	0.0	0	0.0
12H,7-19	**6730**	**70**	**1.0**	**5631**	**83.7**	**768**	**11.4**	**243**	**3.6**	**18**	**0.3**
16H,6-22	**7762**	**98**	**1.3**	**6516**	**84.0**	**858**	**11.1**	**271**	**3.5**	**19**	**0.2**
18H,6-24	**7909**	**106**	**1.3**	**6645**	**84.0**	**865**	**10.9**	**274**	**3.5**	**19**	**0.2**
24H,0-24	**8186**	**114**	**1.4**	**6866**	**83.9**	**886**	**10.8**	**301**	**3.7**	**19**	**0.2**

19028 **RUDHEATH** **Site No: 19028004** **Location** **Site 4, Griffiths Road, Rudheath (Crematorium SP)**

Wed 24-Jun-15 to Tue 30-Jun-15 **Channel: Southbound**

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Daily Totals											
Wed 24-Jun-15	**8462**	89	1.1	7124	84.2	923	10.9	297	3.5	29	0.3
Thu 25-Jun-15	**8076**	93	1.2	6840	84.7	878	10.9	249	3.1	16	0.2
Fri 26-Jun-15	**8814**	75	0.9	7570	85.9	864	9.8	279	3.2	26	0.3
Sat 27-Jun-15	**6370**	104	1.6	5650	88.7	502	7.9	111	1.7	3	0.1
Sun 28-Jun-15	**4870**	67	1.4	4375	89.8	334	6.9	93	1.9	1	0.0
Mon 29-Jun-15	**7863**	98	1.3	6579	83.7	886	11.3	280	3.6	20	0.3
Tue 30-Jun-15	**8186**	114	1.4	6866	83.9	886	10.8	301	3.7	19	0.2
Total Vehicles											
[--]	**52641**	640	1.2	45004	85.8	5273	9.8	1610	3.0	114	0.2



19028		RUDHEATH					Site No: 19028004			Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)				
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Southbound								
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	56-<61	=>61
Wed 24-Jun-15																
00:00	**29**	43.7	37.1	6.8	0	0	1	0	3	8	10	4	3	0	0	0
01:00	**11**	45.6	37.6	7.8	0	0	0	1	1	2	4	1	2	0	0	0
02:00	**14**	48.3	38.9	9.4	0	0	0	0	3	4	2	1	3	0	1	0
03:00	**11**	43.1	36.7	7.9	0	0	0	2	0	2	4	2	1	0	0	0
04:00	**48**	44.8	38.8	6.5	0	0	0	1	5	9	13	16	3	1	0	0
05:00	**140**	43.2	35.7	7.9	3	1	2	7	15	37	42	26	6	1	0	0
06:00	**301**	40.1	33.9	6.3	0	0	10	25	46	99	93	24	4	0	0	0
07:00	**544**	38.2	31.1	7.4	5	14	39	68	84	211	93	27	3	0	0	0
08:00	**742**	32.9	21.1	9.8	149	137	113	75	113	116	31	7	1	0	0	0
09:00	**524**	36.1	29.1	7.5	2	27	69	52	123	170	73	8	0	0	0	0
10:00	**435**	38.2	31.7	6.7	0	5	35	41	77	169	94	12	2	0	0	0
11:00	**482**	37.4	31.4	6.5	0	7	34	38	112	195	85	9	0	1	0	1
12:00	**540**	36.6	30.2	7.3	10	17	42	54	103	222	82	10	0	0	0	0
13:00	**508**	37.2	31.1	6.2	0	2	41	43	135	192	78	16	1	0	0	0
14:00	**521**	36.5	30.8	6.2	1	6	39	37	161	191	69	17	0	0	0	0
15:00	**638**	35.6	30.4	5.6	0	2	45	69	195	253	69	5	0	0	0	0
16:00	**689**	34.5	27.1	7.2	7	50	94	106	202	181	46	2	1	0	0	0
17:00	**712**	34.9	28.6	6.5	4	17	79	109	223	223	48	7	2	0	0	0
18:00	**646**	35.4	29.3	6.4	1	17	56	89	199	213	66	4	1	0	0	0
19:00	**424**	37.1	31.8	5.7	0	0	25	23	114	184	64	12	2	0	0	0
20:00	**194**	39.9	33.8	6.8	0	2	14	4	26	72	60	14	1	1	0	0
21:00	**164**	39.6	32.7	7.8	0	5	14	11	15	64	42	8	4	1	0	0
22:00	**96**	41	35.4	7.4	0	1	2	5	13	28	32	11	2	1	0	1
23:00	**49**	41.8	35.1	7.7	0	0	3	5	1	16	15	7	1	1	0	0
12H,7-19	**6981**	**35.8**	**29**	**7.7**	**179**	**301**	**686**	**781**	**1727**	**2336**	**834**	**124**	**11**	**1**	**0**	**1**
16H,6-22	**8064**	**36.4**	**29.5**	**7.7**	**179**	**308**	**749**	**844**	**1928**	**2755**	**1093**	**182**	**22**	**3**	**0**	**1**
18H,6-24	**8209**	**36.6**	**29.6**	**7.7**	**179**	**309**	**754**	**854**	**1942**	**2799**	**1140**	**200**	**25**	**5**	**0**	**2**
24H,0-24	**8462**	**37**	**29.8**	**7.8**	**182**	**310**	**757**	**865**	**1969**	**2861**	**1215**	**250**	**43**	**7**	**1**	**2**

19028 RUDHEATH Site No: 19028004 Location Site 4, Griffiths Road, Rudheath (Crematorium SP)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Southbound

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	56-<61	=>61
Thu 25-Jun-15																
00:00	27	42.5	36.5	6.2	0	0	0	2	2	8	9	5	1	0	0	0
01:00	10	41	35.5	6.9	0	0	0	0	3	3	2	1	1	0	0	0
02:00	19	42.6	37.7	6.4	0	0	0	1	2	2	10	2	2	0	0	0
03:00	14	44.5	39.2	6.9	0	0	0	0	2	1	7	2	1	1	0	0
04:00	43	45.4	38.4	7	0	1	0	0	3	10	15	8	6	0	0	0
05:00	165	44.9	38.4	6.9	0	3	2	0	4	45	60	33	14	3	1	0
06:00	261	41.7	35.9	6.7	0	2	10	7	23	77	98	33	10	1	0	0
07:00	547	36.5	28.2	8.3	16	36	48	100	122	135	71	16	3	0	0	0
08:00	646	35.1	27.4	8	31	31	71	104	166	177	57	8	1	0	0	0
09:00	454	37.1	30.5	7.1	0	11	50	39	104	164	76	8	0	1	0	1
10:00	476	36.3	30.8	6.3	0	6	39	40	120	195	68	6	1	1	0	0
11:00	458	37.1	32.3	5.8	0	3	26	17	91	237	70	9	4	1	0	0
12:00	506	36.9	31.5	6.1	0	3	39	38	105	231	77	12	1	0	0	0
13:00	508	36	31	5.9	0	2	48	25	135	221	69	8	0	0	0	0
14:00	481	37.1	31.2	6.3	0	5	37	43	111	195	79	10	1	0	0	0
15:00	574	36.4	30.4	6.3	1	5	49	61	165	200	79	14	0	0	0	0
16:00	735	35	26.5	8.4	35	65	105	89	181	188	69	3	0	0	0	0
17:00	726	35.7	30.1	6.1	0	11	50	92	227	254	79	12	1	0	0	0
18:00	558	38.1	30.9	7.2	1	13	51	57	117	190	108	18	3	0	0	0
19:00	335	39.8	33.2	7.2	0	3	29	22	35	122	96	25	2	1	0	0
20:00	230	40.5	34.6	7.3	0	1	15	11	21	78	76	22	2	3	0	1
21:00	147	40.9	33.2	8.4	0	4	16	7	18	43	37	17	5	0	0	0
22:00	109	42.7	35.1	7.2	0	1	3	4	19	37	23	15	7	0	0	0
23:00	47	39.3	33.5	6.4	0	0	3	2	7	19	13	2	1	0	0	0
12H,7-19	6669	36.2	29.9	7.2	84	191	613	705	1644	2387	902	124	15	3	0	1
16H,6-22	7642	37.4	30.4	7.3	84	201	683	752	1741	2707	1209	221	34	8	0	2
18H,6-24	7798	37.5	30.5	7.4	84	202	689	758	1767	2763	1245	238	42	8	0	2
24H,0-24	8076	37.9	30.8	7.5	84	206	691	761	1783	2832	1348	289	67	12	1	2

19028 RUDHEATH Site No: 19028004 Location Site 4, Griffiths Road, Rudheath (Crematorium SP)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Southbound

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	56-<61	=>61
Fri 26-Jun-15																
00:00	19	38.8	34.8	6.1	0	0	0	0	4	10	3	1	0	1	0	0
01:00	12	44.5	39.3	7.7	0	0	0	0	2	2	3	3	1	1	0	0
02:00	13	44.9	36.2	7.4	0	0	0	1	1	6	2	1	2	0	0	0
03:00	14	42.8	38.5	4.6	0	0	0	0	1	2	7	4	0	0	0	0
04:00	39	45.7	38	7.1	0	0	0	0	8	7	12	6	5	1	0	0
05:00	164	42.9	37.4	6	0	1	2	2	6	52	67	23	9	2	0	0
06:00	261	40.7	35.2	6.6	0	0	15	9	19	89	95	29	4	0	1	0
07:00	579	35.9	26.9	9.6	48	46	74	53	125	148	65	15	5	0	0	0
08:00	715	34.4	25	9.3	87	54	83	125	139	174	43	8	2	0	0	0
09:00	469	36	30.9	6.3	0	6	43	34	104	213	60	6	3	0	0	0
10:00	462	35.5	29.3	6.7	1	7	51	74	123	150	46	8	1	1	0	0
11:00	440	35.2	29.6	6	0	5	41	45	157	150	36	4	1	1	0	0
12:00	567	35.9	30.6	6.1	1	7	37	58	162	223	72	4	3	0	0	0
13:00	587	35.7	29.8	6.2	0	7	53	75	183	193	66	9	1	0	0	0
14:00	760	33.8	26.2	7.6	36	61	70	137	237	186	29	4	0	0	0	0
15:00	723	34.9	27.6	7.6	18	49	69	121	202	199	57	5	3	0	0	0
16:00	777	30.6	19	9.1	201	165	116	83	104	93	14	1	0	0	0	0
17:00	760	33	21.6	9.7	155	118	99	92	130	127	37	2	0	0	0	0
18:00	524	37.6	30.5	7.4	6	13	52	48	101	194	99	10	0	0	1	0
19:00	383	40.2	33.4	7.6	0	6	33	23	45	121	115	33	6	1	0	0
20:00	217	40	34	7.2	0	3	11	8	27	96	49	14	5	2	2	0
21:00	131	42.6	35	8.2	1	2	6	7	14	38	37	18	6	2	0	0
22:00	131	39.8	33.9	5.7	0	0	2	5	32	47	33	10	2	0	0	0
23:00	67	39.8	34.9	5.7	0	0	1	1	13	23	24	2	3	0	0	0
12H,7-19	7363	35.1	26.7	8.8	553	538	788	945	1767	2050	624	76	19	2	1	0
16H,6-22	8355	35.8	27.6	8.9	554	549	853	992	1872	2394	920	170	40	7	4	0
18H,6-24	8553	35.9	27.7	8.9	554	549	856	998	1917	2464	977	182	45	7	4	0
24H,0-24	8814	36.2	28	9	554	550	858	1001	1939	2543	1071	220	62	12	4	0

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19028			RUDHEATH				Site No: 19028004			Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Southbound									
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	56-<61	=>61
Sat 27-Jun-15																
00:00	**32**	42.4	36	6.7	0	0	1	2	2	10	10	6	1	0	0	0
01:00	**27**	44.6	39.4	6.4	0	0	0	0	1	8	7	9	1	0	1	0
02:00	**18**	44.2	37.9	6.8	0	0	0	1	2	3	5	6	1	0	0	0
03:00	**17**	40.3	35.3	6.3	0	0	1	0	2	5	7	2	0	0	0	0
04:00	**32**	47.2	39.3	6.9	0	0	0	1	2	7	10	5	7	0	0	0
05:00	**97**	43.9	38.1	6.4	0	2	1	0	3	23	38	26	3	1	0	0
06:00	**108**	43.9	36	8.4	0	1	8	7	5	24	33	23	5	2	0	0
07:00	**181**	42	34.9	7.9	0	1	18	5	14	50	60	27	5	0	1	0
08:00	**262**	40.4	33.3	7.9	0	3	28	18	22	84	77	22	8	0	0	0
09:00	**363**	39.2	31.9	7.4	0	4	41	22	67	123	79	23	4	0	0	0
10:00	**476**	37.2	31	6.5	0	4	44	39	117	181	78	11	2	0	0	0
11:00	**593**	36	30.3	6.6	2	16	51	51	153	230	83	6	1	0	0	0
12:00	**621**	36.1	31.6	5.6	0	6	31	41	148	300	84	10	0	1	0	0
13:00	**539**	38.5	32.6	5.9	0	1	33	27	100	237	119	21	1	0	0	0
14:00	**454**	38.7	32.4	6.7	0	3	38	36	51	205	98	19	4	0	0	0
15:00	**503**	38.3	32.6	6.2	0	7	30	22	79	241	105	17	1	1	0	0
16:00	**485**	38.1	32.6	5.9	0	1	32	26	72	236	105	9	4	0	0	0
17:00	**447**	39.4	33.3	6.5	0	5	30	18	52	186	132	21	2	1	0	0
18:00	**364**	39.4	32.7	7.2	1	3	35	16	49	153	76	26	4	1	0	0
19:00	**253**	39.6	32.8	7.4	0	4	24	16	23	104	61	18	2	1	0	0
20:00	**168**	40.3	34.2	8.1	0	3	15	7	12	55	58	13	2	1	1	1
21:00	**118**	39.5	32.4	8.9	0	3	15	4	20	41	24	5	3	1	1	1
22:00	**110**	41.3	34.8	6.3	0	0	4	2	22	34	30	17	1	0	0	0
23:00	**102**	40.5	35	6	1	0	0	2	16	44	26	10	2	1	0	0
12H,7-19	**5288**	**38.5**	**32.2**	**6.6**	**3**	**54**	**411**	**321**	**924**	**2226**	**1096**	**212**	**36**	**4**	**1**	**0**
16H,6-22	**5935**	**38.8**	**32.3**	**6.8**	**3**	**65**	**473**	**355**	**984**	**2450**	**1272**	**271**	**48**	**9**	**3**	**2**
18H,6-24	**6147**	**38.9**	**32.4**	**6.8**	**4**	**65**	**477**	**359**	**1022**	**2528**	**1328**	**298**	**51**	**10**	**3**	**2**
24H,0-24	**6370**	**39.1**	**32.6**	**6.9**	**4**	**67**	**480**	**363**	**1034**	**2584**	**1405**	**352**	**64**	**11**	**4**	**2**

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19028		RUDHEATH					Site No: 19028004			Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)				
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Southbound								
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	56-<61	=>61
Sun 28-Jun-15																
00:00	**52**	42.9	37.3	5.9	0	0	0	0	7	14	20	7	3	1	0	0
01:00	**24**	43.9	39.5	6	0	0	0	0	1	4	12	5	1	0	1	0
02:00	**20**	43.9	36	7.6	0	0	1	1	1	9	1	6	1	0	0	0
03:00	**10**	39.8	36	4.4	0	0	0	0	1	4	4	1	0	0	0	0
04:00	**17**	44.7	37.9	6.2	0	0	0	0	1	8	2	4	2	0	0	0
05:00	**57**	43	37.4	6.1	0	0	0	1	5	18	20	10	2	0	1	0
06:00	**62**	43.2	36.8	6.4	0	0	1	3	4	18	21	12	3	0	0	0
07:00	**98**	42.8	34.3	8.4	0	3	7	6	9	28	23	19	3	0	0	0
08:00	**109**	41.4	33.8	8.5	0	2	13	6	9	26	35	16	1	1	0	0
09:00	**218**	39.4	32.2	7.7	0	7	22	15	18	85	56	14	1	0	0	0
10:00	**314**	39.5	32.6	7.4	0	5	35	9	50	101	94	16	4	0	0	0
11:00	**392**	38.1	31.4	6.9	1	3	38	36	72	151	77	13	0	0	1	0
12:00	**467**	38.2	32	6.7	2	14	25	21	83	210	96	15	1	0	0	0
13:00	**467**	37.5	32.1	6.1	1	7	24	22	97	221	80	12	3	0	0	0
14:00	**476**	38.5	32.1	6.6	0	5	42	28	81	189	116	15	0	0	0	0
15:00	**473**	39.2	32.7	6.8	0	5	37	30	67	183	124	25	2	0	0	0
16:00	**451**	38.8	32.2	6.9	0	6	43	26	59	184	117	14	2	0	0	0
17:00	**319**	39.5	32.6	7.3	0	6	27	17	54	104	89	19	3	0	0	0
18:00	**285**	40	33	7.6	0	1	31	20	37	82	89	21	3	0	1	0
19:00	**207**	40.2	33.8	7.5	0	2	22	5	17	76	63	16	6	0	0	0
20:00	**147**	40.7	34	8.1	0	2	13	12	12	36	53	14	4	1	0	0
21:00	**94**	41.9	35	7.9	0	2	5	8	4	24	34	13	4	0	0	0
22:00	**80**	42	35.8	7	0	1	3	4	6	20	31	13	2	0	0	0
23:00	**31**	40.2	35.4	5.9	0	0	0	2	5	7	14	2	1	0	0	0
12H,7-19	**4069**	**39.1**	**32.3**	**7**	**4**	**64**	**344**	**236**	**636**	**1564**	**996**	**199**	**23**	**1**	**2**	**0**
16H,6-22	**4579**	**39.3**	**32.6**	**7.1**	**4**	**70**	**385**	**264**	**673**	**1718**	**1167**	**254**	**40**	**2**	**2**	**0**
18H,6-24	**4690**	**39.4**	**32.7**	**7.1**	**4**	**71**	**388**	**270**	**684**	**1745**	**1212**	**269**	**43**	**2**	**2**	**0**
24H,0-24	**4870**	**39.5**	**32.8**	**7.1**	**4**	**71**	**389**	**272**	**700**	**1802**	**1271**	**302**	**52**	**3**	**4**	**0**

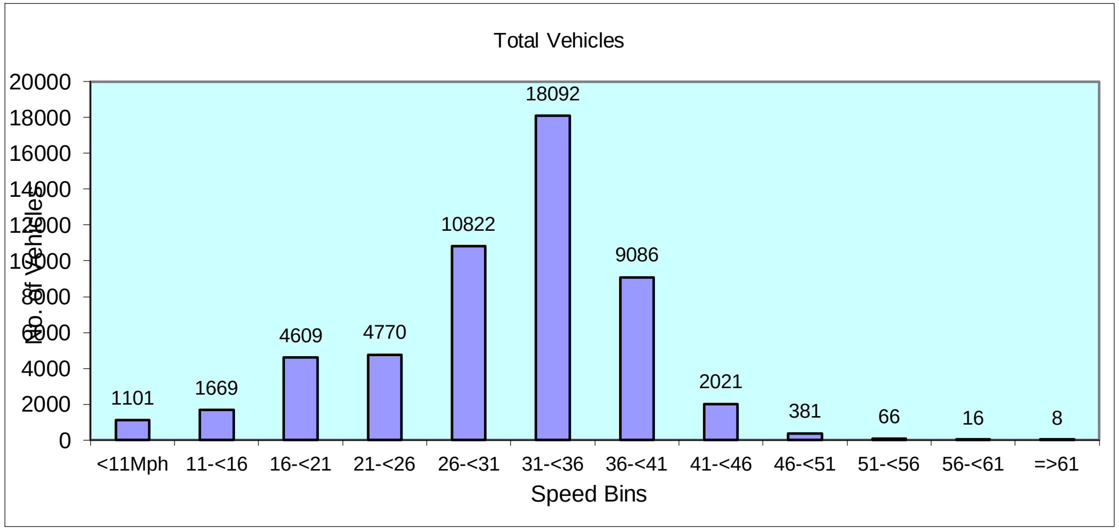
19028			RUDHEATH				Site No: 19028004			Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Southbound									
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	56-<61	=>61
Mon 29-Jun-15																
00:00	**21**	40.2	35.6	5.3	0	0	0	1	3	5	10	2	0	0	0	0
01:00	**17**	39.3	33.8	5.6	0	0	0	1	4	7	3	2	0	0	0	0
02:00	**15**	40.3	36.2	5.5	0	0	0	0	2	6	5	1	1	0	0	0
03:00	**21**	41.6	36.6	7.3	0	1	0	0	2	4	10	3	1	0	0	0
04:00	**38**	44.2	37.7	6.4	0	0	0	0	5	12	9	9	2	1	0	0
05:00	**173**	44	37.5	6.8	0	3	1	1	10	56	55	34	11	1	0	1
06:00	**242**	41	35.6	6.6	0	3	10	7	15	73	98	32	3	1	0	0
07:00	**555**	36.4	28.2	8.1	16	24	71	87	129	138	79	9	2	0	0	0
08:00	**667**	35.4	26.8	8.9	39	61	88	71	129	205	67	7	0	0	0	0
09:00	**479**	37.5	31	6.6	0	2	45	50	114	170	84	12	0	2	0	0
10:00	**460**	35.7	29.4	6.9	2	12	52	49	141	143	48	12	1	0	0	0
11:00	**448**	37.9	32	6.1	0	6	32	19	86	201	98	6	0	0	0	0
12:00	**527**	35.7	30	6.6	1	20	43	42	146	210	56	9	0	0	0	0
13:00	**490**	37.4	31.6	6.3	1	5	33	40	94	217	91	6	1	2	0	0
14:00	**526**	36.6	31.1	6.1	0	3	45	32	144	214	76	12	0	0	0	0
15:00	**561**	37.4	31.3	6.3	0	5	42	47	136	219	100	10	1	1	0	0
16:00	**632**	35.9	30	6.7	2	15	58	68	163	235	79	10	1	1	0	0
17:00	**652**	35.9	30.6	6.1	0	5	48	80	163	262	83	10	1	0	0	0
18:00	**500**	38.1	31.3	6.8	0	3	50	49	98	185	95	18	2	0	0	0
19:00	**330**	40.3	33.6	7.6	0	4	28	26	28	96	114	30	3	1	0	0
20:00	**204**	40.6	34.8	6.9	0	1	12	8	19	69	69	21	4	1	0	0
21:00	**166**	40.7	33.5	8.2	0	4	17	9	12	54	47	19	3	1	0	0
22:00	**97**	40.7	35.5	6.2	0	0	1	5	13	31	34	8	5	0	0	0
23:00	**42**	42.6	34.9	8.1	0	0	4	2	5	9	13	7	2	0	0	0
12H,7-19	**6497**	**36.6**	**30.2**	**7**	**61**	**161**	**607**	**634**	**1543**	**2399**	**956**	**121**	**9**	**6**	**0**	**0**
16H,6-22	**7439**	**37.6**	**30.7**	**7.2**	**61**	**173**	**674**	**684**	**1617**	**2691**	**1284**	**223**	**22**	**10**	**0**	**0**
18H,6-24	**7578**	**37.8**	**30.8**	**7.2**	**61**	**173**	**679**	**691**	**1635**	**2731**	**1331**	**238**	**29**	**10**	**0**	**0**
24H,0-24	**7863**	**38.1**	**31**	**7.3**	**61**	**177**	**680**	**694**	**1661**	**2821**	**1423**	**289**	**44**	**12**	**0**	**1**

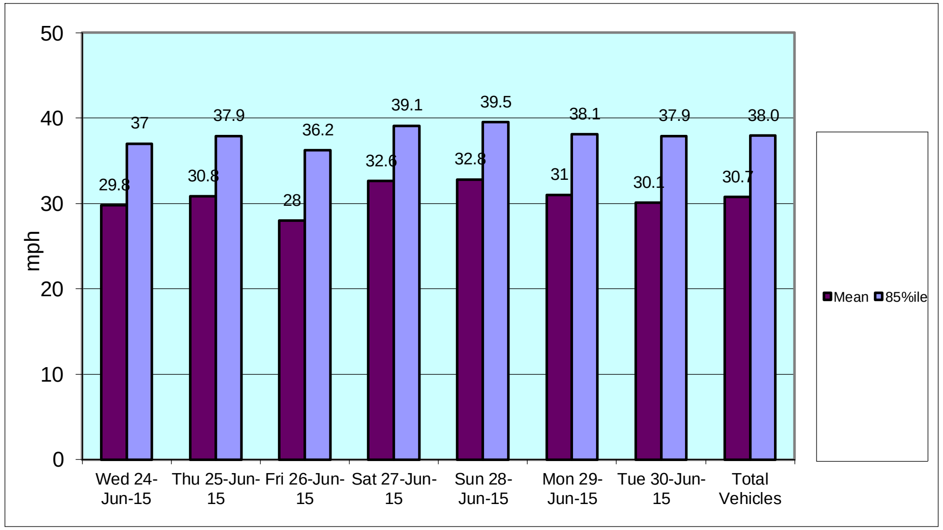
19028		RUDHEATH					Site No: 19028004			Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)				
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Southbound								
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	56-<61	=>61
Tue 30-Jun-15																
00:00	15	39.5	35.8	4	0	0	0	0	1	7	6	1	0	0	0	0
01:00	14	42	39.2	6.9	0	0	0	0	1	2	8	2	0	0	1	0
02:00	12	48.1	39.3	8.6	0	0	0	1	1	2	3	1	4	0	0	0
03:00	19	43.7	37.2	6.8	0	0	1	0	0	8	4	5	1	0	0	0
04:00	49	42.5	35.5	6.7	0	1	0	1	6	22	9	7	3	0	0	0
05:00	168	44.1	37.2	6.8	0	1	3	2	19	44	53	33	12	0	1	0
06:00	247	41.6	35.3	6.6	0	2	10	7	24	87	75	37	5	0	0	0
07:00	559	37.3	28.2	8.8	14	41	79	73	111	137	74	27	3	0	0	0
08:00	712	29.8	18.5	8.9	190	156	126	74	77	68	19	2	0	0	0	0
09:00	509	36.8	29.6	6.9	0	14	45	84	134	143	80	8	1	0	0	0
10:00	457	37.2	30.6	6.8	1	4	54	33	121	157	73	14	0	0	0	0
11:00	501	38.3	32.4	6.2	0	4	28	33	87	229	96	22	1	1	0	0
12:00	509	36.1	29.6	7	1	16	50	75	119	170	68	10	0	0	0	0
13:00	531	37.2	31.1	6.4	0	7	41	45	134	204	84	13	3	0	0	0
14:00	542	35.6	29.3	6.9	3	11	66	65	148	182	55	11	1	0	0	0
15:00	554	37.9	31.9	6.4	0	10	32	41	107	241	102	16	5	0	0	0
16:00	634	36	30.2	6.1	0	7	47	76	203	207	83	9	2	0	0	0
17:00	693	35.6	29.4	6.4	2	6	73	107	201	217	76	11	0	0	0	0
18:00	529	38.2	31.5	6.5	0	0	41	61	113	189	104	19	1	1	0	0
19:00	383	39.4	33.8	6.1	0	1	18	16	52	161	112	19	2	2	0	0
20:00	229	40.1	33.2	8.1	0	5	22	11	32	63	74	18	1	2	0	1
21:00	173	40.7	34.2	7.6	1	1	13	4	29	45	57	18	3	2	0	0
22:00	108	40.2	35	5.5	0	0	2	2	13	51	28	10	1	1	0	0
23:00	39	40.7	33.5	7.9	0	1	3	3	3	13	10	6	0	0	0	0
12H,7-19	6730	36.5	29.1	8	211	276	682	767	1555	2144	914	162	17	2	0	0
16H,6-22	7762	37.5	29.7	8.1	212	285	745	805	1692	2500	1232	254	28	8	0	1
18H,6-24	7909	37.5	29.8	8.1	212	286	750	810	1708	2564	1270	270	29	9	0	1
24H,0-24	8186	37.9	30.1	8.1	212	288	754	814	1736	2649	1353	319	49	9	2	1

19028 RUDHEATH Site No: 19028004 Location Site 4, Griffiths Road, Rudheath (Crematorium SP)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Southbound

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<16	16-<21	21-<26	26-<31	31-<36	36-<41	41-<46	46-<51	51-<56	56-<61	=>61
Daily Totals																
Wed 24-Jun-15	**8462**	37	29.8	7.8	182	310	757	865	1969	2861	1215	250	43	7	1	2
Thu 25-Jun-15	**8076**	37.9	30.8	7.5	84	206	691	761	1783	2832	1348	289	67	12	1	2
Fri 26-Jun-15	**8814**	36.2	28	9	554	550	858	1001	1939	2543	1071	220	62	12	4	0
Sat 27-Jun-15	**6370**	39.1	32.6	6.9	4	67	480	363	1034	2584	1405	352	64	11	4	2
Sun 28-Jun-15	**4870**	39.5	32.8	7.1	4	71	389	272	700	1802	1271	302	52	3	4	0
Mon 29-Jun-15	**7863**	38.1	31	7.3	61	177	680	694	1661	2821	1423	289	44	12	0	1
Tue 30-Jun-15	**8186**	37.9	30.1	8.1	212	288	754	814	1736	2649	1353	319	49	9	2	1
Total Vehicles																
[--]	**52641**	38.0	30.7	7.7	1101	1669	4609	4770	10822	18092	9086	2021	381	66	16	8





AXIOM Traffic Limited

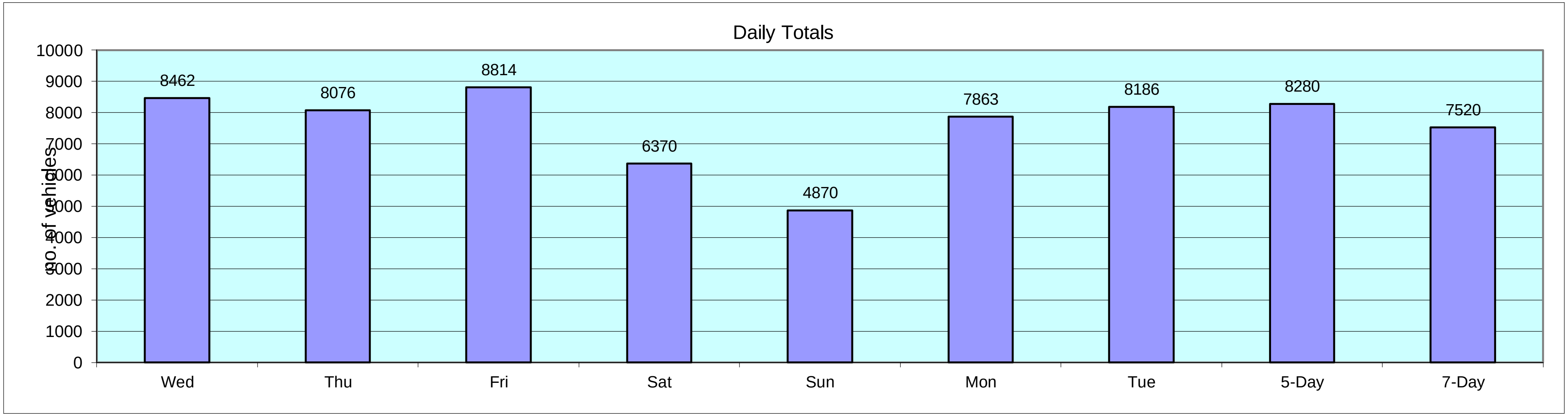
Data produced by Axiom Traffic Ltd

19028		RUDHEATH		Site No: 19028004 Channel: Southbound		Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)		
TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av
Week Begin: 24-Jun-15									
00:00	**29**	27	19	32	52	21	15	22	28
01:00	**11**	10	12	27	24	17	14	13	16
02:00	**14**	19	13	18	20	15	12	15	16
03:00	**11**	14	14	17	10	21	19	16	15
04:00	**48**	43	39	32	17	38	49	43	38
05:00	**140**	165	164	97	57	173	168	162	138
06:00	**301**	261	261	108	62	242	247	262	212
07:00	**544**	547	579	181	98	555	559	557	438
08:00	**742**	646	715	262	109	667	712	696	550
09:00	**524**	454	469	363	218	479	509	487	431
10:00	**435**	476	462	476	314	460	457	458	440
11:00	**482**	458	440	593	392	448	501	466	473
12:00	**540**	506	567	621	467	527	509	530	534
13:00	**508**	508	587	539	467	490	531	525	519
14:00	**521**	481	760	454	476	526	542	566	537
15:00	**638**	574	723	503	473	561	554	610	575
16:00	**689**	735	777	485	451	632	634	693	629
17:00	**712**	726	760	447	319	652	693	709	616
18:00	**646**	558	524	364	285	500	529	551	487
19:00	**424**	335	383	253	207	330	383	371	331
20:00	**194**	230	217	168	147	204	229	215	198
21:00	**164**	147	131	118	94	166	173	156	142
22:00	**96**	109	131	110	80	97	108	108	104
23:00	**49**	47	67	102	31	42	39	49	54
12H,7-19	**6981**	**6669**	**7363**	**5288**	**4069**	**6497**	**6730**	**6848**	**6228**
16H,6-22	**8064**	**7642**	**8355**	**5935**	**4579**	**7439**	**7762**	**7852**	**7111**
18H,6-24	**8209**	**7798**	**8553**	**6147**	**4690**	**7578**	**7909**	**8009**	**7269**
24H,0-24	**8462**	**8076**	**8814**	**6370**	**4870**	**7863**	**8186**	**8280**	**7520**
Am	**08:00**	**08:00**	**08:00**	**11:00**	**11:00**	**08:00**	**08:00**	**-**	**-**
Peak	**742**	**646**	**715**	**593**	**392**	**667**	**712**	**696**	**638**
Pm	**17:00**	**16:00**	**16:00**	**12:00**	**14:00**	**17:00**	**17:00**	**-**	**-**
Peak	**712**	**735**	**777**	**621**	**476**	**652**	**693**	**714**	**667**

Data produced by
Axiom Traffic Ltd

19028	RUDHEATH	Site No: 19028004 Channel: Southbound	Location	Site 4, Griffiths Road, Rudheath (Crematorium SP)

TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av



Data produced by
Axiom Traffic Ltd


A556 Eastbound
(east of rbt)

19028		RUDHEATH JUNE 2015 Direction			Posted Speed Limit (PSL)				
Site	**Location**	**Direction**	**Start Date**	**End Date**	**Posted Speed Limit (PSL)**	**Total Vehicles**	**5 Day Ave.**	**7 Day Ave.**	**Average 85%ile Speed**
Site No: 19028005	Site 5, A556, Rudheath (Armco) SJ 68638 72748	Channel: Eastbound	Wed 24-Jun-15	Tue 30-Jun-15	60	102399	16272	14628	46.7

19028	RUDHEATH JUNE 2015					
Site	**Location**	**Direction**	**Start Date**	**End Date**	**Posted Speed Limit (PSL)**	**Average Mean Speed**
Site No: 19028005	Site 5, A556, Rudheath (Armco) SJ 68638 72748	Channel: Eastbound	Wed 24-Jun-15	Tue 30-Jun-15	60	40.1

19028		RUDHEATH			Site No: 19028005		Location	Site 5, A556, Rudheath (Armco)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Eastbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Wed 24-Jun-15											
00:00	**57**	0	0.0	39	68.4	6	10.5	12	21.1	0	0.0
01:00	**24**	0	0.0	15	62.5	1	4.2	8	33.3	0	0.0
02:00	**43**	0	0.0	19	44.2	5	11.6	17	39.5	2	4.7
03:00	**71**	0	0.0	32	45.1	11	15.5	25	35.2	3	4.2
04:00	**107**	1	0.9	70	65.4	17	15.9	16	15.0	3	2.8
05:00	**266**	5	1.9	197	74.1	28	10.5	34	12.8	2	0.8
06:00	**877**	9	1.0	739	84.3	65	7.4	58	6.6	6	0.7
07:00	**1613**	10	0.6	1385	85.9	109	6.8	106	6.6	3	0.2
08:00	**1713**	10	0.6	1463	85.4	118	6.9	119	7.0	3	0.2
09:00	**1472**	6	0.4	1235	83.9	129	8.8	91	6.2	11	0.8
10:00	**1076**	7	0.7	906	84.2	98	9.1	58	5.4	7	0.7
11:00	**887**	5	0.6	699	78.8	92	10.4	85	9.6	6	0.7
12:00	**882**	6	0.7	722	81.9	81	9.2	67	7.6	6	0.7
13:00	**774**	8	1.0	591	76.4	97	12.5	73	9.4	5	0.7
14:00	**783**	11	1.4	608	77.7	84	10.7	75	9.6	5	0.6
15:00	**932**	10	1.1	731	78.4	117	12.6	70	7.5	4	0.4
16:00	**1122**	12	1.1	936	83.4	89	7.9	80	7.1	5	0.5
17:00	**1033**	15	1.5	927	89.7	52	5.0	37	3.6	2	0.2
18:00	**872**	8	0.9	781	89.6	52	6.0	30	3.4	1	0.1
19:00	**571**	4	0.7	529	92.6	13	2.3	25	4.4	0	0.0
20:00	**359**	3	0.8	324	90.3	16	4.5	14	3.9	2	0.6
21:00	**281**	3	1.1	251	89.3	14	5.0	13	4.6	0	0.0
22:00	**201**	3	1.5	175	87.1	13	6.5	9	4.5	1	0.5
23:00	**111**	0	0.0	83	74.8	9	8.1	18	16.2	1	0.9
12H,7-19	**13159**	**108**	**0.8**	**10984**	**83.5**	**1118**	**8.5**	**891**	**6.8**	**58**	**0.4**
16H,6-22	**15247**	**127**	**0.8**	**12827**	**84.1**	**1226**	**8.0**	**1001**	**6.6**	**66**	**0.4**
18H,6-24	**15559**	**130**	**0.8**	**13085**	**84.1**	**1248**	**8.0**	**1028**	**6.6**	**68**	**0.4**
24H,0-24	**16127**	**136**	**0.8**	**13457**	**83.4**	**1316**	**8.2**	**1140**	**7.1**	**78**	**0.5**

19028		RUDHEATH			Site No: 19028005		Location		Site 5, A556, Rudheath (Armco)		
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Eastbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Thu 25-Jun-15											
00:00	**66**	0	0.0	51	77.3	2	3.0	13	19.7	0	0.0
01:00	**32**	0	0.0	19	59.4	2	6.3	11	34.4	0	0.0
02:00	**51**	0	0.0	29	56.9	8	15.7	14	27.5	0	0.0
03:00	**63**	0	0.0	25	39.7	4	6.4	32	50.8	2	3.2
04:00	**103**	0	0.0	79	76.7	14	13.6	9	8.7	1	1.0
05:00	**260**	2	0.8	212	81.5	21	8.1	21	8.1	4	1.5
06:00	**800**	14	1.8	658	82.3	58	7.3	69	8.6	1	0.1
07:00	**1638**	14	0.9	1412	86.2	95	5.8	115	7.0	2	0.1
08:00	**1676**	7	0.4	1446	86.3	99	5.9	122	7.3	2	0.1
09:00	**1060**	6	0.6	880	83.0	83	7.8	87	8.2	4	0.4
10:00	**824**	4	0.5	643	78.0	101	12.3	67	8.1	9	1.1
11:00	**818**	11	1.3	635	77.6	92	11.3	72	8.8	8	1.0
12:00	**844**	6	0.7	675	80.0	93	11.0	68	8.1	2	0.2
13:00	**830**	6	0.7	653	78.7	87	10.5	82	9.9	2	0.2
14:00	**870**	8	0.9	667	76.7	103	11.8	85	9.8	7	0.8
15:00	**967**	16	1.7	778	80.5	110	11.4	60	6.2	3	0.3
16:00	**1303**	7	0.5	1083	83.1	111	8.5	98	7.5	4	0.3
17:00	**1226**	5	0.4	1100	89.7	60	4.9	60	4.9	1	0.1
18:00	**1011**	10	1.0	926	91.6	30	3.0	43	4.3	2	0.2
19:00	**627**	14	2.2	557	88.8	31	4.9	23	3.7	2	0.3
20:00	**369**	3	0.8	334	90.5	19	5.2	13	3.5	0	0.0
21:00	**265**	3	1.1	235	88.7	17	6.4	9	3.4	1	0.4
22:00	**214**	5	2.3	188	87.9	8	3.7	12	5.6	1	0.5
23:00	**129**	1	0.8	105	81.4	7	5.4	16	12.4	0	0.0
12H,7-19	**13067**	**100**	**0.8**	**10898**	**83.4**	**1064**	**8.1**	**959**	**7.3**	**46**	**0.4**
16H,6-22	**15128**	**134**	**0.9**	**12682**	**83.8**	**1189**	**7.9**	**1073**	**7.1**	**50**	**0.3**
18H,6-24	**15471**	**140**	**0.9**	**12975**	**83.9**	**1204**	**7.8**	**1101**	**7.1**	**51**	**0.3**
24H,0-24	**16046**	**142**	**0.9**	**13390**	**83.5**	**1255**	**7.8**	**1201**	**7.5**	**58**	**0.4**

19028		RUDHEATH			Site No: 19028005		Location		Site 5, A556, Rudheath (Armco)		
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Eastbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Fri 26-Jun-15											
00:00	**72**	0	0.0	49	68.1	7	9.7	16	22.2	0	0.0
01:00	**36**	0	0.0	19	52.8	2	5.6	15	41.7	0	0.0
02:00	**41**	1	2.4	18	43.9	2	4.9	19	46.3	1	2.4
03:00	**58**	2	3.5	26	44.8	8	13.8	20	34.5	2	3.5
04:00	**126**	1	0.8	83	65.9	16	12.7	22	17.5	4	3.2
05:00	**291**	5	1.7	225	77.3	29	10.0	27	9.3	5	1.7
06:00	**713**	8	1.1	591	82.9	49	6.9	65	9.1	0	0.0
07:00	**1478**	2	0.1	1278	86.5	87	5.9	109	7.4	2	0.1
08:00	**1559**	5	0.3	1342	86.1	95	6.1	110	7.1	7	0.5
09:00	**1056**	6	0.6	862	81.6	92	8.7	90	8.5	6	0.6
10:00	**835**	7	0.8	646	77.4	88	10.5	86	10.3	8	1.0
11:00	**876**	3	0.3	701	80.0	96	11.0	72	8.2	4	0.5
12:00	**985**	4	0.4	814	82.6	91	9.2	73	7.4	3	0.3
13:00	**995**	8	0.8	802	80.6	94	9.5	87	8.7	4	0.4
14:00	**1089**	7	0.6	888	81.5	109	10.0	79	7.3	6	0.6
15:00	**1213**	7	0.6	986	81.3	122	10.1	91	7.5	7	0.6
16:00	**1457**	10	0.7	1237	84.9	113	7.8	87	6.0	10	0.7
17:00	**1424**	11	0.8	1257	88.3	86	6.0	66	4.6	4	0.3
18:00	**1271**	8	0.6	1128	88.8	62	4.9	70	5.5	3	0.2
19:00	**908**	6	0.7	790	87.0	59	6.5	50	5.5	3	0.3
20:00	**442**	6	1.4	389	88.0	26	5.9	20	4.5	1	0.2
21:00	**297**	0	0.0	273	91.9	9	3.0	14	4.7	1	0.3
22:00	**184**	1	0.5	154	83.7	11	6.0	18	9.8	0	0.0
23:00	**166**	2	1.2	141	84.9	5	3.0	18	10.8	0	0.0
12H,7-19	**14238**	**78**	**0.6**	**11941**	**83.9**	**1135**	**8.0**	**1020**	**7.2**	**64**	**0.5**
16H,6-22	**16598**	**98**	**0.6**	**13984**	**84.3**	**1278**	**7.7**	**1169**	**7.0**	**69**	**0.4**
18H,6-24	**16948**	**101**	**0.6**	**14279**	**84.3**	**1294**	**7.6**	**1205**	**7.1**	**69**	**0.4**
24H,0-24	**17572**	**110**	**0.6**	**14699**	**83.7**	**1358**	**7.7**	**1324**	**7.5**	**81**	**0.5**

19028		RUDHEATH			Site No: 19028005		Location	Site 5, A556, Rudheath (Armco)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Eastbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sat 27-Jun-15											
00:00	**110**	0	0.0	83	75.5	10	9.1	16	14.6	1	0.9
01:00	**68**	2	2.9	46	67.7	7	10.3	13	19.1	0	0.0
02:00	**46**	0	0.0	31	67.4	2	4.4	12	26.1	1	2.2
03:00	**75**	0	0.0	40	53.3	9	12.0	23	30.7	3	4.0
04:00	**79**	2	2.5	54	68.4	5	6.3	16	20.3	2	2.5
05:00	**163**	1	0.6	131	80.4	14	8.6	17	10.4	0	0.0
06:00	**219**	3	1.4	167	76.3	21	9.6	28	12.8	0	0.0
07:00	**368**	4	1.1	294	79.9	39	10.6	31	8.4	0	0.0
08:00	**567**	5	0.9	484	85.4	39	6.9	36	6.4	3	0.5
09:00	**706**	11	1.6	611	86.5	44	6.2	39	5.5	1	0.1
10:00	**872**	9	1.0	761	87.3	58	6.7	43	4.9	1	0.1
11:00	**919**	10	1.1	825	89.8	36	3.9	46	5.0	2	0.2
12:00	**915**	10	1.1	814	89.0	47	5.1	43	4.7	1	0.1
13:00	**901**	23	2.6	795	88.2	47	5.2	35	3.9	1	0.1
14:00	**818**	25	3.1	725	88.6	36	4.4	30	3.7	2	0.2
15:00	**800**	31	3.9	697	87.1	34	4.3	36	4.5	2	0.3
16:00	**797**	32	4.0	691	86.7	36	4.5	37	4.6	1	0.1
17:00	**803**	28	3.5	712	88.7	34	4.2	27	3.4	2	0.3
18:00	**641**	8	1.3	572	89.2	43	6.7	18	2.8	0	0.0
19:00	**496**	9	1.8	449	90.5	28	5.7	10	2.0	0	0.0
20:00	**298**	7	2.4	264	88.6	19	6.4	8	2.7	0	0.0
21:00	**233**	4	1.7	207	88.8	18	7.7	4	1.7	0	0.0
22:00	**205**	2	1.0	187	91.2	12	5.9	4	2.0	0	0.0
23:00	**188**	2	1.1	164	87.2	9	4.8	13	6.9	0	0.0
12H,7-19	**9107**	**196**	**2.2**	**7981**	**87.6**	**493**	**5.4**	**421**	**4.6**	**16**	**0.2**
16H,6-22	**10353**	**219**	**2.1**	**9068**	**87.6**	**579**	**5.6**	**471**	**4.6**	**16**	**0.2**
18H,6-24	**10746**	**223**	**2.1**	**9419**	**87.7**	**600**	**5.6**	**488**	**4.5**	**16**	**0.2**
24H,0-24	**11287**	**228**	**2.0**	**9804**	**86.9**	**647**	**5.7**	**585**	**5.2**	**23**	**0.2**

19028	RUDHEATH	Site No: 19028005	Location	Site 5, A556, Rudheath (Armco)
Wed 24-Jun-15 to Tue 30-Jun-15		Channel: Eastbound		

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sun 28-Jun-15											
00:00	**138**	0	0.0	123	89.1	7	5.1	8	5.8	0	0.0
01:00	**49**	2	4.1	38	77.6	6	12.2	3	6.1	0	0.0
02:00	**52**	0	0.0	42	80.8	4	7.7	6	11.5	0	0.0
03:00	**58**	0	0.0	42	72.4	4	6.9	12	20.7	0	0.0
04:00	**65**	1	1.5	50	76.9	7	10.8	5	7.7	2	3.1
05:00	**107**	1	0.9	91	85.1	6	5.6	8	7.5	1	0.9
06:00	**152**	1	0.7	125	82.2	10	6.6	15	9.9	1	0.7
07:00	**218**	1	0.5	179	82.1	19	8.7	18	8.3	1	0.5
08:00	**321**	1	0.3	291	90.7	15	4.7	14	4.4	0	0.0
09:00	**509**	6	1.2	463	91.0	25	4.9	14	2.8	1	0.2
10:00	**709**	1	0.1	662	93.4	24	3.4	22	3.1	0	0.0
11:00	**759**	6	0.8	694	91.4	27	3.6	32	4.2	0	0.0
12:00	**810**	7	0.9	744	91.9	32	4.0	26	3.2	1	0.1
13:00	**820**	11	1.3	758	92.4	29	3.5	22	2.7	0	0.0
14:00	**773**	13	1.7	702	90.8	28	3.6	30	3.9	0	0.0
15:00	**787**	11	1.4	705	89.6	36	4.6	33	4.2	2	0.3
16:00	**831**	13	1.6	751	90.4	30	3.6	37	4.5	0	0.0
17:00	**758**	10	1.3	662	87.3	42	5.5	40	5.3	4	0.5
18:00	**604**	12	2.0	513	84.9	37	6.1	41	6.8	1	0.2
19:00	**474**	9	1.9	433	91.4	20	4.2	11	2.3	1	0.2
20:00	**332**	2	0.6	298	89.8	19	5.7	13	3.9	0	0.0
21:00	**219**	5	2.3	197	90.0	8	3.7	9	4.1	0	0.0
22:00	**120**	0	0.0	106	88.3	10	8.3	4	3.3	0	0.0
23:00	**87**	1	1.2	69	79.3	6	6.9	10	11.5	1	1.2
12H,7-19	**7899**	**92**	**1.2**	**7124**	**90.2**	**344**	**4.4**	**329**	**4.2**	**10**	**0.1**
16H,6-22	**9076**	**109**	**1.2**	**8177**	**90.1**	**401**	**4.4**	**377**	**4.2**	**12**	**0.1**
18H,6-24	**9283**	**110**	**1.2**	**8352**	**90.0**	**417**	**4.5**	**391**	**4.2**	**13**	**0.1**
24H,0-24	**9752**	**114**	**1.2**	**8738**	**89.6**	**451**	**4.6**	**433**	**4.4**	**16**	**0.2**

19028			RUDHEATH		Site No: 19028005		Location	Site 5, A556, Rudheath (Armco)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Eastbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Mon 29-Jun-15											
00:00	**49**	1	2.0	36	73.5	3	6.1	9	18.4	0	0.0
01:00	**39**	1	2.6	28	71.8	5	12.8	5	12.8	0	0.0
02:00	**42**	0	0.0	25	59.5	2	4.8	12	28.6	3	7.1
03:00	**64**	1	1.6	31	48.4	7	10.9	23	35.9	2	3.1
04:00	**131**	0	0.0	103	78.6	10	7.6	14	10.7	4	3.1
05:00	**285**	6	2.1	224	78.6	26	9.1	28	9.8	1	0.4
06:00	**784**	5	0.6	665	84.8	50	6.4	63	8.0	1	0.1
07:00	**1695**	6	0.4	1477	87.1	101	6.0	108	6.4	3	0.2
08:00	**1658**	7	0.4	1455	87.8	73	4.4	121	7.3	2	0.1
09:00	**1037**	6	0.6	856	82.6	90	8.7	81	7.8	4	0.4
10:00	**863**	8	0.9	678	78.6	100	11.6	67	7.8	10	1.2
11:00	**747**	8	1.1	566	75.8	89	11.9	82	11.0	2	0.3
12:00	**721**	5	0.7	561	77.8	77	10.7	72	10.0	6	0.8
13:00	**821**	9	1.1	642	78.2	86	10.5	79	9.6	5	0.6
14:00	**845**	7	0.8	644	76.2	107	12.7	86	10.2	1	0.1
15:00	**1024**	6	0.6	807	78.8	119	11.6	88	8.6	4	0.4
16:00	**1213**	12	1.0	1014	83.6	99	8.2	83	6.8	5	0.4
17:00	**1272**	10	0.8	1158	91.0	49	3.9	54	4.3	1	0.1
18:00	**971**	15	1.5	862	88.8	48	4.9	45	4.6	1	0.1
19:00	**511**	6	1.2	454	88.9	25	4.9	24	4.7	2	0.4
20:00	**314**	7	2.2	279	88.9	13	4.1	15	4.8	0	0.0
21:00	**248**	3	1.2	230	92.7	7	2.8	8	3.2	0	0.0
22:00	**181**	1	0.6	161	89.0	10	5.5	8	4.4	1	0.6
23:00	**108**	1	0.9	91	84.3	4	3.7	12	11.1	0	0.0
12H,7-19	**12867**	**99**	**0.8**	**10720**	**83.3**	**1038**	**8.1**	**966**	**7.5**	**44**	**0.3**
16H,6-22	**14724**	**120**	**0.8**	**12348**	**83.9**	**1133**	**7.7**	**1076**	**7.3**	**47**	**0.3**
18H,6-24	**15013**	**122**	**0.8**	**12600**	**83.9**	**1147**	**7.6**	**1096**	**7.3**	**48**	**0.3**
24H,0-24	**15623**	**131**	**0.8**	**13047**	**83.5**	**1200**	**7.7**	**1187**	**7.6**	**58**	**0.4**

19028		RUDHEATH			Site No: 19028005		Location	Site 5, A556, Rudheath (Armco)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Eastbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Tue 30-Jun-15											
00:00	**45**	0	0.0	28	62.2	5	11.1	12	26.7	0	0.0
01:00	**27**	0	0.0	14	51.9	5	18.5	8	29.6	0	0.0
02:00	**40**	0	0.0	17	42.5	2	5.0	20	50.0	1	2.5
03:00	**67**	1	1.5	36	53.7	9	13.4	18	26.9	3	4.5
04:00	**96**	2	2.1	63	65.6	14	14.6	15	15.6	2	2.1
05:00	**290**	4	1.4	234	80.7	22	7.6	28	9.7	2	0.7
06:00	**808**	6	0.7	694	85.9	56	6.9	52	6.4	0	0.0
07:00	**1697**	9	0.5	1488	87.7	96	5.7	102	6.0	2	0.1
08:00	**1682**	13	0.8	1476	87.8	93	5.5	96	5.7	4	0.2
09:00	**1119**	8	0.7	919	82.1	97	8.7	89	8.0	6	0.5
10:00	**792**	3	0.4	625	78.9	88	11.1	70	8.8	6	0.8
11:00	**750**	7	0.9	583	77.7	89	11.9	66	8.8	5	0.7
12:00	**833**	6	0.7	651	78.2	92	11.0	79	9.5	5	0.6
13:00	**829**	8	1.0	654	78.9	83	10.0	77	9.3	7	0.8
14:00	**871**	10	1.2	668	76.7	102	11.7	86	9.9	5	0.6
15:00	**1001**	11	1.1	800	79.9	107	10.7	78	7.8	5	0.5
16:00	**1276**	11	0.9	1073	84.1	105	8.2	83	6.5	4	0.3
17:00	**1287**	15	1.2	1163	90.4	55	4.3	52	4.0	2	0.2
18:00	**921**	14	1.5	819	88.9	48	5.2	39	4.2	1	0.1
19:00	**562**	12	2.1	490	87.2	33	5.9	26	4.6	1	0.2
20:00	**354**	11	3.1	307	86.7	18	5.1	18	5.1	0	0.0
21:00	**311**	10	3.2	275	88.4	15	4.8	10	3.2	1	0.3
22:00	**202**	3	1.5	177	87.6	13	6.4	9	4.5	0	0.0
23:00	**132**	0	0.0	105	79.6	8	6.1	19	14.4	0	0.0
12H,7-19	**13058**	**115**	**0.9**	**10919**	**83.6**	**1055**	**8.1**	**917**	**7.0**	**52**	**0.4**
16H,6-22	**15093**	**154**	**1.0**	**12685**	**84.1**	**1177**	**7.8**	**1023**	**6.8**	**54**	**0.4**
18H,6-24	**15427**	**157**	**1.0**	**12967**	**84.1**	**1198**	**7.8**	**1051**	**6.8**	**54**	**0.4**
24H,0-24	**15992**	**164**	**1.0**	**13359**	**83.5**	**1255**	**7.9**	**1152**	**7.2**	**62**	**0.4**

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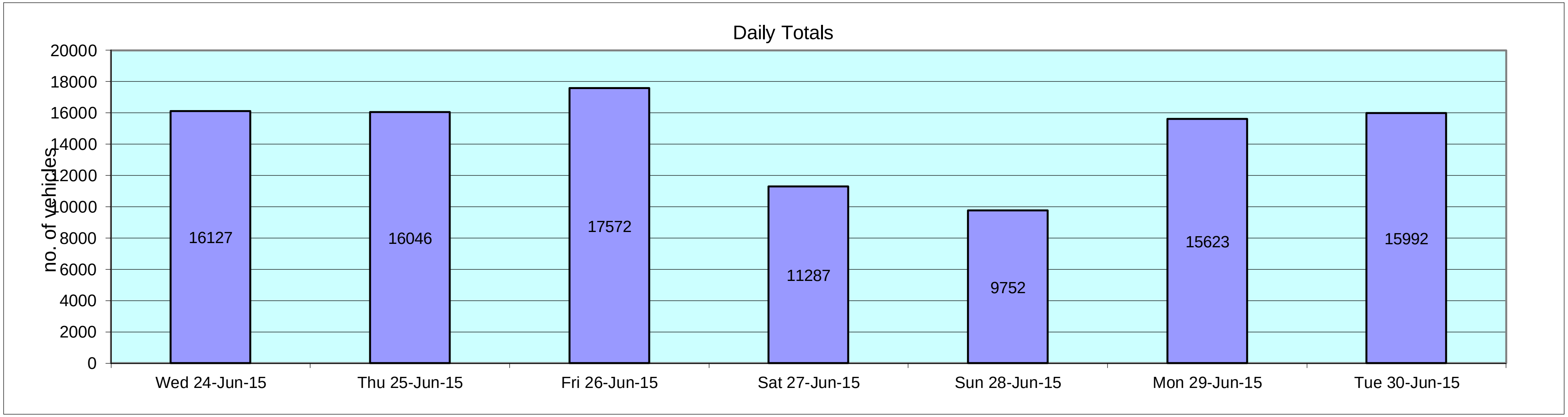
19028		RUDHEATH			Site No: 19028005		Location	Site 5, A556, Rudheath (Armco)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Eastbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Daily Totals											
Wed 24-Jun-15	**16127**	136	0.8	13457	83.4	1316	8.2	1140	7.1	78	0.5
Thu 25-Jun-15	**16046**	142	0.9	13390	83.5	1255	7.8	1201	7.5	58	0.4
Fri 26-Jun-15	**17572**	110	0.6	14699	83.7	1358	7.7	1324	7.5	81	0.5
Sat 27-Jun-15	**11287**	228	2.0	9804	86.9	647	5.7	585	5.2	23	0.2
Sun 28-Jun-15	**9752**	114	1.2	8738	89.6	451	4.6	433	4.4	16	0.2
Mon 29-Jun-15	**15623**	131	0.8	13047	83.5	1200	7.7	1187	7.6	58	0.4
Tue 30-Jun-15	**15992**	164	1.0	13359	83.5	1255	7.9	1152	7.2	62	0.4
Total Vehicles											
[--]	**102399**	1025	1.1	86494	84.9	7482	7.1	7022	6.6	376	0.3



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19028			RUDHEATH				Site No: 19028005			Location	Site 5, A556, Rudheath (Armco)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Eastbound									

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Wed 24-Jun-15																
00:00	**57**	45	38.3	7.8	0	0	8	28	15	2	3	1	0	0	0	0
01:00	**24**	45.9	37.5	7.1	0	0	3	15	2	4	0	0	0	0	0	0
02:00	**43**	44.5	37.6	7.1	0	0	6	23	10	3	1	0	0	0	0	0
03:00	**71**	44.7	36.7	7.5	0	0	13	41	8	7	2	0	0	0	0	0
04:00	**107**	45.4	38.3	7.1	0	0	14	51	29	11	2	0	0	0	0	0
05:00	**266**	48.5	40.2	8	0	1	25	110	69	41	17	2	1	0	0	0
06:00	**877**	48.9	41.5	7.3	0	1	47	322	285	157	49	14	2	0	0	0
07:00	**1613**	47.3	40.9	6.5	0	0	59	685	561	243	54	7	3	0	1	0
08:00	**1713**	44.8	37.7	7.4	11	23	162	934	426	129	23	3	2	0	0	0
09:00	**1472**	45.3	39.1	6.1	0	1	71	811	431	135	18	5	0	0	0	0
10:00	**1076**	45.6	39.4	6.2	0	0	44	594	297	116	22	2	1	0	0	0
11:00	**887**	45.2	38.6	6.6	0	1	72	491	228	74	19	2	0	0	0	0
12:00	**882**	45.8	39.4	6.4	0	1	48	461	250	105	16	0	1	0	0	0
13:00	**774**	46.2	39.6	7	0	0	56	376	222	88	25	6	1	0	0	0
14:00	**783**	45.8	39.6	6.4	0	0	34	426	213	84	22	4	0	0	0	0
15:00	**932**	45.7	39.9	6	0	0	29	480	298	106	14	5	0	0	0	0
16:00	**1122**	46.4	40.3	6.2	0	0	29	566	348	141	31	7	0	0	0	0
17:00	**1033**	46	38.9	8	10	12	80	498	278	115	30	9	1	0	0	0
18:00	**872**	47.9	41.2	6.6	0	0	14	402	277	128	40	7	2	2	0	0
19:00	**571**	48.1	41.4	6.8	0	2	13	240	195	82	31	6	1	1	0	0
20:00	**359**	48.4	41.1	7.1	0	1	12	159	106	55	22	2	2	0	0	0
21:00	**281**	48.3	41.5	6.8	0	0	7	119	94	40	16	4	1	0	0	0
22:00	**201**	46.9	40.5	7.2	0	0	9	96	61	23	10	0	1	0	1	0
23:00	**111**	46.7	39.2	7.9	0	0	13	52	27	13	3	3	0	0	0	0
12H,7-19	**13159**	**45.8**	**39.5**	**6.7**	**21**	**38**	**698**	**6724**	**3829**	**1464**	**314**	**57**	**11**	**2**	**1**	**0**
16H,6-22	**15247**	**46.1**	**39.7**	**6.8**	**21**	**42**	**777**	**7564**	**4509**	**1798**	**432**	**83**	**17**	**3**	**1**	**0**
18H,6-24	**15559**	**46.1**	**39.8**	**6.8**	**21**	**42**	**799**	**7712**	**4597**	**1834**	**445**	**86**	**18**	**3**	**2**	**0**
24H,0-24	**16127**	**46.2**	**39.7**	**6.9**	**21**	**43**	**868**	**7980**	**4730**	**1902**	**470**	**89**	**19**	**3**	**2**	**0**

19028		RUDHEATH			Site No: 19028005			Location	Site 5, A556, Rudheath (Armco)								
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Eastbound												

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Thu 25-Jun-15																
00:00	**66**	44.5	38.5	5.6	0	0	3	40	18	5	0	0	0	0	0	0
01:00	**32**	42.7	36.4	6.5	0	0	5	20	5	2	0	0	0	0	0	0
02:00	**51**	46.5	37.6	8.2	0	0	11	21	10	8	1	0	0	0	0	0
03:00	**63**	44.2	36.4	7.3	0	0	13	33	11	6	0	0	0	0	0	0
04:00	**103**	45.1	39.4	5.9	0	0	4	55	34	8	2	0	0	0	0	0
05:00	**260**	48.3	40.8	7.2	0	0	13	116	75	36	17	2	1	0	0	0
06:00	**800**	48.9	42	6.8	0	0	32	265	290	161	45	7	0	0	0	0
07:00	**1638**	47.7	40.8	6.8	1	12	51	697	544	263	61	9	0	0	0	0
08:00	**1676**	46	39.6	6.7	3	4	88	826	507	201	44	2	1	0	0	0
09:00	**1060**	46.4	40.2	6.9	0	0	58	489	345	118	34	14	0	2	0	0
10:00	**824**	45.9	39	7	0	0	69	435	200	92	22	4	2	0	0	0
11:00	**818**	45.5	39.2	6.6	0	2	40	469	203	74	22	6	2	0	0	0
12:00	**844**	45.5	39.2	6.7	0	0	59	439	242	80	15	7	1	1	0	0
13:00	**830**	46.2	39.7	6.8	0	0	60	394	247	102	21	6	0	0	0	0
14:00	**870**	45.5	39	6.7	0	0	60	477	226	86	16	2	2	0	0	1
15:00	**967**	46.5	39.7	6.8	0	0	66	463	280	129	21	8	0	0	0	0
16:00	**1303**	46.4	39.9	6.5	0	1	61	651	381	172	31	5	0	1	0	0
17:00	**1226**	48	41	7	0	6	46	519	392	192	53	15	3	0	0	0
18:00	**1011**	48.7	41.7	6.8	0	2	18	421	320	181	57	9	2	0	1	0
19:00	**627**	47.9	41	6.9	0	1	12	303	185	83	30	10	2	0	1	0
20:00	**369**	46	40.8	6.1	0	0	4	174	136	41	9	3	2	0	0	0
21:00	**265**	47.1	40.6	7.1	0	0	11	124	82	36	7	4	0	0	0	1
22:00	**214**	46.5	40.1	7.1	0	0	10	110	59	22	8	4	1	0	0	0
23:00	**129**	46.6	40	7	0	0	6	65	36	19	2	0	0	0	1	0
12H,7-19	**13067**	**46.7**	**40**	**6.8**	**4**	**27**	**676**	**6280**	**3887**	**1690**	**397**	**87**	**13**	**4**	**1**	**1**
16H,6-22	**15128**	**46.9**	**40.2**	**6.8**	**4**	**28**	**735**	**7146**	**4580**	**2011**	**488**	**111**	**17**	**4**	**2**	**2**
18H,6-24	**15471**	**46.9**	**40.2**	**6.8**	**4**	**28**	**751**	**7321**	**4675**	**2052**	**498**	**115**	**18**	**4**	**3**	**2**
24H,0-24	**16046**	**46.9**	**40.1**	**6.8**	**4**	**28**	**800**	**7606**	**4828**	**2117**	**518**	**117**	**19**	**4**	**3**	**2**

19028		RUDHEATH					Site No: 19028005			Location	Site 5, A556, Rudheath (Armco)				
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Eastbound								

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Fri 26-Jun-15																
00:00	**72**	46.4	39.4	7.7	0	0	8	32	20	8	3	1	0	0	0	0
01:00	**36**	46.1	35.9	8.9	0	0	12	13	5	5	1	0	0	0	0	0
02:00	**41**	42.1	35	7.1	0	0	11	22	6	2	0	0	0	0	0	0
03:00	**58**	44.5	36.9	8.3	0	2	8	31	11	3	3	0	0	0	0	0
04:00	**126**	45.8	38.9	7	0	0	13	61	34	15	3	0	0	0	0	0
05:00	**291**	47.1	40.5	6.8	0	0	16	126	96	41	9	2	1	0	0	0
06:00	**713**	47.7	41	6.7	0	0	32	284	250	116	25	4	1	1	0	0
07:00	**1478**	46.9	40.7	6.3	0	0	46	663	513	195	54	5	2	0	0	0
08:00	**1559**	46	40	6.5	0	0	70	777	481	178	33	19	1	0	0	0
09:00	**1056**	47	40.3	6.6	0	3	39	508	316	149	33	7	1	0	0	0
10:00	**835**	45.2	38.8	6.4	0	1	49	490	200	75	18	1	0	1	0	0
11:00	**876**	45.8	39.2	6.6	0	1	53	475	226	92	25	4	0	0	0	0
12:00	**985**	45.6	39	6.8	0	4	64	541	245	101	25	4	1	0	0	0
13:00	**995**	46	39.5	6.6	0	0	54	538	253	116	26	7	1	0	0	0
14:00	**1089**	45.8	39.4	6.7	0	1	58	596	282	118	22	9	3	0	0	0
15:00	**1213**	45.9	39.7	6.5	0	2	54	635	349	130	38	5	0	0	0	0
16:00	**1457**	45	38.6	6.3	0	0	91	865	356	108	34	3	0	0	0	0
17:00	**1424**	45.2	38.2	7.2	2	18	134	746	366	131	23	4	0	0	0	0
18:00	**1271**	47.7	41.1	6.4	0	0	26	563	423	196	53	10	0	0	0	0
19:00	**908**	48.5	41.6	6.7	0	0	29	355	316	144	56	6	2	0	0	0
20:00	**442**	48.2	41.1	6.8	0	0	12	201	130	74	21	2	1	0	1	0
21:00	**297**	47.5	40.8	6.9	0	1	10	133	96	40	13	2	2	0	0	0
22:00	**184**	45.3	39.6	6.7	0	0	13	83	69	13	4	1	1	0	0	0
23:00	**166**	45.6	39	7.4	0	0	16	83	45	16	5	0	0	0	1	0
12H,7-19	**14238**	**45.9**	**39.6**	**6.6**	**2**	**30**	**738**	**7397**	**4010**	**1589**	**384**	**78**	**9**	**1**	**0**	**0**
16H,6-22	**16598**	**46.2**	**39.8**	**6.7**	**2**	**31**	**821**	**8370**	**4802**	**1963**	**499**	**92**	**15**	**2**	**1**	**0**
18H,6-24	**16948**	**46.2**	**39.8**	**6.7**	**2**	**31**	**850**	**8536**	**4916**	**1992**	**508**	**93**	**16**	**2**	**2**	**0**
24H,0-24	**17572**	**46.2**	**39.8**	**6.7**	**2**	**33**	**918**	**8821**	**5088**	**2066**	**527**	**96**	**17**	**2**	**2**	**0**

19028		RUDHEATH					Site No: 19028005			Location	Site 5, A556, Rudheath (Armco)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Eastbound									
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Sat 27-Jun-15																
00:00	**110**	44.3	37.8	6.8	0	0	13	62	27	5	2	1	0	0	0	0
01:00	**68**	47.7	39.3	8.3	0	0	7	36	11	10	1	2	1	0	0	0
02:00	**46**	46.6	39.1	8.1	0	0	7	18	13	5	3	0	0	0	0	0
03:00	**75**	45.1	37.5	7.6	0	0	13	38	15	6	3	0	0	0	0	0
04:00	**79**	44.9	38.4	6.9	0	0	9	39	24	5	2	0	0	0	0	0
05:00	**163**	45.8	39.2	7	0	0	14	80	46	18	4	0	1	0	0	0
06:00	**219**	45.8	39.3	7.2	0	1	20	97	70	24	6	1	0	0	0	0
07:00	**368**	46.9	40.7	6.9	0	0	16	162	127	41	14	6	2	0	0	0
08:00	**567**	47.4	40.7	6.9	0	1	30	232	195	83	21	4	1	0	0	0
09:00	**706**	47.4	40.9	6.7	0	1	19	321	230	99	25	8	3	0	0	0
10:00	**872**	47	40.3	6.6	0	1	24	445	248	119	25	5	4	1	0	0
11:00	**919**	47	40.2	6.9	0	1	42	457	256	122	27	9	4	1	0	0
12:00	**915**	46.5	40.2	6.5	0	0	24	476	267	111	27	6	3	0	1	0
13:00	**901**	47.2	40.6	6.6	0	0	19	455	265	111	38	8	4	0	1	0
14:00	**818**	47	40.9	6.9	0	0	17	394	266	91	25	15	6	4	0	0
15:00	**800**	47	40.5	7	0	1	25	401	233	93	25	17	4	1	0	0
16:00	**797**	47.9	40.5	7.4	0	0	30	414	195	98	38	13	7	1	1	0
17:00	**803**	47.9	41.1	7.1	0	0	19	378	242	112	29	11	9	3	0	0
18:00	**641**	47.5	41	6.6	0	1	7	313	200	79	29	9	3	0	0	0
19:00	**496**	46.9	40.6	5.9	0	0	2	259	148	70	15	2	0	0	0	0
20:00	**298**	48.7	41.6	7.1	0	0	4	137	90	40	18	6	2	1	0	0
21:00	**233**	46.7	40.6	6.9	0	0	5	119	70	27	8	2	0	1	1	0
22:00	**205**	46.3	40	6.4	0	0	4	115	53	27	3	1	2	0	0	0
23:00	**188**	45.7	39.5	7.6	0	0	11	106	45	17	3	3	2	0	0	1
12H,7-19	**9107**	**47.3**	**40.6**	**6.8**	**0**	**6**	**272**	**4448**	**2724**	**1159**	**323**	**111**	**50**	**11**	**3**	**0**
16H,6-22	**10353**	**47.2**	**40.6**	**6.8**	**0**	**7**	**303**	**5060**	**3102**	**1320**	**370**	**122**	**52**	**13**	**4**	**0**
18H,6-24	**10746**	**47.2**	**40.6**	**6.8**	**0**	**7**	**318**	**5281**	**3200**	**1364**	**376**	**126**	**56**	**13**	**4**	**1**
24H,0-24	**11287**	**47.1**	**40.5**	**6.9**	**0**	**7**	**381**	**5554**	**3336**	**1413**	**391**	**129**	**58**	**13**	**4**	**1**

19028		RUDHEATH						Site No: 19028005			Location	Site 5, A556, Rudheath (Armco)				
Wed 24-Jun-15 to Tue 30-Jun-15								Channel: Eastbound								
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Sun 28-Jun-15																
00:00	138	47.7	40.4	7.4	0	0	8	66	38	14	9	3	0	0	0	0
01:00	49	45.5	40	7.2	0	0	3	23	17	2	3	1	0	0	0	0
02:00	52	44.3	37.8	6.7	0	0	6	29	13	3	1	0	0	0	0	0
03:00	58	43.8	36.9	6.7	0	0	9	33	12	4	0	0	0	0	0	0
04:00	65	44.9	38.4	6.4	0	0	6	34	19	6	0	0	0	0	0	0
05:00	107	45.4	39.5	6.4	0	0	5	57	32	8	5	0	0	0	0	0
06:00	152	45.2	38.8	6.8	0	0	13	78	45	14	0	1	1	0	0	0
07:00	218	45.6	39.2	6.9	0	1	15	112	62	20	7	1	0	0	0	0
08:00	321	45.4	39.3	6.3	0	2	14	165	105	29	6	0	0	0	0	0
09:00	509	46.5	40.1	6.5	0	1	17	259	149	65	13	5	0	0	0	0
10:00	709	46.8	40.4	6.4	0	0	23	346	219	93	24	3	1	0	0	0
11:00	759	45.8	40	6.2	0	1	20	387	248	85	13	2	1	2	0	0
12:00	810	46.4	40.1	6.4	0	0	24	420	236	98	25	5	2	0	0	0
13:00	820	46.1	40.3	6.2	0	0	26	395	273	101	21	4	0	0	0	0
14:00	773	47.4	40.8	6.5	0	0	15	378	232	109	28	9	1	1	0	0
15:00	787	47.7	40.8	6.7	0	0	24	373	236	106	38	9	1	0	0	0
16:00	831	46.3	40.1	6.8	0	0	24	456	220	93	22	12	1	0	2	1
17:00	758	46.4	40.3	6.6	0	0	19	400	217	88	23	7	2	1	1	0
18:00	604	47.7	40.9	7.2	0	0	34	244	205	86	21	11	3	0	0	0
19:00	474	48.1	41	6.8	0	0	6	241	126	70	20	6	5	0	0	0
20:00	332	46.1	40.6	6.5	0	0	9	156	116	35	10	4	2	0	0	0
21:00	219	47.7	40.9	7.6	0	0	7	107	64	23	11	3	2	1	1	0
22:00	120	48.4	40.7	7.1	0	0	4	61	27	20	5	3	0	0	0	0
23:00	87	49.8	41.7	8.4	0	0	5	37	20	15	7	1	1	1	0	0
12H,7-19	7899	46.6	40.3	6.6	0	5	255	3935	2402	973	241	68	12	4	3	1
16H,6-22	9076	46.7	40.3	6.6	0	5	290	4517	2753	1115	282	82	22	5	4	1
18H,6-24	9283	46.7	40.4	6.6	0	5	299	4615	2800	1150	294	86	23	6	4	1
24H,0-24	9752	46.7	40.3	6.7	0	5	336	4857	2931	1187	312	90	23	6	4	1

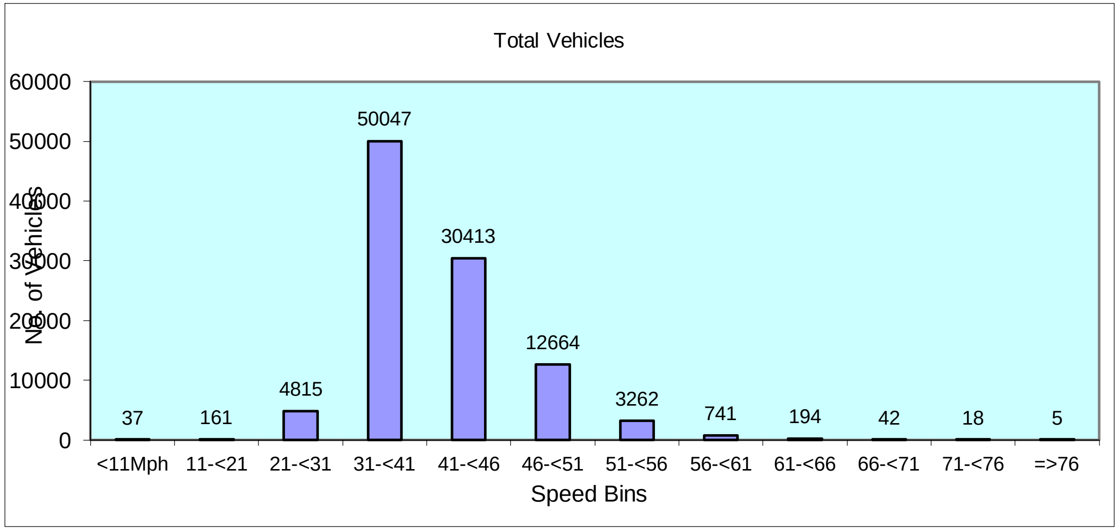
19028			RUDHEATH				Site No: 19028005			Location	Site 5, A556, Rudheath (Armco)				
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Eastbound								
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Mon 29-Jun-15																
00:00	**49**	44.7	37.3	8.4	0	0	9	27	7	3	2	0	1	0	0	0
01:00	**39**	46.5	38.9	7.8	0	0	5	18	9	6	0	1	0	0	0	0
02:00	**42**	41.2	35.5	6.2	0	0	8	27	6	1	0	0	0	0	0	0
03:00	**64**	42.2	36.3	6.2	0	0	9	43	8	4	0	0	0	0	0	0
04:00	**131**	45.7	39.7	6.8	0	0	9	62	42	13	4	1	0	0	0	0
05:00	**285**	47	39.8	7.2	0	2	22	124	85	44	7	1	0	0	0	0
06:00	**784**	47.8	41.1	6.6	0	0	25	331	267	120	33	7	0	1	0	0
07:00	**1695**	46.8	40.6	6.3	0	1	47	782	570	237	50	7	1	0	0	0
08:00	**1658**	46	39.9	6.4	0	0	61	866	483	186	54	6	2	0	0	0
09:00	**1037**	46.8	39.9	6.8	0	3	58	500	297	139	35	5	0	0	0	0
10:00	**863**	45.8	39.2	7	0	2	58	463	220	88	21	9	1	1	0	0
11:00	**747**	45.3	38.9	6.6	0	0	48	423	191	67	10	4	3	1	0	0
12:00	**721**	45.8	39.3	6.6	0	0	42	393	184	78	18	6	0	0	0	0
13:00	**821**	45.9	39.6	6.7	0	1	40	441	220	90	21	4	3	1	0	0
14:00	**845**	46.5	39.9	6.8	0	0	45	426	237	101	25	9	1	1	0	0
15:00	**1024**	45.9	39.7	6.6	0	0	49	531	296	116	21	7	4	0	0	0
16:00	**1213**	46.5	40.2	6.4	0	0	42	603	372	150	39	6	1	0	0	0
17:00	**1272**	47.5	40.9	6.4	0	0	29	584	413	186	49	8	3	0	0	0
18:00	**971**	48.6	41.6	6.6	0	0	16	412	313	162	59	6	3	0	0	0
19:00	**511**	48.1	41.2	6.9	0	1	10	236	156	75	24	6	2	0	1	0
20:00	**314**	48.2	41.3	7.3	0	0	9	142	98	39	19	4	1	1	0	1
21:00	**248**	45.7	40.2	6.3	0	0	2	140	73	20	10	2	0	1	0	0
22:00	**181**	46.8	40.2	7	0	0	7	95	48	20	7	3	1	0	0	0
23:00	**108**	45.9	40	7.4	0	0	9	47	36	8	7	0	1	0	0	0
12H,7-19	**12867**	**46.5**	**40.1**	**6.6**	**0**	**7**	**535**	**6424**	**3796**	**1600**	**402**	**77**	**22**	**4**	**0**	**0**
16H,6-22	**14724**	**46.7**	**40.2**	**6.6**	**0**	**8**	**581**	**7273**	**4390**	**1854**	**488**	**96**	**25**	**7**	**1**	**1**
18H,6-24	**15013**	**46.7**	**40.2**	**6.6**	**0**	**8**	**597**	**7415**	**4474**	**1882**	**502**	**99**	**27**	**7**	**1**	**1**
24H,0-24	**15623**	**46.7**	**40.1**	**6.7**	**0**	**10**	**659**	**7716**	**4631**	**1953**	**515**	**102**	**28**	**7**	**1**	**1**

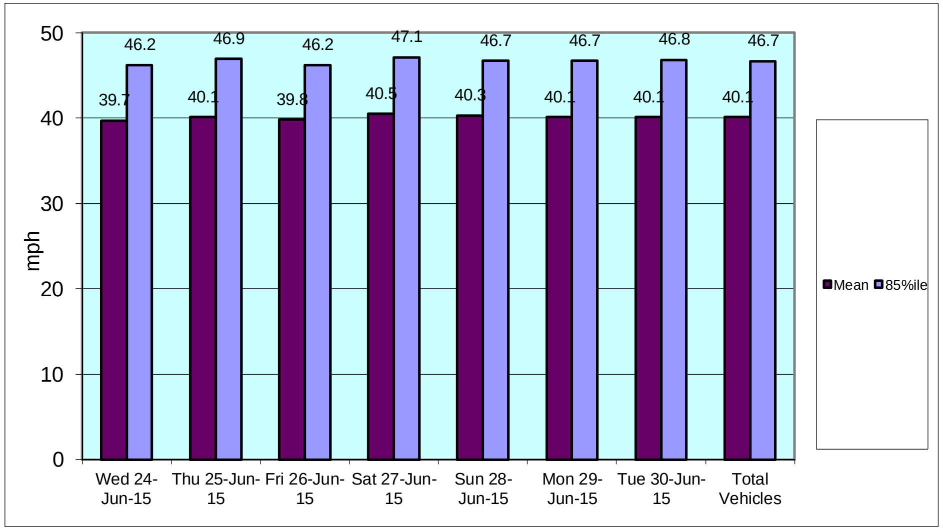
19028		RUDHEATH			Site No: 19028005			Location	Site 5, A556, Rudheath (Armco)							
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Eastbound											
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<21**	**21-<31**	**31-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**61-<66**	**66-<71**	**71-<76**	**=>76**
Tue 30-Jun-15																
00:00	**45**	43.3	37.4	6.5	0	0	4	31	6	2	2	0	0	0	0	0
01:00	**27**	44.1	35.9	9.7	0	0	9	11	4	1	0	2	0	0	0	0
02:00	**40**	41.6	34.7	7.4	0	0	12	21	4	3	0	0	0	0	0	0
03:00	**67**	43.8	36.8	6.9	0	1	9	38	15	4	0	0	0	0	0	0
04:00	**96**	45.5	39.3	7.5	0	0	10	44	30	6	5	0	1	0	0	0
05:00	**290**	47.7	40.4	7.1	0	0	21	122	87	46	14	0	0	0	0	0
06:00	**808**	48.4	41.7	6.5	0	0	18	316	283	143	41	6	1	0	0	0
07:00	**1697**	47.1	40.2	7	0	12	101	720	555	253	47	8	1	0	0	0
08:00	**1682**	45.5	38.6	7.4	10	18	132	844	471	165	36	6	0	0	0	0
09:00	**1119**	47.1	40.3	6.8	0	1	56	517	341	161	32	7	2	2	0	0
10:00	**792**	45.7	39.3	6.7	0	1	53	413	218	80	21	6	0	0	0	0
11:00	**750**	46.7	39.7	7.2	0	0	50	384	190	87	29	6	3	1	0	0
12:00	**833**	45.5	38.8	6.8	0	0	72	440	216	80	21	4	0	0	0	0
13:00	**829**	45.9	39.8	6.6	0	0	48	397	265	88	25	6	0	0	0	0
14:00	**871**	46	39.5	6.8	0	0	59	441	239	105	20	7	0	0	0	0
15:00	**1001**	45.8	39.7	6.7	0	0	60	494	306	107	25	7	1	1	0	0
16:00	**1276**	46.7	40.7	6.3	0	2	32	581	444	168	42	6	0	0	1	0
17:00	**1287**	48	41.2	6.6	0	0	34	558	417	211	54	9	4	0	0	0
18:00	**921**	47.5	41.1	6.5	0	0	21	409	313	128	37	10	3	0	0	0
19:00	**562**	48.4	41.2	7.3	0	0	18	257	169	68	31	15	3	1	0	0
20:00	**354**	48	41.1	7.1	0	0	11	158	111	52	16	3	1	1	1	0
21:00	**311**	47.3	40.8	7.2	0	0	8	157	91	30	14	8	2	1	0	0
22:00	**202**	48.2	41.2	7.2	0	0	4	97	59	26	10	2	4	0	0	0
23:00	**132**	47.1	40.1	8.1	0	0	11	63	35	12	7	0	4	0	0	0
12H,7-19	**13058**	**46.5**	**39.9**	**6.9**	**10**	**34**	**718**	**6198**	**3975**	**1633**	**389**	**82**	**14**	**4**	**1**	**0**
16H,6-22	**15093**	**46.8**	**40.1**	**6.9**	**10**	**34**	**773**	**7086**	**4629**	**1926**	**491**	**114**	**21**	**7**	**2**	**0**
18H,6-24	**15427**	**46.8**	**40.1**	**6.9**	**10**	**34**	**788**	**7246**	**4723**	**1964**	**508**	**116**	**29**	**7**	**2**	**0**
24H,0-24	**15992**	**46.8**	**40.1**	**6.9**	**10**	**35**	**853**	**7513**	**4869**	**2026**	**529**	**118**	**30**	**7**	**2**	**0**

19028 **RUDHEATH** **Site No: 19028005** **Location Site 5, A556, Rudheath (Armco)**

Wed 24-Jun-15 to Tue 30-Jun-15 **Channel: Eastbound**

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Daily Totals																
Wed 24-Jun-15	**16127**	46.2	39.7	6.9	21	43	868	7980	4730	1902	470	89	19	3	2	0
Thu 25-Jun-15	**16046**	46.9	40.1	6.8	4	28	800	7606	4828	2117	518	117	19	4	3	2
Fri 26-Jun-15	**17572**	46.2	39.8	6.7	2	33	918	8821	5088	2066	527	96	17	2	2	0
Sat 27-Jun-15	**11287**	47.1	40.5	6.9	0	7	381	5554	3336	1413	391	129	58	13	4	1
Sun 28-Jun-15	**9752**	46.7	40.3	6.7	0	5	336	4857	2931	1187	312	90	23	6	4	1
Mon 29-Jun-15	**15623**	46.7	40.1	6.7	0	10	659	7716	4631	1953	515	102	28	7	1	1
Tue 30-Jun-15	**15992**	46.8	40.1	6.9	10	35	853	7513	4869	2026	529	118	30	7	2	0
Total Vehicles																
[--]	**102399**	46.7	40.1	6.8	37	161	4815	50047	30413	12664	3262	741	194	42	18	5

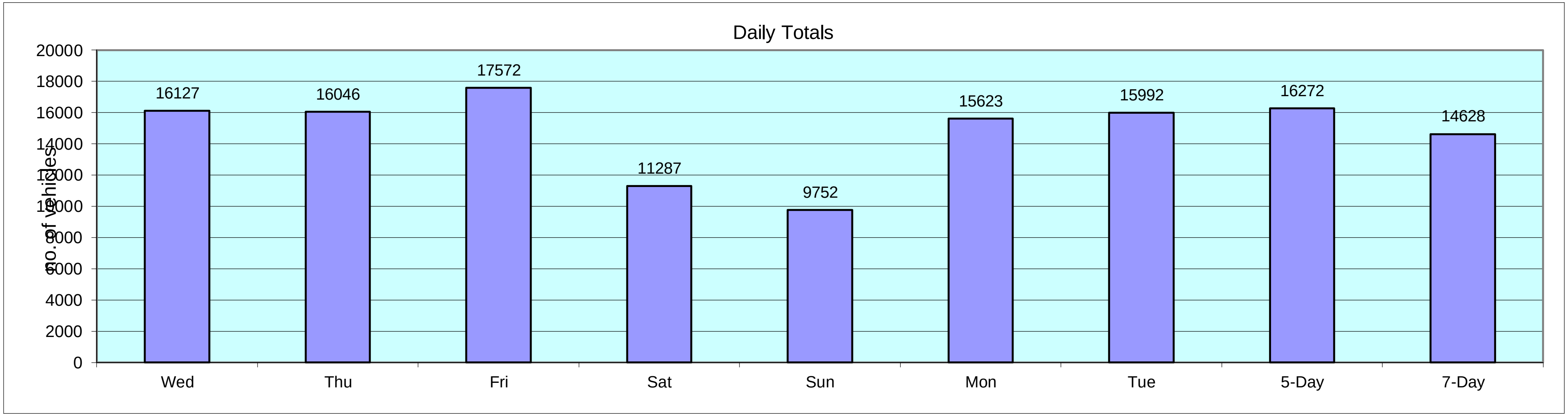




19028	RUDHEATH			Site No: 19028005 Channel: Eastbound		Location	Site 5, A556, Rudheath (Armco)		
TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av
Week Begin: 24-Jun-15									
00:00	**57**	66	72	110	138	49	45	58	77
01:00	**24**	32	36	68	49	39	27	32	39
02:00	**43**	51	41	46	52	42	40	43	45
03:00	**71**	63	58	75	58	64	67	65	65
04:00	**107**	103	126	79	65	131	96	113	101
05:00	**266**	260	291	163	107	285	290	278	237
06:00	**877**	800	713	219	152	784	808	796	622
07:00	**1613**	1638	1478	368	218	1695	1697	1624	1244
08:00	**1713**	1676	1559	567	321	1658	1682	1658	1311
09:00	**1472**	1060	1056	706	509	1037	1119	1149	994
10:00	**1076**	824	835	872	709	863	792	878	853
11:00	**887**	818	876	919	759	747	750	816	822
12:00	**882**	844	985	915	810	721	833	853	856
13:00	**774**	830	995	901	820	821	829	850	853
14:00	**783**	870	1089	818	773	845	871	892	864
15:00	**932**	967	1213	800	787	1024	1001	1027	961
16:00	**1122**	1303	1457	797	831	1213	1276	1274	1143
17:00	**1033**	1226	1424	803	758	1272	1287	1248	1115
18:00	**872**	1011	1271	641	604	971	921	1009	899
19:00	**571**	627	908	496	474	511	562	636	593
20:00	**359**	369	442	298	332	314	354	368	353
21:00	**281**	265	297	233	219	248	311	280	265
22:00	**201**	214	184	205	120	181	202	196	187
23:00	**111**	129	166	188	87	108	132	129	132
12H,7-19	**13159**	**13067**	**14238**	**9107**	**7899**	**12867**	**13058**	**13278**	**11914**
16H,6-22	**15247**	**15128**	**16598**	**10353**	**9076**	**14724**	**15093**	**15358**	**13746**
18H,6-24	**15559**	**15471**	**16948**	**10746**	**9283**	**15013**	**15427**	**15684**	**14064**
24H,0-24	**16127**	**16046**	**17572**	**11287**	**9752**	**15623**	**15992**	**16272**	**14628**
Am	**08:00**	**08:00**	**08:00**	**11:00**	**11:00**	**07:00**	**07:00**	**-**	**-**
Peak	**1713**	**1676**	**1559**	**919**	**759**	**1695**	**1697**	**1668**	**1431**
Pm	**16:00**	**16:00**	**16:00**	**12:00**	**16:00**	**17:00**	**17:00**	**-**	**-**
Peak	**1122**	**1303**	**1457**	**915**	**831**	**1272**	**1287**	**1288**	**1170**

19028	RUDHEATH	Site No: 19028005	Location	Site 5, A556, Rudheath (Armco)
		Channel: Eastbound		

TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av



Westbound A556
(east of Rbt)
dlewich
mes
pel
Saltworks
Crematorium

19028		RUDHEATH JUNE 2015								
Site	Location	Direction	Start Date	End Date	Posted Speed Limit (PSL)	Total Vehicles	5 Day Ave.	7 Day Ave.	Average 85%ile Speed	Average Mean Speed
Site No: 19028006	Site 6, A556, Rudheath (Road Direction Sign) SJ 68717 72753	Channel: Westbound	Wed 24-Jun-15	Tue 30-Jun-15	60	103902	16197	14843	57.3	45.6

AXIOM Traffic Limited

Data produced by
Axiom Traffic Ltd

19028 **RUDHEATH** **Site No: 19028006** **Location** **Site 6, A556, Rudheath (Road Direction Sign)**

Wed 24-Jun-15 to Tue 30-Jun-15 **Channel: Westbound**

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Wed 24-Jun-15											
00:00	**45**	1	2.2	34	75.6	3	6.7	7	15.6	0	0.0
01:00	**50**	0	0.0	36	72.0	4	8.0	10	20.0	0	0.0
02:00	**40**	0	0.0	28	70.0	3	7.5	9	22.5	0	0.0
03:00	**23**	1	4.4	8	34.8	1	4.4	12	52.2	1	4.4
04:00	**60**	0	0.0	38	63.3	10	16.7	11	18.3	1	1.7
05:00	**180**	1	0.6	126	70.0	19	10.6	32	17.8	2	1.1
06:00	**454**	4	0.9	343	75.6	63	13.9	41	9.0	3	0.7
07:00	**1066**	9	0.8	865	81.1	131	12.3	55	5.2	6	0.6
08:00	**1268**	6	0.5	1034	81.6	160	12.6	58	4.6	10	0.8
09:00	**866**	9	1.0	661	76.3	117	13.5	71	8.2	8	0.9
10:00	**795**	7	0.9	601	75.6	112	14.1	66	8.3	9	1.1
11:00	**763**	7	0.9	548	71.8	126	16.5	74	9.7	8	1.1
12:00	**749**	4	0.5	555	74.1	117	15.6	62	8.3	11	1.5
13:00	**721**	10	1.4	549	76.1	87	12.1	68	9.4	7	1.0
14:00	**883**	9	1.0	679	76.9	120	13.6	66	7.5	9	1.0
15:00	**1129**	9	0.8	904	80.1	137	12.1	68	6.0	11	1.0
16:00	**1422**	10	0.7	1189	83.6	150	10.6	70	4.9	3	0.2
17:00	**1705**	9	0.5	1458	85.5	102	6.0	127	7.5	9	0.5
18:00	**1374**	15	1.1	1164	84.7	128	9.3	63	4.6	4	0.3
19:00	**749**	7	0.9	639	85.3	61	8.1	37	4.9	5	0.7
20:00	**434**	6	1.4	365	84.1	41	9.5	19	4.4	3	0.7
21:00	**310**	7	2.3	275	88.7	21	6.8	7	2.3	0	0.0
22:00	**302**	1	0.3	263	87.1	23	7.6	13	4.3	2	0.7
23:00	**198**	1	0.5	169	85.4	20	10.1	8	4.0	0	0.0
12H,7-19	**12741**	**104**	**0.8**	**10207**	**80.1**	**1487**	**11.7**	**848**	**6.7**	**95**	**0.8**
16H,6-22	**14688**	**128**	**0.9**	**11829**	**80.5**	**1673**	**11.4**	**952**	**6.5**	**106**	**0.7**
18H,6-24	**15188**	**130**	**0.9**	**12261**	**80.7**	**1716**	**11.3**	**973**	**6.4**	**108**	**0.7**
24H,0-24	**15586**	**133**	**0.9**	**12531**	**80.4**	**1756**	**11.3**	**1054**	**6.8**	**112**	**0.7**

19028		RUDHEATH			Site No: 19028006		Location		Site 6, A556, Rudheath (Road Direction Sign)		
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Westbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Thu 25-Jun-15											
00:00	**88**	1	1.1	71	80.7	8	9.1	8	9.1	0	0.0
01:00	**44**	1	2.3	36	81.8	3	6.8	4	9.1	0	0.0
02:00	**48**	1	2.1	35	72.9	2	4.2	9	18.8	1	2.1
03:00	**43**	2	4.7	25	58.1	3	7.0	13	30.2	0	0.0
04:00	**55**	0	0.0	38	69.1	6	10.9	10	18.2	1	1.8
05:00	**192**	2	1.0	156	81.3	18	9.4	16	8.3	0	0.0
06:00	**458**	1	0.2	364	79.5	52	11.4	37	8.1	4	0.9
07:00	**1153**	7	0.6	955	82.8	134	11.6	55	4.8	2	0.2
08:00	**1367**	2	0.2	1144	83.7	146	10.7	69	5.1	6	0.4
09:00	**927**	6	0.7	713	76.9	124	13.4	72	7.8	12	1.3
10:00	**733**	11	1.5	527	71.9	126	17.2	61	8.3	8	1.1
11:00	**730**	6	0.8	537	73.6	115	15.8	65	8.9	7	1.0
12:00	**769**	4	0.5	612	79.6	95	12.4	49	6.4	9	1.2
13:00	**770**	7	0.9	601	78.1	94	12.2	59	7.7	9	1.2
14:00	**964**	4	0.4	736	76.4	140	14.5	78	8.1	6	0.6
15:00	**1111**	7	0.6	889	80.0	147	13.2	62	5.6	6	0.5
16:00	**1456**	9	0.6	1192	81.9	171	11.7	78	5.4	6	0.4
17:00	**1739**	10	0.6	1515	87.1	128	7.4	81	4.7	5	0.3
18:00	**1378**	18	1.3	1187	86.1	120	8.7	50	3.6	3	0.2
19:00	**700**	15	2.1	590	84.3	73	10.4	21	3.0	1	0.1
20:00	**473**	1	0.2	417	88.2	37	7.8	17	3.6	1	0.2
21:00	**350**	2	0.6	311	88.9	27	7.7	10	2.9	0	0.0
22:00	**307**	3	1.0	270	88.0	22	7.2	12	3.9	0	0.0
23:00	**178**	2	1.1	155	87.1	13	7.3	8	4.5	0	0.0
12H,7-19	**13097**	**91**	**0.7**	**10608**	**81.0**	**1540**	**11.8**	**779**	**6.0**	**79**	**0.6**
16H,6-22	**15078**	**110**	**0.7**	**12290**	**81.5**	**1729**	**11.5**	**864**	**5.7**	**85**	**0.6**
18H,6-24	**15563**	**115**	**0.7**	**12715**	**81.7**	**1764**	**11.3**	**884**	**5.7**	**85**	**0.6**
24H,0-24	**16033**	**122**	**0.8**	**13076**	**81.6**	**1804**	**11.3**	**944**	**5.9**	**87**	**0.5**

19028			RUDHEATH		Site No: 19028006		Location	Site 6, A556, Rudheath (Road Direction Sign)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Westbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Fri 26-Jun-15											
00:00	**78**	1	1.3	64	82.1	4	5.1	9	11.5	0	0.0
01:00	**47**	0	0.0	38	80.9	3	6.4	6	12.8	0	0.0
02:00	**30**	1	3.3	18	60.0	2	6.7	9	30.0	0	0.0
03:00	**37**	0	0.0	25	67.6	0	0.0	11	29.7	1	2.7
04:00	**64**	0	0.0	47	73.4	5	7.8	12	18.8	0	0.0
05:00	**194**	2	1.0	147	75.8	22	11.3	22	11.3	1	0.5
06:00	**410**	0	0.0	298	72.7	60	14.6	48	11.7	4	1.0
07:00	**1049**	5	0.5	859	81.9	110	10.5	72	6.9	3	0.3
08:00	**1292**	3	0.2	1062	82.2	139	10.8	78	6.0	10	0.8
09:00	**890**	7	0.8	662	74.4	132	14.8	73	8.2	16	1.8
10:00	**786**	3	0.4	550	70.0	138	17.6	86	10.9	9	1.2
11:00	**883**	7	0.8	684	77.5	112	12.7	74	8.4	6	0.7
12:00	**1057**	6	0.6	776	73.4	159	15.0	102	9.7	14	1.3
13:00	**1208**	11	0.9	939	77.7	152	12.6	91	7.5	15	1.2
14:00	**1255**	6	0.5	1046	83.4	111	8.8	80	6.4	12	1.0
15:00	**1352**	8	0.6	1136	84.0	135	10.0	66	4.9	7	0.5
16:00	**1609**	8	0.5	1362	84.7	140	8.7	94	5.8	5	0.3
17:00	**1745**	9	0.5	1545	88.5	99	5.7	85	4.9	7	0.4
18:00	**1404**	6	0.4	1202	85.6	126	9.0	66	4.7	4	0.3
19:00	**787**	6	0.8	688	87.4	61	7.8	32	4.1	0	0.0
20:00	**462**	8	1.7	395	85.5	33	7.1	24	5.2	2	0.4
21:00	**339**	0	0.0	303	89.4	19	5.6	17	5.0	0	0.0
22:00	**359**	2	0.6	318	88.6	22	6.1	15	4.2	2	0.6
23:00	**239**	2	0.8	212	88.7	14	5.9	11	4.6	0	0.0
12H,7-19	**14530**	**79**	**0.5**	**11823**	**81.4**	**1553**	**10.7**	**967**	**6.7**	**108**	**0.7**
16H,6-22	**16528**	**93**	**0.6**	**13507**	**81.7**	**1726**	**10.4**	**1088**	**6.6**	**114**	**0.7**
18H,6-24	**17126**	**97**	**0.6**	**14037**	**82.0**	**1762**	**10.3**	**1114**	**6.5**	**116**	**0.7**
24H,0-24	**17576**	**101**	**0.6**	**14376**	**81.8**	**1798**	**10.2**	**1183**	**6.7**	**118**	**0.7**

19028		RUDHEATH			Site No: 19028006		Location		Site 6, A556, Rudheath (Road Direction Sign)		
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Westbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sat 27-Jun-15											
00:00	**126**	0	0.0	107	84.9	9	7.1	10	7.9	0	0.0
01:00	**76**	0	0.0	60	79.0	8	10.5	8	10.5	0	0.0
02:00	**59**	1	1.7	41	69.5	6	10.2	11	18.6	0	0.0
03:00	**50**	1	2.0	32	64.0	3	6.0	14	28.0	0	0.0
04:00	**69**	0	0.0	46	66.7	8	11.6	14	20.3	1	1.5
05:00	**132**	0	0.0	101	76.5	7	5.3	24	18.2	0	0.0
06:00	**182**	2	1.1	132	72.5	22	12.1	25	13.7	1	0.6
07:00	**289**	4	1.4	203	70.2	44	15.2	38	13.2	0	0.0
08:00	**493**	8	1.6	384	77.9	64	13.0	34	6.9	3	0.6
09:00	**610**	10	1.6	487	79.8	76	12.5	35	5.7	2	0.3
10:00	**777**	24	3.1	631	81.2	72	9.3	43	5.5	7	0.9
11:00	**941**	20	2.1	800	85.0	80	8.5	38	4.0	3	0.3
12:00	**848**	24	2.8	714	84.2	69	8.1	40	4.7	1	0.1
13:00	**805**	17	2.1	692	86.0	66	8.2	29	3.6	1	0.1
14:00	**749**	18	2.4	641	85.6	57	7.6	32	4.3	1	0.1
15:00	**716**	26	3.6	624	87.2	48	6.7	17	2.4	1	0.1
16:00	**822**	10	1.2	732	89.1	57	6.9	23	2.8	0	0.0
17:00	**768**	9	1.2	676	88.0	56	7.3	25	3.3	2	0.3
18:00	**612**	8	1.3	560	91.5	29	4.7	14	2.3	1	0.2
19:00	**474**	3	0.6	426	89.9	27	5.7	18	3.8	0	0.0
20:00	**356**	6	1.7	321	90.2	22	6.2	7	2.0	0	0.0
21:00	**301**	2	0.7	264	87.7	25	8.3	9	3.0	1	0.3
22:00	**259**	3	1.2	235	90.7	16	6.2	5	1.9	0	0.0
23:00	**246**	0	0.0	224	91.1	18	7.3	3	1.2	1	0.4
12H,7-19	**8430**	**178**	**2.1**	**7144**	**84.7**	**718**	**8.5**	**368**	**4.4**	**22**	**0.3**
16H,6-22	**9743**	**191**	**2.0**	**8287**	**85.1**	**814**	**8.4**	**427**	**4.4**	**24**	**0.3**
18H,6-24	**10248**	**194**	**1.9**	**8746**	**85.3**	**848**	**8.3**	**435**	**4.2**	**25**	**0.2**
24H,0-24	**10760**	**196**	**1.8**	**9133**	**84.9**	**889**	**8.3**	**516**	**4.8**	**26**	**0.2**

19028	RUDHEATH	Site No: 19028006	Location	Site 6, A556, Rudheath (Road Direction Sign)
Wed 24-Jun-15 to Tue 30-Jun-15		Channel: Westbound		

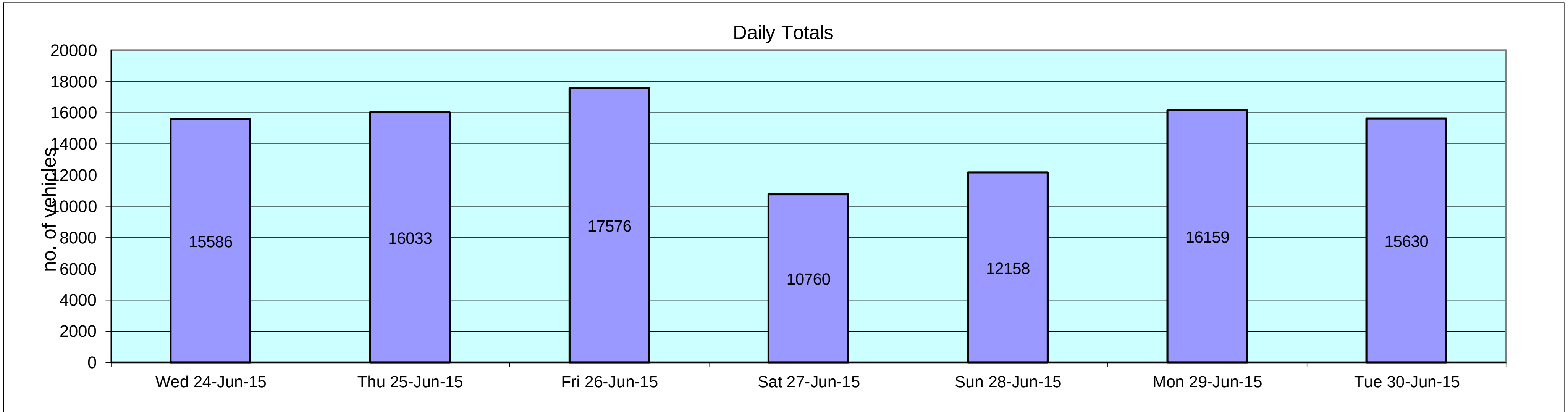
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sun 28-Jun-15											
00:00	**169**	1	0.6	156	92.3	11	6.5	1	0.6	0	0.0
01:00	**96**	0	0.0	85	88.5	8	8.3	3	3.1	0	0.0
02:00	**52**	0	0.0	41	78.9	3	5.8	8	15.4	0	0.0
03:00	**46**	1	2.2	30	65.2	7	15.2	8	17.4	0	0.0
04:00	**42**	0	0.0	28	66.7	8	19.1	6	14.3	0	0.0
05:00	**89**	1	1.1	69	77.5	6	6.7	13	14.6	0	0.0
06:00	**109**	0	0.0	86	78.9	9	8.3	14	12.8	0	0.0
07:00	**177**	1	0.6	137	77.4	20	11.3	19	10.7	0	0.0
08:00	**252**	0	0.0	205	81.4	31	12.3	13	5.2	3	1.2
09:00	**338**	5	1.5	294	87.0	22	6.5	16	4.7	1	0.3
10:00	**586**	8	1.4	516	88.1	32	5.5	29	5.0	1	0.2
11:00	**703**	17	2.4	606	86.2	59	8.4	18	2.6	3	0.4
12:00	**799**	12	1.5	726	90.9	42	5.3	18	2.3	1	0.1
13:00	**985**	6	0.6	801	81.3	158	16.0	19	1.9	1	0.1
14:00	**1091**	10	0.9	854	78.3	205	18.8	22	2.0	0	0.0
15:00	**1145**	9	0.8	950	83.0	158	13.8	28	2.5	0	0.0
16:00	**1223**	11	0.9	1009	82.5	180	14.7	23	1.9	0	0.0
17:00	**1213**	5	0.4	1027	84.7	162	13.4	19	1.6	0	0.0
18:00	**1094**	10	0.9	905	82.7	160	14.6	17	1.6	2	0.2
19:00	**687**	2	0.3	573	83.4	94	13.7	17	2.5	1	0.2
20:00	**434**	2	0.5	361	83.2	60	13.8	10	2.3	1	0.2
21:00	**337**	1	0.3	269	79.8	60	17.8	7	2.1	0	0.0
22:00	**296**	1	0.3	276	93.2	18	6.1	1	0.3	0	0.0
23:00	**195**	2	1.0	169	86.7	18	9.2	5	2.6	1	0.5
12H,7-19	**9606**	**94**	**1.0**	**8030**	**83.6**	**1229**	**12.8**	**241**	**2.5**	**12**	**0.1**
16H,6-22	**11173**	**99**	**0.9**	**9319**	**83.4**	**1452**	**13.0**	**289**	**2.6**	**14**	**0.1**
18H,6-24	**11664**	**102**	**0.9**	**9764**	**83.7**	**1488**	**12.8**	**295**	**2.5**	**15**	**0.1**
24H,0-24	**12158**	**105**	**0.9**	**10173**	**83.7**	**1531**	**12.6**	**334**	**2.8**	**15**	**0.1**

19028		RUDHEATH			Site No: 19028006		Location	Site 6, A556, Rudheath (Road Direction Sign)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Westbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Mon 29-Jun-15											
00:00	**85**	1	1.2	66	77.7	10	11.8	8	9.4	0	0.0
01:00	**35**	1	2.9	28	80.0	2	5.7	4	11.4	0	0.0
02:00	**54**	1	1.9	41	75.9	1	1.9	10	18.5	1	1.9
03:00	**43**	1	2.3	26	60.5	4	9.3	12	27.9	0	0.0
04:00	**60**	0	0.0	45	75.0	5	8.3	9	15.0	1	1.7
05:00	**193**	2	1.0	157	81.4	14	7.3	20	10.4	0	0.0
06:00	**466**	1	0.2	373	80.0	56	12.0	33	7.1	3	0.6
07:00	**1164**	11	1.0	966	83.0	137	11.8	49	4.2	1	0.1
08:00	**1381**	3	0.2	1162	84.1	142	10.3	68	4.9	6	0.4
09:00	**962**	6	0.6	746	77.6	130	13.5	67	7.0	13	1.4
10:00	**754**	9	1.2	548	72.7	117	15.5	69	9.2	11	1.5
11:00	**717**	8	1.1	526	73.4	107	14.9	67	9.3	9	1.3
12:00	**777**	3	0.4	631	81.2	89	11.5	49	6.3	5	0.6
13:00	**740**	4	0.5	573	77.4	91	12.3	60	8.1	12	1.6
14:00	**976**	5	0.5	741	75.9	143	14.7	81	8.3	6	0.6
15:00	**1166**	6	0.5	918	78.7	159	13.6	78	6.7	5	0.4
16:00	**1481**	10	0.7	1236	83.5	158	10.7	68	4.6	9	0.6
17:00	**1775**	15	0.9	1549	87.3	131	7.4	76	4.3	4	0.2
18:00	**1330**	16	1.2	1131	85.0	124	9.3	57	4.3	2	0.2
19:00	**705**	16	2.3	583	82.7	82	11.6	23	3.3	1	0.1
20:00	**481**	1	0.2	423	87.9	40	8.3	16	3.3	1	0.2
21:00	**340**	1	0.3	297	87.4	31	9.1	11	3.2	0	0.0
22:00	**298**	4	1.3	260	87.3	22	7.4	12	4.0	0	0.0
23:00	**176**	1	0.6	154	87.5	13	7.4	8	4.6	0	0.0
12H,7-19	**13223**	**96**	**0.7**	**10727**	**81.1**	**1528**	**11.6**	**789**	**6.0**	**83**	**0.6**
16H,6-22	**15215**	**115**	**0.8**	**12403**	**81.5**	**1737**	**11.4**	**872**	**5.7**	**88**	**0.6**
18H,6-24	**15689**	**120**	**0.8**	**12817**	**81.7**	**1772**	**11.3**	**892**	**5.7**	**88**	**0.6**
24H,0-24	**16159**	**126**	**0.8**	**13180**	**81.6**	**1808**	**11.2**	**955**	**5.9**	**90**	**0.6**

19028		RUDHEATH			Site No: 19028006		Location	Site 6, A556, Rudheath (Road Direction Sign)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Westbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Tue 30-Jun-15											
00:00	**40**	1	2.5	29	72.5	4	10.0	6	15.0	0	0.0
01:00	**55**	0	0.0	41	74.6	5	9.1	9	16.4	0	0.0
02:00	**42**	0	0.0	30	71.4	2	4.8	10	23.8	0	0.0
03:00	**27**	1	3.7	9	33.3	1	3.7	15	55.6	1	3.7
04:00	**60**	0	0.0	41	68.3	7	11.7	11	18.3	1	1.7
05:00	**191**	1	0.5	132	69.1	18	9.4	38	19.9	2	1.1
06:00	**462**	5	1.1	336	72.7	71	15.4	46	10.0	4	0.9
07:00	**1084**	13	1.2	871	80.4	141	13.0	53	4.9	6	0.6
08:00	**1304**	4	0.3	1051	80.6	172	13.2	66	5.1	11	0.8
09:00	**833**	8	1.0	630	75.6	116	13.9	72	8.6	7	0.8
10:00	**802**	11	1.4	614	76.6	114	14.2	54	6.7	9	1.1
11:00	**766**	8	1.0	554	72.3	135	17.6	63	8.2	6	0.8
12:00	**756**	2	0.3	569	75.3	109	14.4	64	8.5	12	1.6
13:00	**698**	5	0.7	545	78.1	86	12.3	59	8.5	3	0.4
14:00	**845**	6	0.7	650	76.9	113	13.4	63	7.5	13	1.5
15:00	**1116**	6	0.5	888	79.6	146	13.1	66	5.9	10	0.9
16:00	**1444**	8	0.6	1211	83.9	152	10.5	70	4.9	3	0.2
17:00	**1683**	11	0.7	1458	86.6	96	5.7	112	6.7	6	0.4
18:00	**1390**	18	1.3	1171	84.2	135	9.7	63	4.5	3	0.2
19:00	**751**	8	1.1	644	85.8	59	7.9	36	4.8	4	0.5
20:00	**452**	5	1.1	377	83.4	50	11.1	18	4.0	2	0.4
21:00	**318**	4	1.3	284	89.3	22	6.9	8	2.5	0	0.0
22:00	**308**	1	0.3	268	87.0	28	9.1	10	3.3	1	0.3
23:00	**203**	1	0.5	171	84.2	22	10.8	9	4.4	0	0.0
12H,7-19	**12721**	**100**	**0.8**	**10212**	**80.3**	**1515**	**11.9**	**805**	**6.3**	**89**	**0.7**
16H,6-22	**14704**	**122**	**0.8**	**11853**	**80.6**	**1717**	**11.7**	**913**	**6.2**	**99**	**0.7**
18H,6-24	**15215**	**124**	**0.8**	**12292**	**80.8**	**1767**	**11.6**	**932**	**6.1**	**100**	**0.7**
24H,0-24	**15630**	**127**	**0.8**	**12574**	**80.5**	**1804**	**11.5**	**1021**	**6.5**	**104**	**0.7**

19028	RUDHEATH	Site No: 19028006	Location	Site 6, A556, Rudheath (Road Direction Sign)
Wed 24-Jun-15 to Tue 30-Jun-15		Channel: Westbound		

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Daily Totals											
Wed 24-Jun-15	**15586**	133	0.9	12531	80.4	1756	11.3	1054	6.8	112	0.7
Thu 25-Jun-15	**16033**	122	0.8	13076	81.6	1804	11.3	944	5.9	87	0.5
Fri 26-Jun-15	**17576**	101	0.6	14376	81.8	1798	10.2	1183	6.7	118	0.7
Sat 27-Jun-15	**10760**	196	1.8	9133	84.9	889	8.3	516	4.8	26	0.2
Sun 28-Jun-15	**12158**	105	0.9	10173	83.7	1531	12.6	334	2.8	15	0.1
Mon 29-Jun-15	**16159**	126	0.8	13180	81.6	1808	11.2	955	5.9	90	0.6
Tue 30-Jun-15	**15630**	127	0.8	12574	80.5	1804	11.5	1021	6.5	104	0.7
Total Vehicles											
[--]	**103902**	910	0.9	85043	82.0	11390	10.9	6007	5.6	552	0.5



19028			RUDHEATH				Site No: 19028006			Location	Site 6, A556, Rudheath (Road Direction Sign)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Westbound									
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<21**	**21-<31**	**31-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**61-<66**	**66-<71**	**71-<76**	**=>76**
Wed 24-Jun-15																
00:00	**45**	60.7	50.7	11.5	0	0	1	9	2	11	9	6	4	1	0	2
01:00	**50**	57.7	49.8	9	0	0	1	8	4	11	16	6	3	1	0	0
02:00	**40**	60.5	50	11	0	0	3	3	6	9	7	6	5	0	1	0
03:00	**23**	54.8	46.5	8.1	0	0	0	6	4	6	4	3	0	0	0	0
04:00	**60**	60.5	51.8	9.1	0	0	0	7	7	15	11	11	5	4	0	0
05:00	**180**	63.7	51.5	10.8	0	0	2	29	24	32	33	20	23	14	2	1
06:00	**454**	62.7	51.4	11.2	0	2	13	70	47	66	90	80	50	28	6	2
07:00	**1066**	57.9	47.7	10.1	0	1	44	224	155	213	225	114	64	22	3	1
08:00	**1268**	53.8	43.5	9.3	0	1	70	468	205	240	164	87	29	4	0	0
09:00	**866**	54.7	43.4	10.4	0	1	77	309	131	131	117	61	29	5	4	1
10:00	**795**	53.9	43.8	9.7	0	0	49	271	149	148	100	48	20	5	4	1
11:00	**763**	53.5	43	9.5	0	1	62	265	146	127	93	55	12	1	1	0
12:00	**749**	56.2	45.9	10.2	0	1	36	212	122	135	127	67	35	11	3	0
13:00	**721**	56.9	45.9	10.4	0	1	48	180	108	161	99	89	23	5	6	1
14:00	**883**	55.3	45.3	10.2	0	7	65	202	144	212	138	79	28	5	3	0
15:00	**1129**	54.9	45	9.2	0	0	49	329	223	235	158	101	30	4	0	0
16:00	**1422**	52	41.5	9.8	0	15	163	501	282	217	156	62	23	3	0	0
17:00	**1705**	38.5	24.1	12.6	239	634	348	303	82	42	30	23	3	1	0	0
18:00	**1374**	52.6	41	11.1	15	37	156	458	249	200	160	68	20	10	0	1
19:00	**749**	59.4	49.2	10	0	0	18	142	105	141	158	107	52	19	6	1
20:00	**434**	60.5	49.7	11.1	0	1	19	75	52	70	87	72	34	17	5	2
21:00	**310**	61.7	51.1	11	0	1	11	47	27	50	66	56	35	10	6	1
22:00	**302**	59.9	50.2	9.7	0	0	4	41	49	73	54	45	22	5	9	0
23:00	**198**	59.8	49.2	10.1	0	0	5	34	34	38	37	26	14	10	0	0
12H,7-19	**12741**	**54**	**41.3**	**12.5**	**254**	**699**	**1167**	**3722**	**1996**	**2061**	**1567**	**854**	**316**	**76**	**24**	**5**
16H,6-22	**14688**	**55.1**	**42.4**	**12.7**	**254**	**703**	**1228**	**4056**	**2227**	**2388**	**1968**	**1169**	**487**	**150**	**47**	**11**
18H,6-24	**15188**	**55.3**	**42.7**	**12.6**	**254**	**703**	**1237**	**4131**	**2310**	**2499**	**2059**	**1240**	**523**	**165**	**56**	**11**
24H,0-24	**15586**	**55.5**	**42.9**	**12.7**	**254**	**703**	**1244**	**4193**	**2357**	**2583**	**2139**	**1292**	**563**	**185**	**59**	**14**

19028 **RUDHEATH** **Site No: 19028006** **Location Site 6, A556, Rudheath (Road Direction Sign)**

Wed 24-Jun-15 to Tue 30-Jun-15 **Channel: Westbound**

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Thu 25-Jun-15																
00:00	**88**	59.1	49.2	9.6	0	0	2	14	13	21	20	7	8	3	0	0
01:00	**44**	59	50.4	8.3	0	0	0	6	6	10	9	10	3	0	0	0
02:00	**48**	60.1	50.4	12.6	0	1	1	7	4	14	10	4	1	2	2	2
03:00	**43**	53.6	46.4	8.2	0	0	2	4	15	13	4	3	2	0	0	0
04:00	**55**	60	51.9	8.4	0	0	0	6	5	12	16	9	5	2	0	0
05:00	**192**	62.2	52.9	10.1	0	0	3	23	16	30	38	47	23	7	3	2
06:00	**458**	63.1	52.7	10.5	0	0	9	51	58	63	90	96	53	26	8	4
07:00	**1153**	59.1	48.9	9.9	0	0	30	216	162	240	235	158	73	30	8	1
08:00	**1367**	55.1	45.1	9.6	0	1	68	412	218	294	205	108	48	12	1	0
09:00	**927**	55.6	44.9	10.2	0	2	64	261	159	173	141	88	25	12	2	0
10:00	**733**	55	45.3	9.4	0	1	35	191	142	168	108	58	25	4	1	0
11:00	**730**	55.1	45.1	9.7	0	0	49	187	130	166	108	61	24	4	1	0
12:00	**769**	56.2	46.5	9.8	0	1	26	207	115	158	143	75	31	11	1	1
13:00	**770**	57	46.9	9.5	0	0	27	167	156	154	132	92	33	6	3	0
14:00	**964**	54.7	44.3	9.8	0	4	67	279	183	181	141	78	22	9	0	0
15:00	**1111**	56.9	46.7	10	0	1	59	246	173	238	204	125	48	14	1	2
16:00	**1456**	54	43.5	10.1	0	7	134	431	272	278	190	93	41	7	1	2
17:00	**1739**	50.7	40.6	10.3	8	48	208	581	330	325	156	65	14	4	0	0
18:00	**1378**	57	46.5	10	0	4	54	342	242	265	232	155	60	19	5	0
19:00	**700**	62.4	51	11.2	0	0	28	115	60	104	160	106	77	38	10	2
20:00	**473**	60.7	50.3	10.7	0	0	13	90	51	67	100	86	44	13	7	2
21:00	**350**	61	51	11	0	0	14	45	45	56	77	60	26	19	3	5
22:00	**307**	59.8	50.3	9.6	0	0	9	35	43	70	68	47	23	9	3	0
23:00	**178**	59.3	49.9	9.9	0	0	8	22	21	36	41	35	11	3	0	1
12H,7-19	**13097**	**55.5**	**45.1**	**10.1**	**8**	**69**	**821**	**3520**	**2282**	**2640**	**1995**	**1156**	**444**	**132**	**24**	**6**
16H,6-22	**15078**	**56.6**	**45.9**	**10.5**	**8**	**69**	**885**	**3821**	**2496**	**2930**	**2422**	**1504**	**644**	**228**	**52**	**19**
18H,6-24	**15563**	**56.8**	**46**	**10.5**	**8**	**69**	**902**	**3878**	**2560**	**3036**	**2531**	**1586**	**678**	**240**	**55**	**20**
24H,0-24	**16033**	**57**	**46.2**	**10.5**	**8**	**70**	**910**	**3938**	**2619**	**3136**	**2628**	**1666**	**720**	**254**	**60**	**24**

Data produced by
Axiom Traffic Ltd

19028		RUDHEATH						Site No: 19028006			Location	Site 6, A556, Rudheath (Road Direction Sign)				
Wed 24-Jun-15 to Tue 30-Jun-15								Channel: Westbound								
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Fri 26-Jun-15																
00:00	78	57.6	49.2	9	0	0	0	13	18	9	23	9	5	0	0	1
01:00	47	56.6	49.5	8.3	0	0	1	3	13	9	13	4	3	1	0	0
02:00	30	59.3	47.8	10.7	0	0	2	5	6	5	5	3	4	0	0	0
03:00	37	55	47.6	7.2	0	0	0	5	10	12	5	4	1	0	0	0
04:00	64	57.2	49.6	8.3	0	0	0	10	7	19	16	8	3	0	1	0
05:00	194	62.8	52.3	10.4	0	0	6	19	17	42	39	34	21	10	6	0
06:00	410	60.8	50.6	10.1	0	0	8	71	42	71	92	66	46	10	2	2
07:00	1049	58.6	48.6	9.8	0	1	33	191	163	200	225	152	60	17	5	2
08:00	1292	55.1	44.5	10	0	1	93	388	225	228	199	105	41	9	3	0
09:00	890	55.7	44.9	10.3	0	2	61	265	138	164	135	79	36	7	3	0
10:00	786	54.4	43	10.7	0	9	76	257	145	124	84	54	26	8	3	0
11:00	883	51.8	42.3	9.3	0	9	72	292	200	162	91	48	8	0	1	0
12:00	1057	50.6	39.8	11.1	14	40	127	367	218	144	83	43	17	1	3	0
13:00	1208	47.4	31.9	14.4	121	204	212	308	149	114	59	26	10	5	0	0
14:00	1255	46.9	30.1	15.2	191	257	168	266	162	121	49	29	11	1	0	0
15:00	1352	49	34.8	13.9	116	147	177	408	215	144	89	45	7	4	0	0
16:00	1609	45.9	36.8	9.2	8	45	337	662	320	166	51	18	2	0	0	0
17:00	1745	43.8	29.2	12.7	113	446	383	431	198	117	45	9	3	0	0	0
18:00	1404	55.5	45.7	9.6	0	2	55	394	249	281	236	118	51	16	2	0
19:00	787	60.5	49.7	10.9	0	2	22	170	74	123	148	143	71	24	7	3
20:00	462	60.5	49.6	10.9	0	4	11	95	41	77	93	80	45	12	3	1
21:00	339	60.5	51	9.8	0	0	4	55	32	65	71	68	28	11	5	0
22:00	359	58.9	49.5	9.6	0	0	14	40	61	83	76	53	19	10	2	1
23:00	239	58.3	48.8	9.9	0	0	7	43	35	52	53	27	13	6	2	1
12H,7-19	14530	51.9	38.5	13.3	563	1163	1794	4229	2382	1965	1346	726	272	68	20	2
16H,6-22	16528	53.8	39.9	13.5	563	1169	1839	4620	2571	2301	1750	1083	462	125	37	8
18H,6-24	17126	54.1	40.2	13.5	563	1169	1860	4703	2667	2436	1879	1163	494	141	41	10
24H,0-24	17576	54.3	40.5	13.5	563	1169	1869	4758	2738	2532	1980	1225	531	152	48	11

19028			RUDHEATH				Site No: 19028006			Location	Site 6, A556, Rudheath (Road Direction Sign)				
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Westbound								
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Sat 27-Jun-15																
00:00	**126**	61.2	50.1	10.3	0	0	2	20	21	24	28	11	13	3	4	0
01:00	**76**	59.9	49.8	11.4	0	0	4	12	10	13	15	13	3	4	1	1
02:00	**59**	57.9	48	10.2	0	1	2	7	13	15	9	7	3	2	0	0
03:00	**50**	55.5	48.2	9.1	0	0	1	7	12	13	10	3	2	1	1	0
04:00	**69**	58.6	50	10.6	0	0	4	7	6	19	19	6	4	2	1	1
05:00	**132**	61.7	51.5	10.4	0	0	3	16	18	26	23	24	12	8	1	1
06:00	**182**	62.7	51.3	11.8	0	0	9	24	21	29	36	30	15	11	3	4
07:00	**289**	59.8	49.6	10.2	0	0	9	48	37	62	57	42	22	8	3	1
08:00	**493**	59.2	47.9	10.9	0	2	22	116	54	95	83	72	29	17	3	0
09:00	**610**	57.8	46.5	10.8	0	0	34	166	89	106	99	66	30	14	5	1
10:00	**777**	57.1	46.7	10.1	0	1	38	193	101	163	143	93	37	4	3	1
11:00	**941**	55.7	46.1	9.6	0	0	47	221	175	213	151	96	24	8	5	1
12:00	**848**	55.6	45.8	9.7	0	0	41	221	150	179	142	74	30	9	0	2
13:00	**805**	55.9	46.4	9.7	0	1	40	181	134	184	146	75	35	5	3	1
14:00	**749**	57.9	47.6	10.4	0	3	36	166	88	133	172	98	37	14	2	0
15:00	**716**	59.1	48.8	10.3	0	1	21	139	99	146	138	105	42	13	7	5
16:00	**822**	58.9	48.2	10.3	0	2	36	156	116	172	148	117	52	20	3	0
17:00	**768**	59.7	49.4	10.2	0	2	25	132	82	169	165	104	61	25	1	2
18:00	**612**	60.9	50.8	10.5	0	0	22	86	66	104	137	107	61	21	6	2
19:00	**474**	60.7	50.6	10.4	0	0	15	74	42	101	89	87	44	17	3	2
20:00	**356**	61.3	51	10.5	0	0	8	62	27	60	81	62	37	13	5	1
21:00	**301**	61.1	50.1	11.2	0	0	17	45	35	48	59	51	26	17	3	0
22:00	**259**	57	46.6	10.9	0	0	20	58	35	51	49	32	6	3	4	1
23:00	**246**	58.5	48.9	9.6	0	0	10	32	44	55	50	35	13	6	1	0
12H,7-19	**8430**	**58.2**	**47.6**	**10.3**	**0**	**12**	**371**	**1825**	**1191**	**1726**	**1581**	**1049**	**460**	**158**	**41**	**16**
16H,6-22	**9743**	**58.7**	**48**	**10.4**	**0**	**12**	**420**	**2030**	**1316**	**1964**	**1846**	**1279**	**582**	**216**	**55**	**23**
18H,6-24	**10248**	**58.7**	**48**	**10.4**	**0**	**12**	**450**	**2120**	**1395**	**2070**	**1945**	**1346**	**601**	**225**	**60**	**24**
24H,0-24	**10760**	**58.7**	**48.1**	**10.4**	**0**	**13**	**466**	**2189**	**1475**	**2180**	**2049**	**1410**	**638**	**245**	**68**	**27**

19028 RUDHEATH Site No: 19028006 Location Site 6, A556, Rudheath (Road Direction Sign)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Westbound

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Sun 28-Jun-15																
00:00	**169**	57.9	47.8	10.2	0	0	4	44	17	36	35	19	10	1	2	1
01:00	**96**	58.1	48.1	10.5	0	0	5	19	9	24	19	12	4	3	1	0
02:00	**52**	58.6	47.8	10.4	0	0	3	9	10	9	9	7	4	1	0	0
03:00	**46**	58.2	47.2	9.6	0	0	1	9	15	6	5	6	3	1	0	0
04:00	**42**	60.4	51.1	9.4	0	0	1	4	7	7	10	7	5	1	0	0
05:00	**89**	59.7	48.9	10.1	0	0	3	16	12	20	16	11	9	2	0	0
06:00	**109**	58.5	49.4	9.4	0	0	2	20	7	33	22	16	5	4	0	0
07:00	**177**	58.8	49.3	10.4	0	0	11	26	16	29	52	28	11	2	2	0
08:00	**252**	58	48.5	9.7	0	0	7	53	26	53	62	32	14	4	1	0
09:00	**338**	57.7	47.6	10.1	0	1	17	60	54	76	64	43	16	6	0	1
10:00	**586**	56.5	46.9	9.6	0	1	21	139	82	129	119	66	23	5	1	0
11:00	**703**	55.9	46	10.2	0	2	45	170	103	143	138	66	22	12	2	0
12:00	**799**	56.2	46	9.9	0	1	34	219	130	164	127	81	32	8	1	2
13:00	**985**	60.3	50.1	10.3	0	1	27	166	115	172	196	186	86	25	9	2
14:00	**1091**	63.4	53.1	10.4	0	0	10	139	143	104	226	226	164	50	14	15
15:00	**1145**	63.9	53.7	10.5	0	0	10	148	112	128	199	272	176	61	26	13
16:00	**1223**	64.4	53.7	10.2	0	0	8	146	101	178	269	215	178	95	25	8
17:00	**1213**	64.7	55.9	9.3	0	0	2	99	71	126	224	333	237	87	25	9
18:00	**1094**	65	56.7	9.2	0	0	3	70	56	120	189	291	248	69	37	11
19:00	**687**	66.5	56.6	10.5	0	0	7	49	40	93	102	156	131	58	35	16
20:00	**434**	68.8	57.3	11.1	0	0	2	35	34	44	72	70	83	51	28	15
21:00	**337**	67.2	55.7	11	0	0	2	37	18	48	60	61	51	38	14	8
22:00	**296**	64.9	54	9.6	0	0	2	11	51	52	63	49	30	30	4	4
23:00	**195**	64.2	54.2	10.4	0	0	0	21	22	30	34	35	36	9	1	7
12H,7-19	**9606**	**62.6**	**51.8**	**10.7**	**0**	**6**	**195**	**1435**	**1009**	**1422**	**1865**	**1839**	**1207**	**424**	**143**	**61**
16H,6-22	**11173**	**63.4**	**52.4**	**10.8**	**0**	**6**	**208**	**1576**	**1108**	**1640**	**2121**	**2142**	**1477**	**575**	**220**	**100**
18H,6-24	**11664**	**63.4**	**52.5**	**10.8**	**0**	**6**	**210**	**1608**	**1181**	**1722**	**2218**	**2226**	**1543**	**614**	**225**	**111**
24H,0-24	**12158**	**63.3**	**52.3**	**10.8**	**0**	**6**	**227**	**1709**	**1251**	**1824**	**2312**	**2288**	**1578**	**623**	**228**	**112**

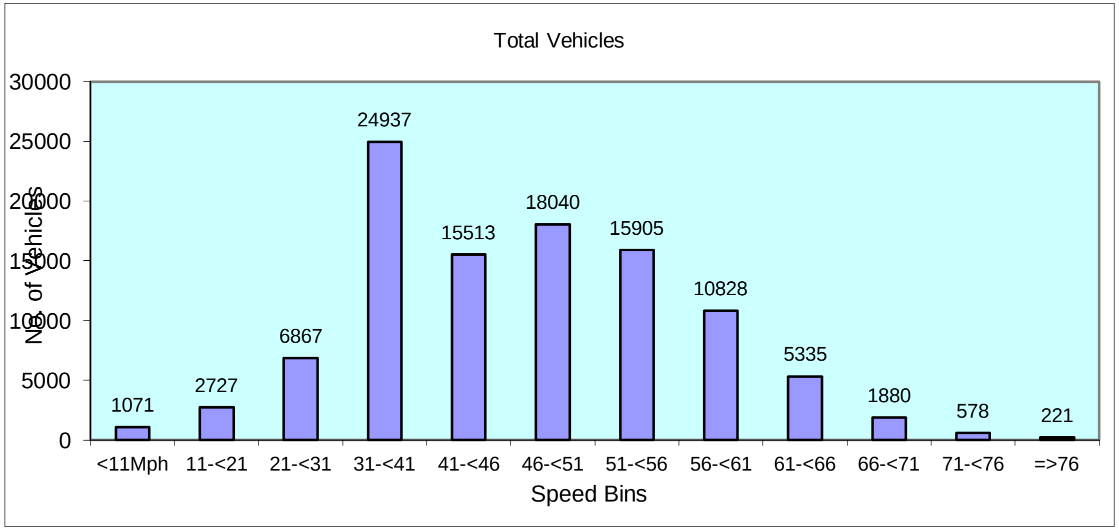
19028 RUDHEATH Site No: 19028006 Location Site 6, A556, Rudheath (Road Direction Sign)

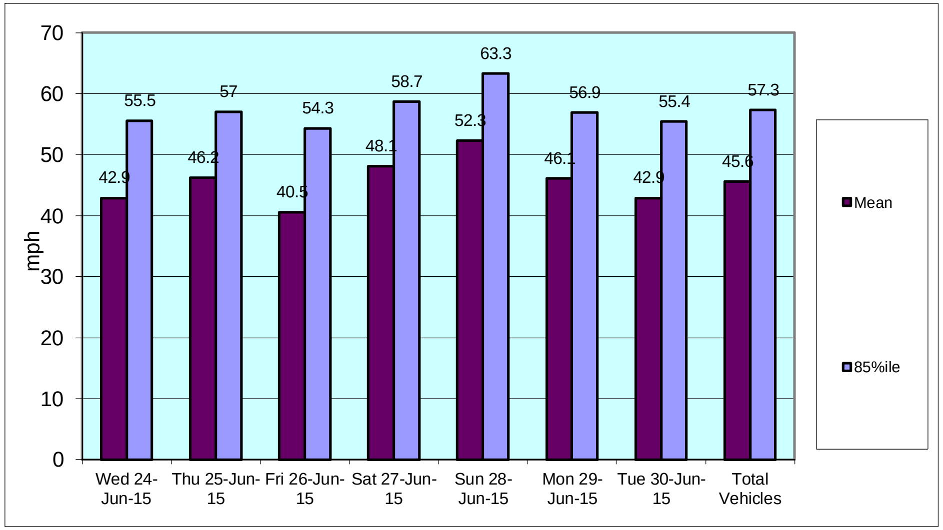
Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Westbound

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Mon 29-Jun-15																
00:00	**85**	55.7	48.7	9.3	0	0	2	15	11	20	24	4	7	2	0	0
01:00	**35**	59.6	50.9	8.9	0	0	0	5	7	4	4	13	2	0	0	0
02:00	**54**	64.5	51.1	12.7	0	1	1	6	6	20	6	4	2	2	4	2
03:00	**43**	53.1	46.3	7.4	0	0	1	4	19	10	5	2	2	0	0	0
04:00	**60**	60.6	51.8	8.7	0	0	0	8	3	12	23	5	6	3	0	0
05:00	**193**	62.5	52.3	10.4	0	0	3	26	19	33	37	38	26	5	4	2
06:00	**466**	63	52.6	10.6	0	0	14	50	56	58	93	99	63	22	9	2
07:00	**1164**	59	49	9.8	0	0	30	202	171	262	230	156	70	35	7	1
08:00	**1381**	55.2	45	9.7	0	1	71	419	212	309	192	113	50	13	1	0
09:00	**962**	55.3	44.8	10.1	0	3	60	288	153	191	142	83	24	15	3	0
10:00	**754**	55	45.4	9.3	0	1	36	187	153	181	103	58	31	3	1	0
11:00	**717**	55.2	44.9	9.8	0	0	54	183	133	150	107	59	27	4	0	0
12:00	**777**	55.9	46.5	9.6	0	1	25	203	113	169	152	75	26	11	1	1
13:00	**740**	56.8	47	9.2	0	0	22	159	155	154	124	89	28	7	2	0
14:00	**976**	54.3	44.1	9.7	0	4	75	270	193	190	148	73	19	4	0	0
15:00	**1166**	57.3	47	10	0	1	55	267	177	233	222	132	60	17	1	1
16:00	**1481**	54	43.5	10	0	11	128	430	285	294	187	95	45	4	1	1
17:00	**1775**	50.6	40.8	10.1	5	50	201	583	355	340	158	67	14	2	0	0
18:00	**1330**	57.1	46.4	10	0	4	52	343	244	242	212	148	62	18	5	0
19:00	**705**	62.2	50.8	11.2	0	0	33	109	68	99	169	102	77	33	13	2
20:00	**481**	60.6	50.5	10.4	0	0	10	88	57	66	97	99	47	10	5	2
21:00	**340**	60.4	50.6	10.8	0	0	13	45	50	52	81	54	20	17	3	5
22:00	**298**	59.2	49.7	9.5	0	0	12	32	47	67	69	40	23	7	1	0
23:00	**176**	60	50.9	10	0	0	8	18	22	28	37	45	14	3	0	1
12H,7-19	**13223**	**55.4**	**45.1**	**10.1**	**5**	**76**	**809**	**3534**	**2344**	**2715**	**1977**	**1148**	**456**	**133**	**22**	**4**
16H,6-22	**15215**	**56.5**	**45.9**	**10.4**	**5**	**76**	**879**	**3826**	**2575**	**2990**	**2417**	**1502**	**663**	**215**	**52**	**15**
18H,6-24	**15689**	**56.7**	**46**	**10.4**	**5**	**76**	**899**	**3876**	**2644**	**3085**	**2523**	**1587**	**700**	**225**	**53**	**16**
24H,0-24	**16159**	**56.9**	**46.1**	**10.4**	**5**	**77**	**906**	**3940**	**2709**	**3184**	**2622**	**1653**	**745**	**237**	**61**	**20**

19028		RUDHEATH			Site No: 19028006			Location	Site 6, A556, Rudheath (Road Direction Sign)							
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Westbound											
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<21**	**21-<31**	**31-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**61-<66**	**66-<71**	**71-<76**	**=>76**
Tue 30-Jun-15																
00:00	**40**	60.4	51.1	10.4	0	0	1	6	1	11	11	4	4	1	0	1
01:00	**55**	56.3	50	8.7	0	0	1	8	3	14	20	4	4	1	0	0
02:00	**42**	57.5	48.1	10.5	0	0	4	2	9	12	7	4	3	0	1	0
03:00	**27**	53.4	45.8	7.6	0	0	0	7	6	8	3	3	0	0	0	0
04:00	**60**	59.9	51.3	8.6	0	0	0	6	10	14	12	11	4	3	0	0
05:00	**191**	64.2	52.4	10.4	0	0	1	25	28	30	40	21	26	18	1	1
06:00	**462**	62.4	51.8	10.8	0	2	10	68	44	65	94	95	52	24	6	2
07:00	**1084**	58.2	47.9	10.3	0	1	53	219	147	204	245	119	71	20	4	1
08:00	**1304**	53.7	43.5	9.3	0	1	66	498	212	242	165	84	31	5	0	0
09:00	**833**	54.9	43.5	10.7	0	1	78	292	122	131	106	56	34	7	5	1
10:00	**802**	53.6	43.5	9.7	0	0	56	269	160	143	104	43	16	6	4	1
11:00	**766**	53.9	43.2	9.6	0	1	61	263	144	122	103	59	11	1	1	0
12:00	**756**	55.8	45.4	10.1	0	1	41	223	118	135	130	67	29	9	3	0
13:00	**698**	56.2	45.9	10.2	0	1	47	168	107	153	114	78	19	5	5	1
14:00	**845**	55.4	45.3	10.2	0	9	55	203	127	212	128	73	29	6	3	0
15:00	**1116**	54.5	44.6	9.1	0	0	54	333	224	235	146	93	28	3	0	0
16:00	**1444**	51.6	41.4	9.7	0	18	156	505	300	229	157	58	18	3	0	0
17:00	**1683**	38.9	24.4	12.6	228	608	344	316	85	48	26	24	3	1	0	0
18:00	**1390**	52.9	41.1	11.2	13	44	155	455	251	196	173	76	17	9	0	1
19:00	**751**	59.6	49.2	10.1	0	0	20	142	103	137	152	116	57	18	5	1
20:00	**452**	60.2	49.6	11.1	0	1	20	77	58	77	89	74	28	20	6	2
21:00	**318**	61.8	50.5	11.2	0	1	13	55	23	58	57	57	38	11	4	1
22:00	**308**	59.7	50.2	9.3	0	0	4	38	52	78	51	52	22	5	6	0
23:00	**203**	59.5	49.4	9.7	0	0	5	32	30	47	42	23	16	8	0	0
12H,7-19	**12721**	**53.9**	**41.3**	**12.4**	**241**	**685**	**1166**	**3744**	**1997**	**2050**	**1597**	**830**	**306**	**75**	**25**	**5**
16H,6-22	**14704**	**55.1**	**42.5**	**12.6**	**241**	**689**	**1229**	**4086**	**2225**	**2387**	**1989**	**1172**	**481**	**148**	**46**	**11**
18H,6-24	**15215**	**55.3**	**42.7**	**12.6**	**241**	**689**	**1238**	**4156**	**2307**	**2512**	**2082**	**1247**	**519**	**161**	**52**	**11**
24H,0-24	**15630**	**55.4**	**42.9**	**12.6**	**241**	**689**	**1245**	**4210**	**2364**	**2601**	**2175**	**1294**	**560**	**184**	**54**	**13**

19028		RUDHEATH		Site No: 19028006		Location	Site 6, A556, Rudheath (Road Direction Sign)									
Wed 24-Jun-15 to Tue 30-Jun-15				Channel: Westbound												
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<21**	**21-<31**	**31-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**61-<66**	**66-<71**	**71-<76**	**=>76**
Daily Totals																
Wed 24-Jun-15	**15586**	55.5	42.9	12.7	254	703	1244	4193	2357	2583	2139	1292	563	185	59	14
Thu 25-Jun-15	**16033**	57	46.2	10.5	8	70	910	3938	2619	3136	2628	1666	720	254	60	24
Fri 26-Jun-15	**17576**	54.3	40.5	13.5	563	1169	1869	4758	2738	2532	1980	1225	531	152	48	11
Sat 27-Jun-15	**10760**	58.7	48.1	10.4	0	13	466	2189	1475	2180	2049	1410	638	245	68	27
Sun 28-Jun-15	**12158**	63.3	52.3	10.8	0	6	227	1709	1251	1824	2312	2288	1578	623	228	112
Mon 29-Jun-15	**16159**	56.9	46.1	10.4	5	77	906	3940	2709	3184	2622	1653	745	237	61	20
Tue 30-Jun-15	**15630**	55.4	42.9	12.6	241	689	1245	4210	2364	2601	2175	1294	560	184	54	13
Total Vehicles																
[--]	**103902**	57.3	45.6	11.6	1071	2727	6867	24937	15513	18040	15905	10828	5335	1880	578	221





Data produced by
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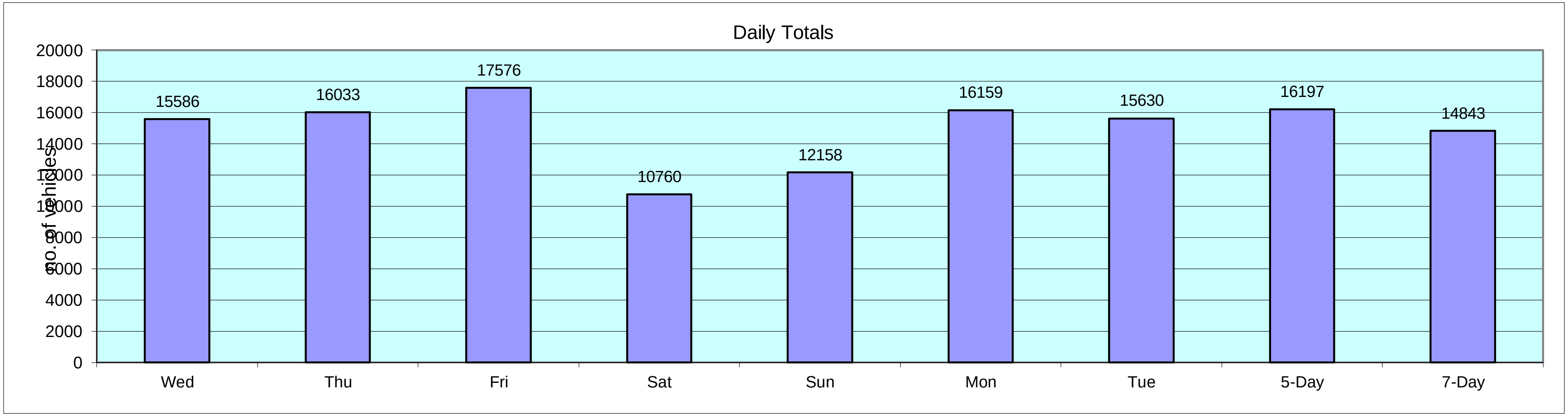
19028	RUDHEATH		Site No: 19028006 Channel: Westbound		Location	Site 6, A556, Rudheath (Road Direction Sign)		
TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av
Week Begin: 24-Jun-15									
00:00	**45**	88	78	126	169	85	40	67	90
01:00	**50**	44	47	76	96	35	55	46	58
02:00	**40**	48	30	59	52	54	42	43	46
03:00	**23**	43	37	50	46	43	27	35	38
04:00	**60**	55	64	69	42	60	60	60	59
05:00	**180**	192	194	132	89	193	191	190	167
06:00	**454**	458	410	182	109	466	462	450	363
07:00	**1066**	1153	1049	289	177	1164	1084	1103	855
08:00	**1268**	1367	1292	493	252	1381	1304	1322	1051
09:00	**866**	927	890	610	338	962	833	896	775
10:00	**795**	733	786	777	586	754	802	774	748
11:00	**763**	730	883	941	703	717	766	772	786
12:00	**749**	769	1057	848	799	777	756	822	822
13:00	**721**	770	1208	805	985	740	698	827	847
14:00	**883**	964	1255	749	1091	976	845	985	966
15:00	**1129**	1111	1352	716	1145	1166	1116	1175	1105
16:00	**1422**	1456	1609	822	1223	1481	1444	1482	1351
17:00	**1705**	1739	1745	768	1213	1775	1683	1729	1518
18:00	**1374**	1378	1404	612	1094	1330	1390	1375	1226
19:00	**749**	700	787	474	687	705	751	738	693
20:00	**434**	473	462	356	434	481	452	460	442
21:00	**310**	350	339	301	337	340	318	331	328
22:00	**302**	307	359	259	296	298	308	315	304
23:00	**198**	178	239	246	195	176	203	199	205
12H,7-19	**12741**	**13097**	**14530**	**8430**	**9606**	**13223**	**12721**	**13262**	**12050**
16H,6-22	**14688**	**15078**	**16528**	**9743**	**11173**	**15215**	**14704**	**15243**	**13876**
18H,6-24	**15188**	**15563**	**17126**	**10248**	**11664**	**15689**	**15215**	**15756**	**14385**
24H,0-24	**15586**	**16033**	**17576**	**10760**	**12158**	**16159**	**15630**	**16197**	**14843**
Am	**08:00**	**08:00**	**08:00**	**11:00**	**11:00**	**08:00**	**08:00**	**-**	**-**
Peak	**1268**	**1367**	**1292**	**941**	**703**	**1381**	**1304**	**1322**	**1179**
Pm	**17:00**	**17:00**	**17:00**	**12:00**	**16:00**	**17:00**	**17:00**	**-**	**-**
Peak	**1705**	**1739**	**1745**	**848**	**1223**	**1775**	**1683**	**1729**	**1531**

19028	RUDHEATH	Site No: 19028006	Location	Site 6, A556, Rudheath (Road Direction Sign)
		Channel: Westbound		

TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av




A530 Southbound

19028		RUDHEATH JUNE 2015								
Site	Location	Direction	Start Date	End Date	Posted Speed Limit (PSL)	Total Vehicles	5 Day Ave.	7 Day Ave.	Average 85%ile Speed	Average Mean Speed
Site No: 19028007	Site 7, A530, Rudheath (Armco) SJ 68571 72538	Channel: Southbound	Wed 24-Jun-15	Tue 30-Jun-15	60	56958	9128	8137	50.7	44.1

19028		RUDHEATH			Site No: 19028007		Location		Site 7, A530, Rudheath (Armco)		
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Southbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Wed 24-Jun-15											
00:00	**43**	3	7.0	31	72.1	2	4.7	7	16.3	0	0.0
01:00	**28**	0	0.0	17	60.7	1	3.6	10	35.7	0	0.0
02:00	**36**	0	0.0	13	36.1	3	8.3	19	52.8	1	2.8
03:00	**43**	0	0.0	22	51.2	4	9.3	15	34.9	2	4.7
04:00	**80**	1	1.3	48	60.0	7	8.8	23	28.8	1	1.3
05:00	**293**	6	2.1	239	81.6	12	4.1	36	12.3	0	0.0
06:00	**357**	3	0.8	295	82.6	28	7.8	30	8.4	1	0.3
07:00	**679**	10	1.5	573	84.4	56	8.3	37	5.5	3	0.4
08:00	**498**	4	0.8	405	81.3	57	11.5	30	6.0	2	0.4
09:00	**360**	1	0.3	267	74.2	43	11.9	47	13.1	2	0.6
10:00	**346**	3	0.9	230	66.5	64	18.5	47	13.6	2	0.6
11:00	**373**	1	0.3	276	74.0	60	16.1	32	8.6	4	1.1
12:00	**437**	1	0.2	328	75.1	72	16.5	34	7.8	2	0.5
13:00	**388**	1	0.3	305	78.6	53	13.7	26	6.7	3	0.8
14:00	**493**	5	1.0	384	77.9	70	14.2	33	6.7	1	0.2
15:00	**559**	6	1.1	440	78.7	70	12.5	37	6.6	6	1.1
16:00	**778**	4	0.5	668	85.9	71	9.1	32	4.1	3	0.4
17:00	**915**	6	0.7	806	88.1	76	8.3	23	2.5	4	0.4
18:00	**732**	3	0.4	643	87.8	53	7.2	32	4.4	1	0.1
19:00	**411**	2	0.5	353	85.9	28	6.8	28	6.8	0	0.0
20:00	**210**	1	0.5	184	87.6	12	5.7	13	6.2	0	0.0
21:00	**164**	2	1.2	146	89.0	6	3.7	9	5.5	1	0.6
22:00	**118**	1	0.9	100	84.8	5	4.2	11	9.3	1	0.9
23:00	**93**	2	2.2	67	72.0	12	12.9	11	11.8	1	1.1
12H,7-19	**6558**	**45**	**0.7**	**5325**	**81.2**	**745**	**11.4**	**410**	**6.3**	**33**	**0.5**
16H,6-22	**7700**	**53**	**0.7**	**6303**	**81.9**	**819**	**10.6**	**490**	**6.4**	**35**	**0.5**
18H,6-24	**7911**	**56**	**0.7**	**6470**	**81.8**	**836**	**10.6**	**512**	**6.5**	**37**	**0.5**
24H,0-24	**8434**	**66**	**0.8**	**6840**	**81.1**	**865**	**10.3**	**622**	**7.4**	**41**	**0.5**

Data produced by
Axiom Traffic Ltd

19028		RUDHEATH			Site No: 19028007		Location		Site 7, A530, Rudheath (Armco)		
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Southbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Thu 25-Jun-15											
00:00	**49**	0	0.0	32	65.3	5	10.2	12	24.5	0	0.0
01:00	**28**	0	0.0	19	67.9	1	3.6	8	28.6	0	0.0
02:00	**41**	0	0.0	14	34.2	3	7.3	22	53.7	2	4.9
03:00	**41**	0	0.0	19	46.3	2	4.9	18	43.9	2	4.9
04:00	**76**	0	0.0	45	59.2	5	6.6	24	31.6	2	2.6
05:00	**299**	8	2.7	252	84.3	16	5.4	23	7.7	0	0.0
06:00	**356**	5	1.4	284	79.8	34	9.6	33	9.3	0	0.0
07:00	**714**	8	1.1	619	86.7	56	7.8	28	3.9	3	0.4
08:00	**540**	4	0.7	456	84.4	53	9.8	25	4.6	2	0.4
09:00	**425**	1	0.2	328	77.2	43	10.1	49	11.5	4	0.9
10:00	**383**	3	0.8	289	75.5	61	15.9	29	7.6	1	0.3
11:00	**365**	2	0.6	284	77.8	41	11.2	36	9.9	2	0.6
12:00	**401**	1	0.3	321	80.1	51	12.7	28	7.0	0	0.0
13:00	**390**	3	0.8	304	78.0	52	13.3	30	7.7	1	0.3
14:00	**549**	3	0.6	430	78.3	68	12.4	46	8.4	2	0.4
15:00	**653**	5	0.8	532	81.5	73	11.2	39	6.0	4	0.6
16:00	**863**	2	0.2	744	86.2	80	9.3	35	4.1	2	0.2
17:00	**949**	6	0.6	831	87.6	78	8.2	31	3.3	3	0.3
18:00	**767**	10	1.3	675	88.0	58	7.6	21	2.7	3	0.4
19:00	**355**	12	3.4	302	85.1	22	6.2	19	5.4	0	0.0
20:00	**245**	1	0.4	213	86.9	18	7.4	12	4.9	1	0.4
21:00	**161**	5	3.1	135	83.9	13	8.1	6	3.7	2	1.2
22:00	**147**	4	2.7	115	78.2	14	9.5	14	9.5	0	0.0
23:00	**69**	1	1.5	53	76.8	7	10.1	8	11.6	0	0.0
12H,7-19	**6999**	**48**	**0.7**	**5813**	**83.1**	**714**	**10.2**	**397**	**5.7**	**27**	**0.4**
16H,6-22	**8116**	**71**	**0.9**	**6747**	**83.1**	**801**	**9.9**	**467**	**5.8**	**30**	**0.4**
18H,6-24	**8332**	**76**	**0.9**	**6915**	**83.0**	**822**	**9.9**	**489**	**5.9**	**30**	**0.4**
24H,0-24	**8866**	**84**	**1.0**	**7296**	**82.3**	**854**	**9.6**	**596**	**6.7**	**36**	**0.4**

19028		RUDHEATH			Site No: 19028007		Location		Site 7, A530, Rudheath (Armco)		
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Southbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Fri 26-Jun-15											
00:00	**43**	0	0.0	27	62.8	3	7.0	13	30.2	0	0.0
01:00	**30**	0	0.0	17	56.7	2	6.7	10	33.3	1	3.3
02:00	**37**	1	2.7	18	48.7	2	5.4	14	37.8	2	5.4
03:00	**40**	0	0.0	17	42.5	3	7.5	19	47.5	1	2.5
04:00	**86**	0	0.0	52	60.5	8	9.3	25	29.1	1	1.2
05:00	**299**	9	3.0	252	84.3	15	5.0	21	7.0	2	0.7
06:00	**308**	4	1.3	245	79.6	32	10.4	25	8.1	2	0.7
07:00	**678**	4	0.6	587	86.6	62	9.1	25	3.7	0	0.0
08:00	**528**	2	0.4	418	79.2	56	10.6	48	9.1	4	0.8
09:00	**409**	0	0.0	309	75.6	55	13.5	40	9.8	5	1.2
10:00	**434**	2	0.5	318	73.3	63	14.5	47	10.8	4	0.9
11:00	**506**	1	0.2	401	79.3	55	10.9	41	8.1	8	1.6
12:00	**745**	0	0.0	574	77.1	96	12.9	71	9.5	4	0.5
13:00	**1048**	5	0.5	839	80.1	124	11.8	69	6.6	11	1.1
14:00	**1152**	5	0.4	914	79.3	144	12.5	79	6.9	10	0.9
15:00	**974**	4	0.4	805	82.7	111	11.4	51	5.2	3	0.3
16:00	**1046**	9	0.9	894	85.5	95	9.1	43	4.1	5	0.5
17:00	**1046**	5	0.5	934	89.3	68	6.5	34	3.3	5	0.5
18:00	**745**	3	0.4	658	88.3	57	7.7	27	3.6	0	0.0
19:00	**383**	4	1.0	329	85.9	22	5.7	27	7.1	1	0.3
20:00	**230**	2	0.9	190	82.6	14	6.1	23	10.0	1	0.4
21:00	**177**	0	0.0	146	82.5	9	5.1	21	11.9	1	0.6
22:00	**156**	0	0.0	136	87.2	9	5.8	11	7.1	0	0.0
23:00	**125**	0	0.0	110	88.0	4	3.2	10	8.0	1	0.8
12H,7-19	**9311**	**40**	**0.4**	**7651**	**82.2**	**986**	**10.6**	**575**	**6.2**	**59**	**0.6**
16H,6-22	**10409**	**50**	**0.5**	**8561**	**82.3**	**1063**	**10.2**	**671**	**6.5**	**64**	**0.6**
18H,6-24	**10690**	**50**	**0.5**	**8807**	**82.4**	**1076**	**10.1**	**692**	**6.5**	**65**	**0.6**
24H,0-24	**11225**	**60**	**0.5**	**9190**	**81.9**	**1109**	**9.9**	**794**	**7.1**	**72**	**0.6**

19028		RUDHEATH			Site No: 19028007		Location		Site 7, A530, Rudheath (Armco)		
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Southbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sat 27-Jun-15											
00:00	**62**	1	1.6	45	72.6	3	4.8	13	21.0	0	0.0
01:00	**40**	0	0.0	30	75.0	3	7.5	7	17.5	0	0.0
02:00	**45**	1	2.2	20	44.4	4	8.9	17	37.8	3	6.7
03:00	**40**	1	2.5	14	35.0	2	5.0	22	55.0	1	2.5
04:00	**76**	1	1.3	49	64.5	5	6.6	19	25.0	2	2.6
05:00	**199**	3	1.5	170	85.4	3	1.5	23	11.6	0	0.0
06:00	**122**	4	3.3	80	65.6	11	9.0	26	21.3	1	0.8
07:00	**250**	2	0.8	187	74.8	29	11.6	30	12.0	2	0.8
08:00	**241**	2	0.8	183	75.9	28	11.6	28	11.6	0	0.0
09:00	**284**	2	0.7	235	82.8	22	7.8	25	8.8	0	0.0
10:00	**353**	3	0.9	303	85.8	20	5.7	27	7.7	0	0.0
11:00	**379**	4	1.1	328	86.5	25	6.6	19	5.0	3	0.8
12:00	**462**	6	1.3	417	90.3	25	5.4	14	3.0	0	0.0
13:00	**379**	10	2.6	335	88.4	21	5.5	13	3.4	0	0.0
14:00	**372**	6	1.6	320	86.0	23	6.2	23	6.2	0	0.0
15:00	**388**	9	2.3	327	84.3	30	7.7	21	5.4	1	0.3
16:00	**402**	3	0.8	350	87.1	29	7.2	20	5.0	0	0.0
17:00	**436**	4	0.9	394	90.4	27	6.2	10	2.3	1	0.2
18:00	**345**	5	1.5	314	91.0	15	4.4	11	3.2	0	0.0
19:00	**264**	1	0.4	224	84.9	18	6.8	21	8.0	0	0.0
20:00	**164**	1	0.6	144	87.8	8	4.9	11	6.7	0	0.0
21:00	**143**	2	1.4	129	90.2	6	4.2	6	4.2	0	0.0
22:00	**114**	1	0.9	102	89.5	4	3.5	6	5.3	1	0.9
23:00	**106**	0	0.0	99	93.4	3	2.8	4	3.8	0	0.0
12H,7-19	**4291**	**56**	**1.3**	**3693**	**86.1**	**294**	**6.9**	**241**	**5.6**	**7**	**0.2**
16H,6-22	**4984**	**64**	**1.3**	**4270**	**85.7**	**337**	**6.8**	**305**	**6.1**	**8**	**0.2**
18H,6-24	**5204**	**65**	**1.3**	**4471**	**85.9**	**344**	**6.6**	**315**	**6.1**	**9**	**0.2**
24H,0-24	**5666**	**72**	**1.3**	**4799**	**84.7**	**364**	**6.4**	**416**	**7.3**	**15**	**0.3**

19028		RUDHEATH			Site No: 19028007		Location	Site 7, A530, Rudheath (Armco)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Southbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sun 28-Jun-15											
00:00	**63**	0	0.0	57	90.5	3	4.8	3	4.8	0	0.0
01:00	**33**	0	0.0	29	87.9	1	3.0	3	9.1	0	0.0
02:00	**32**	0	0.0	22	68.8	1	3.1	9	28.1	0	0.0
03:00	**27**	2	7.4	12	44.4	3	11.1	8	29.6	2	7.4
04:00	**36**	0	0.0	24	66.7	3	8.3	8	22.2	1	2.8
05:00	**133**	3	2.3	107	80.5	6	4.5	17	12.8	0	0.0
06:00	**66**	2	3.0	44	66.7	6	9.1	14	21.2	0	0.0
07:00	**139**	1	0.7	114	82.0	13	9.4	10	7.2	1	0.7
08:00	**113**	0	0.0	86	76.1	16	14.2	10	8.9	1	0.9
09:00	**190**	2	1.1	151	79.5	24	12.6	13	6.8	0	0.0
10:00	**271**	2	0.7	232	85.6	16	5.9	21	7.8	0	0.0
11:00	**314**	3	1.0	271	86.3	22	7.0	17	5.4	1	0.3
12:00	**365**	7	1.9	332	91.0	13	3.6	13	3.6	0	0.0
13:00	**453**	2	0.4	417	92.1	26	5.7	8	1.8	0	0.0
14:00	**443**	1	0.2	401	90.5	20	4.5	20	4.5	1	0.2
15:00	**528**	8	1.5	469	88.8	30	5.7	20	3.8	1	0.2
16:00	**626**	7	1.1	577	92.2	30	4.8	8	1.3	4	0.6
17:00	**567**	4	0.7	515	90.8	30	5.3	16	2.8	2	0.4
18:00	**525**	3	0.6	474	90.3	32	6.1	14	2.7	2	0.4
19:00	**269**	0	0.0	242	90.0	13	4.8	13	4.8	1	0.4
20:00	**159**	4	2.5	143	89.9	5	3.1	6	3.8	1	0.6
21:00	**119**	0	0.0	109	91.6	6	5.0	4	3.4	0	0.0
22:00	**106**	1	0.9	92	86.8	3	2.8	7	6.6	3	2.8
23:00	**73**	1	1.4	59	80.8	7	9.6	5	6.9	1	1.4
12H,7-19	**4534**	**40**	**0.9**	**4039**	**89.1**	**272**	**6.0**	**170**	**3.8**	**13**	**0.3**
16H,6-22	**5147**	**46**	**0.9**	**4577**	**88.9**	**302**	**5.9**	**207**	**4.0**	**15**	**0.3**
18H,6-24	**5326**	**48**	**0.9**	**4728**	**88.8**	**312**	**5.9**	**219**	**4.1**	**19**	**0.4**
24H,0-24	**5650**	**53**	**0.9**	**4979**	**88.1**	**329**	**5.8**	**267**	**4.7**	**22**	**0.4**

19028 RUDHEATH Site No: 19028007 Location Site 7, A530, Rudheath (Armco)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Southbound

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Mon 29-Jun-15											
00:00	**28**	0	0.0	22	78.6	1	3.6	5	17.9	0	0.0
01:00	**29**	0	0.0	19	65.5	4	13.8	6	20.7	0	0.0
02:00	**27**	0	0.0	12	44.4	1	3.7	13	48.2	1	3.7
03:00	**48**	1	2.1	21	43.8	1	2.1	22	45.8	3	6.3
04:00	**90**	1	1.1	51	56.7	9	10.0	28	31.1	1	1.1
05:00	**317**	8	2.5	266	83.9	10	3.2	33	10.4	0	0.0
06:00	**369**	7	1.9	310	84.0	30	8.1	21	5.7	1	0.3
07:00	**697**	8	1.2	612	87.8	46	6.6	28	4.0	3	0.4
08:00	**494**	0	0.0	413	83.6	48	9.7	32	6.5	1	0.2
09:00	**456**	4	0.9	334	73.3	64	14.0	51	11.2	3	0.7
10:00	**429**	1	0.2	314	73.2	74	17.3	37	8.6	3	0.7
11:00	**399**	5	1.3	289	72.4	60	15.0	37	9.3	8	2.0
12:00	**604**	2	0.3	465	77.0	85	14.1	46	7.6	6	1.0
13:00	**599**	10	1.7	438	73.1	99	16.5	45	7.5	7	1.2
14:00	**614**	7	1.1	478	77.9	92	15.0	35	5.7	2	0.3
15:00	**485**	3	0.6	390	80.4	62	12.8	27	5.6	3	0.6
16:00	**708**	7	1.0	610	86.2	66	9.3	22	3.1	3	0.4
17:00	**926**	10	1.1	826	89.2	66	7.1	22	2.4	2	0.2
18:00	**592**	6	1.0	533	90.0	37	6.3	15	2.5	1	0.2
19:00	**338**	3	0.9	301	89.1	18	5.3	16	4.7	0	0.0
20:00	**181**	2	1.1	157	86.7	11	6.1	11	6.1	0	0.0
21:00	**185**	0	0.0	162	87.6	6	3.2	16	8.7	1	0.5
22:00	**109**	2	1.8	93	85.3	3	2.8	9	8.3	2	1.8
23:00	**81**	0	0.0	63	77.8	8	9.9	9	11.1	1	1.2
12H,7-19	**7003**	**63**	**0.9**	**5702**	**81.4**	**799**	**11.4**	**397**	**5.7**	**42**	**0.6**
16H,6-22	**8076**	**75**	**0.9**	**6632**	**82.1**	**864**	**10.7**	**461**	**5.7**	**44**	**0.5**
18H,6-24	**8266**	**77**	**0.9**	**6788**	**82.1**	**875**	**10.6**	**479**	**5.8**	**47**	**0.6**
24H,0-24	**8805**	**87**	**1.0**	**7179**	**81.5**	**901**	**10.2**	**586**	**6.7**	**52**	**0.6**

19028 **RUDHEATH** **Site No: 19028007** **Location** **Site 7, A530, Rudheath (Armco)**

Wed 24-Jun-15 to Tue 30-Jun-15 **Channel: Southbound**

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Tue 30-Jun-15											
00:00	**46**	0	0.0	35	76.1	4	8.7	7	15.2	0	0.0
01:00	**24**	0	0.0	14	58.3	2	8.3	8	33.3	0	0.0
02:00	**44**	1	2.3	19	43.2	4	9.1	18	40.9	2	4.6
03:00	**36**	0	0.0	16	44.4	3	8.3	15	41.7	2	5.6
04:00	**90**	1	1.1	55	61.1	11	12.2	22	24.4	1	1.1
05:00	**282**	8	2.8	239	84.8	10	3.6	25	8.9	0	0.0
06:00	**363**	11	3.0	293	80.7	26	7.2	32	8.8	1	0.3
07:00	**725**	7	1.0	622	85.8	69	9.5	24	3.3	3	0.4
08:00	**576**	4	0.7	471	81.8	66	11.5	31	5.4	4	0.7
09:00	**458**	4	0.9	332	72.5	74	16.2	46	10.0	2	0.4
10:00	**360**	4	1.1	257	71.4	55	15.3	40	11.1	4	1.1
11:00	**382**	4	1.1	278	72.8	55	14.4	43	11.3	2	0.5
12:00	**383**	1	0.3	309	80.7	37	9.7	35	9.1	1	0.3
13:00	**415**	8	1.9	314	75.7	59	14.2	30	7.2	4	1.0
14:00	**466**	4	0.9	359	77.0	66	14.2	32	6.9	5	1.1
15:00	**525**	7	1.3	417	79.4	64	12.2	33	6.3	4	0.8
16:00	**696**	7	1.0	601	86.4	55	7.9	32	4.6	1	0.1
17:00	**872**	8	0.9	779	89.3	60	6.9	21	2.4	4	0.5
18:00	**614**	11	1.8	541	88.1	39	6.4	22	3.6	1	0.2
19:00	**369**	8	2.2	311	84.3	30	8.1	19	5.2	1	0.3
20:00	**211**	4	1.9	176	83.4	18	8.5	13	6.2	0	0.0
21:00	**154**	5	3.3	128	83.1	7	4.6	11	7.1	3	2.0
22:00	**131**	2	1.5	108	82.4	6	4.6	14	10.7	1	0.8
23:00	**90**	3	3.3	68	75.6	10	11.1	8	8.9	1	1.1
12H,7-19	**6472**	**69**	**1.1**	**5280**	**81.6**	**699**	**10.8**	**389**	**6.0**	**35**	**0.5**
16H,6-22	**7569**	**97**	**1.3**	**6188**	**81.8**	**780**	**10.3**	**464**	**6.1**	**40**	**0.5**
18H,6-24	**7790**	**102**	**1.3**	**6364**	**81.7**	**796**	**10.2**	**486**	**6.2**	**42**	**0.5**
24H,0-24	**8312**	**112**	**1.4**	**6742**	**81.1**	**830**	**10.0**	**581**	**7.0**	**47**	**0.6**

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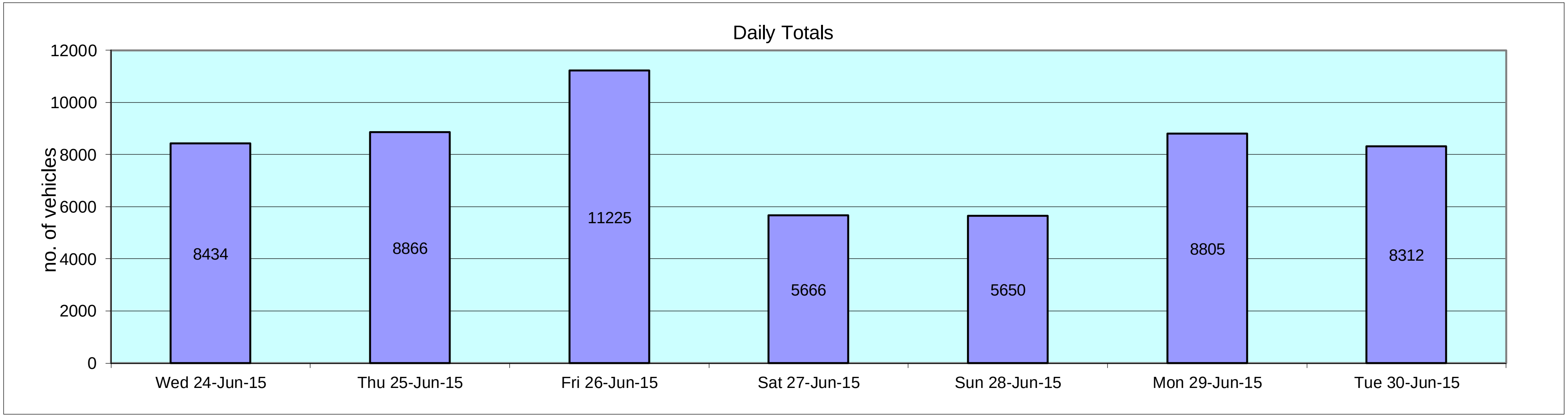
19028	RUDHEATH	Site No: 19028007	Location	Site 7, A530, Rudheath (Armco)
Wed 24-Jun-15 to Tue 30-Jun-15		Channel: Southbound		

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Daily Totals											
Wed 24-Jun-15	**8434**	66	0.8	6840	81.1	865	10.3	622	7.4	41	0.5
Thu 25-Jun-15	**8866**	84	1.0	7296	82.3	854	9.6	596	6.7	36	0.4
Fri 26-Jun-15	**11225**	60	0.5	9190	81.9	1109	9.9	794	7.1	72	0.6
Sat 27-Jun-15	**5666**	72	1.3	4799	84.7	364	6.4	416	7.3	15	0.3
Sun 28-Jun-15	**5650**	53	0.9	4979	88.1	329	5.8	267	4.7	22	0.4
Mon 29-Jun-15	**8805**	87	1.0	7179	81.5	901	10.2	586	6.7	52	0.6
Tue 30-Jun-15	**8312**	112	1.4	6742	81.1	830	10.0	581	7.0	47	0.6
Total Vehicles											
[--]	**56958**	534	1.0	47025	83.0	5252	8.9	3862	6.7	285	0.5



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19028			RUDHEATH				Site No: 19028007			Location	Site 7, A530, Rudheath (Armco)				
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Southbound								
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Wed 24-Jun-15																
00:00	**43**	50.6	42.8	9.7	0	0	4	14	6	13	5	0	0	0	1	0
01:00	**28**	49.1	40.7	7.8	0	0	2	13	4	7	2	0	0	0	0	0
02:00	**36**	47.1	38.4	7.9	0	0	5	19	5	5	2	0	0	0	0	0
03:00	**43**	44.8	39.5	5.9	0	0	2	21	17	2	1	0	0	0	0	0
04:00	**80**	50.3	43	7.1	0	0	0	30	28	11	8	2	1	0	0	0
05:00	**293**	50.3	43.1	7.7	0	1	9	91	93	63	23	9	4	0	0	0
06:00	**357**	53	45.5	8.1	0	1	9	68	110	95	49	13	8	3	1	0
07:00	**679**	51.8	45.4	7.1	0	0	6	132	240	187	76	24	11	2	0	1
08:00	**498**	52.6	45.2	8	0	2	5	120	147	131	57	24	7	3	0	2
09:00	**360**	50.3	43.3	7.3	0	1	4	119	120	72	28	12	4	0	0	0
10:00	**346**	51.4	43.9	8.2	0	1	13	90	116	71	34	12	7	2	0	0
11:00	**373**	50.3	43.7	7.5	0	0	9	104	132	83	29	10	3	2	1	0
12:00	**437**	50.4	43.2	7.6	0	0	15	133	141	94	35	14	5	0	0	0
13:00	**388**	49.5	43	7	0	0	7	123	142	82	24	5	2	2	1	0
14:00	**493**	50.1	43.7	7.7	0	0	10	144	176	108	27	14	10	2	1	1
15:00	**559**	50.6	43.4	7.4	0	0	10	177	190	107	47	20	8	0	0	0
16:00	**778**	50.2	43.7	7	0	0	11	208	308	161	62	17	7	3	1	0
17:00	**915**	50.2	43.8	7.3	0	1	8	253	368	177	66	24	8	5	3	2
18:00	**732**	50.4	44	7.2	0	0	12	191	268	173	55	18	12	2	1	0
19:00	**411**	51.7	43.7	8.2	0	1	11	125	136	71	37	20	8	1	0	1
20:00	**210**	50.9	44.8	7.7	0	0	6	43	74	56	14	11	5	1	0	0
21:00	**164**	52	44.6	7.8	0	0	5	40	47	43	19	7	3	0	0	0
22:00	**118**	50.5	43.4	8	0	1	1	39	38	23	10	3	2	1	0	0
23:00	**93**	50.6	43.2	8.5	0	1	3	29	28	19	8	2	3	0	0	0
12H,7-19	**6558**	**50.6**	**43.9**	**7.4**	**0**	**5**	**110**	**1794**	**2348**	**1446**	**540**	**194**	**84**	**23**	**8**	**6**
16H,6-22	**7700**	**50.7**	**44**	**7.5**	**0**	**7**	**141**	**2070**	**2715**	**1711**	**659**	**245**	**108**	**28**	**9**	**7**
18H,6-24	**7911**	**50.7**	**44**	**7.5**	**0**	**9**	**145**	**2138**	**2781**	**1753**	**677**	**250**	**113**	**29**	**9**	**7**
24H,0-24	**8434**	**50.7**	**43.9**	**7.6**	**0**	**10**	**167**	**2326**	**2934**	**1854**	**718**	**261**	**118**	**29**	**10**	**7**

19028		RUDHEATH					Site No: 19028007			Location	Site 7, A530, Rudheath (Armco)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Southbound									

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Thu 25-Jun-15																
00:00	**49**	48.9	41.2	9.3	0	0	5	19	12	9	1	1	1	1	0	0
01:00	**28**	46.8	38.7	9.5	0	0	5	13	5	2	2	0	1	0	0	0
02:00	**41**	43.9	37.2	6.9	0	0	5	27	4	4	1	0	0	0	0	0
03:00	**41**	44.9	39.2	6.4	0	0	2	23	12	2	2	0	0	0	0	0
04:00	**76**	49	41.7	7.1	0	0	2	33	19	17	3	2	0	0	0	0
05:00	**299**	51.1	43.9	7.9	0	2	5	87	88	71	30	12	3	1	0	0
06:00	**356**	53.1	45.6	8.3	0	0	15	62	101	104	47	19	2	4	2	0
07:00	**714**	52.3	45.4	7.7	0	2	5	155	225	201	70	32	20	3	0	1
08:00	**540**	50.6	44.3	7	0	1	3	139	195	132	45	18	4	2	1	0
09:00	**425**	49.9	42.8	8	0	2	16	138	128	99	25	10	4	1	1	1
10:00	**383**	50.8	43.3	8.2	0	1	11	127	116	73	33	14	5	2	0	1
11:00	**365**	49.2	42.6	7.6	0	0	9	130	128	66	17	8	5	0	0	2
12:00	**401**	49.8	43.2	7.2	0	0	8	124	145	83	25	10	5	0	1	0
13:00	**390**	50.1	43.7	7.2	0	0	5	112	141	90	29	6	4	2	0	1
14:00	**549**	50.2	43.6	7.4	0	0	8	162	201	113	40	14	7	2	1	1
15:00	**653**	50.9	44.5	7.5	0	0	10	161	227	161	59	19	10	5	0	1
16:00	**863**	50.9	45.1	6.9	0	0	7	161	345	224	78	28	14	6	0	0
17:00	**949**	50.9	45	7.1	0	1	14	180	360	255	89	29	15	6	0	0
18:00	**767**	50.3	44.1	7.3	0	0	9	198	297	173	42	31	10	4	3	0
19:00	**355**	53	46	9.1	0	1	6	73	102	104	39	14	6	0	1	9
20:00	**245**	52.1	45.2	7.6	0	0	3	52	90	57	26	10	3	3	1	0
21:00	**161**	54	45.6	9.5	0	1	4	33	56	32	17	11	2	2	0	3
22:00	**147**	55.3	45	10.5	0	2	4	41	44	24	11	6	10	3	2	0
23:00	**69**	50.7	43.4	8.4	0	1	1	22	20	15	6	2	2	0	0	0
12H,7-19	**6999**	**50.6**	**44.2**	**7.4**	**0**	**7**	**105**	**1787**	**2508**	**1670**	**552**	**219**	**103**	**33**	**7**	**8**
16H,6-22	**8116**	**50.8**	**44.4**	**7.6**	**0**	**9**	**133**	**2007**	**2857**	**1967**	**681**	**273**	**116**	**42**	**11**	**20**
18H,6-24	**8332**	**50.8**	**44.4**	**7.7**	**0**	**12**	**138**	**2070**	**2921**	**2006**	**698**	**281**	**128**	**45**	**13**	**20**
24H,0-24	**8866**	**50.8**	**44.3**	**7.7**	**0**	**14**	**162**	**2272**	**3061**	**2111**	**737**	**296**	**133**	**47**	**13**	**20**

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19028		RUDHEATH					Site No: 19028007		Location	Site 7, A530, Rudheath (Armco)						
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Southbound									
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Fri 26-Jun-15																
00:00	**43**	47.3	40.2	7.1	0	0	1	25	9	4	3	1	0	0	0	0
01:00	**30**	45.4	39.6	7	0	0	2	15	9	2	2	0	0	0	0	0
02:00	**37**	47.6	39.6	7.1	0	0	1	24	4	6	1	1	0	0	0	0
03:00	**40**	44.8	37.8	7.8	0	0	5	24	6	4	0	0	1	0	0	0
04:00	**86**	46.4	40	6.6	0	0	1	52	19	8	4	2	0	0	0	0
05:00	**299**	50.8	43.7	7.7	0	1	9	78	107	61	28	12	2	1	0	0
06:00	**308**	52.6	45.2	7.4	0	0	4	64	113	68	39	15	3	0	2	0
07:00	**678**	51.3	44.5	7.4	0	1	6	174	230	161	71	22	9	3	1	0
08:00	**528**	50.3	43.6	7.4	0	1	12	150	180	123	38	15	9	0	0	0
09:00	**409**	50.8	43.1	8	0	0	13	144	112	82	40	13	3	0	2	0
10:00	**434**	49.5	41.9	7.9	0	0	24	159	134	73	31	9	2	0	2	0
11:00	**506**	48.8	41.8	7.6	0	0	13	215	165	65	24	12	11	0	1	0
12:00	**745**	49.5	42.1	7.6	0	0	34	262	261	109	51	21	4	2	1	0
13:00	**1048**	49.8	42.7	7.6	0	0	21	388	351	172	69	27	15	2	2	1
14:00	**1152**	48.6	41.7	7.1	0	0	43	441	394	192	55	15	11	1	0	0
15:00	**974**	50	42.6	7.4	0	0	30	336	328	166	75	31	8	0	0	0
16:00	**1046**	49.5	42.7	7	0	0	16	368	373	189	62	28	8	1	1	0
17:00	**1046**	48.9	42.6	6.9	0	0	24	331	412	207	43	17	5	6	0	1
18:00	**745**	52.5	45.5	7.4	0	0	9	146	250	202	87	37	5	8	0	1
19:00	**383**	51.6	44.9	7.4	0	0	5	89	124	102	40	16	5	0	2	0
20:00	**230**	52.6	44.5	8.3	0	0	8	58	72	48	29	10	3	1	0	1
21:00	**177**	53	43.6	9.5	0	1	11	53	45	29	27	6	2	1	2	0
22:00	**156**	51.4	44.3	7.6	0	0	2	43	55	31	13	9	3	0	0	0
23:00	**125**	50.5	43.4	8	0	0	3	40	44	21	9	3	4	1	0	0
12H,7-19	**9311**	**49.9**	**42.9**	**7.4**	**0**	**2**	**245**	**3114**	**3190**	**1741**	**646**	**247**	**90**	**23**	**10**	**3**
16H,6-22	**10409**	**50.1**	**43**	**7.5**	**0**	**3**	**273**	**3378**	**3544**	**1988**	**781**	**294**	**103**	**25**	**16**	**4**
18H,6-24	**10690**	**50.2**	**43.1**	**7.5**	**0**	**3**	**278**	**3461**	**3643**	**2040**	**803**	**306**	**110**	**26**	**16**	**4**
24H,0-24	**11225**	**50.2**	**43**	**7.5**	**0**	**4**	**297**	**3679**	**3797**	**2125**	**841**	**322**	**113**	**27**	**16**	**4**

19028		RUDHEATH		Site No: 19028007			Location	Site 7, A530, Rudheath (Armco)								
Wed 24-Jun-15 to Tue 30-Jun-15				Channel: Southbound												

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Sat 27-Jun-15																
00:00	**62**	53.3	43.8	8.9	0	0	2	21	19	7	7	3	3	0	0	0
01:00	**40**	54.1	43.1	9.6	0	0	3	13	12	3	4	4	1	0	0	0
02:00	**45**	47.3	39.9	7.9	0	0	3	24	9	7	0	1	1	0	0	0
03:00	**40**	44.8	39.1	7.2	0	0	1	28	6	2	2	0	1	0	0	0
04:00	**76**	47.9	40.5	7.4	0	0	3	39	18	11	3	1	1	0	0	0
05:00	**199**	48.6	41.7	7	0	1	7	73	67	39	9	3	0	0	0	0
06:00	**122**	50.8	43.1	8.6	0	0	5	40	42	17	10	5	2	0	0	1
07:00	**250**	50.6	43.8	7.4	0	0	3	77	84	52	18	13	3	0	0	0
08:00	**241**	53.1	45	8.2	0	0	8	56	68	57	37	9	3	3	0	0
09:00	**284**	50.6	44.1	7.2	0	1	2	77	96	71	22	12	3	0	0	0
10:00	**353**	50.7	44.5	7.6	0	0	10	76	124	95	28	12	4	4	0	0
11:00	**379**	50.9	44.6	7.6	0	2	3	91	133	95	36	9	6	3	0	1
12:00	**462**	51.4	44.6	7.4	0	0	10	102	174	102	49	17	6	1	1	0
13:00	**379**	50.7	44.2	7.3	0	1	3	98	140	85	37	9	3	2	0	1
14:00	**372**	51.6	44.8	8.1	0	0	7	93	122	89	39	8	6	6	2	0
15:00	**388**	50.4	44.6	7.4	0	0	4	89	150	98	28	10	2	4	2	1
16:00	**402**	50.7	44.8	7.1	0	0	6	82	151	108	37	10	4	3	0	1
17:00	**436**	52.1	45.5	7.9	0	0	6	93	139	122	44	15	11	3	2	1
18:00	**345**	50.6	45	7.4	0	0	3	74	128	96	24	7	10	1	1	1
19:00	**264**	50.6	44.1	7.1	0	0	7	58	107	56	23	11	2	0	0	0
20:00	**164**	50.4	44.6	7.5	0	0	1	39	64	40	13	2	3	0	0	2
21:00	**143**	51	44.3	8.5	0	1	2	38	49	31	13	6	1	0	0	2
22:00	**114**	50.4	43.4	7.2	0	0	2	35	40	22	10	4	1	0	0	0
23:00	**106**	49.4	42.4	6.8	0	0	0	44	34	17	8	2	1	0	0	0
12H,7-19	**4291**	**51**	**44.6**	**7.5**	**0**	**4**	**65**	**1008**	**1509**	**1070**	**399**	**131**	**61**	**30**	**8**	**6**
16H,6-22	**4984**	**50.9**	**44.6**	**7.6**	**0**	**5**	**80**	**1183**	**1771**	**1214**	**458**	**155**	**69**	**30**	**8**	**11**
18H,6-24	**5204**	**50.9**	**44.5**	**7.6**	**0**	**5**	**82**	**1262**	**1845**	**1253**	**476**	**161**	**71**	**30**	**8**	**11**
24H,0-24	**5666**	**50.8**	**44.3**	**7.6**	**0**	**6**	**101**	**1460**	**1976**	**1322**	**501**	**173**	**78**	**30**	**8**	**11**

19028			RUDHEATH				Site No: 19028007			Location	Site 7, A530, Rudheath (Armco)				
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Southbound								
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	=>76
Sun 28-Jun-15															
00:00	63	51	45.3	7.2	0	0	0	17	13	23	6	3	1	0	0	0
01:00	33	51.9	45	7.6	0	0	0	10	7	10	3	3	0	0	0	0
02:00	32	49.9	41.4	8.7	0	0	2	15	5	6	3	0	1	0	0	0
03:00	27	50.5	42.9	10.3	0	0	3	8	6	6	1	1	2	0	0	0
04:00	36	46.3	41	7.1	0	0	1	17	12	2	3	1	0	0	0	0
05:00	133	49.4	41.4	7.8	0	1	6	54	38	20	11	3	0	0	0	0
06:00	66	48.8	42.2	6.8	0	0	0	28	21	12	3	1	1	0	0	0
07:00	139	49	42.7	6.7	0	0	1	47	59	18	7	7	0	0	0	0
08:00	113	48.3	41.3	7.5	0	0	10	33	43	21	4	2	0	0	0	0
09:00	190	48.7	42.7	6.4	0	0	3	57	84	31	11	3	1	0	0	0
10:00	271	50.8	43.2	7.7	0	2	5	87	89	49	26	12	0	1	0	0
11:00	314	50.3	43.9	7.9	0	0	6	93	103	75	21	7	3	4	1	1
12:00	365	50.5	44.4	6.7	0	1	2	79	156	79	32	12	4	0	0	0
13:00	453	50.9	45.2	7	0	0	1	90	187	109	42	8	11	3	2	0
14:00	443	51.1	45.1	7.4	0	0	6	97	145	127	36	24	7	0	0	1
15:00	528	51.1	44.7	7.4	0	0	6	119	206	116	54	17	4	3	1	2
16:00	626	52.1	45.7	7.4	0	1	4	119	216	177	65	25	13	3	2	1
17:00	567	51.6	45.6	6.9	0	2	6	91	190	185	64	21	5	3	0	0
18:00	525	52.3	45.9	7.2	0	0	6	82	193	152	50	29	8	4	1	0
19:00	269	51.7	45	7.3	0	0	3	62	87	72	31	9	3	2	0	0
20:00	159	53.4	46.4	8.1	0	0	2	26	56	44	14	7	6	4	0	0
21:00	119	51.7	45.6	7.4	0	0	0	23	47	29	12	4	1	2	1	0
22:00	106	52.9	44.6	7.8	0	0	1	29	39	14	17	3	2	1	0	0
23:00	73	51.6	44	8.4	0	0	1	24	24	12	5	4	2	1	0	0
12H,7-19	4534	50.9	44.8	7.3	0	6	56	994	1671	1139	412	167	56	21	7	5
16H,6-22	5147	51	44.8	7.3	0	6	61	1133	1882	1296	472	188	67	29	8	5
18H,6-24	5326	51	44.8	7.4	0	6	63	1186	1945	1322	494	195	71	31	8	5
24H,0-24	5650	51	44.7	7.4	0	7	75	1307	2026	1389	521	206	75	31	8	5

19028			RUDHEATH				Site No: 19028007			Location	Site 7, A530, Rudheath (Armco)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Southbound									
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Mon 29-Jun-15																
00:00	**28**	48.3	43.6	6.4	0	0	0	7	14	5	1	0	1	0	0	0
01:00	**29**	45.5	40.4	7.4	0	0	1	15	9	2	0	2	0	0	0	0
02:00	**27**	46.8	40.4	6.4	0	0	0	16	6	3	2	0	0	0	0	0
03:00	**48**	45.3	39.8	7.2	0	0	2	27	13	2	2	2	0	0	0	0
04:00	**90**	48.3	40.8	7.4	0	0	5	40	24	15	4	2	0	0	0	0
05:00	**317**	50.8	44.1	8.1	0	2	8	81	98	84	27	10	5	1	0	1
06:00	**369**	54.3	46.5	7.8	0	0	3	68	109	100	50	27	7	4	1	0
07:00	**697**	51.8	45	7.4	0	1	7	152	246	174	75	29	7	3	1	2
08:00	**494**	51.4	45	7.2	0	0	6	105	179	126	48	21	6	3	0	0
09:00	**456**	50.5	43.7	7.3	0	0	7	137	154	100	41	8	7	2	0	0
10:00	**429**	50	43.4	7.5	0	0	12	126	149	96	25	12	6	3	0	0
11:00	**399**	50.1	43.5	7.9	0	0	11	117	134	93	28	8	3	1	2	2
12:00	**604**	50.2	43.4	7.4	0	0	17	177	206	136	47	11	7	2	1	0
13:00	**599**	50.8	43.6	8.1	0	0	17	186	182	128	57	16	6	3	2	2
14:00	**614**	50.9	43.8	7.7	0	0	20	167	206	132	56	22	11	0	0	0
15:00	**485**	50.6	44.5	6.9	0	0	3	121	169	130	35	21	6	0	0	0
16:00	**708**	50.3	44.3	6.7	0	0	11	148	289	177	64	9	6	4	0	0
17:00	**926**	50.1	44	6.9	0	0	11	225	392	192	68	25	8	2	2	1
18:00	**592**	52.5	45.5	7.3	0	0	10	103	217	149	77	25	5	6	0	0
19:00	**338**	52.1	45.1	7.5	0	0	3	79	114	81	43	10	4	3	1	0
20:00	**181**	51.7	45.1	8.1	0	0	1	47	60	43	16	6	4	2	2	0
21:00	**185**	52.5	44.2	8.1	0	0	5	50	67	28	23	6	4	2	0	0
22:00	**109**	50.6	43.3	9.5	0	1	5	33	34	21	8	3	1	1	1	1
23:00	**81**	49.9	42.9	8.2	0	0	3	27	26	16	4	4	0	0	1	0
12H,7-19	**7003**	**50.7**	**44.2**	**7.4**	**0**	**1**	**132**	**1764**	**2523**	**1633**	**621**	**207**	**78**	**29**	**8**	**7**
16H,6-22	**8076**	**50.9**	**44.3**	**7.4**	**0**	**1**	**144**	**2008**	**2873**	**1885**	**753**	**256**	**97**	**40**	**12**	**7**
18H,6-24	**8266**	**50.9**	**44.3**	**7.5**	**0**	**2**	**152**	**2068**	**2933**	**1922**	**765**	**263**	**98**	**41**	**14**	**8**
24H,0-24	**8805**	**50.8**	**44.2**	**7.5**	**0**	**4**	**168**	**2254**	**3097**	**2033**	**801**	**279**	**104**	**42**	**14**	**9**

AXIOM
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19028			RUDHEATH				Site No: 19028007			Location	Site 7, A530, Rudheath (Armco)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Southbound									
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<21**	**21-<31**	**31-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**61-<66**	**66-<71**	**71-<76**	**=>76**
Tue 30-Jun-15																
00:00	**46**	47.3	40.6	7.8	0	0	2	23	12	6	2	0	0	1	0	0
01:00	**24**	44.8	38.6	8.2	0	0	4	9	9	1	0	1	0	0	0	0
02:00	**44**	45.5	39.4	6.3	0	0	2	24	12	5	1	0	0	0	0	0
03:00	**36**	45.1	38.6	6.1	0	0	1	25	5	4	1	0	0	0	0	0
04:00	**90**	48.1	40.5	7.1	0	0	6	39	23	19	3	0	0	0	0	0
05:00	**282**	51.9	44.2	7.9	0	1	4	83	85	61	29	13	5	1	0	0
06:00	**363**	54.5	46.5	8.4	0	0	9	66	93	108	46	25	11	4	1	0
07:00	**725**	51.7	45.2	7.5	0	1	5	156	263	180	72	26	12	8	1	1
08:00	**576**	51.2	44.6	7.1	0	0	6	138	209	134	62	20	3	3	1	0
09:00	**458**	49.9	43.1	7.2	0	0	7	151	164	85	29	18	3	1	0	0
10:00	**360**	50.1	42.6	7.7	0	0	13	129	109	66	30	9	3	0	1	0
11:00	**382**	50.3	43.5	7.9	0	0	11	112	139	73	29	9	5	0	3	1
12:00	**383**	50.5	43.5	7.2	0	0	5	122	120	87	34	11	4	0	0	0
13:00	**415**	50.9	43.7	7.1	0	0	9	110	162	73	47	10	3	1	0	0
14:00	**466**	49.7	43	7.2	0	1	9	145	179	83	29	14	6	0	0	0
15:00	**525**	50.7	44.4	7.6	0	0	10	126	191	126	45	16	6	2	1	2
16:00	**696**	50.5	44.1	7.3	0	1	9	181	254	162	55	20	10	3	0	1
17:00	**872**	50.5	44.4	7.1	0	0	14	188	366	193	64	32	7	6	1	1
18:00	**614**	51.6	44.8	7.4	0	0	10	137	228	139	67	17	13	1	1	1
19:00	**369**	52.8	46.3	7.6	0	0	1	67	112	116	48	11	7	4	1	2
20:00	**211**	50.9	44.4	7.6	0	0	4	55	68	53	18	9	3	0	1	0
21:00	**154**	51.1	43.8	7.7	0	0	6	38	56	30	16	6	2	0	0	0
22:00	**131**	50.2	42.4	7.7	0	0	4	50	41	19	12	3	2	0	0	0
23:00	**90**	50.3	43	8.2	0	1	2	28	33	14	7	3	1	1	0	0
12H,7-19	**6472**	**50.7**	**44.1**	**7.4**	**0**	**3**	**108**	**1695**	**2384**	**1401**	**563**	**202**	**75**	**25**	**9**	**7**
16H,6-22	**7569**	**50.9**	**44.3**	**7.5**	**0**	**3**	**128**	**1921**	**2713**	**1708**	**691**	**253**	**98**	**33**	**12**	**9**
18H,6-24	**7790**	**50.9**	**44.2**	**7.5**	**0**	**4**	**134**	**1999**	**2787**	**1741**	**710**	**259**	**101**	**34**	**12**	**9**
24H,0-24	**8312**	**50.8**	**44.1**	**7.5**	**0**	**5**	**153**	**2202**	**2933**	**1837**	**746**	**273**	**106**	**36**	**12**	**9**

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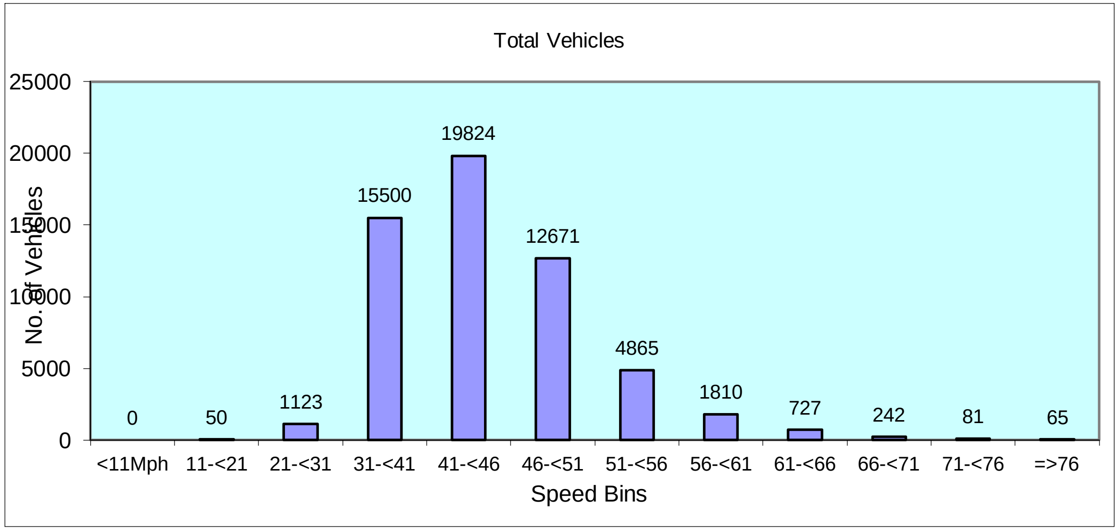
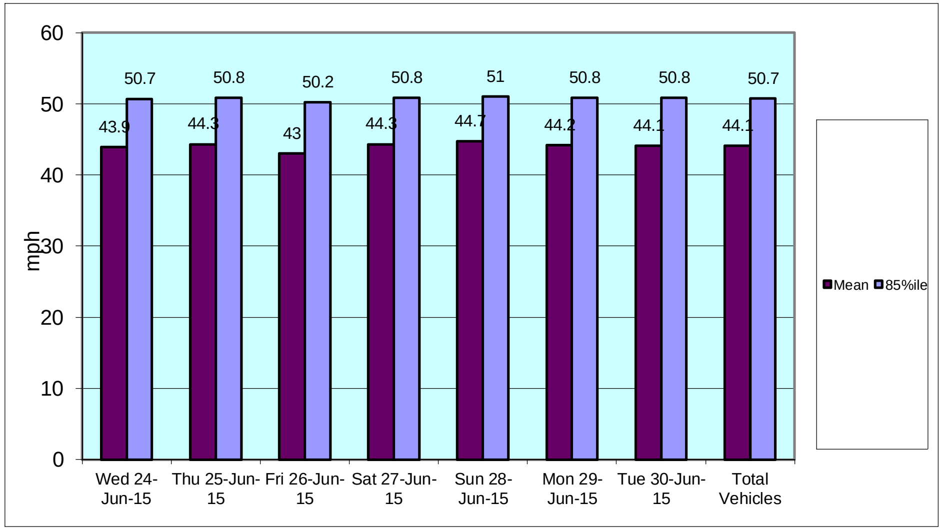
Data produced by
Axiom Traffic Ltd

19028			RUDHEATH				Site No: 19028007			Location	Site 7, A530, Rudheath (Armco)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Southbound									

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Daily Totals																
Wed 24-Jun-15	**8434**	50.7	43.9	7.6	0	10	167	2326	2934	1854	718	261	118	29	10	7
Thu 25-Jun-15	**8866**	50.8	44.3	7.7	0	14	162	2272	3061	2111	737	296	133	47	13	20
Fri 26-Jun-15	**11225**	50.2	43	7.5	0	4	297	3679	3797	2125	841	322	113	27	16	4
Sat 27-Jun-15	**5666**	50.8	44.3	7.6	0	6	101	1460	1976	1322	501	173	78	30	8	11
Sun 28-Jun-15	**5650**	51	44.7	7.4	0	7	75	1307	2026	1389	521	206	75	31	8	5
Mon 29-Jun-15	**8805**	50.8	44.2	7.5	0	4	168	2254	3097	2033	801	279	104	42	14	9
Tue 30-Jun-15	**8312**	50.8	44.1	7.5	0	5	153	2202	2933	1837	746	273	106	36	12	9
Total Vehicles																
[--]	**56958**	50.7	44.1	7.5	0	50	1123	15500	19824	12671	4865	1810	727	242	81	65





19028	RUDHEATH		Site No: 19028007 Channel: Southbound		Location	Site 7, A530, Rudheath (Armco)		
TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av
Week Begin: 24-Jun-15									
00:00	**43**	49	43	62	63	28	46	42	48
01:00	**28**	28	30	40	33	29	24	28	30
02:00	**36**	41	37	45	32	27	44	37	37
03:00	**43**	41	40	40	27	48	36	42	39
04:00	**80**	76	86	76	36	90	90	84	76
05:00	**293**	299	299	199	133	317	282	298	260
06:00	**357**	356	308	122	66	369	363	351	277
07:00	**679**	714	678	250	139	697	725	699	555
08:00	**498**	540	528	241	113	494	576	527	427
09:00	**360**	425	409	284	190	456	458	422	369
10:00	**346**	383	434	353	271	429	360	390	368
11:00	**373**	365	506	379	314	399	382	405	388
12:00	**437**	401	745	462	365	604	383	514	485
13:00	**388**	390	1048	379	453	599	415	568	525
14:00	**493**	549	1152	372	443	614	466	655	584
15:00	**559**	653	974	388	528	485	525	639	587
16:00	**778**	863	1046	402	626	708	696	818	731
17:00	**915**	949	1046	436	567	926	872	942	816
18:00	**732**	767	745	345	525	592	614	690	617
19:00	**411**	355	383	264	269	338	369	371	341
20:00	**210**	245	230	164	159	181	211	215	200
21:00	**164**	161	177	143	119	185	154	168	158
22:00	**118**	147	156	114	106	109	131	132	126
23:00	**93**	69	125	106	73	81	90	92	91
12H,7-19	**6558**	**6999**	**9311**	**4291**	**4534**	**7003**	**6472**	**7269**	**6453**
16H,6-22	**7700**	**8116**	**10409**	**4984**	**5147**	**8076**	**7569**	**8374**	**7429**
18H,6-24	**7911**	**8332**	**10690**	**5204**	**5326**	**8266**	**7790**	**8598**	**7646**
24H,0-24	**8434**	**8866**	**11225**	**5666**	**5650**	**8805**	**8312**	**9128**	**8137**
Am	**07:00**	**07:00**	**07:00**	**11:00**	**11:00**	**07:00**	**07:00**	**-**	**-**
Peak	**679**	**714**	**678**	**379**	**314**	**697**	**725**	**699**	**598**
Pm	**17:00**	**17:00**	**14:00**	**12:00**	**16:00**	**17:00**	**17:00**	**-**	**-**
Peak	**915**	**949**	**1152**	**462**	**626**	**926**	**872**	**963**	**843**

Data produced by
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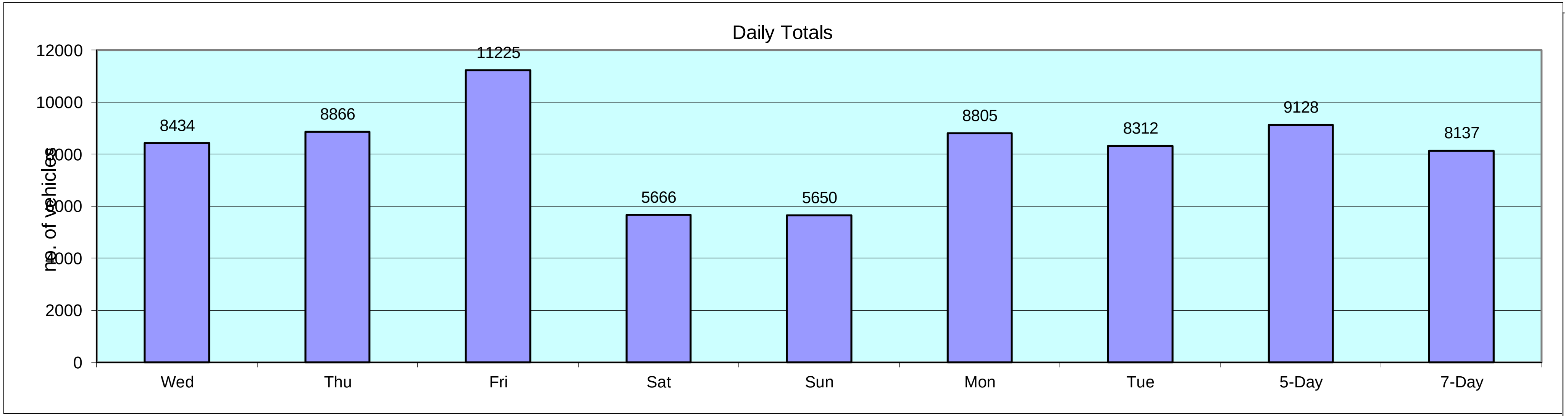
19028	RUDHEATH	Site No: 19028007	Location	Site 7, A530, Rudheath (Armco)				
		Channel: Southbound						

TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av




A530 northbound
Warrington

19028		RUDHEATH JUNE 2015								
Site	**Location**	**Direction**	**Start Date**	**End Date**	**Posted Speed Limit (PSL)**	**Total Vehicles**	**5 Day Ave.**	**7 Day Ave.**	**Average 85%ile Speed**	**Average Mean Speed**
Site No: 19028008	Site 8, A530, Rudheath (Armco) SJ 68571 72538	Channel: Northbound	Wed 24-Jun-15	Tue 30-Jun-15	60	52401	8202	7486	47.2	37.5

19028		RUDHEATH			Site No: 19028008		Location		Site 8, A530, Rudheath (Armco)		
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound						

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Wed 24-Jun-15											
00:00	**41**	2	4.9	24	58.5	1	2.4	14	34.2	0	0.0
01:00	**39**	0	0.0	21	53.9	1	2.6	17	43.6	0	0.0
02:00	**63**	1	1.6	39	61.9	1	1.6	18	28.6	4	6.4
03:00	**65**	0	0.0	35	53.9	7	10.8	22	33.9	1	1.5
04:00	**81**	1	1.2	60	74.1	6	7.4	12	14.8	2	2.5
05:00	**164**	1	0.6	124	75.6	11	6.7	28	17.1	0	0.0
06:00	**325**	5	1.5	256	78.8	26	8.0	36	11.1	2	0.6
07:00	**718**	4	0.6	593	82.6	72	10.0	47	6.6	2	0.3
08:00	**849**	9	1.1	740	87.2	50	5.9	40	4.7	10	1.2
09:00	**674**	0	0.0	555	82.3	63	9.4	46	6.8	10	1.5
10:00	**533**	4	0.8	443	83.1	46	8.6	38	7.1	2	0.4
11:00	**427**	3	0.7	304	71.2	58	13.6	58	13.6	4	0.9
12:00	**448**	1	0.2	340	75.9	48	10.7	53	11.8	6	1.3
13:00	**377**	3	0.8	290	76.9	38	10.1	42	11.1	4	1.1
14:00	**491**	6	1.2	386	78.6	51	10.4	47	9.6	1	0.2
15:00	**521**	3	0.6	417	80.0	62	11.9	34	6.5	5	1.0
16:00	**564**	10	1.8	470	83.3	50	8.9	32	5.7	2	0.4
17:00	**585**	4	0.7	520	88.9	31	5.3	28	4.8	2	0.3
18:00	**451**	4	0.9	398	88.3	28	6.2	21	4.7	0	0.0
19:00	**305**	0	0.0	279	91.5	15	4.9	11	3.6	0	0.0
20:00	**189**	0	0.0	165	87.3	13	6.9	11	5.8	0	0.0
21:00	**154**	5	3.3	128	83.1	13	8.4	8	5.2	0	0.0
22:00	**127**	1	0.8	110	86.6	6	4.7	10	7.9	0	0.0
23:00	**84**	0	0.0	59	70.2	8	9.5	17	20.2	0	0.0
12H,7-19	**6638**	**51**	**0.8**	**5456**	**82.2**	**597**	**9.0**	**486**	**7.3**	**48**	**0.7**
16H,6-22	**7611**	**61**	**0.8**	**6284**	**82.6**	**664**	**8.7**	**552**	**7.3**	**50**	**0.7**
18H,6-24	**7822**	**62**	**0.8**	**6453**	**82.5**	**678**	**8.7**	**579**	**7.4**	**50**	**0.6**
24H,0-24	**8275**	**67**	**0.8**	**6756**	**81.6**	**705**	**8.5**	**690**	**8.3**	**57**	**0.7**

19028		RUDHEATH			Site No: 19028008		Location		Site 8, A530, Rudheath (Armco)		
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Thu 25-Jun-15											
00:00	**49**	1	2.0	27	55.1	0	0.0	19	38.8	2	4.1
01:00	**47**	0	0.0	31	66.0	3	6.4	13	27.7	0	0.0
02:00	**48**	0	0.0	34	70.8	0	0.0	10	20.8	4	8.3
03:00	**78**	1	1.3	50	64.1	6	7.7	20	25.6	1	1.3
04:00	**71**	0	0.0	56	78.9	7	9.9	8	11.3	0	0.0
05:00	**181**	2	1.1	162	89.5	6	3.3	11	6.1	0	0.0
06:00	**319**	5	1.6	254	79.6	28	8.8	31	9.7	1	0.3
07:00	**620**	5	0.8	520	83.9	52	8.4	40	6.5	3	0.5
08:00	**705**	1	0.1	616	87.4	50	7.1	34	4.8	4	0.6
09:00	**508**	2	0.4	407	80.1	50	9.8	46	9.1	3	0.6
10:00	**396**	3	0.8	291	73.5	53	13.4	46	11.6	3	0.8
11:00	**443**	4	0.9	320	72.2	56	12.6	55	12.4	8	1.8
12:00	**362**	0	0.0	287	79.3	33	9.1	41	11.3	1	0.3
13:00	**426**	2	0.5	342	80.3	45	10.6	35	8.2	2	0.5
14:00	**502**	7	1.4	394	78.5	52	10.4	47	9.4	2	0.4
15:00	**556**	5	0.9	445	80.0	57	10.3	48	8.6	1	0.2
16:00	**681**	6	0.9	582	85.5	52	7.6	39	5.7	2	0.3
17:00	**671**	7	1.0	597	89.0	34	5.1	30	4.5	3	0.5
18:00	**561**	9	1.6	486	86.6	35	6.2	27	4.8	4	0.7
19:00	**332**	11	3.3	286	86.1	22	6.6	12	3.6	1	0.3
20:00	**199**	2	1.0	178	89.5	9	4.5	10	5.0	0	0.0
21:00	**170**	5	2.9	139	81.8	12	7.1	14	8.2	0	0.0
22:00	**146**	3	2.1	117	80.1	11	7.5	15	10.3	0	0.0
23:00	**66**	2	3.0	46	69.7	0	0.0	18	27.3	0	0.0
12H,7-19	**6431**	**51**	**0.8**	**5287**	**82.2**	**569**	**8.9**	**488**	**7.6**	**36**	**0.6**
16H,6-22	**7451**	**74**	**1.0**	**6144**	**82.5**	**640**	**8.6**	**555**	**7.5**	**38**	**0.5**
18H,6-24	**7663**	**79**	**1.0**	**6307**	**82.3**	**651**	**8.5**	**588**	**7.7**	**38**	**0.5**
24H,0-24	**8137**	**83**	**1.0**	**6667**	**81.9**	**673**	**8.3**	**669**	**8.2**	**45**	**0.6**

Data produced by
Axiom Traffic Ltd

19028		RUDHEATH			Site No: 19028008		Location	Site 8, A530, Rudheath (Armco)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Fri 26-Jun-15											
00:00	**70**	1	1.4	34	48.6	8	11.4	25	35.7	2	2.9
01:00	**47**	0	0.0	31	66.0	1	2.1	14	29.8	1	2.1
02:00	**52**	2	3.9	27	51.9	3	5.8	18	34.6	2	3.9
03:00	**69**	0	0.0	42	60.9	2	2.9	23	33.3	2	2.9
04:00	**84**	0	0.0	54	64.3	8	9.5	22	26.2	0	0.0
05:00	**154**	4	2.6	115	74.7	10	6.5	25	16.2	0	0.0
06:00	**296**	3	1.0	226	76.4	32	10.8	33	11.2	2	0.7
07:00	**597**	2	0.3	510	85.4	48	8.0	36	6.0	1	0.2
08:00	**702**	1	0.1	602	85.8	53	7.6	42	6.0	4	0.6
09:00	**481**	0	0.0	394	81.9	38	7.9	43	8.9	6	1.3
10:00	**462**	4	0.9	332	71.9	59	12.8	62	13.4	5	1.1
11:00	**350**	2	0.6	280	80.0	24	6.9	43	12.3	1	0.3
12:00	**477**	2	0.4	383	80.3	49	10.3	42	8.8	1	0.2
13:00	**414**	6	1.5	345	83.3	30	7.3	29	7.0	4	1.0
14:00	**520**	4	0.8	420	80.8	54	10.4	41	7.9	1	0.2
15:00	**568**	7	1.2	454	79.9	61	10.7	45	7.9	1	0.2
16:00	**690**	8	1.2	584	84.6	47	6.8	48	7.0	3	0.4
17:00	**662**	7	1.1	592	89.4	27	4.1	33	5.0	3	0.5
18:00	**570**	4	0.7	497	87.2	31	5.4	33	5.8	5	0.9
19:00	**323**	12	3.7	273	84.5	26	8.1	11	3.4	1	0.3
20:00	**204**	2	1.0	177	86.8	14	6.9	11	5.4	0	0.0
21:00	**167**	4	2.4	140	83.8	12	7.2	11	6.6	0	0.0
22:00	**138**	3	2.2	112	81.2	10	7.3	13	9.4	0	0.0
23:00	**67**	2	3.0	43	64.2	0	0.0	22	32.8	0	0.0
12H,7-19	**6493**	**47**	**0.7**	**5393**	**83.1**	**521**	**8.0**	**497**	**7.7**	**35**	**0.5**
16H,6-22	**7483**	**68**	**0.9**	**6209**	**83.0**	**605**	**8.1**	**563**	**7.5**	**38**	**0.5**
18H,6-24	**7688**	**73**	**1.0**	**6364**	**82.8**	**615**	**8.0**	**598**	**7.8**	**38**	**0.5**
24H,0-24	**8164**	**80**	**1.0**	**6667**	**81.7**	**647**	**7.9**	**725**	**8.9**	**45**	**0.6**

19028		RUDHEATH			Site No: 19028008		Location	Site 8, A530, Rudheath (Armco)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sat 27-Jun-15											
00:00	**120**	5	4.2	88	73.3	1	0.8	26	21.7	0	0.0
01:00	**45**	0	0.0	36	80.0	0	0.0	9	20.0	0	0.0
02:00	**54**	0	0.0	46	85.2	0	0.0	6	11.1	2	3.7
03:00	**68**	0	0.0	37	54.4	2	2.9	28	41.2	1	1.5
04:00	**75**	2	2.7	52	69.3	7	9.3	12	16.0	2	2.7
05:00	**131**	1	0.8	107	81.7	8	6.1	15	11.5	0	0.0
06:00	**190**	1	0.5	151	79.5	16	8.4	22	11.6	0	0.0
07:00	**233**	1	0.4	182	78.1	36	15.5	14	6.0	0	0.0
08:00	**500**	4	0.8	429	85.8	47	9.4	19	3.8	1	0.2
09:00	**477**	0	0.0	406	85.1	37	7.8	24	5.0	10	2.1
10:00	**488**	3	0.6	436	89.3	24	4.9	24	4.9	1	0.2
11:00	**471**	1	0.2	400	84.9	34	7.2	33	7.0	3	0.6
12:00	**390**	1	0.3	324	83.1	29	7.4	33	8.5	3	0.8
13:00	**439**	14	3.2	352	80.2	27	6.2	45	10.3	1	0.2
14:00	**449**	6	1.3	387	86.2	23	5.1	32	7.1	1	0.2
15:00	**411**	1	0.2	341	83.0	28	6.8	41	10.0	0	0.0
16:00	**429**	3	0.7	366	85.3	44	10.3	16	3.7	0	0.0
17:00	**401**	1	0.3	366	91.3	20	5.0	13	3.2	1	0.3
18:00	**346**	3	0.9	304	87.9	23	6.7	16	4.6	0	0.0
19:00	**211**	3	1.4	191	90.5	11	5.2	6	2.8	0	0.0
20:00	**148**	1	0.7	128	86.5	14	9.5	5	3.4	0	0.0
21:00	**116**	1	0.9	103	88.8	10	8.6	2	1.7	0	0.0
22:00	**98**	0	0.0	91	92.9	3	3.1	4	4.1	0	0.0
23:00	**93**	0	0.0	74	79.6	9	9.7	10	10.8	0	0.0
12H,7-19	**5034**	**38**	**0.8**	**4293**	**85.3**	**372**	**7.4**	**310**	**6.2**	**21**	**0.4**
16H,6-22	**5699**	**44**	**0.8**	**4866**	**85.4**	**423**	**7.4**	**345**	**6.1**	**21**	**0.4**
18H,6-24	**5890**	**44**	**0.8**	**5031**	**85.4**	**435**	**7.4**	**359**	**6.1**	**21**	**0.4**
24H,0-24	**6383**	**52**	**0.8**	**5397**	**84.6**	**453**	**7.1**	**455**	**7.1**	**26**	**0.4**

19028		RUDHEATH			Site No: 19028008		Location		Site 8, A530, Rudheath (Armco)		
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sun 28-Jun-15											
00:00	**139**	1	0.7	115	82.7	0	0.0	23	16.6	0	0.0
01:00	**128**	0	0.0	106	82.8	0	0.0	22	17.2	0	0.0
02:00	**127**	0	0.0	114	89.8	1	0.8	9	7.1	3	2.4
03:00	**63**	0	0.0	43	68.3	3	4.8	16	25.4	1	1.6
04:00	**51**	0	0.0	41	80.4	4	7.8	5	9.8	1	2.0
05:00	**94**	0	0.0	78	83.0	5	5.3	11	11.7	0	0.0
06:00	**160**	2	1.3	126	78.8	12	7.5	20	12.5	0	0.0
07:00	**180**	1	0.6	160	88.9	10	5.6	9	5.0	0	0.0
08:00	**319**	3	0.9	279	87.5	18	5.6	18	5.6	1	0.3
09:00	**362**	0	0.0	298	82.3	31	8.6	25	6.9	8	2.2
10:00	**375**	4	1.1	312	83.2	25	6.7	31	8.3	3	0.8
11:00	**401**	3	0.8	303	75.6	49	12.2	42	10.5	4	1.0
12:00	**313**	1	0.3	234	74.8	38	12.1	36	11.5	4	1.3
13:00	**345**	14	4.1	274	79.4	25	7.3	28	8.1	4	1.2
14:00	**329**	4	1.2	252	76.6	30	9.1	40	12.2	3	0.9
15:00	**300**	3	1.0	234	78.0	29	9.7	34	11.3	0	0.0
16:00	**286**	4	1.4	233	81.5	30	10.5	19	6.6	0	0.0
17:00	**309**	3	1.0	271	87.7	16	5.2	18	5.8	1	0.3
18:00	**290**	2	0.7	255	87.9	21	7.2	12	4.1	0	0.0
19:00	**120**	2	1.7	112	93.3	4	3.3	2	1.7	0	0.0
20:00	**122**	1	0.8	103	84.4	12	9.8	6	4.9	0	0.0
21:00	**100**	1	1.0	88	88.0	6	6.0	5	5.0	0	0.0
22:00	**54**	0	0.0	49	90.7	3	5.6	2	3.7	0	0.0
23:00	**40**	0	0.0	27	67.5	4	10.0	9	22.5	0	0.0
12H,7-19	**3809**	**42**	**1.1**	**3105**	**81.5**	**322**	**8.5**	**312**	**8.2**	**28**	**0.7**
16H,6-22	**4311**	**48**	**1.1**	**3534**	**82.0**	**356**	**8.3**	**345**	**8.0**	**28**	**0.7**
18H,6-24	**4405**	**48**	**1.1**	**3610**	**82.0**	**363**	**8.2**	**356**	**8.1**	**28**	**0.6**
24H,0-24	**5007**	**49**	**1.0**	**4107**	**82.0**	**376**	**7.5**	**442**	**8.8**	**33**	**0.7**

19028 RUDHEATH Site No: 19028008 Location Site 8, A530, Rudheath (Armco)

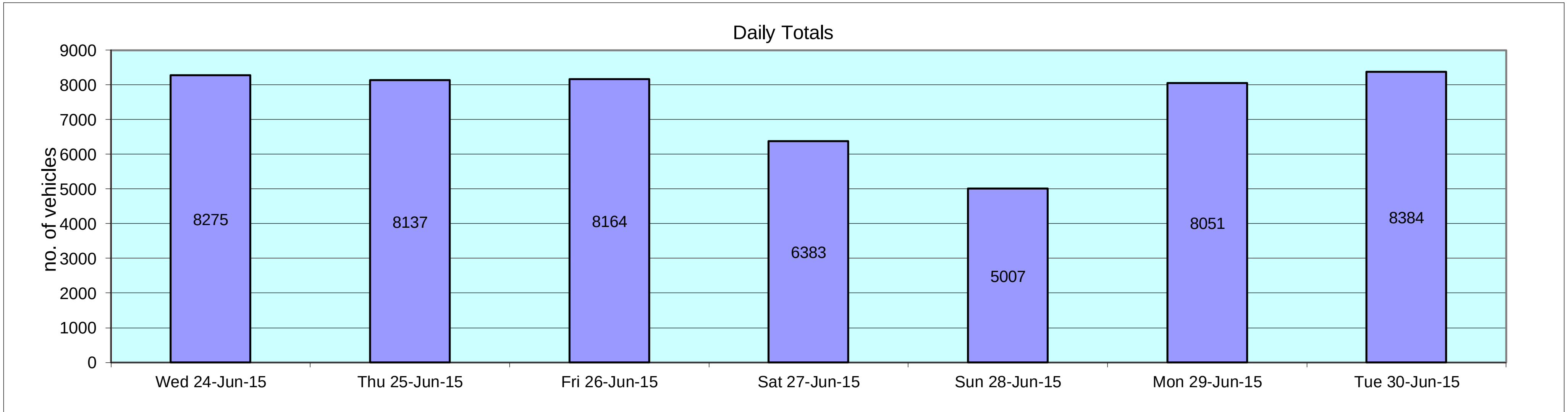
Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Northbound

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Mon 29-Jun-15											
00:00	**60**	1	1.7	28	46.7	5	8.3	24	40.0	2	3.3
01:00	**43**	0	0.0	26	60.5	1	2.3	15	34.9	1	2.3
02:00	**55**	3	5.5	23	41.8	3	5.5	24	43.6	2	3.6
03:00	**73**	0	0.0	47	64.4	3	4.1	22	30.1	1	1.4
04:00	**90**	0	0.0	56	62.2	9	10.0	25	27.8	0	0.0
05:00	**150**	5	3.3	121	80.7	5	3.3	19	12.7	0	0.0
06:00	**287**	2	0.7	222	77.4	25	8.7	37	12.9	1	0.4
07:00	**593**	1	0.2	513	86.5	42	7.1	36	6.1	1	0.2
08:00	**703**	1	0.1	607	86.3	51	7.3	40	5.7	4	0.6
09:00	**459**	0	0.0	378	82.4	32	7.0	45	9.8	4	0.9
10:00	**441**	3	0.7	315	71.4	58	13.2	62	14.1	3	0.7
11:00	**366**	2	0.6	294	80.3	23	6.3	46	12.6	1	0.3
12:00	**515**	3	0.6	401	77.9	58	11.3	52	10.1	1	0.2
13:00	**400**	8	2.0	330	82.5	30	7.5	29	7.3	3	0.8
14:00	**502**	3	0.6	403	80.3	62	12.4	33	6.6	1	0.2
15:00	**548**	6	1.1	435	79.4	63	11.5	43	7.9	1	0.2
16:00	**659**	11	1.7	570	86.5	40	6.1	36	5.5	2	0.3
17:00	**648**	5	0.8	581	89.7	22	3.4	36	5.6	4	0.6
18:00	**553**	4	0.7	480	86.8	29	5.2	35	6.3	5	0.9
19:00	**315**	12	3.8	261	82.9	30	9.5	11	3.5	1	0.3
20:00	**206**	2	1.0	179	86.9	17	8.3	8	3.9	0	0.0
21:00	**162**	4	2.5	139	85.8	10	6.2	9	5.6	0	0.0
22:00	**152**	3	2.0	121	79.6	15	9.9	13	8.6	0	0.0
23:00	**71**	3	4.2	51	71.8	0	0.0	17	23.9	0	0.0
12H,7-19	**6387**	**47**	**0.7**	**5307**	**83.1**	**510**	**8.0**	**493**	**7.7**	**30**	**0.5**
16H,6-22	**7357**	**67**	**0.9**	**6108**	**83.0**	**592**	**8.1**	**558**	**7.6**	**32**	**0.4**
18H,6-24	**7580**	**73**	**1.0**	**6280**	**82.9**	**607**	**8.0**	**588**	**7.8**	**32**	**0.4**
24H,0-24	**8051**	**82**	**1.0**	**6581**	**81.7**	**633**	**7.9**	**717**	**8.9**	**38**	**0.5**

19028		RUDHEATH			Site No: 19028008		Location	Site 8, A530, Rudheath (Armco)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Northbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Tue 30-Jun-15											
00:00	**47**	2	4.3	27	57.5	1	2.1	17	36.2	0	0.0
01:00	**41**	0	0.0	25	61.0	1	2.4	15	36.6	0	0.0
02:00	**65**	1	1.5	47	72.3	1	1.5	12	18.5	4	6.2
03:00	**59**	0	0.0	28	47.5	5	8.5	25	42.4	1	1.7
04:00	**71**	2	2.8	52	73.2	5	7.0	10	14.1	2	2.8
05:00	**169**	1	0.6	132	78.1	11	6.5	25	14.8	0	0.0
06:00	**332**	7	2.1	260	78.3	22	6.6	42	12.7	1	0.3
07:00	**730**	4	0.6	613	84.0	67	9.2	45	6.2	1	0.1
08:00	**838**	8	1.0	736	87.8	47	5.6	42	5.0	5	0.6
09:00	**668**	0	0.0	548	82.0	61	9.1	48	7.2	11	1.7
10:00	**517**	4	0.8	437	84.5	37	7.2	37	7.2	2	0.4
11:00	**504**	2	0.4	387	76.8	63	12.5	48	9.5	4	0.8
12:00	**421**	2	0.5	322	76.5	50	11.9	44	10.5	3	0.7
13:00	**384**	11	2.9	281	73.2	42	10.9	48	12.5	2	0.5
14:00	**405**	6	1.5	319	78.8	38	9.4	40	9.9	2	0.5
15:00	**471**	4	0.9	371	78.8	47	10.0	49	10.4	0	0.0
16:00	**606**	7	1.2	494	81.5	74	12.2	31	5.1	0	0.0
17:00	**658**	5	0.8	585	88.9	36	5.5	30	4.6	2	0.3
18:00	**565**	6	1.1	495	87.6	42	7.4	22	3.9	0	0.0
19:00	**283**	4	1.4	254	89.8	15	5.3	10	3.5	0	0.0
20:00	**189**	4	2.1	158	83.6	18	9.5	9	4.8	0	0.0
21:00	**164**	2	1.2	139	84.8	13	7.9	10	6.1	0	0.0
22:00	**118**	0	0.0	104	88.1	5	4.2	8	6.8	1	0.9
23:00	**79**	0	0.0	57	72.2	6	7.6	15	19.0	1	1.3
12H,7-19	**6767**	**59**	**0.9**	**5588**	**82.6**	**604**	**8.9**	**484**	**7.2**	**32**	**0.5**
16H,6-22	**7735**	**76**	**1.0**	**6399**	**82.7**	**672**	**8.7**	**555**	**7.2**	**33**	**0.4**
18H,6-24	**7932**	**76**	**1.0**	**6560**	**82.7**	**683**	**8.6**	**578**	**7.3**	**35**	**0.4**
24H,0-24	**8384**	**82**	**1.0**	**6871**	**82.0**	**707**	**8.4**	**682**	**8.1**	**42**	**0.5**

19028	RUDHEATH	Site No: 19028008	Location	Site 8, A530, Rudheath (Armco)
Wed 24-Jun-15 to Tue 30-Jun-15		Channel: Northbound		

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Daily Totals											
Wed 24-Jun-15	**8275**	67	0.8	6756	81.6	705	8.5	690	8.3	57	0.7
Thu 25-Jun-15	**8137**	83	1.0	6667	81.9	673	8.3	669	8.2	45	0.6
Fri 26-Jun-15	**8164**	80	1.0	6667	81.7	647	7.9	725	8.9	45	0.6
Sat 27-Jun-15	**6383**	52	0.8	5397	84.6	453	7.1	455	7.1	26	0.4
Sun 28-Jun-15	**5007**	49	1.0	4107	82.0	376	7.5	442	8.8	33	0.7
Mon 29-Jun-15	**8051**	82	1.0	6581	81.7	633	7.9	717	8.9	38	0.5
Tue 30-Jun-15	**8384**	82	1.0	6871	82.0	707	8.4	682	8.1	42	0.5
Total Vehicles											
[--]	**52401**	495	0.9	43046	82.2	4194	7.9	4380	8.3	286	0.5



19028			RUDHEATH				Site No: 19028008			Location	Site 8, A530, Rudheath (Armco)				
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Northbound								
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Wed 24-Jun-15																
00:00	**41**	49.3	40.9	8.7	0	0	4	17	8	8	3	0	1	0	0	0
01:00	**39**	48.3	41.3	7.6	0	0	1	19	9	8	0	1	1	0	0	0
02:00	**63**	48	40.6	7.4	0	0	3	31	15	10	2	2	0	0	0	0
03:00	**65**	48.9	40.3	8.6	0	0	7	28	14	10	4	1	1	0	0	0
04:00	**81**	49.5	42	7.6	0	0	3	32	23	15	4	4	0	0	0	0
05:00	**164**	51	43.4	8.3	0	0	7	47	60	25	13	8	2	2	0	0
06:00	**325**	50.8	43.2	8.2	0	0	16	103	85	75	31	10	4	1	0	0
07:00	**718**	47.7	40	7.7	0	1	62	325	189	94	33	11	3	0	0	0
08:00	**849**	37.5	24.3	11.4	148	204	238	201	40	13	4	1	0	0	0	0
09:00	**674**	44.8	37.9	6.8	0	3	60	411	130	52	13	5	0	0	0	0
10:00	**533**	45.6	38.9	7.6	0	3	49	276	135	43	16	9	1	0	0	1
11:00	**427**	47.2	39.8	7.5	0	1	31	212	105	56	16	3	2	0	0	1
12:00	**448**	46.7	40.8	6.9	0	0	10	218	145	50	11	7	6	1	0	0
13:00	**377**	47.5	40.6	7	0	0	21	160	123	55	12	6	0	0	0	0
14:00	**491**	46.9	39.1	7.9	0	1	47	261	99	50	19	10	4	0	0	0
15:00	**521**	48.3	40.5	7.7	0	0	46	210	147	86	22	7	3	0	0	0
16:00	**564**	48.2	40.6	8.2	0	0	41	257	152	66	27	13	4	0	4	0
17:00	**585**	47.5	38.7	8.7	0	7	91	240	137	73	28	5	4	0	0	0
18:00	**451**	50	42.6	7.6	0	2	8	173	133	83	31	17	3	1	0	0
19:00	**305**	50.8	43.7	7.8	0	0	12	83	94	72	29	10	5	0	0	0
20:00	**189**	50.6	43	7.7	0	0	9	54	65	35	19	6	1	0	0	0
21:00	**154**	50.7	44	8	0	1	3	39	59	30	15	2	2	3	0	0
22:00	**127**	51.2	44.6	7.7	0	0	0	39	35	33	12	4	3	0	1	0
23:00	**84**	48.3	40.3	8.3	0	0	8	36	21	13	4	1	0	1	0	0
12H,7-19	**6638**	**46.6**	**37.9**	**9.8**	**148**	**222**	**704**	**2944**	**1535**	**721**	**232**	**94**	**30**	**2**	**4**	**2**
16H,6-22	**7611**	**47.6**	**38.6**	**9.7**	**148**	**223**	**744**	**3223**	**1838**	**933**	**326**	**122**	**42**	**6**	**4**	**2**
18H,6-24	**7822**	**47.7**	**38.7**	**9.7**	**148**	**223**	**752**	**3298**	**1894**	**979**	**342**	**127**	**45**	**7**	**5**	**2**
24H,0-24	**8275**	**47.8**	**38.9**	**9.7**	**148**	**223**	**777**	**3472**	**2023**	**1055**	**368**	**143**	**50**	**9**	**5**	**2**

Data produced by
Axiom Traffic Ltd

19028			RUDHEATH				Site No: 19028008			Location	Site 8, A530, Rudheath (Armco)				
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Northbound								
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76

Thu 25-Jun-15

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
00:00	**49**	44.8	39.7	5.7	0	0	3	19	25	2	0	0	0	0	0	0
01:00	**47**	47.8	39.1	8	0	0	5	25	8	4	5	0	0	0	0	0
02:00	**48**	44.9	38.8	6.5	0	0	3	28	12	3	2	0	0	0	0	0
03:00	**78**	45.5	38.8	7	0	0	5	49	13	5	6	0	0	0	0	0
04:00	**71**	47.3	41.5	6	0	0	0	31	26	11	2	1	0	0	0	0
05:00	**181**	54.2	45.5	8.2	0	0	1	47	60	26	30	10	5	2	0	0
06:00	**319**	50.7	44.7	7	0	0	5	70	112	89	26	13	3	1	0	0
07:00	**620**	48.6	40.4	8.3	4	6	40	256	167	103	36	4	3	1	0	0
08:00	**705**	44.6	32.9	11.7	35	91	132	262	109	49	22	3	2	0	0	0
09:00	**508**	47.5	39.2	8.7	1	15	47	215	133	67	20	9	1	0	0	0
10:00	**396**	48.8	41.3	7.5	0	1	22	153	122	69	20	7	2	0	0	0
11:00	**443**	47	39.7	7.5	0	0	38	208	118	61	10	4	3	1	0	0
12:00	**362**	49.9	42.4	7.6	0	0	13	131	119	57	25	14	3	0	0	0
13:00	**426**	48.3	41	7.6	0	1	24	175	132	63	22	3	4	2	0	0
14:00	**502**	47.1	40.1	7.4	0	0	31	244	138	60	18	7	3	0	1	0
15:00	**556**	48.6	40.6	7.8	0	0	34	263	134	78	30	12	4	1	0	0
16:00	**681**	48.1	38.6	10.3	6	34	86	241	177	82	38	9	5	2	1	0
17:00	**671**	45.6	35.4	10.9	28	43	102	284	122	59	25	8	0	0	0	0
18:00	**561**	49.4	41.5	7.7	0	2	16	254	142	92	37	11	6	1	0	0
19:00	**332**	51.3	44.4	8.7	0	0	9	92	102	77	33	7	4	3	1	4
20:00	**199**	53.3	45.4	8.8	0	1	9	35	57	56	23	11	4	2	1	0
21:00	**170**	50.9	45.3	8.3	0	1	4	28	61	51	15	6	1	0	0	3
22:00	**146**	51.6	43.9	8	0	0	3	45	46	28	13	8	2	1	0	0
23:00	**66**	50	42.5	8.2	0	0	5	20	17	17	4	3	0	0	0	0
12H,7-19	**6431**	**47.9**	**39**	**9.4**	**74**	**193**	**585**	**2686**	**1613**	**840**	**303**	**91**	**36**	**8**	**2**	**0**
16H,6-22	**7451**	**48.7**	**39.8**	**9.4**	**74**	**195**	**612**	**2911**	**1945**	**1113**	**400**	**128**	**48**	**14**	**4**	**7**
18H,6-24	**7663**	**48.8**	**39.9**	**9.4**	**74**	**195**	**620**	**2976**	**2008**	**1158**	**417**	**139**	**50**	**15**	**4**	**7**
24H,0-24	**8137**	**48.8**	**40**	**9.3**	**74**	**195**	**637**	**3175**	**2152**	**1209**	**462**	**150**	**55**	**17**	**4**	**7**

19028		RUDHEATH				Site No: 19028008			Location	Site 8, A530, Rudheath (Armco)						
Wed 24-Jun-15 to Tue 30-Jun-15						Channel: Northbound										
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Fri 26-Jun-15																
00:00	**70**	49.3	41.4	8.5	0	0	5	29	17	12	4	2	0	1	0	0
01:00	**47**	52	41.9	10.4	0	0	4	21	8	5	7	0	1	0	0	1
02:00	**52**	46.9	39	8.3	0	0	8	22	13	4	5	0	0	0	0	0
03:00	**69**	49.4	41	7.7	0	0	4	32	12	15	5	1	0	0	0	0
04:00	**84**	48.3	40.5	7.5	0	0	7	34	24	13	6	0	0	0	0	0
05:00	**154**	50.3	43.6	8.5	0	2	4	42	52	35	8	7	3	0	1	0
06:00	**296**	50.5	43.5	7.2	0	0	10	83	89	77	30	7	0	0	0	0
07:00	**597**	48.3	40.7	7.4	0	1	27	281	159	86	26	15	2	0	0	0
08:00	**702**	45.3	34.9	11	17	70	116	289	121	53	28	5	3	0	0	0
09:00	**481**	49.2	41.4	7.9	0	3	28	182	148	75	33	8	4	0	0	0
10:00	**462**	45.8	37.3	9.3	5	20	59	211	102	45	14	5	1	0	0	0
11:00	**350**	40.3	27.2	12.6	53	67	77	108	24	14	5	2	0	0	0	0
12:00	**477**	46.6	37.7	10	2	28	65	193	111	46	19	10	2	0	1	0
13:00	**414**	43.6	25.4	15.3	137	53	55	87	37	33	5	4	2	1	0	0
14:00	**520**	47	37.6	9.9	8	15	82	222	103	55	21	11	3	0	0	0
15:00	**568**	48.5	40.6	7.6	0	0	30	280	131	84	27	11	4	1	0	0
16:00	**690**	48.2	38.3	10.4	9	28	97	256	164	73	44	13	3	2	1	0
17:00	**662**	45.5	35.3	11	31	44	94	287	117	59	21	9	0	0	0	0
18:00	**570**	49.1	41.5	7.4	0	1	15	262	147	95	32	13	4	1	0	0
19:00	**323**	51.1	44.1	8.2	0	0	12	85	97	79	39	4	2	2	1	2
20:00	**204**	52.8	45.7	8.2	0	1	6	34	59	64	25	9	3	2	1	0
21:00	**167**	50.9	45.3	8.4	0	1	6	24	58	54	16	4	1	0	0	3
22:00	**138**	50.4	43.8	7.5	0	0	4	37	46	34	11	4	1	1	0	0
23:00	**67**	49.8	42.2	8.7	0	0	7	19	16	19	2	4	0	0	0	0
12H,7-19	**6493**	**47.1**	**37**	**11**	**262**	**330**	**745**	**2658**	**1364**	**718**	**275**	**106**	**28**	**5**	**2**	**0**
16H,6-22	**7483**	**48.2**	**38**	**10.9**	**262**	**332**	**779**	**2884**	**1667**	**992**	**385**	**130**	**34**	**9**	**4**	**5**
18H,6-24	**7688**	**48.3**	**38.1**	**10.9**	**262**	**332**	**790**	**2940**	**1729**	**1045**	**398**	**138**	**35**	**10**	**4**	**5**
24H,0-24	**8164**	**48.4**	**38.3**	**10.8**	**262**	**334**	**822**	**3120**	**1855**	**1129**	**433**	**148**	**39**	**11**	**5**	**6**

AXIOM Traffic Limited

Data produced by
Axiom Traffic Ltd

19028			RUDHEATH				Site No: 19028008			Location	Site 8, A530, Rudheath (Armco)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Northbound									
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<21**	**21-<31**	**31-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**61-<66**	**66-<71**	**71-<76**	**=>76**
Sat 27-Jun-15																
00:00	**120**	45.5	36.1	10.5	3	9	11	65	15	8	6	3	0	0	0	0
01:00	**45**	44.8	34.9	10.2	1	4	6	23	5	5	1	0	0	0	0	0
02:00	**54**	44.9	34.8	11	2	4	9	25	7	4	2	1	0	0	0	0
03:00	**68**	44.3	35	9.9	1	7	7	37	8	6	2	0	0	0	0	0
04:00	**75**	45.1	34.4	11	3	8	9	35	10	8	2	0	0	0	0	0
05:00	**131**	44.3	34.3	11.1	6	11	20	62	18	7	5	2	0	0	0	0
06:00	**190**	47.5	36.4	10.7	6	12	24	85	27	24	12	0	0	0	0	0
07:00	**233**	44.3	33.6	11.5	13	24	35	101	37	13	7	3	0	0	0	0
08:00	**500**	44.8	34.4	10.9	22	46	62	249	60	42	16	3	0	0	0	0
09:00	**477**	47.3	35.1	11.9	19	53	62	194	65	47	30	7	0	0	0	0
10:00	**488**	44.7	34	10.7	23	43	70	238	55	49	10	0	0	0	0	0
11:00	**471**	45.1	34.8	10.7	14	46	60	231	60	33	26	1	0	0	0	0
12:00	**390**	44	34.5	9.9	12	29	59	199	53	29	9	0	0	0	0	0
13:00	**439**	45.3	34.7	11.2	22	32	65	205	56	32	22	5	0	0	0	0
14:00	**449**	45.1	35.3	10.4	14	32	60	220	67	39	11	6	0	0	0	0
15:00	**411**	43.8	33.9	10.7	19	35	62	203	53	24	12	3	0	0	0	0
16:00	**429**	44	34	10.6	20	33	66	214	52	29	13	2	0	0	0	0
17:00	**401**	45.3	34.7	11.3	10	46	63	166	65	24	20	7	0	0	0	0
18:00	**346**	44.8	34.9	10.3	10	27	55	158	57	26	13	0	0	0	0	0
19:00	**211**	45.1	34.2	11.5	9	20	37	89	29	13	11	3	0	0	0	0
20:00	**148**	43.6	34	10.1	4	16	19	75	22	10	2	0	0	0	0	0
21:00	**116**	43.7	35.2	9.5	1	10	14	66	13	7	4	1	0	0	0	0
22:00	**98**	43.8	33	11	7	7	19	39	19	7	0	0	0	0	0	0
23:00	**93**	46.3	34.8	11.6	3	11	13	37	14	10	4	1	0	0	0	0
12H,7-19	**5034**	**45**	**34.5**	**10.8**	**198**	**446**	**719**	**2378**	**680**	**387**	**189**	**37**	**0**	**0**	**0**	**0**
16H,6-22	**5699**	**45**	**34.6**	**10.8**	**218**	**504**	**813**	**2693**	**771**	**441**	**218**	**41**	**0**	**0**	**0**	**0**
18H,6-24	**5890**	**45**	**34.6**	**10.8**	**228**	**522**	**845**	**2769**	**804**	**458**	**222**	**42**	**0**	**0**	**0**	**0**
24H,0-24	**6383**	**45**	**34.6**	**10.8**	**244**	**565**	**907**	**3016**	**867**	**496**	**240**	**48**	**0**	**0**	**0**	**0**

19028			RUDHEATH				Site No: 19028008			Location	Site 8, A530, Rudheath (Armco)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Northbound									

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Sun 28-Jun-15																
00:00	**139**	45.4	34	11.2	6	14	24	57	19	15	4	0	0	0	0	0
01:00	**128**	43.7	33.7	10.4	5	13	17	64	17	12	0	0	0	0	0	0
02:00	**127**	44.2	34.6	10.1	4	10	18	64	18	10	3	0	0	0	0	0
03:00	**63**	44.9	34.2	11.4	4	5	8	29	9	6	2	0	0	0	0	0
04:00	**51**	43.4	32.6	11.4	4	5	7	24	6	5	0	0	0	0	0	0
05:00	**94**	45.3	35.3	10.7	4	6	14	40	18	9	3	0	0	0	0	0
06:00	**160**	45.6	34.4	11	4	20	24	62	28	20	2	0	0	0	0	0
07:00	**180**	44.4	34.7	10.2	8	11	26	88	29	14	4	0	0	0	0	0
08:00	**319**	45.7	34.9	11.1	10	36	40	130	58	36	9	0	0	0	0	0
09:00	**362**	44.4	34.3	10.6	11	40	48	167	61	24	11	0	0	0	0	0
10:00	**375**	44.5	33.8	10.8	18	33	62	170	50	34	8	0	0	0	0	0
11:00	**401**	44.7	34.8	10.2	9	36	58	194	59	31	14	0	0	0	0	0
12:00	**313**	43.8	33.4	10.9	13	35	48	148	39	20	10	0	0	0	0	0
13:00	**345**	43	32.8	10.8	20	39	45	171	45	23	2	0	0	0	0	0
14:00	**329**	44.4	33.2	11.3	18	35	58	134	50	26	8	0	0	0	0	0
15:00	**300**	44.5	33.3	11.1	14	34	49	130	39	28	6	0	0	0	0	0
16:00	**286**	43.6	33.2	10.8	14	30	44	137	34	22	5	0	0	0	0	0
17:00	**309**	45	34.6	10.9	14	21	57	126	55	20	16	0	0	0	0	0
18:00	**290**	45.4	34.8	10.9	15	21	39	128	49	32	6	0	0	0	0	0
19:00	**120**	45.2	34.7	10.5	4	9	21	54	16	12	4	0	0	0	0	0
20:00	**122**	44.9	33.8	11.2	7	10	21	52	17	12	3	0	0	0	0	0
21:00	**100**	44	33.5	11.2	5	11	14	46	14	6	4	0	0	0	0	0
22:00	**54**	43.8	33.4	10.8	3	5	8	25	8	5	0	0	0	0	0	0
23:00	**40**	44.8	34	10.8	1	5	6	17	6	5	0	0	0	0	0	0
12H,7-19	**3809**	**44.6**	**34**	**10.8**	**164**	**371**	**574**	**1723**	**568**	**310**	**99**	**0**	**0**	**0**	**0**	**0**
16H,6-22	**4311**	**44.6**	**34**	**10.8**	**184**	**421**	**654**	**1937**	**643**	**360**	**112**	**0**	**0**	**0**	**0**	**0**
18H,6-24	**4405**	**44.6**	**34**	**10.8**	**188**	**431**	**668**	**1979**	**657**	**370**	**112**	**0**	**0**	**0**	**0**	**0**
24H,0-24	**5007**	**44.7**	**34**	**10.8**	**215**	**484**	**756**	**2257**	**744**	**427**	**124**	**0**	**0**	**0**	**0**	**0**

19028		RUDHEATH					Site No: 19028008			Location	Site 8, A530, Rudheath (Armco)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Northbound									

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Mon 29-Jun-15																
00:00	**60**	49.3	41.3	7.9	0	0	5	22	15	13	4	1	0	0	0	0
01:00	**43**	50.1	40.9	10	0	0	2	26	4	5	4	0	1	0	0	1
02:00	**55**	48.3	39	8.4	0	0	8	26	10	5	6	0	0	0	0	0
03:00	**73**	48.9	40.4	7.3	0	0	2	43	9	13	5	1	0	0	0	0
04:00	**90**	48.5	41.4	6.9	0	0	4	35	29	16	6	0	0	0	0	0
05:00	**150**	50.3	44.3	8.3	0	2	2	36	52	41	4	8	4	0	1	0
06:00	**287**	50.8	44	7	0	0	7	74	87	78	37	4	0	0	0	0
07:00	**593**	48.8	40.9	7.7	0	1	30	276	144	93	28	18	3	0	0	0
08:00	**703**	45	34.9	10.7	15	67	120	287	135	49	24	3	3	0	0	0
09:00	**459**	48.4	40.9	7.5	0	3	29	176	151	65	29	6	0	0	0	0
10:00	**441**	45.3	37.1	9.1	5	16	59	212	95	35	13	5	1	0	0	0
11:00	**366**	39.8	26.7	12.6	59	75	76	114	20	16	5	1	0	0	0	0
12:00	**515**	46.3	37.6	10.1	2	35	61	215	122	43	21	13	2	0	1	0
13:00	**400**	43.6	25.6	15.2	128	51	55	86	38	32	3	5	2	0	0	0
14:00	**502**	47.2	38	9.3	5	11	71	226	98	62	18	9	2	0	0	0
15:00	**548**	48.6	40.7	7.6	0	0	26	272	121	88	27	8	5	1	0	0
16:00	**659**	48.2	38.4	10.3	10	24	89	250	156	69	43	12	3	2	1	0
17:00	**648**	45.7	35.1	11.5	35	51	81	277	114	54	24	12	0	0	0	0
18:00	**553**	48.8	41.4	7.2	0	1	11	257	153	86	28	13	4	0	0	0
19:00	**315**	51.5	44.3	7.7	0	0	10	73	109	71	40	6	2	3	1	0
20:00	**206**	53.2	45.5	8.6	0	1	9	39	49	65	26	11	4	2	0	0
21:00	**162**	50.4	44.7	7.9	0	1	4	29	59	50	13	3	1	0	0	2
22:00	**152**	49.7	43.1	7.4	0	0	5	45	51	37	9	3	1	1	0	0
23:00	**71**	50	42.2	9	0	0	8	20	15	21	2	5	0	0	0	0
12H,7-19	**6387**	**46.9**	**36.9**	**11**	**259**	**335**	**708**	**2648**	**1347**	**692**	**263**	**105**	**25**	**3**	**2**	**0**
16H,6-22	**7357**	**48.1**	**37.9**	**10.9**	**259**	**337**	**738**	**2863**	**1651**	**956**	**379**	**129**	**32**	**8**	**3**	**2**
18H,6-24	**7580**	**48.2**	**38.1**	**10.9**	**259**	**337**	**751**	**2928**	**1717**	**1014**	**390**	**137**	**33**	**9**	**3**	**2**
24H,0-24	**8051**	**48.3**	**38.3**	**10.8**	**259**	**339**	**774**	**3116**	**1836**	**1107**	**419**	**147**	**38**	**9**	**4**	**3**

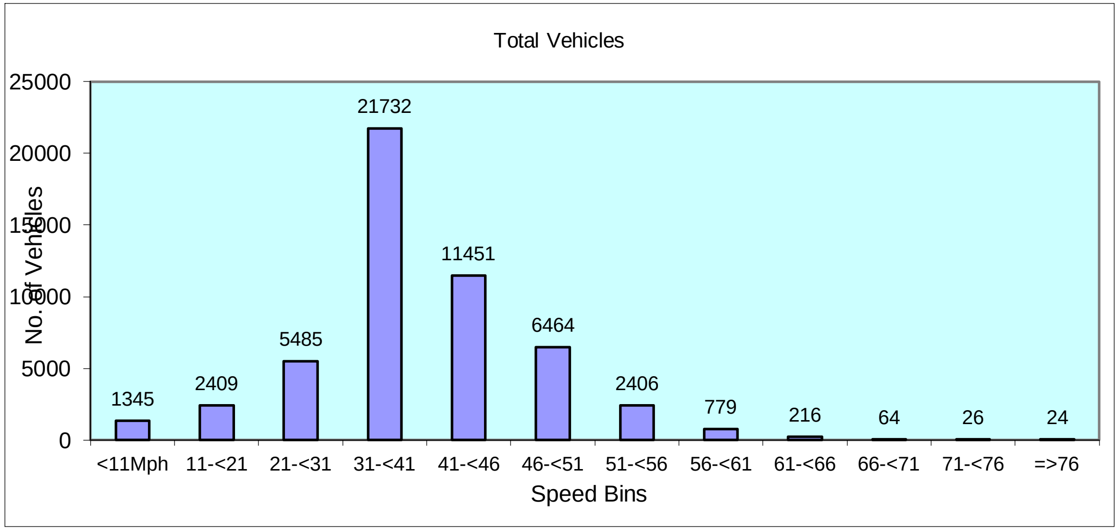
19028 **RUDHEATH** **Site No: 19028008** **Location Site 8, A530, Rudheath (Armco)**

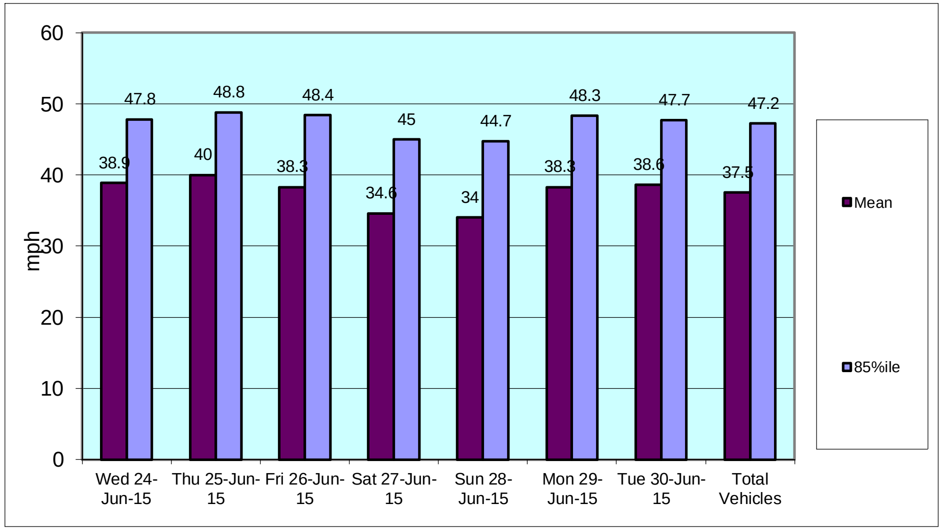
Wed 24-Jun-15 to Tue 30-Jun-15 **Channel: Northbound**

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Tue 30-Jun-15																
00:00	**47**	48.5	40.5	7.8	0	0	5	17	13	9	3	0	0	0	0	0
01:00	**41**	47.9	40.9	6.7	0	0	1	20	10	9	0	1	0	0	0	0
02:00	**65**	45.6	39.5	7.4	0	0	4	36	16	5	1	3	0	0	0	0
03:00	**59**	48.6	40.4	7.6	0	0	4	28	12	11	3	1	0	0	0	0
04:00	**71**	48.6	41.5	7.4	0	0	3	29	21	13	2	3	0	0	0	0
05:00	**169**	50.2	43.3	7.5	0	0	4	51	63	30	12	6	2	1	0	0
06:00	**332**	50.7	43.3	8.2	0	0	17	104	80	86	28	12	4	1	0	0
07:00	**730**	47.2	39.8	7.6	0	1	63	339	195	89	27	13	3	0	0	0
08:00	**838**	38	24.6	11.5	139	205	223	208	46	12	4	1	0	0	0	0
09:00	**668**	44.7	37.9	6.8	0	4	58	407	134	47	11	7	0	0	0	0
10:00	**517**	45.7	38.8	7.8	0	2	53	272	118	45	12	13	1	0	0	1
11:00	**504**	45.2	38.9	6.2	0	0	27	290	132	42	13	0	0	0	0	0
12:00	**421**	45.8	39.1	7	0	3	30	216	113	45	11	3	0	0	0	0
13:00	**384**	48.1	41.2	9.3	0	0	21	183	103	45	9	10	1	2	5	5
14:00	**405**	48.3	40.4	7.7	0	1	21	203	93	55	21	5	6	0	0	0
15:00	**471**	48.2	40.4	8.1	0	4	31	209	132	55	25	11	3	0	1	0
16:00	**606**	47.3	38.8	8.8	0	14	78	251	152	74	29	5	1	2	0	0
17:00	**658**	46.7	37.1	10	4	34	116	260	135	71	27	6	2	2	1	0
18:00	**565**	50.2	41.9	8.3	0	1	42	198	154	101	45	23	1	0	0	0
19:00	**283**	52.5	45	8	0	0	2	76	87	64	36	8	3	6	1	0
20:00	**189**	50.7	44.2	7.2	0	0	0	58	57	48	19	1	5	1	0	0
21:00	**164**	49.9	43.4	7.1	0	0	3	50	52	43	11	3	1	1	0	0
22:00	**118**	50.8	44.5	7.9	0	0	1	36	32	32	8	6	1	2	0	0
23:00	**79**	47.3	40.5	7.3	0	0	5	35	24	10	3	2	0	0	0	0
12H,7-19	**6767**	**46.2**	**37.5**	**9.9**	**143**	**269**	**763**	**3036**	**1507**	**681**	**234**	**97**	**18**	**6**	**7**	**6**
16H,6-22	**7735**	**47.5**	**38.3**	**9.9**	**143**	**269**	**785**	**3324**	**1783**	**922**	**328**	**121**	**31**	**15**	**8**	**6**
18H,6-24	**7932**	**47.6**	**38.5**	**9.9**	**143**	**269**	**791**	**3395**	**1839**	**964**	**339**	**129**	**32**	**17**	**8**	**6**
24H,0-24	**8384**	**47.7**	**38.6**	**9.8**	**143**	**269**	**812**	**3576**	**1974**	**1041**	**360**	**143**	**34**	**18**	**8**	**6**

19028		RUDHEATH		Site No: 19028008		Location	Site 8, A530, Rudheath (Armco)									
Wed 24-Jun-15 to Tue 30-Jun-15				Channel: Northbound												

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Daily Totals																
Wed 24-Jun-15	**8275**	47.8	38.9	9.7	148	223	777	3472	2023	1055	368	143	50	9	5	2
Thu 25-Jun-15	**8137**	48.8	40	9.3	74	195	637	3175	2152	1209	462	150	55	17	4	7
Fri 26-Jun-15	**8164**	48.4	38.3	10.8	262	334	822	3120	1855	1129	433	148	39	11	5	6
Sat 27-Jun-15	**6383**	45	34.6	10.8	244	565	907	3016	867	496	240	48	0	0	0	0
Sun 28-Jun-15	**5007**	44.7	34	10.8	215	484	756	2257	744	427	124	0	0	0	0	0
Mon 29-Jun-15	**8051**	48.3	38.3	10.8	259	339	774	3116	1836	1107	419	147	38	9	4	3
Tue 30-Jun-15	**8384**	47.7	38.6	9.8	143	269	812	3576	1974	1041	360	143	34	18	8	6
Total Vehicles																
[--]	**52401**	47.2	37.5	10.3	1345	2409	5485	21732	11451	6464	2406	779	216	64	26	24





AXIOM Traffic Limited

Data produced by
Axiom Traffic Ltd

19028		RUDHEATH		Site No: 19028008 Channel: Northbound		Location	Site 8, A530, Rudheath (Armco)		
TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av
Week Begin: 24-Jun-15									
00:00	**41**	49	70	120	139	60	47	53	75
01:00	**39**	47	47	45	128	43	41	43	56
02:00	**63**	48	52	54	127	55	65	57	66
03:00	**65**	78	69	68	63	73	59	69	68
04:00	**81**	71	84	75	51	90	71	79	75
05:00	**164**	181	154	131	94	150	169	164	149
06:00	**325**	319	296	190	160	287	332	312	273
07:00	**718**	620	597	233	180	593	730	652	524
08:00	**849**	705	702	500	319	703	838	759	659
09:00	**674**	508	481	477	362	459	668	558	518
10:00	**533**	396	462	488	375	441	517	470	459
11:00	**427**	443	350	471	401	366	504	418	423
12:00	**448**	362	477	390	313	515	421	445	418
13:00	**377**	426	414	439	345	400	384	400	398
14:00	**491**	502	520	449	329	502	405	484	457
15:00	**521**	556	568	411	300	548	471	533	482
16:00	**564**	681	690	429	286	659	606	640	559
17:00	**585**	671	662	401	309	648	658	645	562
18:00	**451**	561	570	346	290	553	565	540	477
19:00	**305**	332	323	211	120	315	283	312	270
20:00	**189**	199	204	148	122	206	189	197	180
21:00	**154**	170	167	116	100	162	164	163	148
22:00	**127**	146	138	98	54	152	118	136	119
23:00	**84**	66	67	93	40	71	79	73	71
12H,7-19	**6638**	**6431**	**6493**	**5034**	**3809**	**6387**	**6767**	**6543**	**5937**
16H,6-22	**7611**	**7451**	**7483**	**5699**	**4311**	**7357**	**7735**	**7527**	**6807**
18H,6-24	**7822**	**7663**	**7688**	**5890**	**4405**	**7580**	**7932**	**7737**	**6997**
24H,0-24	**8275**	**8137**	**8164**	**6383**	**5007**	**8051**	**8384**	**8202**	**7486**
Am	**08:00**	**08:00**	**08:00**	**08:00**	**11:00**	**08:00**	**08:00**	**-**	**-**
Peak	**849**	**705**	**702**	**500**	**401**	**703**	**838**	**759**	**671**
Pm	**17:00**	**16:00**	**16:00**	**14:00**	**13:00**	**16:00**	**17:00**	**-**	**-**
Peak	**585**	**681**	**690**	**449**	**345**	**659**	**658**	**655**	**581**

AXIOM
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Data produced by
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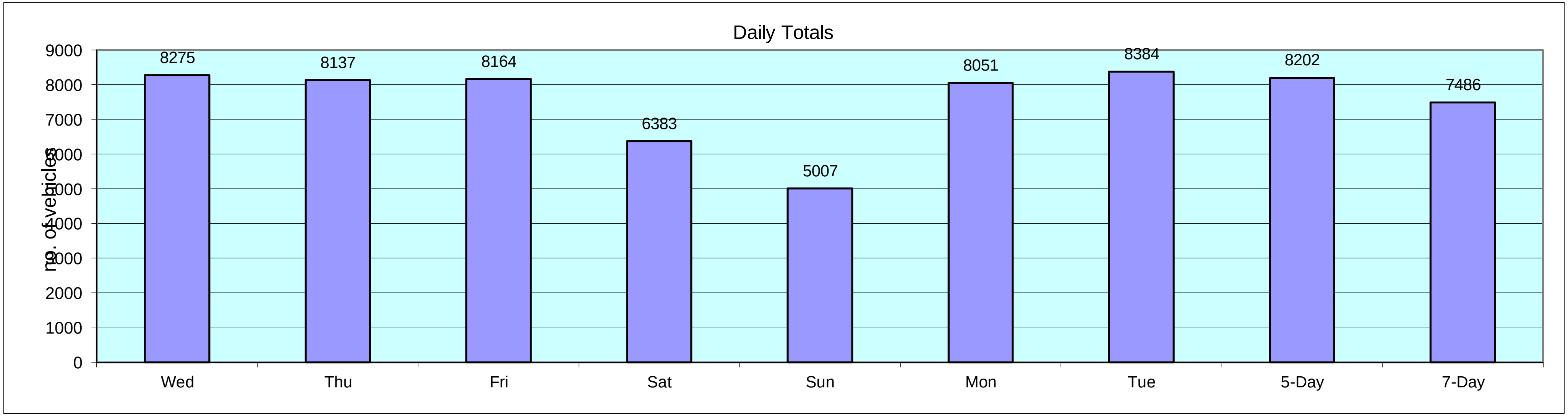
19028	RUDHEATH	Site No: 19028008 Channel: Northbound	Location	Site 8, A530, Rudheath (Armco)

TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av




A556 Westbound

19028		RUDHEATH JUNE 2015								
Site	**Location**	**Direction**	**Start Date**	**End Date**	**Posted Speed Limit (PSL)**	**Total Vehicles**	**5 Day Ave.**	**7 Day Ave.**	**Average 85%ile Speed**	**Average Mean Speed**
Site No: 19028009	Site 9, A556, Rudheath (LC 411) SJ 68369 72674	Channel: Westbound	Wed 24-Jun-15	Tue 30-Jun-15	60	89948	14119	12850	52.6	44.2

19028			RUDHEATH			Site No: 19028009		Location	Site 9, A556, Rudheath (LC 411)					
Wed 24-Jun-15 to Tue 30-Jun-15						Channel: Westbound								
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	CARS OR CAR-BASED LGV	LIGHT GOODS VEHICLES	BUSES	TWO AXLE, SIX TYRE, RIGID/BUSES	THREE AXLE RIGID	FOUR OR MORE AXLE RIGID	FOUR OR LESS AXLE ARTIC	FIVE AXLE ARTIC	SIX OR MORE AXLE ARTIC	FIVE OR LESS AXLE MULTI-TRAILER ARTIC	SIX AXLE MULTI-TRAILER ARTIC	SEVEN OR MORE AXLE ARTIC
Wed 24-Jun-15														
00:00	**46**	0	38	3	0	0	0	0	0	1	1	3	0	0
01:00	**44**	0	34	3	0	0	0	0	4	0	2	1	0	0
02:00	**49**	0	33	4	3	0	0	0	0	1	2	6	0	0
03:00	**31**	1	17	3	2	1	0	0	3	0	1	3	0	0
04:00	**54**	0	38	9	1	1	1	0	2	0	1	1	0	0
05:00	**123**	2	91	17	1	0	1	0	6	0	1	4	0	0
06:00	**345**	2	250	58	1	3	1	0	8	1	10	9	0	2
07:00	**881**	9	727	98	5	1	6	3	15	1	5	8	0	3
08:00	**1424**	10	1197	146	9	13	8	5	14	0	5	12	0	5
09:00	**812**	18	632	113	7	15	4	1	5	0	6	10	0	1
10:00	**681**	11	507	106	7	16	0	2	10	1	10	8	0	3
11:00	**633**	8	451	102	9	19	4	0	14	2	12	10	0	2
12:00	**741**	5	555	119	10	17	3	1	11	0	9	9	0	2
13:00	**716**	10	549	83	8	15	8	1	17	1	8	11	0	5
14:00	**911**	5	720	114	7	8	9	2	21	1	13	8	1	2
15:00	**1098**	6	884	129	11	11	11	7	17	0	9	12	0	1
16:00	**1271**	11	1063	140	3	11	10	8	7	2	4	7	0	5
17:00	**1448**	10	1234	116	6	5	11	19	23	1	2	9	0	12
18:00	**1193**	8	1005	111	6	6	16	13	14	0	3	4	0	7
19:00	**748**	9	647	62	4	10	5	0	1	3	4	3	0	0
20:00	**393**	3	335	32	2	4	2	2	3	2	3	4	0	1
21:00	**297**	6	268	19	0	1	0	2	0	0	0	1	0	0
22:00	**303**	1	273	22	1	0	0	0	2	1	1	1	0	1
23:00	**170**	1	146	17	0	0	0	0	1	0	2	3	0	0
12H,7-19	**11809**	**111**	**9524**	**1377**	**88**	**137**	**90**	**62**	**168**	**9**	**86**	**108**	**1**	**48**
16H,6-22	**13592**	**131**	**11024**	**1548**	**95**	**155**	**98**	**66**	**180**	**15**	**103**	**125**	**1**	**51**
18H,6-24	**14065**	**133**	**11443**	**1587**	**96**	**155**	**98**	**66**	**183**	**16**	**106**	**129**	**1**	**52**
24H,0-24	**14412**	**136**	**11694**	**1626**	**103**	**157**	**100**	**66**	**198**	**18**	**114**	**147**	**1**	**52**

19028			RUDHEATH			Site No: 19028009		Location	Site 9, A556, Rudheath (LC 411)					
Wed 24-Jun-15 to Tue 30-Jun-15						Channel: Westbound								
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	CARS OR CAR-BASED LGV	LIGHT GOODS VEHICLES	BUSES	TWO AXLE, SIX TYRE, RIGID/BUSES	THREE AXLE RIGID	FOUR OR MORE AXLE RIGID	FOUR OR LESS AXLE ARTIC	FIVE AXLE ARTIC	SIX OR MORE AXLE ARTIC	FIVE OR LESS AXLE MULTI-TRAILER ARTIC	SIX AXLE MULTI-TRAILER ARTIC	SEVEN OR MORE AXLE ARTIC
Thu 25-Jun-15														
00:00	**81**	1	65	5	2	0	1	0	0	2	3	2	0	0
01:00	**48**	1	35	5	1	0	0	0	2	0	2	2	0	0
02:00	**41**	0	29	4	5	0	0	0	0	1	1	1	0	0
03:00	**45**	1	26	5	1	0	0	0	4	0	2	6	0	0
04:00	**51**	0	38	7	0	1	1	0	0	0	0	3	0	1
05:00	**134**	3	105	13	0	1	2	0	2	1	0	7	0	0
06:00	**328**	1	240	53	3	3	2	0	8	0	5	10	0	3
07:00	**990**	6	795	125	4	3	6	2	22	1	10	11	2	3
08:00	**1448**	5	1241	127	5	10	18	5	21	1	3	9	1	2
09:00	**918**	5	721	134	8	20	2	2	12	1	4	8	0	1
10:00	**742**	13	542	117	3	17	12	2	13	1	9	9	0	4
11:00	**729**	4	505	125	11	24	8	3	24	1	9	12	0	3
12:00	**765**	7	606	103	9	9	5	4	10	0	4	5	0	3
13:00	**792**	6	635	89	10	12	8	1	13	1	6	6	0	5
14:00	**847**	6	647	126	6	13	3	1	23	1	9	7	0	5
15:00	**976**	7	770	129	1	13	7	9	15	2	11	7	0	5
16:00	**1271**	12	1063	125	3	11	9	7	17	0	3	18	1	2
17:00	**1499**	11	1293	124	9	0	18	11	23	0	4	2	1	3
18:00	**1174**	16	1007	101	1	6	7	10	12	0	4	5	0	5
19:00	**655**	9	565	64	1	0	3	4	5	0	1	2	0	1
20:00	**453**	1	409	28	1	2	1	0	3	1	3	2	0	2
21:00	**335**	6	295	29	0	0	1	0	1	0	1	2	0	0
22:00	**281**	1	252	17	0	2	1	1	1	2	1	2	0	1
23:00	**169**	5	147	8	0	0	0	2	1	3	0	2	0	1
12H,7-19	**12151**	**98**	**9825**	**1425**	**70**	**138**	**103**	**57**	**205**	**9**	**76**	**99**	**5**	**41**
16H,6-22	**13922**	**115**	**11334**	**1599**	**75**	**143**	**110**	**61**	**222**	**10**	**86**	**115**	**5**	**47**
18H,6-24	**14372**	**121**	**11733**	**1624**	**75**	**145**	**111**	**64**	**224**	**15**	**87**	**119**	**5**	**49**
24H,0-24	**14772**	**127**	**12031**	**1663**	**84**	**147**	**115**	**64**	**232**	**19**	**95**	**140**	**5**	**50**

19028			RUDHEATH			Site No: 19028009		Location	Site 9, A556, Rudheath (LC 411)					
Wed 24-Jun-15 to Tue 30-Jun-15						Channel: Westbound								
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	CARS OR CAR-BASED LGV	LIGHT GOODS VEHICLES	BUSES	TWO AXLE, SIX TYRE, RIGID/BUSES	THREE AXLE RIGID	FOUR OR MORE AXLE RIGID	FOUR OR LESS AXLE ARTIC	FIVE AXLE ARTIC	SIX OR MORE AXLE ARTIC	FIVE OR LESS AXLE MULTI-TRAILER ARTIC	SIX AXLE MULTI-TRAILER ARTIC	SEVEN OR MORE AXLE ARTIC
Fri 26-Jun-15														
00:00	**84**	1	66	6	2	0	0	0	1	4	1	3	0	0
01:00	**47**	0	38	3	1	0	0	0	0	2	3	0	0	0
02:00	**39**	1	27	3	2	1	0	0	1	1	0	3	0	0
03:00	**48**	0	33	2	3	0	0	0	2	1	1	6	0	0
04:00	**56**	0	41	5	0	0	0	0	0	1	2	6	0	1
05:00	**136**	3	100	21	0	1	1	0	3	0	2	5	0	0
06:00	**311**	2	212	61	1	7	2	2	7	0	6	11	0	0
07:00	**910**	10	752	98	2	7	4	4	17	0	6	6	0	4
08:00	**1370**	2	1156	138	8	7	14	1	23	0	7	12	0	2
09:00	**869**	3	669	125	12	14	7	3	15	0	8	9	0	4
10:00	**584**	8	403	98	18	10	20	0	7	1	6	9	1	3
11:00	**592**	7	426	85	13	15	14	3	12	0	9	5	1	2
12:00	**431**	6	320	46	17	8	16	1	8	0	4	4	0	1
13:00	**294**	4	231	26	13	5	7	0	3	1	1	3	0	0
14:00	**428**	12	321	42	18	4	18	1	4	3	2	2	0	1
15:00	**928**	8	740	112	17	9	5	6	12	2	8	7	0	2
16:00	**1266**	10	1043	142	8	8	18	5	12	0	6	12	0	2
17:00	**1225**	8	1046	67	10	4	34	23	18	1	4	6	0	4
18:00	**1130**	4	992	94	5	2	4	5	6	3	6	8	0	1
19:00	**671**	8	589	48	1	4	5	4	3	0	3	4	0	2
20:00	**434**	5	381	35	3	1	2	1	2	0	0	0	0	4
21:00	**327**	1	298	18	2	1	1	0	1	1	3	1	0	0
22:00	**337**	2	303	19	2	0	2	0	0	2	4	3	0	0
23:00	**196**	2	169	16	2	0	2	2	1	1	0	1	0	0
12H,7-19	**10027**	**82**	**8099**	**1073**	**141**	**93**	**161**	**52**	**137**	**11**	**67**	**83**	**2**	**26**
16H,6-22	**11770**	**98**	**9579**	**1235**	**148**	**106**	**171**	**59**	**150**	**12**	**79**	**99**	**2**	**32**
18H,6-24	**12303**	**102**	**10051**	**1270**	**152**	**106**	**175**	**61**	**151**	**15**	**83**	**103**	**2**	**32**
24H,0-24	**12713**	**107**	**10356**	**1310**	**160**	**108**	**176**	**61**	**158**	**24**	**92**	**126**	**2**	**33**

19028			RUDHEATH			Site No: 19028009		Location	Site 9, A556, Rudheath (LC 411)					
Wed 24-Jun-15 to Tue 30-Jun-15						Channel: Westbound								
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	CARS OR CAR-BASED LGV	LIGHT GOODS VEHICLES	BUSES	TWO AXLE, SIX TYRE, RIGID/BUSES	THREE AXLE RIGID	FOUR OR MORE AXLE RIGID	FOUR OR LESS AXLE ARTIC	FIVE AXLE ARTIC	SIX OR MORE AXLE ARTIC	FIVE OR LESS AXLE MULTI-TRAILER ARTIC	SIX AXLE MULTI-TRAILER ARTIC	SEVEN OR MORE AXLE ARTIC
Sat 27-Jun-15														
00:00	**130**	0	112	10	1	0	0	0	1	3	2	1	0	0
01:00	**83**	1	59	7	1	0	1	0	3	1	3	7	0	0
02:00	**59**	0	42	7	2	0	0	0	0	0	1	7	0	0
03:00	**47**	0	32	8	2	0	0	0	0	2	1	2	0	0
04:00	**65**	0	44	10	1	1	0	0	1	0	4	4	0	0
05:00	**101**	3	75	8	1	1	2	0	3	0	5	3	0	0
06:00	**169**	3	132	22	3	0	0	0	1	2	0	6	0	0
07:00	**251**	3	190	36	2	1	1	1	6	0	3	8	0	0
08:00	**434**	11	326	67	4	5	4	2	7	0	2	6	0	0
09:00	**608**	8	485	81	3	10	7	2	7	0	3	1	0	1
10:00	**814**	30	657	83	6	19	4	2	9	1	0	1	0	2
11:00	**995**	27	852	78	4	7	10	5	4	1	3	4	0	0
12:00	**915**	31	760	88	2	6	11	1	7	0	5	3	1	0
13:00	**857**	22	747	66	2	3	3	2	6	0	4	1	0	1
14:00	**734**	25	623	57	0	0	3	2	10	2	5	6	0	1
15:00	**750**	36	655	45	0	0	4	2	4	1	1	1	0	1
16:00	**803**	16	708	64	0	2	3	1	3	1	2	2	0	1
17:00	**702**	10	629	40	2	0	3	6	5	2	3	2	0	0
18:00	**603**	12	549	34	1	1	2	0	2	0	0	2	0	0
19:00	**428**	5	388	27	0	2	2	1	1	0	1	1	0	0
20:00	**338**	1	308	26	0	0	1	0	0	1	0	1	0	0
21:00	**267**	2	235	26	0	0	0	1	1	0	1	0	0	1
22:00	**245**	2	225	14	0	0	0	0	0	1	1	1	0	1
23:00	**216**	0	202	13	1	0	0	0	0	0	0	0	0	0
12H,7-19	**8466**	**231**	**7181**	**739**	**26**	**54**	**55**	**26**	**70**	**8**	**31**	**37**	**1**	**7**
16H,6-22	**9668**	**242**	**8244**	**840**	**29**	**56**	**58**	**28**	**73**	**11**	**33**	**45**	**1**	**8**
18H,6-24	**10129**	**244**	**8671**	**867**	**30**	**56**	**58**	**28**	**73**	**12**	**34**	**46**	**1**	**9**
24H,0-24	**10614**	**248**	**9035**	**917**	**38**	**58**	**61**	**28**	**81**	**18**	**50**	**70**	**1**	**9**

AXIOM Traffic Limited

Data produced by
Axiom Traffic Ltd

19028			RUDHEATH			Site No: 19028009		Location	Site 9, A556, Rudheath (LC 411)					
Wed 24-Jun-15 to Tue 30-Jun-15						Channel: Westbound								
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	CARS OR CAR-BASED LGV	LIGHT GOODS VEHICLES	BUSES	TWO AXLE, SIX TYRE, RIGID/BUSES	THREE AXLE RIGID	FOUR OR MORE AXLE RIGID	FOUR OR LESS AXLE ARTIC	FIVE AXLE ARTIC	SIX OR MORE AXLE ARTIC	FIVE OR LESS AXLE MULTI-TRAILER ARTIC	SIX AXLE MULTI-TRAILER ARTIC	SEVEN OR MORE AXLE ARTIC
Sun 28-Jun-15														
00:00	**154**	1	137	10	0	0	1	0	1	1	3	0	0	0
01:00	**82**	0	69	7	0	0	0	0	0	2	1	2	0	1
02:00	**50**	0	41	5	0	0	0	0	0	0	0	4	0	0
03:00	**43**	0	29	8	0	0	0	0	2	0	2	2	0	0
04:00	**40**	1	29	6	1	0	0	1	1	0	1	0	0	0
05:00	**70**	1	57	8	0	1	0	0	2	0	0	1	0	0
06:00	**105**	1	88	10	0	0	0	0	0	0	2	3	0	1
07:00	**154**	1	127	18	0	1	0	0	3	0	1	3	0	0
08:00	**242**	0	204	24	1	3	3	0	2	0	3	2	0	0
09:00	**357**	6	322	19	2	0	1	0	3	1	1	1	0	1
10:00	**536**	4	489	30	2	1	4	0	3	0	2	1	0	0
11:00	**694**	13	601	53	4	1	8	2	8	0	2	1	0	1
12:00	**777**	7	702	48	1	2	7	4	1	1	1	2	0	1
13:00	**724**	7	643	51	4	4	3	3	5	1	2	1	0	0
14:00	**749**	9	671	47	1	0	3	6	6	0	2	2	0	2
15:00	**732**	13	648	58	0	1	3	2	1	1	1	3	0	1
16:00	**710**	5	656	39	0	0	1	1	6	0	1	1	0	0
17:00	**672**	7	618	27	1	1	3	3	4	0	1	5	0	2
18:00	**580**	13	519	36	1	0	1	2	3	0	2	3	0	0
19:00	**434**	1	399	26	1	1	1	1	1	0	1	2	0	0
20:00	**316**	4	287	19	1	1	1	0	1	0	1	1	0	0
21:00	**231**	0	214	14	0	1	0	0	1	0	0	1	0	0
22:00	**172**	3	156	9	0	0	0	0	1	0	2	0	0	1
23:00	**113**	2	93	10	2	1	2	0	1	1	0	1	0	0
12H,7-19	**6927**	**85**	**6200**	**450**	**17**	**14**	**37**	**23**	**45**	**4**	**19**	**25**	**0**	**8**
16H,6-22	**8013**	**91**	**7188**	**519**	**19**	**17**	**39**	**24**	**48**	**4**	**23**	**32**	**0**	**9**
18H,6-24	**8298**	**96**	**7437**	**538**	**21**	**18**	**41**	**24**	**50**	**5**	**25**	**33**	**0**	**10**
24H,0-24	**8737**	**99**	**7799**	**582**	**22**	**19**	**42**	**25**	**56**	**8**	**32**	**42**	**0**	**11**

19028			RUDHEATH			Site No: 19028009		Location	Site 9, A556, Rudheath (LC 411)					
Wed 24-Jun-15 to Tue 30-Jun-15						Channel: Westbound								
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	CARS OR CAR-BASED LGV	LIGHT GOODS VEHICLES	BUSES	TWO AXLE, SIX TYRE, RIGID/BUSES	THREE AXLE RIGID	FOUR OR MORE AXLE RIGID	FOUR OR LESS AXLE ARTIC	FIVE AXLE ARTIC	SIX OR MORE AXLE ARTIC	FIVE OR LESS AXLE MULTI-TRAILER ARTIC	SIX AXLE MULTI-TRAILER ARTIC	SEVEN OR MORE AXLE ARTIC
Mon 29-Jun-15														
00:00	**60**	0	45	3	1	0	0	0	4	1	1	5	0	0
01:00	**36**	0	25	6	2	0	0	0	0	1	1	1	0	0
02:00	**48**	0	34	7	3	0	0	0	2	0	0	2	0	0
03:00	**41**	1	29	3	2	0	0	0	1	0	1	4	0	0
04:00	**48**	0	33	6	0	0	0	0	3	1	2	3	0	0
05:00	**131**	1	104	12	2	0	0	0	5	1	1	4	0	1
06:00	**297**	5	217	45	1	3	1	1	5	1	7	8	0	3
07:00	**887**	6	735	105	3	6	2	1	11	1	6	8	0	3
08:00	**1325**	9	1120	138	4	6	18	3	11	1	3	7	1	4
09:00	**1051**	1	852	125	9	8	8	6	13	2	6	19	0	2
10:00	**659**	10	464	129	8	5	7	1	11	1	6	11	0	6
11:00	**666**	4	471	110	13	24	4	1	12	0	8	16	0	3
12:00	**848**	13	615	135	13	24	9	1	11	0	13	10	0	4
13:00	**794**	8	598	115	3	22	7	3	8	0	9	18	0	3
14:00	**866**	11	685	120	4	8	7	3	14	1	4	7	0	2
15:00	**942**	8	759	119	7	6	7	2	15	0	7	8	0	4
16:00	**1180**	14	959	145	5	5	11	9	14	0	7	6	1	4
17:00	**1464**	11	1299	92	3	5	8	16	11	1	9	4	0	5
18:00	**1151**	6	1021	92	1	2	9	3	5	1	4	3	1	3
19:00	**619**	6	547	50	1	0	5	0	3	1	2	4	0	0
20:00	**346**	1	309	26	0	1	1	2	1	2	1	2	0	0
21:00	**316**	2	288	22	0	0	0	0	3	0	1	0	0	0
22:00	**243**	1	224	10	1	0	1	1	0	1	1	3	0	0
23:00	**117**	0	104	8	0	0	1	0	0	1	0	2	0	1
12H,7-19	**11833**	**101**	**9578**	**1425**	**73**	**121**	**97**	**49**	**136**	**8**	**82**	**117**	**3**	**43**
16H,6-22	**13411**	**115**	**10939**	**1568**	**75**	**125**	**104**	**52**	**148**	**12**	**93**	**131**	**3**	**46**
18H,6-24	**13771**	**116**	**11267**	**1586**	**76**	**125**	**106**	**53**	**148**	**14**	**94**	**136**	**3**	**47**
24H,0-24	**14135**	**118**	**11537**	**1623**	**86**	**125**	**106**	**53**	**163**	**18**	**100**	**155**	**3**	**48**

19028 **RUDHEATH** **Site No: 19028009** **Location** **Site 9, A556, Rudheath (LC 411)**

Wed 24-Jun-15 to Tue 30-Jun-15 **Channel: Westbound**

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	CARS OR CAR-BASED LGV	LIGHT GOODS VEHICLES	BUSES	TWO AXLE, SIX TYRE, RIGID/BUSES	THREE AXLE RIGID	FOUR OR MORE AXLE RIGID	FOUR OR LESS AXLE ARTIC	FIVE AXLE ARTIC	SIX OR MORE AXLE ARTIC	FIVE OR LESS AXLE MULTI-TRAILER ARTIC	SIX AXLE MULTI-TRAILER ARTIC	SEVEN OR MORE AXLE ARTIC
Tue 30-Jun-15														
00:00	**59**	0	44	5	1	0	1	0	3	1	2	2	0	0
01:00	**39**	2	27	0	0	0	0	0	1	2	1	6	0	0
02:00	**35**	0	22	5	4	0	0	0	1	0	0	3	0	0
03:00	**40**	0	28	3	1	0	0	0	2	0	1	5	0	0
04:00	**47**	1	30	6	1	0	0	0	1	1	0	5	0	2
05:00	**118**	4	88	13	1	0	0	0	5	0	2	4	0	1
06:00	**318**	2	222	57	5	5	0	2	5	0	11	9	0	0
07:00	**980**	14	802	106	5	5	8	3	8	0	12	12	0	5
08:00	**1495**	6	1279	139	3	9	14	4	19	0	8	9	0	5
09:00	**876**	10	692	113	8	13	1	3	11	0	11	9	0	5
10:00	**699**	14	526	91	6	13	7	0	14	0	6	17	0	5
11:00	**762**	10	582	97	6	23	7	1	11	0	8	15	0	2
12:00	**755**	11	578	94	11	13	3	2	16	0	10	12	0	5
13:00	**808**	5	624	109	9	14	9	3	12	4	8	9	0	2
14:00	**925**	9	721	122	5	17	8	2	16	1	11	10	0	3
15:00	**945**	11	763	119	5	5	12	3	11	0	3	9	0	4
16:00	**1153**	12	977	116	4	8	6	9	7	1	2	7	0	4
17:00	**1502**	14	1304	122	4	3	6	15	18	1	4	5	1	5
18:00	**1197**	11	1044	92	4	3	8	10	10	3	5	5	0	2
19:00	**646**	15	562	50	0	1	2	4	2	0	4	5	0	1
20:00	**438**	9	374	46	0	0	0	1	3	1	2	2	0	0
21:00	**322**	3	297	20	0	0	0	0	0	0	0	2	0	0
22:00	**261**	6	230	17	0	0	1	0	0	1	2	4	0	0
23:00	**145**	0	124	15	1	0	0	0	2	1	1	1	0	0
12H,7-19	**12097**	**127**	**9892**	**1320**	**70**	**126**	**89**	**55**	**153**	**10**	**88**	**119**	**1**	**47**
16H,6-22	**13821**	**156**	**11347**	**1493**	**75**	**132**	**91**	**62**	**163**	**11**	**105**	**137**	**1**	**48**
18H,6-24	**14227**	**162**	**11701**	**1525**	**76**	**132**	**92**	**62**	**165**	**13**	**108**	**142**	**1**	**48**
24H,0-24	**14565**	**169**	**11940**	**1557**	**84**	**132**	**93**	**62**	**178**	**17**	**114**	**167**	**1**	**51**

Data produced by
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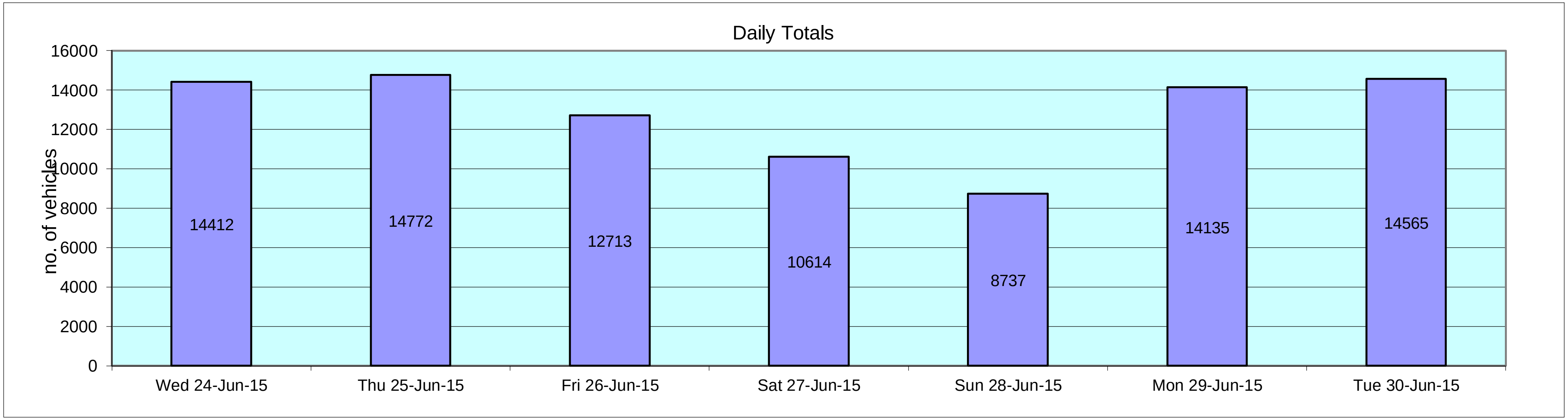
19028		RUDHEATH			Site No: 19028009		Location	Site 9, A556, Rudheath (LC 411)					
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Westbound								
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	CARS OR CAR-BASED LGV	LIGHT GOODS VEHICLES	BUSES	TWO AXLE, SIX TYRE, RIGID/BUSES	THREE AXLE RIGID	FOUR OR MORE AXLE RIGID	FOUR OR LESS AXLE ARTIC	FIVE AXLE ARTIC	SIX OR MORE AXLE ARTIC	FIVE OR LESS AXLE MULTI-TRAILER ARTIC	SIX AXLE MULTI-TRAILER ARTIC	SEVEN OR MORE AXLE ARTIC
Daily Totals														
Wed 24-Jun-15	**14412**	136	11694	1626	103	157	100	66	198	18	114	147	1	52
Thu 25-Jun-15	**14772**	127	12031	1663	84	147	115	64	232	19	95	140	5	50
Fri 26-Jun-15	**12713**	107	10356	1310	160	108	176	61	158	24	92	126	2	33
Sat 27-Jun-15	**10614**	248	9035	917	38	58	61	28	81	18	50	70	1	9
Sun 28-Jun-15	**8737**	99	7799	582	22	19	42	25	56	8	32	42	0	11
Mon 29-Jun-15	**14135**	118	11537	1623	86	125	106	53	163	18	100	155	3	48
Tue 30-Jun-15	**14565**	169	11940	1557	84	132	93	62	178	17	114	167	1	51
Total Vehicles														
[--]	**89948**	1004	74392	9278	577	746	693	359	1066	122	597	847	13	254



19028		RUDHEATH			Site No: 19028009		Location	Site 9, A556, Rudheath (LC 411)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Westbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Wed 24-Jun-15											
00:00	**46**	0	0.0	38	82.6	3	6.5	5	10.9	0	0.0
01:00	**44**	0	0.0	34	77.3	3	6.8	7	15.9	0	0.0
02:00	**49**	0	0.0	33	67.4	4	8.2	9	18.4	3	6.1
03:00	**31**	1	3.2	17	54.8	3	9.7	8	25.8	2	6.5
04:00	**54**	0	0.0	38	70.4	9	16.7	6	11.1	1	1.9
05:00	**123**	2	1.6	91	74.0	17	13.8	12	9.8	1	0.8
06:00	**345**	2	0.6	250	72.5	58	16.8	34	9.9	1	0.3
07:00	**881**	9	1.0	727	82.5	98	11.1	42	4.8	5	0.6
08:00	**1424**	10	0.7	1197	84.1	146	10.3	62	4.4	9	0.6
09:00	**812**	18	2.2	632	77.8	113	13.9	42	5.2	7	0.9
10:00	**681**	11	1.6	507	74.5	106	15.6	50	7.3	7	1.0
11:00	**633**	8	1.3	451	71.3	102	16.1	63	10.0	9	1.4
12:00	**741**	5	0.7	555	74.9	119	16.1	52	7.0	10	1.4
13:00	**716**	10	1.4	549	76.7	83	11.6	66	9.2	8	1.1
14:00	**911**	5	0.6	720	79.0	114	12.5	65	7.1	7	0.8
15:00	**1098**	6	0.6	884	80.5	129	11.8	68	6.2	11	1.0
16:00	**1271**	11	0.9	1063	83.6	140	11.0	54	4.3	3	0.2
17:00	**1448**	10	0.7	1234	85.2	116	8.0	82	5.7	6	0.4
18:00	**1193**	8	0.7	1005	84.2	111	9.3	63	5.3	6	0.5
19:00	**748**	9	1.2	647	86.5	62	8.3	26	3.5	4	0.5
20:00	**393**	3	0.8	335	85.2	32	8.1	21	5.3	2	0.5
21:00	**297**	6	2.0	268	90.2	19	6.4	4	1.4	0	0.0
22:00	**303**	1	0.3	273	90.1	22	7.3	6	2.0	1	0.3
23:00	**170**	1	0.6	146	85.9	17	10.0	6	3.5	0	0.0
12H,7-19	**11809**	**111**	**0.9**	**9524**	**80.7**	**1377**	**11.7**	**709**	**6.0**	**88**	**0.8**
16H,6-22	**13592**	**131**	**1.0**	**11024**	**81.1**	**1548**	**11.4**	**794**	**5.8**	**95**	**0.7**
18H,6-24	**14065**	**133**	**1.0**	**11443**	**81.4**	**1587**	**11.3**	**806**	**5.7**	**96**	**0.7**
24H,0-24	**14412**	**136**	**0.9**	**11694**	**81.1**	**1626**	**11.3**	**853**	**5.9**	**103**	**0.7**

AXIOM Traffic Limited

Data produced by
Axiom Traffic Ltd

19028 RUDHEATH Site No: 19028009 Location Site 9, A556, Rudheath (LC 411)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Westbound

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Thu 25-Jun-15											
00:00	**81**	1	1.2	65	80.3	5	6.2	8	9.9	2	2.5
01:00	**48**	1	2.1	35	72.9	5	10.4	6	12.5	1	2.1
02:00	**41**	0	0.0	29	70.7	4	9.8	3	7.3	5	12.2
03:00	**45**	1	2.2	26	57.8	5	11.1	12	26.7	1	2.2
04:00	**51**	0	0.0	38	74.5	7	13.7	6	11.8	0	0.0
05:00	**134**	3	2.2	105	78.4	13	9.7	13	9.7	0	0.0
06:00	**328**	1	0.3	240	73.2	53	16.2	31	9.5	3	0.9
07:00	**990**	6	0.6	795	80.3	125	12.6	60	6.1	4	0.4
08:00	**1448**	5	0.4	1241	85.7	127	8.8	70	4.8	5	0.4
09:00	**918**	5	0.5	721	78.5	134	14.6	50	5.5	8	0.9
10:00	**742**	13	1.8	542	73.1	117	15.8	67	9.0	3	0.4
11:00	**729**	4	0.6	505	69.3	125	17.2	84	11.5	11	1.5
12:00	**765**	7	0.9	606	79.2	103	13.5	40	5.2	9	1.2
13:00	**792**	6	0.8	635	80.2	89	11.2	52	6.6	10	1.3
14:00	**847**	6	0.7	647	76.4	126	14.9	62	7.3	6	0.7
15:00	**976**	7	0.7	770	78.9	129	13.2	69	7.1	1	0.1
16:00	**1271**	12	0.9	1063	83.6	125	9.8	68	5.4	3	0.2
17:00	**1499**	11	0.7	1293	86.3	124	8.3	62	4.1	9	0.6
18:00	**1174**	16	1.4	1007	85.8	101	8.6	49	4.2	1	0.1
19:00	**655**	9	1.4	565	86.3	64	9.8	16	2.4	1	0.2
20:00	**453**	1	0.2	409	90.3	28	6.2	14	3.1	1	0.2
21:00	**335**	6	1.8	295	88.1	29	8.7	5	1.5	0	0.0
22:00	**281**	1	0.4	252	89.7	17	6.1	11	3.9	0	0.0
23:00	**169**	5	3.0	147	87.0	8	4.7	9	5.3	0	0.0
12H,7-19	**12151**	**98**	**0.8**	**9825**	**80.9**	**1425**	**11.7**	**733**	**6.0**	**70**	**0.6**
16H,6-22	**13922**	**115**	**0.8**	**11334**	**81.4**	**1599**	**11.5**	**799**	**5.7**	**75**	**0.5**
18H,6-24	**14372**	**121**	**0.8**	**11733**	**81.6**	**1624**	**11.3**	**819**	**5.7**	**75**	**0.5**
24H,0-24	**14772**	**127**	**0.9**	**12031**	**81.4**	**1663**	**11.3**	**867**	**5.9**	**84**	**0.6**

Data produced by
Axiom Traffic Ltd

19028	RUDHEATH	Site No: 19028009	Location	Site 9, A556, Rudheath (LC 411)
Wed 24-Jun-15 to Tue 30-Jun-15		Channel: Westbound		

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Fri 26-Jun-15											
00:00	**84**	1	1.2	66	78.6	6	7.1	9	10.7	2	2.4
01:00	**47**	0	0.0	38	80.9	3	6.4	5	10.6	1	2.1
02:00	**39**	1	2.6	27	69.2	3	7.7	6	15.4	2	5.1
03:00	**48**	0	0.0	33	68.8	2	4.2	10	20.8	3	6.3
04:00	**56**	0	0.0	41	73.2	5	8.9	10	17.9	0	0.0
05:00	**136**	3	2.2	100	73.5	21	15.4	12	8.8	0	0.0
06:00	**311**	2	0.6	212	68.2	61	19.6	35	11.3	1	0.3
07:00	**910**	10	1.1	752	82.6	98	10.8	48	5.3	2	0.2
08:00	**1370**	2	0.2	1156	84.4	138	10.1	66	4.8	8	0.6
09:00	**869**	3	0.4	669	77.0	125	14.4	60	6.9	12	1.4
10:00	**584**	8	1.4	403	69.0	98	16.8	57	9.8	18	3.1
11:00	**592**	7	1.2	426	72.0	85	14.4	61	10.3	13	2.2
12:00	**431**	6	1.4	320	74.3	46	10.7	42	9.7	17	3.9
13:00	**294**	4	1.4	231	78.6	26	8.8	20	6.8	13	4.4
14:00	**428**	12	2.8	321	75.0	42	9.8	35	8.2	18	4.2
15:00	**928**	8	0.9	740	79.7	112	12.1	51	5.5	17	1.8
16:00	**1266**	10	0.8	1043	82.4	142	11.2	63	5.0	8	0.6
17:00	**1225**	8	0.7	1046	85.4	67	5.5	94	7.7	10	0.8
18:00	**1130**	4	0.4	992	87.8	94	8.3	35	3.1	5	0.4
19:00	**671**	8	1.2	589	87.8	48	7.2	25	3.7	1	0.2
20:00	**434**	5	1.2	381	87.8	35	8.1	10	2.3	3	0.7
21:00	**327**	1	0.3	298	91.1	18	5.5	8	2.5	2	0.6
22:00	**337**	2	0.6	303	89.9	19	5.6	11	3.3	2	0.6
23:00	**196**	2	1.0	169	86.2	16	8.2	7	3.6	2	1.0
12H,7-19	**10027**	**82**	**0.8**	**8099**	**80.8**	**1073**	**10.7**	**632**	**6.3**	**141**	**1.4**
16H,6-22	**11770**	**98**	**0.8**	**9579**	**81.4**	**1235**	**10.5**	**710**	**6.0**	**148**	**1.3**
18H,6-24	**12303**	**102**	**0.8**	**10051**	**81.7**	**1270**	**10.3**	**728**	**5.9**	**152**	**1.2**
24H,0-24	**12713**	**107**	**0.8**	**10356**	**81.5**	**1310**	**10.3**	**780**	**6.1**	**160**	**1.3**

Data produced by
Axiom Traffic Ltd

19028		RUDHEATH			Site No: 19028009		Location	Site 9, A556, Rudheath (LC 411)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Westbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sat 27-Jun-15											
00:00	**130**	0	0.0	112	86.2	10	7.7	7	5.4	1	0.8
01:00	**83**	1	1.2	59	71.1	7	8.4	15	18.1	1	1.2
02:00	**59**	0	0.0	42	71.2	7	11.9	8	13.6	2	3.4
03:00	**47**	0	0.0	32	68.1	8	17.0	5	10.6	2	4.3
04:00	**65**	0	0.0	44	67.7	10	15.4	10	15.4	1	1.5
05:00	**101**	3	3.0	75	74.3	8	7.9	14	13.9	1	1.0
06:00	**169**	3	1.8	132	78.1	22	13.0	9	5.3	3	1.8
07:00	**251**	3	1.2	190	75.7	36	14.3	20	8.0	2	0.8
08:00	**434**	11	2.5	326	75.1	67	15.4	26	6.0	4	0.9
09:00	**608**	8	1.3	485	79.8	81	13.3	31	5.1	3	0.5
10:00	**814**	30	3.7	657	80.7	83	10.2	38	4.7	6	0.7
11:00	**995**	27	2.7	852	85.6	78	7.8	34	3.4	4	0.4
12:00	**915**	31	3.4	760	83.1	88	9.6	34	3.7	2	0.2
13:00	**857**	22	2.6	747	87.2	66	7.7	20	2.3	2	0.2
14:00	**734**	25	3.4	623	84.9	57	7.8	29	4.0	0	0.0
15:00	**750**	36	4.8	655	87.3	45	6.0	14	1.9	0	0.0
16:00	**803**	16	2.0	708	88.2	64	8.0	15	1.9	0	0.0
17:00	**702**	10	1.4	629	89.6	40	5.7	21	3.0	2	0.3
18:00	**603**	12	2.0	549	91.0	34	5.6	7	1.2	1	0.2
19:00	**428**	5	1.2	388	90.7	27	6.3	8	1.9	0	0.0
20:00	**338**	1	0.3	308	91.1	26	7.7	3	0.9	0	0.0
21:00	**267**	2	0.8	235	88.0	26	9.7	4	1.5	0	0.0
22:00	**245**	2	0.8	225	91.8	14	5.7	4	1.6	0	0.0
23:00	**216**	0	0.0	202	93.5	13	6.0	0	0.0	1	0.5
12H,7-19	**8466**	**231**	**2.7**	**7181**	**84.8**	**739**	**8.7**	**289**	**3.4**	**26**	**0.3**
16H,6-22	**9668**	**242**	**2.5**	**8244**	**85.3**	**840**	**8.7**	**313**	**3.2**	**29**	**0.3**
18H,6-24	**10129**	**244**	**2.4**	**8671**	**85.6**	**867**	**8.6**	**317**	**3.1**	**30**	**0.3**
24H,0-24	**10614**	**248**	**2.3**	**9035**	**85.1**	**917**	**8.6**	**376**	**3.5**	**38**	**0.4**

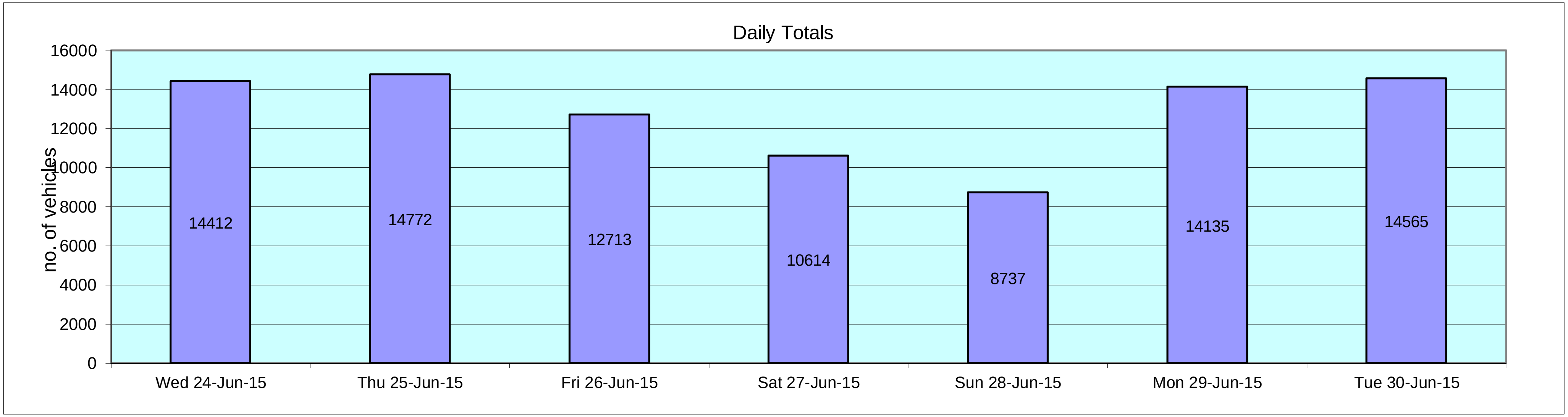
19028		RUDHEATH			Site No: 19028009		Location	Site 9, A556, Rudheath (LC 411)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Westbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sun 28-Jun-15											
00:00	**154**	1	0.7	137	89.0	10	6.5	6	3.9	0	0.0
01:00	**82**	0	0.0	69	84.2	7	8.5	6	7.3	0	0.0
02:00	**50**	0	0.0	41	82.0	5	10.0	4	8.0	0	0.0
03:00	**43**	0	0.0	29	67.4	8	18.6	6	14.0	0	0.0
04:00	**40**	1	2.5	29	72.5	6	15.0	3	7.5	1	2.5
05:00	**70**	1	1.4	57	81.4	8	11.4	4	5.7	0	0.0
06:00	**105**	1	1.0	88	83.8	10	9.5	6	5.7	0	0.0
07:00	**154**	1	0.7	127	82.5	18	11.7	8	5.2	0	0.0
08:00	**242**	0	0.0	204	84.3	24	9.9	13	5.4	1	0.4
09:00	**357**	6	1.7	322	90.2	19	5.3	8	2.2	2	0.6
10:00	**536**	4	0.8	489	91.2	30	5.6	11	2.1	2	0.4
11:00	**694**	13	1.9	601	86.6	53	7.6	23	3.3	4	0.6
12:00	**777**	7	0.9	702	90.4	48	6.2	19	2.5	1	0.1
13:00	**724**	7	1.0	643	88.8	51	7.0	19	2.6	4	0.6
14:00	**749**	9	1.2	671	89.6	47	6.3	21	2.8	1	0.1
15:00	**732**	13	1.8	648	88.5	58	7.9	13	1.8	0	0.0
16:00	**710**	5	0.7	656	92.4	39	5.5	10	1.4	0	0.0
17:00	**672**	7	1.0	618	92.0	27	4.0	19	2.8	1	0.2
18:00	**580**	13	2.2	519	89.5	36	6.2	11	1.9	1	0.2
19:00	**434**	1	0.2	399	91.9	26	6.0	7	1.6	1	0.2
20:00	**316**	4	1.3	287	90.8	19	6.0	5	1.6	1	0.3
21:00	**231**	0	0.0	214	92.6	14	6.1	3	1.3	0	0.0
22:00	**172**	3	1.7	156	90.7	9	5.2	4	2.3	0	0.0
23:00	**113**	2	1.8	93	82.3	10	8.9	6	5.3	2	1.8
12H,7-19	**6927**	**85**	**1.2**	**6200**	**89.5**	**450**	**6.5**	**175**	**2.5**	**17**	**0.3**
16H,6-22	**8013**	**91**	**1.1**	**7188**	**89.7**	**519**	**6.5**	**196**	**2.5**	**19**	**0.2**
18H,6-24	**8298**	**96**	**1.2**	**7437**	**89.6**	**538**	**6.5**	**206**	**2.5**	**21**	**0.3**
24H,0-24	**8737**	**99**	**1.1**	**7799**	**89.3**	**582**	**6.7**	**235**	**2.7**	**22**	**0.3**

19028	RUDHEATH		Site No: 19028009		Location	Site 9, A556, Rudheath (LC 411)					
Wed 24-Jun-15 to Tue 30-Jun-15			Channel: Westbound								
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Mon 29-Jun-15											
00:00	**60**	0	0.0	45	75.0	3	5.0	11	18.3	1	1.7
01:00	**36**	0	0.0	25	69.4	6	16.7	3	8.3	2	5.6
02:00	**48**	0	0.0	34	70.8	7	14.6	4	8.3	3	6.3
03:00	**41**	1	2.4	29	70.7	3	7.3	6	14.6	2	4.9
04:00	**48**	0	0.0	33	68.8	6	12.5	9	18.8	0	0.0
05:00	**131**	1	0.8	104	79.4	12	9.2	12	9.2	2	1.5
06:00	**297**	5	1.7	217	73.1	45	15.2	29	9.8	1	0.3
07:00	**887**	6	0.7	735	82.9	105	11.8	38	4.3	3	0.3
08:00	**1325**	9	0.7	1120	84.5	138	10.4	54	4.1	4	0.3
09:00	**1051**	1	0.1	852	81.1	125	11.9	64	6.1	9	0.9
10:00	**659**	10	1.5	464	70.4	129	19.6	48	7.3	8	1.2
11:00	**666**	4	0.6	471	70.7	110	16.5	68	10.2	13	2.0
12:00	**848**	13	1.5	615	72.5	135	15.9	72	8.5	13	1.5
13:00	**794**	8	1.0	598	75.3	115	14.5	70	8.8	3	0.4
14:00	**866**	11	1.3	685	79.1	120	13.9	46	5.3	4	0.5
15:00	**942**	8	0.9	759	80.6	119	12.6	49	5.2	7	0.7
16:00	**1180**	14	1.2	959	81.3	145	12.3	57	4.8	5	0.4
17:00	**1464**	11	0.8	1299	88.7	92	6.3	59	4.0	3	0.2
18:00	**1151**	6	0.5	1021	88.7	92	8.0	31	2.7	1	0.1
19:00	**619**	6	1.0	547	88.4	50	8.1	15	2.4	1	0.2
20:00	**346**	1	0.3	309	89.3	26	7.5	10	2.9	0	0.0
21:00	**316**	2	0.6	288	91.1	22	7.0	4	1.3	0	0.0
22:00	**243**	1	0.4	224	92.2	10	4.1	7	2.9	1	0.4
23:00	**117**	0	0.0	104	88.9	8	6.8	5	4.3	0	0.0
12H,7-19	**11833**	**101**	**0.9**	**9578**	**80.9**	**1425**	**12.0**	**656**	**5.5**	**73**	**0.6**
16H,6-22	**13411**	**115**	**0.9**	**10939**	**81.6**	**1568**	**11.7**	**714**	**5.3**	**75**	**0.6**
18H,6-24	**13771**	**116**	**0.8**	**11267**	**81.8**	**1586**	**11.5**	**726**	**5.3**	**76**	**0.6**
24H,0-24	**14135**	**118**	**0.8**	**11537**	**81.6**	**1623**	**11.5**	**771**	**5.5**	**86**	**0.6**

19028			RUDHEATH		Site No: 19028009		Location	Site 9, A556, Rudheath (LC 411)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Westbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Tue 30-Jun-15											
00:00	**59**	0	0.0	44	74.6	5	8.5	9	15.3	1	1.7
01:00	**39**	2	5.1	27	69.2	0	0.0	10	25.6	0	0.0
02:00	**35**	0	0.0	22	62.9	5	14.3	4	11.4	4	11.4
03:00	**40**	0	0.0	28	70.0	3	7.5	8	20.0	1	2.5
04:00	**47**	1	2.1	30	63.8	6	12.8	9	19.2	1	2.1
05:00	**118**	4	3.4	88	74.6	13	11.0	12	10.2	1	0.9
06:00	**318**	2	0.6	222	69.8	57	17.9	32	10.1	5	1.6
07:00	**980**	14	1.4	802	81.8	106	10.8	53	5.4	5	0.5
08:00	**1495**	6	0.4	1279	85.6	139	9.3	68	4.6	3	0.2
09:00	**876**	10	1.1	692	79.0	113	12.9	53	6.1	8	0.9
10:00	**699**	14	2.0	526	75.3	91	13.0	62	8.9	6	0.9
11:00	**762**	10	1.3	582	76.4	97	12.7	67	8.8	6	0.8
12:00	**755**	11	1.5	578	76.6	94	12.5	61	8.1	11	1.5
13:00	**808**	5	0.6	624	77.2	109	13.5	61	7.6	9	1.1
14:00	**925**	9	1.0	721	78.0	122	13.2	68	7.4	5	0.5
15:00	**945**	11	1.2	763	80.7	119	12.6	47	5.0	5	0.5
16:00	**1153**	12	1.0	977	84.7	116	10.1	44	3.8	4	0.4
17:00	**1502**	14	0.9	1304	86.8	122	8.1	58	3.9	4	0.3
18:00	**1197**	11	0.9	1044	87.2	92	7.7	46	3.8	4	0.3
19:00	**646**	15	2.3	562	87.0	50	7.7	19	2.9	0	0.0
20:00	**438**	9	2.1	374	85.4	46	10.5	9	2.1	0	0.0
21:00	**322**	3	0.9	297	92.2	20	6.2	2	0.6	0	0.0
22:00	**261**	6	2.3	230	88.1	17	6.5	8	3.1	0	0.0
23:00	**145**	0	0.0	124	85.5	15	10.3	5	3.5	1	0.7
12H,7-19	**12097**	**127**	**1.1**	**9892**	**81.8**	**1320**	**10.9**	**688**	**5.7**	**70**	**0.6**
16H,6-22	**13821**	**156**	**1.1**	**11347**	**82.1**	**1493**	**10.8**	**750**	**5.4**	**75**	**0.5**
18H,6-24	**14227**	**162**	**1.1**	**11701**	**82.3**	**1525**	**10.7**	**763**	**5.4**	**76**	**0.5**
24H,0-24	**14565**	**169**	**1.2**	**11940**	**82.0**	**1557**	**10.7**	**815**	**5.6**	**84**	**0.6**

19028	RUDHEATH	Site No: 19028009	Location	Site 9, A556, Rudheath (LC 411)
Wed 24-Jun-15 to Tue 30-Jun-15		Channel: Westbound		

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Daily Totals											
Wed 24-Jun-15	**14412**	136	0.9	11694	81.1	1626	11.3	853	5.9	103	0.7
Thu 25-Jun-15	**14772**	127	0.9	12031	81.4	1663	11.3	867	5.9	84	0.6
Fri 26-Jun-15	**12713**	107	0.8	10356	81.5	1310	10.3	780	6.1	160	1.3
Sat 27-Jun-15	**10614**	248	2.3	9035	85.1	917	8.6	376	3.5	38	0.4
Sun 28-Jun-15	**8737**	99	1.1	7799	89.3	582	6.7	235	2.7	22	0.3
Mon 29-Jun-15	**14135**	118	0.8	11537	81.6	1623	11.5	771	5.5	86	0.6
Tue 30-Jun-15	**14565**	169	1.2	11940	82.0	1557	10.7	815	5.6	84	0.6
Total Vehicles											
[--]	**89948**	1004	1.2	74392	83.1	9278	10.0	4697	5.0	577	0.6



19028			RUDHEATH				Site No: 19028009			Location	Site 9, A556, Rudheath (LC 411)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Westbound									
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<21**	**21-<31**	**31-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**61-<66**	**66-<71**	**71-<76**	**=>76**
Wed 24-Jun-15																
00:00	**46**	53	43.8	10.9	0	0	5	13	7	12	4	2	2	0	1	0
01:00	**44**	51.9	45.8	7.2	0	0	0	10	11	15	5	2	1	0	0	0
02:00	**49**	50.2	43.8	7.6	0	0	0	17	15	11	3	2	0	1	0	0
03:00	**31**	49.5	41.8	7.6	0	0	1	14	6	7	2	1	0	0	0	0
04:00	**54**	54	46.4	7.7	0	0	0	14	9	14	14	2	1	0	0	0
05:00	**123**	52.3	45.1	7.1	0	0	1	27	42	29	20	2	1	1	0	0
06:00	**345**	54.1	46.6	7.5	0	0	3	60	97	104	47	26	5	3	0	0
07:00	**881**	52	44.8	7.2	0	0	5	217	305	199	112	27	10	5	1	0
08:00	**1424**	49.6	42.3	7.2	0	0	38	536	440	275	100	24	7	4	0	0
09:00	**812**	51	44.5	7.6	0	0	13	207	271	200	75	26	12	6	1	1
10:00	**681**	52.7	45.3	7.5	0	0	6	151	233	158	89	28	7	9	0	0
11:00	**633**	51.8	43.9	7.4	0	0	7	193	212	113	81	19	4	4	0	0
12:00	**741**	52.3	44.9	7.5	0	0	11	180	222	190	105	17	10	6	0	0
13:00	**716**	52.5	44.9	8	0	0	22	158	224	180	81	40	4	5	0	2
14:00	**911**	51.3	44.5	7.1	0	0	7	241	299	221	99	34	7	2	1	0
15:00	**1098**	52.7	45.6	7.1	0	0	4	239	320	313	163	38	18	2	1	0
16:00	**1271**	50.8	42.1	9.8	7	47	86	298	369	286	128	43	6	1	0	0
17:00	**1448**	47.3	37	11.2	45	124	128	531	355	188	56	18	2	1	0	0
18:00	**1193**	50.7	36.9	14.7	85	154	135	194	244	213	111	40	12	2	3	0
19:00	**748**	54.8	47.3	7.9	0	0	5	119	202	199	145	54	10	7	5	2
20:00	**393**	53.9	46.2	8.2	0	0	9	73	103	120	49	25	8	5	0	1
21:00	**297**	55.3	48	7.6	0	0	0	34	92	86	46	22	11	4	2	0
22:00	**303**	54.9	47.8	8.2	0	0	0	41	92	87	48	16	9	4	4	2
23:00	**170**	54	46.2	8.7	0	0	5	31	47	48	22	10	2	3	2	0
12H,7-19	**11809**	**50.9**	**42.5**	**9.7**	**137**	**325**	**462**	**3145**	**3494**	**2536**	**1200**	**354**	**99**	**47**	**7**	**3**
16H,6-22	**13592**	**51.5**	**43.1**	**9.6**	**137**	**325**	**479**	**3431**	**3988**	**3045**	**1487**	**481**	**133**	**66**	**14**	**6**
18H,6-24	**14065**	**51.6**	**43.2**	**9.6**	**137**	**325**	**484**	**3503**	**4127**	**3180**	**1557**	**507**	**144**	**73**	**20**	**8**
24H,0-24	**14412**	**51.7**	**43.3**	**9.5**	**137**	**325**	**491**	**3598**	**4217**	**3268**	**1605**	**518**	**149**	**75**	**21**	**8**

19028		RUDHEATH				Site No: 19028009			Location	Site 9, A556, Rudheath (LC 411)						
Wed 24-Jun-15 to Tue 30-Jun-15						Channel: Westbound										
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<21**	**21-<31**	**31-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**61-<66**	**66-<71**	**71-<76**	**=>76**
Thu 25-Jun-15																
00:00	**81**	53.1	45	8.1	0	0	4	17	19	23	13	5	0	0	0	0
01:00	**48**	51.3	44	9.4	0	0	5	9	11	15	5	2	0	1	0	0
02:00	**41**	51.4	44	7.6	0	0	0	15	9	10	4	3	0	0	0	0
03:00	**45**	47.5	41	7.1	0	0	1	22	13	6	1	2	0	0	0	0
04:00	**51**	52.2	45.6	6.7	0	0	0	10	18	13	8	1	1	0	0	0
05:00	**134**	53.1	45.7	7.3	0	0	0	29	45	31	20	5	3	1	0	0
06:00	**328**	54	46.4	7.3	0	0	1	63	90	97	46	24	6	1	0	0
07:00	**990**	51.7	45.1	7	0	0	6	227	317	274	118	36	7	5	0	0
08:00	**1448**	46.8	37	10.6	15	118	199	528	344	165	55	18	4	1	1	0
09:00	**918**	51.6	44.3	7.6	0	0	14	257	292	204	101	31	15	3	0	1
10:00	**742**	51.1	44.4	7.4	0	0	14	197	217	200	88	15	8	1	1	1
11:00	**729**	50.6	43.7	7.8	0	0	25	200	236	171	62	21	8	6	0	0
12:00	**765**	52.2	45.1	7.3	0	0	9	168	269	183	87	37	7	4	0	1
13:00	**792**	52	45.1	7.6	0	0	16	165	269	205	85	32	13	5	1	1
14:00	**847**	52.3	45.5	7.5	0	0	12	172	274	240	82	50	9	6	2	0
15:00	**976**	53.6	46.1	7.4	0	0	15	170	291	281	141	63	11	3	0	1
16:00	**1271**	52.7	45.9	6.8	0	0	10	217	414	377	187	51	8	6	1	0
17:00	**1499**	50.1	40.1	11.6	46	75	140	349	407	311	115	41	10	4	1	0
18:00	**1174**	54.4	47.7	6.9	0	0	2	130	332	381	227	67	21	10	1	3
19:00	**655**	56.5	48.3	8.1	0	0	3	81	187	178	101	66	24	9	4	2
20:00	**453**	55.5	47.9	7.7	0	0	3	53	130	137	68	40	17	2	2	1
21:00	**335**	56.3	48.3	8.5	0	0	2	41	97	91	51	34	5	9	2	3
22:00	**281**	54.7	47.4	8.1	0	0	0	45	80	86	37	17	8	4	3	1
23:00	**169**	53.7	47.2	7.6	0	0	0	24	52	53	26	7	3	2	1	1
12H,7-19	**12151**	**51.7**	**43.8**	**9**	**61**	**193**	**462**	**2780**	**3662**	**2992**	**1348**	**462**	**121**	**54**	**8**	**8**
16H,6-22	**13922**	**52.3**	**44.3**	**8.9**	**61**	**193**	**471**	**3018**	**4166**	**3495**	**1614**	**626**	**173**	**75**	**16**	**14**
18H,6-24	**14372**	**52.4**	**44.4**	**8.9**	**61**	**193**	**471**	**3087**	**4298**	**3634**	**1677**	**650**	**184**	**81**	**20**	**16**
24H,0-24	**14772**	**52.4**	**44.4**	**8.9**	**61**	**193**	**481**	**3189**	**4413**	**3732**	**1728**	**668**	**188**	**83**	**20**	**16**

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19028		RUDHEATH			Site No: 19028009			Location	Site 9, A556, Rudheath (LC 411)							
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Westbound											
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Fri 26-Jun-15																
00:00	**84**	52.4	45.6	7.1	0	0	2	16	20	29	14	3	0	0	0	0
01:00	**47**	53.2	46.7	7.4	0	0	1	6	13	16	8	1	2	0	0	0
02:00	**39**	50.6	43.3	7.9	0	0	0	17	7	9	4	1	1	0	0	0
03:00	**48**	49.9	42.4	7.6	0	0	2	18	11	12	4	1	0	0	0	0
04:00	**56**	52.7	44.7	7.3	0	0	0	18	12	13	12	1	0	0	0	0
05:00	**136**	51.4	45.5	6.4	0	0	0	22	58	34	15	6	0	1	0	0
06:00	**311**	52.3	45.4	7.7	0	0	5	70	87	92	37	10	7	3	0	0
07:00	**910**	51.4	45.1	7	0	0	9	205	276	276	98	32	13	1	0	0
08:00	**1370**	49.2	40	9.7	8	59	101	501	365	205	95	25	10	0	1	0
09:00	**869**	50.5	43.6	7.7	0	2	16	265	280	193	68	30	8	5	1	1
10:00	**584**	45.1	24.5	16	214	110	31	78	76	58	16	1	0	0	0	0
11:00	**592**	42	24.4	14.5	194	106	45	144	70	25	8	0	0	0	0	0
12:00	**431**	36	19.1	12.9	168	146	35	34	24	15	7	1	1	0	0	0
13:00	**294**	18.8	12.9	5.4	153	124	16	1	0	0	0	0	0	0	0	0
14:00	**428**	19.9	13.7	6.4	210	173	38	7	0	0	0	0	0	0	0	0
15:00	**928**	51.8	39.8	14.1	68	74	47	155	234	193	104	40	8	3	0	2
16:00	**1266**	51	44	7.3	0	0	24	350	424	280	140	35	8	4	1	0
17:00	**1225**	38.9	22.9	12.3	197	515	196	169	83	49	14	2	0	0	0	0
18:00	**1130**	54.1	44.8	10.6	20	30	30	201	279	293	170	76	18	7	6	0
19:00	**671**	54.7	47.1	7.8	0	1	8	96	193	196	103	52	14	5	0	3
20:00	**434**	54.6	47.3	8	1	0	8	52	119	139	68	30	9	6	1	1
21:00	**327**	54.5	46.9	7.4	0	0	6	44	90	106	45	31	3	2	0	0
22:00	**337**	54.2	46.3	8.3	0	1	1	74	86	100	37	22	12	1	2	1
23:00	**196**	53	46.6	7.1	0	0	2	26	64	62	31	6	2	2	1	0
12H,7-19	**10027**	**49.6**	**35.1**	**15.2**	**1232**	**1339**	**588**	**2110**	**2111**	**1587**	**720**	**242**	**66**	**20**	**9**	**3**
16H,6-22	**11770**	**50.3**	**36.8**	**15**	**1233**	**1340**	**615**	**2372**	**2600**	**2120**	**973**	**365**	**99**	**36**	**10**	**7**
18H,6-24	**12303**	**50.5**	**37.2**	**14.9**	**1233**	**1341**	**618**	**2472**	**2750**	**2282**	**1041**	**393**	**113**	**39**	**13**	**8**
24H,0-24	**12713**	**50.5**	**37.5**	**14.7**	**1233**	**1341**	**623**	**2569**	**2871**	**2395**	**1098**	**406**	**116**	**40**	**13**	**8**

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19028		RUDHEATH						Site No: 19028009			Location	Site 9, A556, Rudheath (LC 411)				
Wed 24-Jun-15 to Tue 30-Jun-15								Channel: Westbound								
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<21**	**21-<31**	**31-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**61-<66**	**66-<71**	**71-<76**	**=>76**
Sat 27-Jun-15																
00:00	**130**	53.6	45.2	9.2	0	1	6	27	33	33	19	7	2	1	1	0
01:00	**83**	53.5	44.9	9.3	0	0	4	23	16	22	10	3	4	1	0	0
02:00	**59**	52.9	44.4	7.9	0	0	1	18	16	12	7	5	0	0	0	0
03:00	**47**	53.2	46.7	7.5	0	0	0	7	17	12	8	1	0	2	0	0
04:00	**65**	51.4	44.2	8	0	0	3	17	14	20	9	1	1	0	0	0
05:00	**101**	50.7	44.7	8.2	0	0	3	23	32	29	6	6	1	0	0	1
06:00	**169**	54.4	46.7	8.2	0	1	1	26	57	46	18	10	7	3	0	0
07:00	**251**	54.2	46.5	7.6	0	0	3	40	81	68	33	19	5	1	1	0
08:00	**434**	53.5	46.1	8	0	0	7	88	116	130	54	20	15	3	1	0
09:00	**608**	52.9	45.6	7.6	0	1	4	124	209	146	83	25	9	4	1	2
10:00	**814**	53.6	45.9	7.9	0	1	12	148	277	192	117	42	18	2	2	3
11:00	**995**	53.9	46.4	8.1	0	0	20	169	304	267	145	51	24	8	3	4
12:00	**915**	53.2	46.2	7.4	0	0	11	147	298	266	126	39	19	6	2	1
13:00	**857**	54.1	46.6	7.8	0	1	6	144	272	239	107	49	28	6	4	1
14:00	**734**	53.5	46.5	7.6	0	0	5	112	256	204	91	40	17	4	0	5
15:00	**750**	54.4	47.3	7.7	0	0	2	86	279	203	98	53	11	7	2	9
16:00	**803**	54.4	47.2	7.4	0	0	1	112	268	217	123	45	26	9	0	2
17:00	**702**	54.5	47.5	7.1	0	0	8	61	247	200	113	54	12	3	4	0
18:00	**603**	54.8	47.4	7.7	0	0	1	81	193	169	89	45	14	5	4	2
19:00	**428**	54.6	47.3	7.4	0	0	1	55	146	110	72	30	8	3	1	2
20:00	**338**	54.4	47.6	7.4	0	0	2	33	113	103	52	22	7	2	3	1
21:00	**267**	55.4	47.6	7.8	0	0	0	33	93	72	32	24	6	4	2	1
22:00	**245**	54.6	46.9	7.7	0	0	0	46	63	76	32	20	6	1	0	1
23:00	**216**	53.9	46.9	6.8	0	0	1	31	63	67	36	16	2	0	0	0
12H,7-19	**8466**	**54**	**46.6**	**7.7**	**0**	**3**	**80**	**1312**	**2800**	**2301**	**1179**	**482**	**198**	**58**	**24**	**29**
16H,6-22	**9668**	**54.1**	**46.7**	**7.7**	**0**	**4**	**84**	**1459**	**3209**	**2632**	**1353**	**568**	**226**	**70**	**30**	**33**
18H,6-24	**10129**	**54.1**	**46.7**	**7.7**	**0**	**4**	**85**	**1536**	**3335**	**2775**	**1421**	**604**	**234**	**71**	**30**	**34**
24H,0-24	**10614**	**54**	**46.6**	**7.7**	**0**	**5**	**102**	**1651**	**3463**	**2903**	**1480**	**627**	**242**	**75**	**31**	**35**

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19028		RUDHEATH			Site No: 19028009			Location	Site 9, A556, Rudheath (LC 411)							
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Westbound											
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Sun 28-Jun-15																
00:00	**154**	53.9	47.1	7.6	0	0	3	18	44	51	25	8	4	0	0	1
01:00	**82**	50.3	44.3	8.1	0	0	4	15	33	20	5	3	1	0	1	0
02:00	**50**	50.2	45	7	0	0	0	12	15	18	2	1	2	0	0	0
03:00	**43**	50	43.8	6.4	0	0	0	12	16	10	4	1	0	0	0	0
04:00	**40**	52.3	45.6	8.5	0	0	1	9	9	13	6	1	0	0	1	0
05:00	**70**	50.7	45.4	7.2	0	0	0	14	28	18	4	4	1	1	0	0
06:00	**105**	52	45.2	7.4	0	0	0	25	38	24	9	5	4	0	0	0
07:00	**154**	50.3	44.7	6.8	0	0	4	26	57	51	12	0	4	0	0	0
08:00	**242**	53.3	46.2	7.3	0	0	3	43	68	73	39	13	2	0	1	0
09:00	**357**	53	45.5	7.4	0	0	1	79	122	85	40	23	4	2	1	0
10:00	**536**	53.3	46.3	7.3	0	0	5	88	173	150	84	23	7	5	1	0
11:00	**694**	53.6	46.8	7.3	0	0	4	101	217	214	101	34	14	6	3	0
12:00	**777**	52.8	45.8	7.1	0	0	2	149	258	216	97	42	10	1	1	1
13:00	**724**	53	46.2	7.1	0	0	7	108	257	207	90	38	12	3	2	0
14:00	**749**	53.6	46.8	6.9	0	0	2	106	239	228	116	39	14	3	2	0
15:00	**732**	54	46.9	7.5	0	0	5	107	225	223	102	42	17	8	2	1
16:00	**710**	54.2	47.1	7.2	0	0	2	99	220	210	111	45	16	5	2	0
17:00	**672**	54.3	47.1	7.3	0	0	3	88	219	194	101	46	13	5	2	1
18:00	**580**	55.8	48.3	8.1	0	0	3	60	180	162	92	43	25	8	4	3
19:00	**434**	55.1	48.2	7.7	0	0	2	42	135	124	80	30	10	6	3	2
20:00	**316**	55	48.2	7.5	0	0	1	33	87	102	56	23	9	1	2	2
21:00	**231**	56.4	48.6	7.9	0	0	1	25	59	72	37	25	6	4	1	1
22:00	**172**	54.9	47.5	7.7	0	0	2	19	55	51	24	12	6	3	0	0
23:00	**113**	54.9	47.7	9.4	0	0	4	16	21	42	16	7	2	3	0	2
12H,7-19	**6927**	**53.8**	**46.7**	**7.3**	**0**	**0**	**41**	**1054**	**2235**	**2013**	**985**	**388**	**138**	**46**	**21**	**6**
16H,6-22	**8013**	**54**	**46.8**	**7.4**	**0**	**0**	**45**	**1179**	**2554**	**2335**	**1167**	**471**	**167**	**57**	**27**	**11**
18H,6-24	**8298**	**54**	**46.9**	**7.4**	**0**	**0**	**51**	**1214**	**2630**	**2428**	**1207**	**490**	**175**	**63**	**27**	**13**
24H,0-24	**8737**	**54**	**46.8**	**7.4**	**0**	**0**	**59**	**1294**	**2775**	**2558**	**1253**	**508**	**183**	**64**	**29**	**14**

19028 RUDHEATH Site No: 19028009 Location Site 9, A556, Rudheath (LC 411)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Westbound

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Mon 29-Jun-15																
00:00	60	50.3	44.4	7.5	0	0	1	16	17	19	4	2	0	1	0	0
01:00	36	51.9	45.7	6.5	0	0	0	6	14	9	6	0	1	0	0	0
02:00	48	52.6	45.3	7.7	0	0	0	13	13	13	4	4	1	0	0	0
03:00	41	48.4	42.6	7.2	0	0	1	13	18	5	1	3	0	0	0	0
04:00	48	52.9	46.1	7.8	0	0	1	10	9	18	6	3	1	0	0	0
05:00	131	53.3	45.7	7.8	0	0	1	30	38	35	15	8	3	1	0	0
06:00	297	54.4	46.9	7.8	0	0	5	46	76	94	45	23	3	4	1	0
07:00	887	52.8	45.8	7.1	0	0	3	171	307	234	107	49	11	3	1	1
08:00	1325	49.9	42.9	6.9	0	0	17	473	405	299	101	26	2	2	0	0
09:00	1051	50.8	44.2	7.1	0	0	16	274	345	271	100	33	11	1	0	0
10:00	659	51.8	44.7	7.2	0	0	4	168	223	151	86	14	11	0	2	0
11:00	666	51	44.4	7.2	0	0	3	180	225	157	73	18	5	1	3	1
12:00	848	51.7	43.4	9.2	0	7	62	218	226	196	80	39	15	3	0	2
13:00	794	52.5	44.7	7.8	0	0	15	204	252	173	103	31	11	2	3	0
14:00	866	52.7	45.4	7.3	0	0	10	184	267	233	125	35	8	1	2	1
15:00	942	53.4	46.1	7.4	0	0	10	168	296	263	134	47	15	6	3	0
16:00	1180	52.8	46.4	6.9	1	0	6	164	390	384	159	53	16	3	2	2
17:00	1464	51.5	45.3	6.7	0	0	4	310	469	445	165	55	13	2	1	0
18:00	1151	54.3	47.4	7.1	0	0	4	139	339	364	198	74	23	6	2	2
19:00	619	55.5	48.1	7.2	0	0	1	61	187	192	95	60	16	2	4	1
20:00	346	55	47.8	7.8	0	0	2	41	108	92	63	20	14	4	1	1
21:00	316	55.9	48.3	7.7	0	0	2	37	76	102	52	32	11	1	3	0
22:00	243	53.5	46.6	7.3	0	0	0	41	77	70	36	15	0	1	3	0
23:00	117	56.5	48.6	7.7	0	0	0	11	35	39	13	9	7	3	0	0
12H,7-19	11833	52.1	45.1	7.4	1	7	154	2653	3744	3170	1431	474	141	30	19	9
16H,6-22	13411	52.6	45.4	7.5	1	7	164	2838	4191	3650	1686	609	185	41	28	11
18H,6-24	13771	52.7	45.5	7.5	1	7	164	2890	4303	3759	1735	633	192	45	31	11
24H,0-24	14135	52.7	45.5	7.5	1	7	168	2978	4412	3858	1771	653	198	47	31	11

19028 RUDHEATH Site No: 19028009 Location Site 9, A556, Rudheath (LC 411)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Westbound

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Tue 30-Jun-15																
00:00	59	56.4	46.2	9	0	0	1	17	10	12	9	9	1	0	0	0
01:00	39	53.6	44.3	9.5	0	0	4	8	8	9	7	3	0	0	0	0
02:00	35	49.6	44.2	6	0	0	0	8	14	10	2	1	0	0	0	0
03:00	40	53.5	44.5	8.6	0	0	2	10	11	8	5	4	0	0	0	0
04:00	47	53.2	45.9	7.6	0	0	0	13	7	15	10	1	1	0	0	0
05:00	118	51.3	45.7	7.3	0	0	1	19	47	32	13	3	1	0	2	0
06:00	318	53.7	46.5	7.5	0	0	4	53	89	97	50	17	6	1	0	1
07:00	980	52	45.1	7.4	0	0	10	230	295	275	115	33	17	3	1	1
08:00	1495	46.9	37.2	10.5	13	134	165	556	368	185	54	16	3	1	0	0
09:00	876	51	44.2	7.6	0	4	12	231	291	208	85	32	8	4	0	1
10:00	699	52.3	44.7	7.9	0	0	16	176	217	163	85	25	12	4	0	1
11:00	762	51.7	44.3	8.1	0	2	15	198	271	150	77	30	8	8	1	2
12:00	755	52.5	45.2	7.7	0	0	11	171	241	191	91	28	16	5	0	1
13:00	808	53.1	45.3	7.6	0	1	7	188	252	189	119	33	12	6	1	0
14:00	925	52.4	45.6	7.3	0	1	8	177	315	254	107	46	12	2	0	3
15:00	945	53.4	46.6	7.2	0	0	7	140	292	300	132	51	14	4	3	2
16:00	1153	53.5	46.6	6.8	0	0	2	176	365	337	201	52	13	5	1	1
17:00	1502	52.4	46	6.8	0	0	7	240	532	442	191	65	17	6	1	1
18:00	1197	54.2	47.2	7.2	0	0	9	150	365	356	213	69	25	7	2	1
19:00	646	55.7	48.5	7.8	0	0	4	61	192	180	119	51	25	7	6	1
20:00	438	55.8	48.5	8.4	0	0	5	45	121	130	73	34	15	8	5	2
21:00	322	54.6	47.8	7.1	0	0	0	32	110	90	58	20	7	3	1	1
22:00	261	53.6	46.5	7.7	0	0	2	41	90	71	33	14	5	3	2	0
23:00	145	53.8	47	6.9	0	0	1	20	41	45	28	7	3	0	0	0
12H,7-19	12097	52.3	44.6	8.3	13	142	269	2633	3804	3050	1470	480	157	55	10	14
16H,6-22	13821	52.8	45	8.3	13	142	282	2824	4316	3547	1770	602	210	74	22	19
18H,6-24	14227	52.8	45.1	8.3	13	142	285	2885	4447	3663	1831	623	218	77	24	19
24H,0-24	14565	52.8	45.1	8.3	13	142	293	2960	4544	3749	1877	644	221	77	26	19

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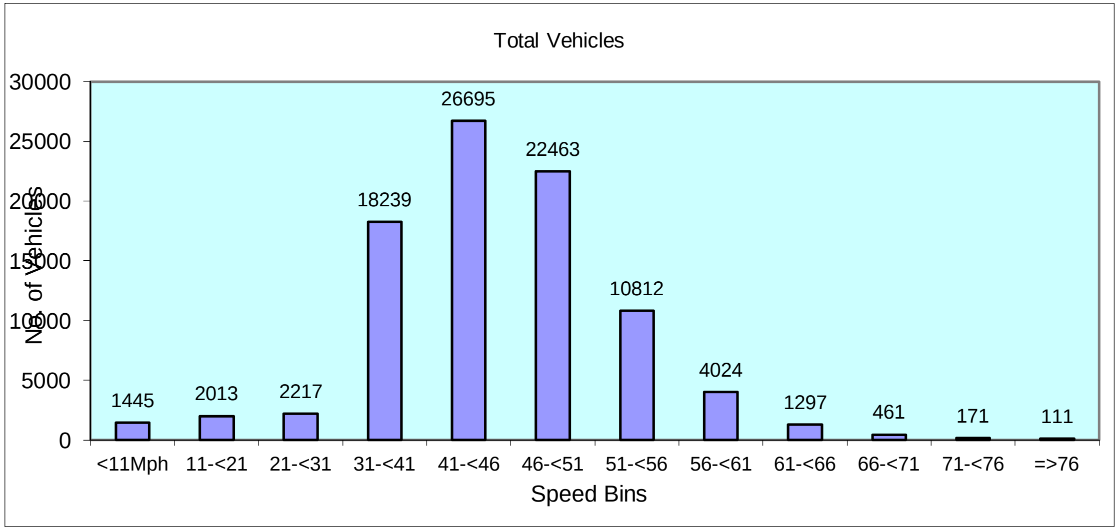
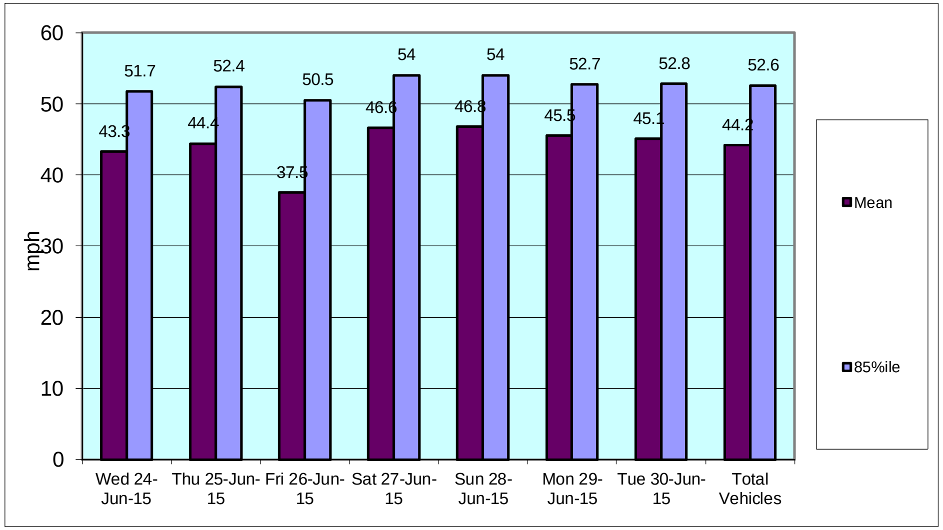
Data produced by Axiom Traffic Ltd

19028 **RUDHEATH** **Site No: 19028009** **Location Site 9, A556, Rudheath (LC 411)**

Wed 24-Jun-15 to Tue 30-Jun-15 **Channel: Westbound**

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Daily Totals																
Wed 24-Jun-15	**14412**	51.7	43.3	9.5	137	325	491	3598	4217	3268	1605	518	149	75	21	8
Thu 25-Jun-15	**14772**	52.4	44.4	8.9	61	193	481	3189	4413	3732	1728	668	188	83	20	16
Fri 26-Jun-15	**12713**	50.5	37.5	14.7	1233	1341	623	2569	2871	2395	1098	406	116	40	13	8
Sat 27-Jun-15	**10614**	54	46.6	7.7	0	5	102	1651	3463	2903	1480	627	242	75	31	35
Sun 28-Jun-15	**8737**	54	46.8	7.4	0	0	59	1294	2775	2558	1253	508	183	64	29	14
Mon 29-Jun-15	**14135**	52.7	45.5	7.5	1	7	168	2978	4412	3858	1771	653	198	47	31	11
Tue 30-Jun-15	**14565**	52.8	45.1	8.3	13	142	293	2960	4544	3749	1877	644	221	77	26	19
Total Vehicles																
[--]	**89948**	52.6	44.2	9.1	1445	2013	2217	18239	26695	22463	10812	4024	1297	461	171	111



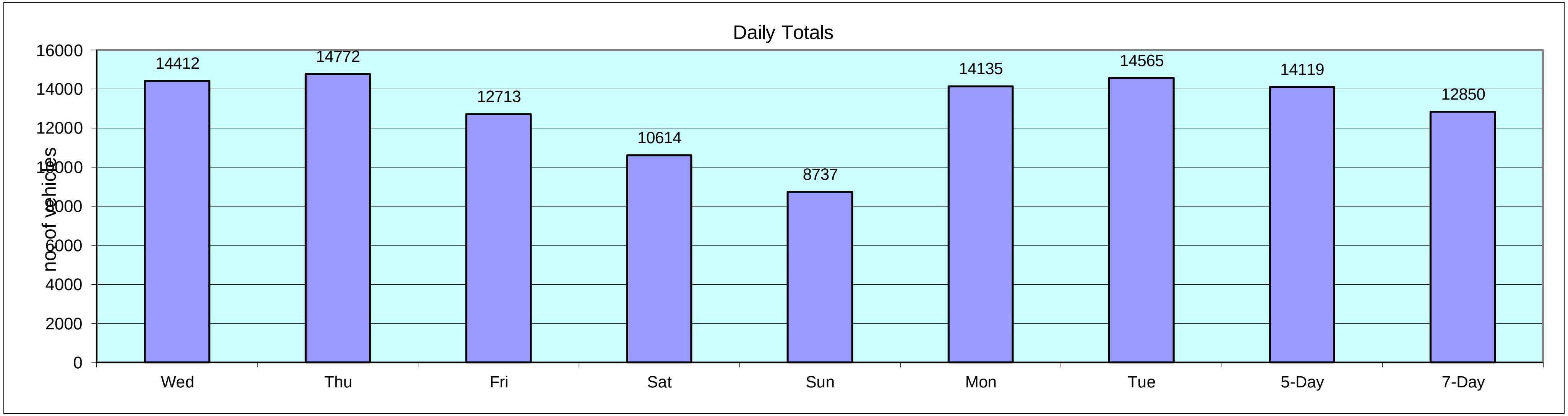


Data produced by
Axiom Traffic Ltd

19028		RUDHEATH		Site No: 19028009 Channel: Westbound		Location	Site 9, A556, Rudheath (LC 411)	
TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av
Week Begin: 24-Jun-15									
00:00	**46**	81	84	130	154	60	59	66	88
01:00	**44**	48	47	83	82	36	39	43	54
02:00	**49**	41	39	59	50	48	35	42	46
03:00	**31**	45	48	47	43	41	40	41	42
04:00	**54**	51	56	65	40	48	47	51	52
05:00	**123**	134	136	101	70	131	118	128	116
06:00	**345**	328	311	169	105	297	318	320	268
07:00	**881**	990	910	251	154	887	980	930	722
08:00	**1424**	1448	1370	434	242	1325	1495	1412	1105
09:00	**812**	918	869	608	357	1051	876	905	784
10:00	**681**	742	584	814	536	659	699	673	674
11:00	**633**	729	592	995	694	666	762	676	724
12:00	**741**	765	431	915	777	848	755	708	747
13:00	**716**	792	294	857	724	794	808	681	712
14:00	**911**	847	428	734	749	866	925	795	780
15:00	**1098**	976	928	750	732	942	945	978	910
16:00	**1271**	1271	1266	803	710	1180	1153	1228	1093
17:00	**1448**	1499	1225	702	672	1464	1502	1428	1216
18:00	**1193**	1174	1130	603	580	1151	1197	1169	1004
19:00	**748**	655	671	428	434	619	646	668	600
20:00	**393**	453	434	338	316	346	438	413	388
21:00	**297**	335	327	267	231	316	322	319	299
22:00	**303**	281	337	245	172	243	261	285	263
23:00	**170**	169	196	216	113	117	145	159	161
12H,7-19	**11809**	**12151**	**10027**	**8466**	**6927**	**11833**	**12097**	**11583**	**10473**
16H,6-22	**13592**	**13922**	**11770**	**9668**	**8013**	**13411**	**13821**	**13303**	**12028**
18H,6-24	**14065**	**14372**	**12303**	**10129**	**8298**	**13771**	**14227**	**13748**	**12452**
24H,0-24	**14412**	**14772**	**12713**	**10614**	**8737**	**14135**	**14565**	**14119**	**12850**
Am	**08:00**	**08:00**	**08:00**	**11:00**	**11:00**	**08:00**	**08:00**	**-**	**-**
Peak	**1424**	**1448**	**1370**	**995**	**694**	**1325**	**1495**	**1412**	**1250**
Pm	**17:00**	**17:00**	**16:00**	**12:00**	**12:00**	**17:00**	**17:00**	**-**	**-**
Peak	**1448**	**1499**	**1266**	**915**	**777**	**1464**	**1502**	**1436**	**1267**

19028	RUDHEATH	Site No: 19028009	Location	Site 9, A556, Rudheath (LC 411)
		Channel: Westbound		

TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av



Data produced by
Axiom Traffic Ltd


A556 Eastbound
(west of rbt)

19028		RUDHEATH JUNE 2015								
Site	Location	Direction	Start Date	End Date	Posted Speed Limit (PSL)	Total Vehicles	5 Day Ave.	7 Day Ave.	Average 85%ile Speed	Average Mean Speed
Site No: 19028010	Site 10, A556, Rudheath (LC 411) SJ 68369 72674	Channel: Eastbound	Wed 24-Jun-15	Tue 30-Jun-15	60	89243	13994	12749	51.2	40.3

19028	RUDHEATH				Site No: 19028010		Location	Site 10, A556, Rudheath (LC 411)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Eastbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Wed 24-Jun-15											
00:00	**49**	2	4.1	38	77.6	7	14.3	2	4.1	0	0.0
01:00	**17**	0	0.0	12	70.6	2	11.8	3	17.7	0	0.0
02:00	**36**	0	0.0	15	41.7	4	11.1	14	38.9	3	8.3
03:00	**55**	0	0.0	20	36.4	10	18.2	19	34.6	6	10.9
04:00	**83**	1	1.2	42	50.6	16	19.3	19	22.9	5	6.0
05:00	**281**	1	0.4	229	81.5	23	8.2	26	9.3	2	0.7
06:00	**720**	9	1.3	584	81.1	76	10.6	45	6.3	6	0.8
07:00	**1328**	19	1.4	1072	80.7	73	5.5	154	11.6	10	0.8
08:00	**1211**	28	2.3	936	77.3	39	3.2	176	14.5	32	2.6
09:00	**1192**	7	0.6	996	83.6	107	9.0	71	6.0	11	0.9
10:00	**908**	7	0.8	724	79.7	115	12.7	54	6.0	8	0.9
11:00	**750**	3	0.4	582	77.6	96	12.8	60	8.0	9	1.2
12:00	**736**	5	0.7	562	76.4	100	13.6	60	8.2	9	1.2
13:00	**711**	8	1.1	551	77.5	96	13.5	53	7.5	3	0.4
14:00	**716**	10	1.4	535	74.7	86	12.0	76	10.6	9	1.3
15:00	**792**	14	1.8	595	75.1	110	13.9	65	8.2	8	1.0
16:00	**1069**	7	0.7	886	82.9	90	8.4	80	7.5	6	0.6
17:00	**1065**	11	1.0	926	87.0	62	5.8	63	5.9	3	0.3
18:00	**847**	4	0.5	741	87.5	54	6.4	47	5.6	1	0.1
19:00	**537**	2	0.4	472	87.9	36	6.7	26	4.8	1	0.2
20:00	**327**	2	0.6	283	86.5	23	7.0	18	5.5	1	0.3
21:00	**272**	1	0.4	240	88.2	22	8.1	9	3.3	0	0.0
22:00	**174**	3	1.7	147	84.5	17	9.8	4	2.3	3	1.7
23:00	**102**	0	0.0	86	84.3	10	9.8	4	3.9	2	2.0
12H,7-19	**11325**	**123**	**1.1**	**9106**	**80.4**	**1028**	**9.1**	**959**	**8.5**	**109**	**1.0**
16H,6-22	**13181**	**137**	**1.0**	**10685**	**81.1**	**1185**	**9.0**	**1057**	**8.0**	**117**	**0.9**
18H,6-24	**13457**	**140**	**1.0**	**10918**	**81.1**	**1212**	**9.0**	**1065**	**7.9**	**122**	**0.9**
24H,0-24	**13978**	**144**	**1.0**	**11274**	**80.7**	**1274**	**9.1**	**1148**	**8.2**	**138**	**1.0**

19028		RUDHEATH			Site No: 19028010		Location		Site 10, A556, Rudheath (LC 411)		
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Eastbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Thu 25-Jun-15											
00:00	**60**	1	1.7	47	78.3	8	13.3	4	6.7	0	0.0
01:00	**27**	1	3.7	19	70.4	3	11.1	4	14.8	0	0.0
02:00	**50**	0	0.0	25	50.0	10	20.0	13	26.0	2	4.0
03:00	**54**	0	0.0	28	51.9	5	9.3	17	31.5	4	7.4
04:00	**92**	0	0.0	61	66.3	13	14.1	15	16.3	3	3.3
05:00	**260**	1	0.4	205	78.9	24	9.2	27	10.4	3	1.2
06:00	**659**	8	1.2	524	79.5	76	11.5	49	7.4	2	0.3
07:00	**1347**	10	0.7	1132	84.0	77	5.7	122	9.1	6	0.5
08:00	**1364**	9	0.7	1156	84.8	84	6.2	104	7.6	11	0.8
09:00	**964**	8	0.8	770	79.9	102	10.6	81	8.4	3	0.3
10:00	**721**	1	0.1	562	78.0	96	13.3	57	7.9	5	0.7
11:00	**700**	7	1.0	521	74.4	107	15.3	60	8.6	5	0.7
12:00	**788**	5	0.6	620	78.7	93	11.8	66	8.4	4	0.5
13:00	**741**	4	0.5	576	77.7	92	12.4	65	8.8	4	0.5
14:00	**777**	6	0.8	594	76.5	100	12.9	69	8.9	8	1.0
15:00	**835**	9	1.1	641	76.8	111	13.3	69	8.3	5	0.6
16:00	**1124**	9	0.8	926	82.4	107	9.5	71	6.3	11	1.0
17:00	**1129**	4	0.4	979	86.7	66	5.9	76	6.7	4	0.4
18:00	**936**	9	1.0	832	88.9	51	5.5	42	4.5	2	0.2
19:00	**592**	8	1.4	516	87.2	39	6.6	28	4.7	1	0.2
20:00	**371**	6	1.6	320	86.3	30	8.1	14	3.8	1	0.3
21:00	**263**	6	2.3	222	84.4	25	9.5	7	2.7	3	1.1
22:00	**207**	5	2.4	169	81.6	18	8.7	14	6.8	1	0.5
23:00	**133**	1	0.8	117	88.0	11	8.3	4	3.0	0	0.0
12H,7-19	**11426**	**81**	**0.7**	**9309**	**81.5**	**1086**	**9.5**	**882**	**7.7**	**68**	**0.6**
16H,6-22	**13311**	**109**	**0.8**	**10891**	**81.8**	**1256**	**9.4**	**980**	**7.4**	**75**	**0.6**
18H,6-24	**13651**	**115**	**0.8**	**11177**	**81.9**	**1285**	**9.4**	**998**	**7.3**	**76**	**0.6**
24H,0-24	**14194**	**118**	**0.8**	**11562**	**81.5**	**1348**	**9.5**	**1078**	**7.6**	**88**	**0.6**

AXIOM Traffic Limited

Data produced by
Axiom Traffic Ltd

19028		RUDHEATH			Site No: 19028010		Location		Site 10, A556, Rudheath (LC 411)		
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Eastbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Fri 26-Jun-15											
00:00	**61**	0	0.0	53	86.9	6	9.8	2	3.3	0	0.0
01:00	**32**	0	0.0	22	68.8	2	6.3	8	25.0	0	0.0
02:00	**35**	1	2.9	14	40.0	1	2.9	16	45.7	3	8.6
03:00	**48**	0	0.0	18	37.5	8	16.7	19	39.6	3	6.3
04:00	**97**	0	0.0	56	57.7	15	15.5	19	19.6	7	7.2
05:00	**278**	2	0.7	220	79.1	29	10.4	17	6.1	10	3.6
06:00	**570**	6	1.1	460	80.7	64	11.2	36	6.3	4	0.7
07:00	**1216**	3	0.3	1009	83.0	88	7.2	112	9.2	4	0.3
08:00	**1289**	6	0.5	1097	85.1	90	7.0	89	6.9	7	0.5
09:00	**917**	3	0.3	715	78.0	114	12.4	78	8.5	7	0.8
10:00	**727**	5	0.7	564	77.6	80	11.0	71	9.8	7	1.0
11:00	**796**	2	0.3	604	75.9	119	15.0	61	7.7	10	1.3
12:00	**847**	8	0.9	658	77.7	94	11.1	82	9.7	5	0.6
13:00	**777**	7	0.9	620	79.8	79	10.2	66	8.5	5	0.6
14:00	**867**	5	0.6	684	78.9	93	10.7	79	9.1	6	0.7
15:00	**942**	6	0.6	738	78.3	108	11.5	84	8.9	6	0.6
16:00	**1254**	9	0.7	1062	84.7	90	7.2	81	6.5	12	1.0
17:00	**1157**	5	0.4	1015	87.7	59	5.1	69	6.0	9	0.8
18:00	**973**	7	0.7	848	87.2	61	6.3	54	5.6	3	0.3
19:00	**682**	6	0.9	562	82.4	60	8.8	50	7.3	4	0.6
20:00	**390**	3	0.8	338	86.7	35	9.0	10	2.6	4	1.0
21:00	**279**	1	0.4	240	86.0	19	6.8	17	6.1	2	0.7
22:00	**199**	1	0.5	170	85.4	19	9.6	9	4.5	0	0.0
23:00	**151**	2	1.3	128	84.8	11	7.3	6	4.0	4	2.7
12H,7-19	**11762**	**66**	**0.6**	**9614**	**81.7**	**1075**	**9.1**	**926**	**7.9**	**81**	**0.7**
16H,6-22	**13683**	**82**	**0.6**	**11214**	**82.0**	**1253**	**9.2**	**1039**	**7.6**	**95**	**0.7**
18H,6-24	**14033**	**85**	**0.6**	**11512**	**82.0**	**1283**	**9.1**	**1054**	**7.5**	**99**	**0.7**
24H,0-24	**14584**	**88**	**0.6**	**11895**	**81.6**	**1344**	**9.2**	**1135**	**7.8**	**122**	**0.8**

19028		RUDHEATH			Site No: 19028010		Location	Site 10, A556, Rudheath (LC 411)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Eastbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sat 27-Jun-15											
00:00	**103**	1	1.0	83	80.6	14	13.6	3	2.9	2	1.9
01:00	**58**	0	0.0	45	77.6	9	15.5	4	6.9	0	0.0
02:00	**52**	1	1.9	30	57.7	4	7.7	14	26.9	3	5.8
03:00	**57**	0	0.0	31	54.4	8	14.0	15	26.3	3	5.3
04:00	**75**	0	0.0	44	58.7	8	10.7	18	24.0	5	6.7
05:00	**150**	1	0.7	122	81.3	14	9.3	13	8.7	0	0.0
06:00	**159**	2	1.3	122	76.7	20	12.6	15	9.4	0	0.0
07:00	**339**	4	1.2	276	81.4	39	11.5	19	5.6	1	0.3
08:00	**510**	8	1.6	422	82.8	51	10.0	26	5.1	3	0.6
09:00	**626**	10	1.6	520	83.1	55	8.8	39	6.2	2	0.3
10:00	**791**	9	1.1	663	83.8	79	10.0	40	5.1	0	0.0
11:00	**768**	9	1.2	660	85.9	63	8.2	35	4.6	1	0.1
12:00	**816**	9	1.1	706	86.5	68	8.3	33	4.0	0	0.0
13:00	**761**	23	3.0	652	85.7	47	6.2	38	5.0	1	0.1
14:00	**771**	19	2.5	644	83.5	60	7.8	46	6.0	2	0.3
15:00	**717**	40	5.6	593	82.7	50	7.0	32	4.5	2	0.3
16:00	**704**	34	4.8	578	82.1	61	8.7	30	4.3	1	0.1
17:00	**733**	28	3.8	615	83.9	51	7.0	37	5.1	2	0.3
18:00	**630**	12	1.9	531	84.3	65	10.3	22	3.5	0	0.0
19:00	**471**	9	1.9	398	84.5	47	10.0	17	3.6	0	0.0
20:00	**307**	6	2.0	260	84.7	31	10.1	10	3.3	0	0.0
21:00	**241**	5	2.1	210	87.1	21	8.7	5	2.1	0	0.0
22:00	**193**	1	0.5	169	87.6	16	8.3	6	3.1	1	0.5
23:00	**160**	2	1.3	144	90.0	11	6.9	3	1.9	0	0.0
12H,7-19	**8166**	**205**	**2.5**	**6860**	**84.0**	**689**	**8.4**	**397**	**4.9**	**15**	**0.2**
16H,6-22	**9344**	**227**	**2.4**	**7850**	**84.0**	**808**	**8.7**	**444**	**4.8**	**15**	**0.2**
18H,6-24	**9697**	**230**	**2.4**	**8163**	**84.2**	**835**	**8.6**	**453**	**4.7**	**16**	**0.2**
24H,0-24	**10192**	**233**	**2.3**	**8518**	**83.6**	**892**	**8.8**	**520**	**5.1**	**29**	**0.3**

19028 **RUDHEATH** **Site No: 19028010** **Location** **Site 10, A556, Rudheath (LC 411)**

Wed 24-Jun-15 to Tue 30-Jun-15 **Channel: Eastbound**

TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Sun 28-Jun-15											
00:00	**121**	1	0.8	107	88.4	11	9.1	2	1.7	0	0.0
01:00	**40**	0	0.0	31	77.5	6	15.0	3	7.5	0	0.0
02:00	**48**	0	0.0	40	83.3	4	8.3	4	8.3	0	0.0
03:00	**41**	1	2.4	31	75.6	5	12.2	2	4.9	2	4.9
04:00	**57**	1	1.8	44	77.2	7	12.3	2	3.5	3	5.3
05:00	**116**	2	1.7	94	81.0	14	12.1	5	4.3	1	0.9
06:00	**110**	2	1.8	90	81.8	10	9.1	7	6.4	1	0.9
07:00	**204**	1	0.5	170	83.3	22	10.8	9	4.4	2	1.0
08:00	**270**	0	0.0	231	85.6	25	9.3	13	4.8	1	0.4
09:00	**461**	4	0.9	399	86.6	39	8.5	18	3.9	1	0.2
10:00	**652**	2	0.3	576	88.3	49	7.5	24	3.7	1	0.2
11:00	**693**	3	0.4	612	88.3	54	7.8	23	3.3	1	0.1
12:00	**710**	6	0.9	625	88.0	52	7.3	27	3.8	0	0.0
13:00	**727**	11	1.5	640	88.0	49	6.7	26	3.6	1	0.1
14:00	**747**	10	1.3	663	88.8	40	5.4	33	4.4	1	0.1
15:00	**742**	18	2.4	622	83.8	47	6.3	50	6.7	5	0.7
16:00	**765**	14	1.8	642	83.9	61	8.0	45	5.9	3	0.4
17:00	**786**	11	1.4	689	87.7	52	6.6	30	3.8	4	0.5
18:00	**599**	11	1.8	495	82.6	53	8.9	37	6.2	3	0.5
19:00	**448**	5	1.1	395	88.2	31	6.9	17	3.8	0	0.0
20:00	**314**	2	0.6	263	83.8	32	10.2	16	5.1	1	0.3
21:00	**228**	4	1.8	203	89.0	13	5.7	8	3.5	0	0.0
22:00	**118**	0	0.0	99	83.9	13	11.0	3	2.5	3	2.5
23:00	**84**	1	1.2	69	82.1	9	10.7	3	3.6	2	2.4
12H,7-19	**7356**	**91**	**1.2**	**6364**	**86.5**	**543**	**7.4**	**335**	**4.6**	**23**	**0.3**
16H,6-22	**8456**	**104**	**1.2**	**7315**	**86.5**	**629**	**7.4**	**383**	**4.5**	**25**	**0.3**
18H,6-24	**8658**	**105**	**1.2**	**7483**	**86.4**	**651**	**7.5**	**389**	**4.5**	**30**	**0.4**
24H,0-24	**9081**	**110**	**1.2**	**7830**	**86.2**	**698**	**7.7**	**407**	**4.5**	**36**	**0.4**

19028		RUDHEATH			Site No: 19028010		Location	Site 10, A556, Rudheath (LC 411)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Eastbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Mon 29-Jun-15											
00:00	**38**	1	2.6	33	86.8	2	5.3	2	5.3	0	0.0
01:00	**23**	0	0.0	17	73.9	4	17.4	2	8.7	0	0.0
02:00	**29**	0	0.0	11	37.9	3	10.3	11	37.9	4	13.8
03:00	**61**	1	1.6	26	42.6	6	9.8	20	32.8	8	13.1
04:00	**108**	0	0.0	66	61.1	17	15.7	18	16.7	7	6.5
05:00	**289**	4	1.4	230	79.6	23	8.0	27	9.3	5	1.7
06:00	**645**	1	0.2	508	78.8	77	11.9	55	8.5	4	0.6
07:00	**1385**	5	0.4	1154	83.3	97	7.0	124	9.0	5	0.4
08:00	**1325**	6	0.5	1109	83.7	83	6.3	120	9.1	7	0.5
09:00	**927**	4	0.4	728	78.5	104	11.2	87	9.4	4	0.4
10:00	**687**	2	0.3	498	72.5	114	16.6	62	9.0	11	1.6
11:00	**655**	3	0.5	476	72.7	107	16.3	60	9.2	9	1.4
12:00	**733**	8	1.1	538	73.4	100	13.6	80	10.9	7	1.0
13:00	**712**	16	2.3	526	73.9	100	14.0	63	8.9	7	1.0
14:00	**720**	9	1.3	537	74.6	96	13.3	75	10.4	3	0.4
15:00	**878**	3	0.3	676	77.0	108	12.3	83	9.5	8	0.9
16:00	**1087**	11	1.0	907	83.4	82	7.5	78	7.2	9	0.8
17:00	**1179**	7	0.6	1028	87.2	57	4.8	83	7.0	4	0.3
18:00	**858**	9	1.1	746	87.0	56	6.5	46	5.4	1	0.1
19:00	**496**	5	1.0	432	87.1	32	6.5	25	5.0	2	0.4
20:00	**303**	4	1.3	268	88.5	20	6.6	11	3.6	0	0.0
21:00	**240**	2	0.8	209	87.1	13	5.4	15	6.3	1	0.4
22:00	**168**	2	1.2	146	86.9	11	6.6	6	3.6	3	1.8
23:00	**93**	2	2.2	82	88.2	7	7.5	1	1.1	1	1.1
12H,7-19	**11146**	**83**	**0.7**	**8923**	**80.1**	**1104**	**9.9**	**961**	**8.6**	**75**	**0.7**
16H,6-22	**12830**	**95**	**0.7**	**10340**	**80.6**	**1246**	**9.7**	**1067**	**8.3**	**82**	**0.6**
18H,6-24	**13091**	**99**	**0.8**	**10568**	**80.7**	**1264**	**9.7**	**1074**	**8.2**	**86**	**0.7**
24H,0-24	**13639**	**105**	**0.8**	**10951**	**80.3**	**1319**	**9.7**	**1154**	**8.5**	**110**	**0.8**

19028	RUDHEATH			Site No: 19028010		Location		Site 10, A556, Rudheath (LC 411)			
Wed 24-Jun-15 to Tue 30-Jun-15				Channel: Eastbound							
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Tue 30-Jun-15											
00:00	**38**	0	0.0	27	71.1	6	15.8	5	13.2	0	0.0
01:00	**11**	0	0.0	6	54.6	1	9.1	4	36.4	0	0.0
02:00	**42**	1	2.4	17	40.5	2	4.8	18	42.9	4	9.5
03:00	**51**	1	2.0	22	43.1	10	19.6	13	25.5	5	9.8
04:00	**90**	1	1.1	52	57.8	16	17.8	16	17.8	5	5.6
05:00	**274**	5	1.8	219	79.9	26	9.5	21	7.7	3	1.1
06:00	**640**	8	1.3	515	80.5	65	10.2	49	7.7	3	0.5
07:00	**1354**	3	0.2	1125	83.1	83	6.1	137	10.1	6	0.4
08:00	**1340**	14	1.0	1092	81.5	88	6.6	135	10.1	11	0.8
09:00	**991**	8	0.8	791	79.8	106	10.7	80	8.1	6	0.6
10:00	**696**	5	0.7	517	74.3	107	15.4	61	8.8	6	0.9
11:00	**646**	7	1.1	483	74.8	93	14.4	57	8.8	6	0.9
12:00	**781**	6	0.8	586	75.0	97	12.4	87	11.1	5	0.6
13:00	**699**	13	1.9	517	74.0	81	11.6	85	12.2	3	0.4
14:00	**625**	8	1.3	490	78.4	71	11.4	53	8.5	3	0.5
15:00	**823**	8	1.0	658	80.0	99	12.0	49	6.0	9	1.1
16:00	**1061**	15	1.4	855	80.6	95	9.0	90	8.5	6	0.6
17:00	**1138**	17	1.5	1000	87.9	50	4.4	68	6.0	3	0.3
18:00	**816**	11	1.4	709	86.9	51	6.3	45	5.5	0	0.0
19:00	**537**	17	3.2	475	88.5	29	5.4	16	3.0	0	0.0
20:00	**343**	5	1.5	295	86.0	28	8.2	15	4.4	0	0.0
21:00	**310**	7	2.3	262	84.5	26	8.4	11	3.6	4	1.3
22:00	**165**	3	1.8	141	85.5	15	9.1	4	2.4	2	1.2
23:00	**104**	4	3.9	83	79.8	12	11.5	4	3.9	1	1.0
12H,7-19	**10970**	**115**	**1.1**	**8823**	**80.4**	**1021**	**9.3**	**947**	**8.6**	**64**	**0.6**
16H,6-22	**12800**	**152**	**1.2**	**10370**	**81.0**	**1169**	**9.1**	**1038**	**8.1**	**71**	**0.6**
18H,6-24	**13069**	**159**	**1.2**	**10594**	**81.1**	**1196**	**9.2**	**1046**	**8.0**	**74**	**0.6**
24H,0-24	**13575**	**167**	**1.2**	**10937**	**80.6**	**1257**	**9.3**	**1123**	**8.3**	**91**	**0.7**

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Data produced by
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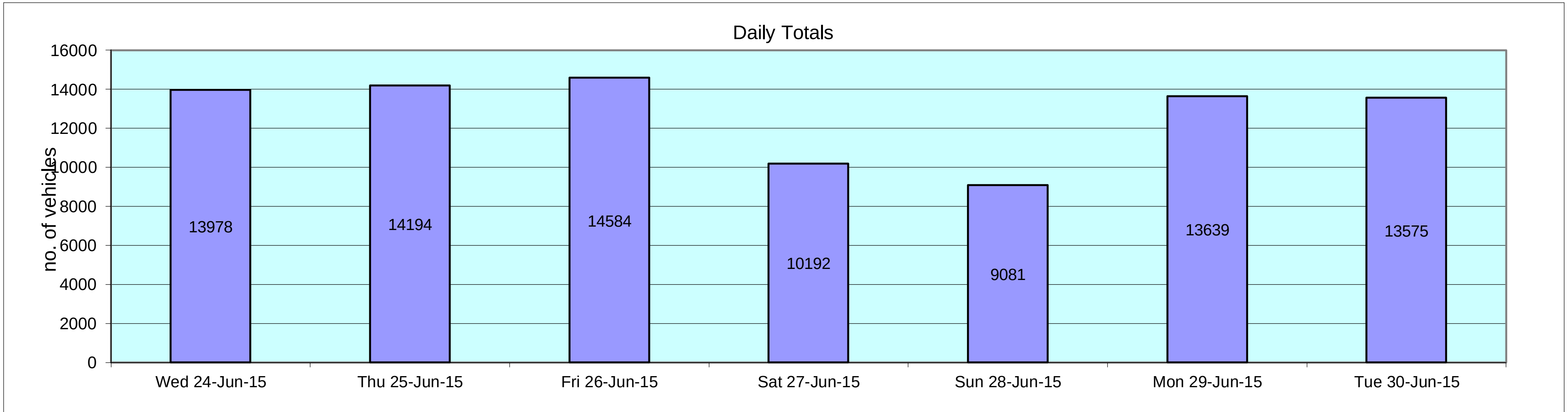
19028		RUDHEATH			Site No: 19028010		Location	Site 10, A556, Rudheath (LC 411)			
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Eastbound						
TIME PERIOD	TOTAL VEHICLES	MOTOR-CYCLES	MOTOR-CYCLES%	CARS	CARS %	LGV	LGV %	HGV	HGV %	BUS	BUS %
Daily Totals											
Wed 24-Jun-15	**13978**	144	1.0	11274	80.7	1274	9.1	1148	8.2	138	1.0
Thu 25-Jun-15	**14194**	118	0.8	11562	81.5	1348	9.5	1078	7.6	88	0.6
Fri 26-Jun-15	**14584**	88	0.6	11895	81.6	1344	9.2	1135	7.8	122	0.8
Sat 27-Jun-15	**10192**	233	2.3	8518	83.6	892	8.8	520	5.1	29	0.3
Sun 28-Jun-15	**9081**	110	1.2	7830	86.2	698	7.7	407	4.5	36	0.4
Mon 29-Jun-15	**13639**	105	0.8	10951	80.3	1319	9.7	1154	8.5	110	0.8
Tue 30-Jun-15	**13575**	167	1.2	10937	80.6	1257	9.3	1123	8.3	91	0.7
Total Vehicles											
[--]	**89243**	965	1.1	72967	82.0	8132	9.0	6565	7.1	614	0.7



19028			RUDHEATH				Site No: 19028010			Location	Site 10, A556, Rudheath (LC 411)				
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Eastbound								
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<21**	**21-<31**	**31-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**61-<66**	**66-<71**	**71-<76**	**=>76**
Wed 24-Jun-15																
00:00	**49**	52.4	45.3	8.1	0	0	1	11	15	13	4	3	2	0	0	0
01:00	**17**	49.7	44.5	6.8	0	0	0	5	3	8	0	1	0	0	0	0
02:00	**36**	47.8	41.3	6.5	0	0	1	15	12	6	2	0	0	0	0	0
03:00	**55**	49.5	42.3	6.5	0	0	0	23	17	9	6	0	0	0	0	0
04:00	**83**	54.2	46	7.5	0	0	0	20	21	20	14	8	0	0	0	0
05:00	**281**	56.4	48.6	8.4	0	1	5	34	59	67	70	30	12	3	0	0
06:00	**720**	54.3	45.3	8.8	0	3	35	153	167	173	121	56	10	2	0	0
07:00	**1328**	40.4	22.9	14.1	412	320	192	217	88	55	35	6	3	0	0	0
08:00	**1211**	15.7	10.9	4	879	322	9	1	0	0	0	0	0	0	0	0
09:00	**1192**	41.4	27.3	12.9	141	324	217	323	97	59	21	10	0	0	0	0
10:00	**908**	47.4	37.4	10	8	43	148	367	173	113	38	15	3	0	0	0
11:00	**750**	48.9	40.2	8.5	0	8	72	315	176	112	48	12	7	0	0	0
12:00	**736**	49.7	40.6	9	0	10	84	262	171	131	63	9	5	1	0	0
13:00	**711**	50.6	41.7	9	0	2	76	227	178	130	72	18	5	2	1	0
14:00	**716**	49.9	41.3	8.6	0	3	65	265	171	132	59	14	3	3	1	0
15:00	**792**	50	41.5	8.5	0	5	67	273	211	146	69	15	6	0	0	0
16:00	**1069**	47.9	37.1	10.6	7	78	180	376	216	137	58	14	2	0	1	0
17:00	**1065**	48.1	38.2	10	14	38	149	418	230	132	59	19	5	1	0	0
18:00	**847**	51	42.1	8.9	0	9	55	304	195	157	90	27	8	1	1	0
19:00	**537**	54.3	46	8.1	0	1	7	121	142	119	99	39	6	1	2	0
20:00	**327**	55.2	46.8	7.9	0	0	5	56	89	88	47	35	5	2	0	0
21:00	**272**	56.5	47.8	8.2	0	0	1	41	80	72	34	27	9	8	0	0
22:00	**174**	52	44.6	7	0	0	0	49	51	42	26	5	1	0	0	0
23:00	**102**	52.6	45.2	7.9	0	0	1	24	35	21	16	3	0	1	0	1
12H,7-19	**11325**	**47.7**	**33.4**	**14.2**	**1461**	**1162**	**1314**	**3348**	**1906**	**1304**	**612**	**159**	**47**	**8**	**4**	**0**
16H,6-22	**13181**	**49.2**	**35.2**	**14.2**	**1461**	**1166**	**1362**	**3719**	**2384**	**1756**	**913**	**316**	**77**	**21**	**6**	**0**
18H,6-24	**13457**	**49.3**	**35.4**	**14.2**	**1461**	**1166**	**1363**	**3792**	**2470**	**1819**	**955**	**324**	**78**	**22**	**6**	**1**
24H,0-24	**13978**	**49.6**	**35.8**	**14.2**	**1461**	**1167**	**1370**	**3900**	**2597**	**1942**	**1051**	**366**	**92**	**25**	**6**	**1**

19028		RUDHEATH					Site No: 19028010			Location	Site 10, A556, Rudheath (LC 411)				
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Eastbound								
Time Period	**Total Vehicles**	**85%ile Speed**	**Mean Speed**	**Stand Dev.**	**<11Mph**	**11-<21**	**21-<31**	**31-<41**	**41-<46**	**46-<51**	**51-<56**	**56-<61**	**61-<66**	**66-<71**	**71-<76**	**=>76**
Thu 25-Jun-15																
00:00	**60**	51.3	45	6.7	0	0	1	12	18	19	9	1	0	0	0	0
01:00	**27**	48.5	42.9	6.2	0	0	0	9	10	7	0	1	0	0	0	0
02:00	**50**	52	44.3	8.5	0	0	1	15	16	9	5	2	1	1	0	0
03:00	**54**	49.6	42.7	6.5	0	0	0	22	12	16	4	0	0	0	0	0
04:00	**92**	55	48	7.4	0	0	0	14	19	28	21	7	2	1	0	0
05:00	**260**	57.8	49.6	8.1	0	0	0	29	55	68	57	32	12	5	2	0
06:00	**659**	55.8	47.7	8.2	0	0	11	103	148	180	123	69	19	4	2	0
07:00	**1347**	45.4	31.8	12.5	35	273	327	364	165	104	59	10	10	0	0	0
08:00	**1364**	41.9	27.9	12.2	130	306	371	330	123	79	21	4	0	0	0	0
09:00	**964**	48.7	38.7	9.9	4	34	141	367	194	147	50	23	2	1	0	1
10:00	**721**	50.7	42.2	8.9	2	13	38	230	196	141	73	21	7	0	0	0
11:00	**700**	51	42.6	8.1	0	1	30	250	201	113	77	21	4	2	1	0
12:00	**788**	50.8	41.4	8.9	0	4	73	298	167	134	81	28	2	1	0	0
13:00	**741**	51	42.4	8.8	1	5	48	252	174	149	79	25	5	2	1	0
14:00	**777**	50.7	41.9	9.1	0	5	69	271	181	142	66	28	14	0	1	0
15:00	**835**	50.4	42.2	8.3	0	3	52	296	205	174	71	30	4	0	0	0
16:00	**1124**	48.3	35.6	12.6	51	127	158	350	198	155	63	19	3	0	0	0
17:00	**1129**	49.5	38.5	11.5	23	70	164	309	263	184	82	27	5	2	0	0
18:00	**936**	52.2	42	10.3	5	23	86	270	215	168	114	38	13	2	2	0
19:00	**592**	52.8	45.1	7.7	0	0	15	134	165	161	78	32	6	1	0	0
20:00	**371**	54.5	47.2	7.6	0	1	0	60	103	100	72	21	10	3	1	0
21:00	**263**	54.4	47	7.5	0	0	0	51	62	75	51	15	8	1	0	0
22:00	**207**	52.2	44.8	7.6	0	0	3	57	50	60	23	11	3	0	0	0
23:00	**133**	52.9	45.4	7.1	0	0	1	31	36	36	23	6	0	0	0	0
12H,7-19	**11426**	**49.5**	**37.9**	**11.7**	**251**	**864**	**1557**	**3587**	**2282**	**1690**	**836**	**274**	**69**	**10**	**5**	**1**
16H,6-22	**13311**	**50.4**	**39.1**	**11.6**	**251**	**865**	**1583**	**3935**	**2760**	**2206**	**1160**	**411**	**112**	**19**	**8**	**1**
18H,6-24	**13651**	**50.4**	**39.3**	**11.6**	**251**	**865**	**1587**	**4023**	**2846**	**2302**	**1206**	**428**	**115**	**19**	**8**	**1**
24H,0-24	**14194**	**50.6**	**39.6**	**11.6**	**251**	**865**	**1589**	**4124**	**2976**	**2449**	**1302**	**471**	**130**	**26**	**10**	**1**

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19028 RUDHEATH Site No: 19028010 Location Site 10, A556, Rudheath (LC 411)

Wed 24-Jun-15 to Tue 30-Jun-15 Channel: Eastbound

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Fri 26-Jun-15																
00:00	61	56.4	47.9	9	0	0	0	9	22	13	7	5	2	1	2	0
01:00	32	53.6	43.7	10.2	0	0	4	7	7	5	7	1	1	0	0	0
02:00	35	49.3	43.1	6.1	0	0	0	11	13	8	3	0	0	0	0	0
03:00	48	51.4	45.4	7.3	0	0	0	10	19	11	4	2	2	0	0	0
04:00	97	57.2	47.6	9.4	0	0	2	22	15	23	17	12	4	2	0	0
05:00	278	57.4	49.5	7.7	0	0	0	30	58	74	64	34	13	5	0	0
06:00	570	54.6	46.6	8.1	0	0	9	113	136	148	108	39	13	2	1	1
07:00	1216	45.9	34.4	11.4	37	117	267	428	189	114	45	18	1	0	0	0
08:00	1289	45	32	12.5	73	193	303	405	151	101	36	17	8	2	0	0
09:00	917	50.3	40.1	10.3	9	42	85	300	200	168	94	18	1	0	0	0
10:00	727	49.5	41.1	8.3	0	0	53	312	180	105	49	20	6	1	0	1
11:00	796	48.9	39.1	9.6	5	24	91	334	163	102	59	12	5	1	0	0
12:00	847	48.6	39	9.4	2	24	123	308	189	142	47	9	2	1	0	0
13:00	777	48.5	36.7	11.7	30	47	120	282	132	99	49	13	4	1	0	0
14:00	867	47.7	37.6	10.3	8	47	136	324	183	111	41	15	1	0	0	1
15:00	942	47.6	36.6	10.5	12	52	194	344	163	111	54	9	2	1	0	0
16:00	1254	43.1	29	12.9	135	245	293	335	138	63	34	9	1	1	0	0
17:00	1157	43.5	29.9	12.6	122	176	276	341	135	77	26	3	1	0	0	0
18:00	973	50.7	40.3	10.5	4	38	123	301	197	175	100	27	7	1	0	0
19:00	682	54.8	45.4	9.2	0	2	35	153	163	138	116	57	14	3	0	1
20:00	390	55.9	47.4	8.7	0	0	12	60	95	85	81	42	11	3	1	0
21:00	279	55.5	48	7.9	0	0	0	44	70	67	62	23	8	4	1	0
22:00	199	53.3	45.7	7.6	0	0	3	43	52	57	30	12	0	2	0	0
23:00	151	55	46	8.4	0	1	1	34	42	34	20	17	0	2	0	0
12H,7-19	11762	47.7	35.7	11.8	437	1005	2064	4014	2020	1368	634	170	39	9	0	2
16H,6-22	13683	49.3	37.2	12	437	1007	2120	4384	2484	1806	1001	331	85	21	3	4
18H,6-24	14033	49.5	37.4	12	437	1008	2124	4461	2578	1897	1051	360	85	25	3	4
24H,0-24	14584	49.8	37.8	12.1	437	1008	2130	4550	2712	2031	1153	414	107	33	5	4

19028			RUDHEATH				Site No: 19028010			Location	Site 10, A556, Rudheath (LC 411)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Eastbound									
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Sat 27-Jun-15																
00:00	**103**	55	45.6	9.3	0	0	4	28	20	20	19	7	5	0	0	0
01:00	**58**	54.2	45.5	7.9	0	0	0	16	17	10	9	5	1	0	0	0
02:00	**52**	50.5	44.8	6.1	0	0	0	10	23	12	5	2	0	0	0	0
03:00	**57**	50.2	44.3	7.3	0	0	1	13	23	13	4	1	2	0	0	0
04:00	**75**	54.8	47	8	0	0	0	15	19	21	11	5	3	1	0	0
05:00	**150**	55.7	49.2	7.2	0	0	1	12	28	56	32	13	6	2	0	0
06:00	**159**	58.7	50.5	7.8	0	0	0	17	24	42	36	29	9	2	0	0
07:00	**339**	55	48	6.9	0	0	0	44	75	113	69	30	8	0	0	0
08:00	**510**	55.9	48.1	8.5	0	1	6	83	104	129	113	46	20	6	1	1
09:00	**626**	53.6	45.5	7.9	0	2	8	150	156	169	91	39	10	1	0	0
10:00	**791**	51.6	43.3	8.3	0	1	29	269	200	162	88	30	7	4	1	0
11:00	**768**	51.6	43	8.7	0	1	48	252	187	154	80	35	8	2	0	1
12:00	**816**	50.7	42.6	8.2	0	3	41	276	225	156	77	32	6	0	0	0
13:00	**761**	52.4	43.7	8.5	0	0	29	253	186	154	89	33	14	2	0	1
14:00	**771**	52.1	43.5	8.3	0	0	29	255	210	141	91	33	7	3	2	0
15:00	**717**	52.6	44.7	7.8	0	0	11	208	174	186	94	36	5	1	2	0
16:00	**704**	53.4	44.6	8.5	0	1	22	196	180	156	91	46	6	4	2	0
17:00	**733**	54.3	45.8	8.2	0	1	12	172	182	184	108	57	14	2	1	0
18:00	**630**	55.1	46.4	8.4	0	0	8	140	168	133	105	48	22	6	0	0
19:00	**471**	54	46.5	7.4	0	0	1	96	115	134	89	29	4	2	0	1
20:00	**307**	55.6	48.2	8	0	0	0	42	82	88	53	20	16	4	1	1
21:00	**241**	54.4	47.4	6.8	0	0	0	34	62	76	48	18	3	0	0	0
22:00	**193**	52.5	45.2	7.2	0	0	1	44	66	44	28	6	3	1	0	0
23:00	**160**	50.7	44.1	7.5	0	0	0	48	60	29	16	4	0	1	2	0
12H,7-19	**8166**	**53.3**	**44.6**	**8.4**	**0**	**10**	**243**	**2298**	**2047**	**1837**	**1096**	**465**	**127**	**31**	**9**	**3**
16H,6-22	**9344**	**53.6**	**45**	**8.4**	**0**	**10**	**244**	**2487**	**2330**	**2177**	**1322**	**561**	**159**	**39**	**10**	**5**
18H,6-24	**9697**	**53.6**	**45**	**8.3**	**0**	**10**	**245**	**2579**	**2456**	**2250**	**1366**	**571**	**162**	**41**	**12**	**5**
24H,0-24	**10192**	**53.6**	**45.1**	**8.3**	**0**	**10**	**251**	**2673**	**2586**	**2382**	**1446**	**604**	**179**	**44**	**12**	**5**

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19028			RUDHEATH				Site No: 19028010			Location	Site 10, A556, Rudheath (LC 411)				
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Eastbound								
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Sun 28-Jun-15																
00:00	121	54.9	46.3	8	0	0	0	27	37	26	16	10	4	1	0	0
01:00	40	54.1	46.3	7.9	0	0	0	10	8	13	4	4	1	0	0	0
02:00	48	53.4	47	6.7	0	0	0	8	9	20	7	4	0	0	0	0
03:00	41	50.5	45.4	6.6	0	0	0	9	10	17	4	0	1	0	0	0
04:00	57	51	45.5	6.3	0	0	0	11	18	19	7	2	0	0	0	0
05:00	116	55.8	48.5	7.9	0	1	0	13	28	29	28	11	6	0	0	0
06:00	110	52.4	45.8	7.1	0	0	2	17	37	34	11	8	1	0	0	0
07:00	204	53.3	46	6.9	0	0	0	37	73	47	35	8	4	0	0	0
08:00	270	54.6	47	7.5	0	0	2	47	68	71	57	18	7	0	0	0
09:00	461	53.8	46.3	7.5	0	0	5	83	134	125	78	27	5	4	0	0
10:00	652	53.9	45.7	7.9	0	1	4	168	162	155	108	38	13	3	0	0
11:00	693	53	45	7.5	0	0	9	186	165	184	111	33	5	0	0	0
12:00	710	52.6	43.9	8.4	0	0	27	229	160	160	87	35	11	0	1	0
13:00	727	52	44.3	8	0	6	17	186	205	185	90	31	7	0	0	0
14:00	747	53.3	44.9	8.1	0	3	19	182	211	168	114	36	13	1	0	0
15:00	742	53.9	44.9	8.8	0	3	28	189	187	156	117	47	9	4	2	0
16:00	765	52.5	44.8	7.6	0	1	5	205	235	176	93	38	10	0	1	1
17:00	786	53.1	44.7	8.2	0	0	19	221	205	177	109	37	13	3	1	1
18:00	599	54.3	46.3	8.2	0	1	13	124	129	166	115	37	11	0	3	0
19:00	448	55.5	47.8	8.2	0	0	3	76	97	131	82	39	12	4	2	2
20:00	314	55.5	47.6	7.7	0	0	0	54	76	81	62	31	8	2	0	0
21:00	228	55.9	48.9	7.3	0	0	0	24	51	71	48	22	9	3	0	0
22:00	118	54.7	46.9	7.4	0	0	0	22	32	31	20	10	3	0	0	0
23:00	84	55.5	47.3	9.3	0	0	1	17	20	23	11	7	2	1	1	1
12H,7-19	7356	53.4	45.1	8	0	15	148	1857	1934	1770	1114	385	108	15	8	2
16H,6-22	8456	53.7	45.4	8.1	0	15	153	2028	2195	2087	1317	485	138	24	10	4
18H,6-24	8658	53.7	45.5	8.1	0	15	154	2067	2247	2141	1348	502	143	25	11	5
24H,0-24	9081	53.8	45.5	8	0	16	154	2145	2357	2265	1414	533	155	26	11	5

19028		RUDHEATH			Site No: 19028010			Location	Site 10, A556, Rudheath (LC 411)							
Wed 24-Jun-15 to Tue 30-Jun-15					Channel: Eastbound											
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Mon 29-Jun-15																
00:00	**38**	53.7	47.1	6.3	0	0	0	4	14	10	7	3	0	0	0	0
01:00	**23**	56.1	47.1	8.8	0	0	0	5	6	6	2	3	0	1	0	0
02:00	**29**	48.2	41.9	6.2	0	0	0	12	10	5	2	0	0	0	0	0
03:00	**61**	49.3	42.9	6.8	0	0	1	20	21	14	3	2	0	0	0	0
04:00	**108**	55	47.6	7.6	0	0	3	12	23	39	18	11	2	0	0	0
05:00	**289**	57.2	49.6	7.6	0	0	1	27	60	81	69	31	16	4	0	0
06:00	**645**	55	47.1	7.9	0	0	3	117	170	165	115	52	18	3	1	1
07:00	**1385**	46.1	32.7	12.6	62	224	298	396	195	133	59	15	2	1	0	0
08:00	**1325**	42.7	28.5	12.5	103	327	315	336	132	77	25	10	0	0	0	0
09:00	**927**	50	39.9	10.2	11	21	116	322	186	164	78	21	6	0	2	0
10:00	**687**	51	42.2	8.7	0	7	32	264	170	110	69	25	9	1	0	0
11:00	**655**	50.6	42.7	8	0	1	26	236	178	124	61	20	8	1	0	0
12:00	**733**	50.3	41.8	8.5	0	4	59	253	168	160	71	14	3	1	0	0
13:00	**712**	50.3	41.1	8.9	0	5	73	256	164	125	70	13	3	2	1	0
14:00	**720**	52.4	43.1	8.7	0	2	46	220	184	133	95	35	4	1	0	0
15:00	**878**	49.8	40.5	9.3	2	18	88	320	199	157	68	21	1	3	1	0
16:00	**1087**	48.7	37	11.9	43	69	171	343	215	152	68	20	4	2	0	0
17:00	**1179**	47.7	35.2	11.8	32	122	225	398	174	145	69	10	2	2	0	0
18:00	**858**	52.2	43.1	9.4	2	12	53	242	219	178	94	40	14	3	0	1
19:00	**496**	53.7	45.8	7.8	0	0	5	117	127	134	71	29	11	2	0	0
20:00	**303**	55.4	47.8	8	0	0	3	38	90	81	51	25	8	6	0	1
21:00	**240**	54.1	47	7.3	0	0	1	34	74	70	40	16	3	0	1	1
22:00	**168**	53.9	45.8	8.1	0	0	2	40	45	39	28	11	1	1	0	1
23:00	**93**	53.2	46	7.2	0	0	0	21	23	27	17	3	2	0	0	0
12H,7-19	**11146**	**49.4**	**37.9**	**11.6**	**255**	**812**	**1502**	**3586**	**2184**	**1658**	**827**	**244**	**56**	**17**	**4**	**1**
16H,6-22	**12830**	**50.2**	**39.1**	**11.6**	**255**	**812**	**1514**	**3892**	**2645**	**2108**	**1104**	**366**	**96**	**28**	**6**	**4**
18H,6-24	**13091**	**50.3**	**39.2**	**11.6**	**255**	**812**	**1516**	**3953**	**2713**	**2174**	**1149**	**380**	**99**	**29**	**6**	**5**
24H,0-24	**13639**	**50.6**	**39.5**	**11.6**	**255**	**812**	**1521**	**4033**	**2847**	**2329**	**1250**	**430**	**117**	**34**	**6**	**5**

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Axiom Traffic Ltd

19028			RUDHEATH				Site No: 19028010			Location	Site 10, A556, Rudheath (LC 411)					
Wed 24-Jun-15 to Tue 30-Jun-15							Channel: Eastbound									
Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Tue 30-Jun-15																
00:00	**38**	53.8	44.9	9.7	0	0	2	11	7	9	5	2	1	1	0	0
01:00	**11**	55.3	44	11.1	0	0	1	3	4	0	1	1	1	0	0	0
02:00	**42**	50.5	43.8	7.8	0	0	1	12	15	8	3	2	1	0	0	0
03:00	**51**	50.1	43.8	7.2	0	1	0	11	21	12	5	1	0	0	0	0
04:00	**90**	54.3	46.9	8.1	0	0	1	18	20	23	21	3	3	1	0	0
05:00	**274**	56.5	49.3	7.6	0	0	0	35	42	83	69	33	9	2	1	0
06:00	**640**	55	47.1	8.1	0	0	7	123	142	175	121	47	21	3	0	1
07:00	**1354**	43.5	28.2	13.7	187	308	246	344	130	86	37	13	2	1	0	0
08:00	**1340**	39.2	24.5	12.5	239	379	292	280	86	41	17	5	1	0	0	0
09:00	**991**	49.2	36.9	12.2	30	98	134	301	187	143	78	17	1	2	0	0
10:00	**696**	50.6	42.4	8.3	0	5	31	251	175	141	66	20	6	1	0	0
11:00	**646**	52.7	43.6	8.7	0	5	28	190	175	124	80	36	7	0	1	0
12:00	**781**	50.1	41.2	8.8	0	7	81	265	188	149	74	13	3	1	0	0
13:00	**699**	49.9	40.8	9.1	3	7	57	288	151	111	51	22	9	0	0	0
14:00	**625**	51.1	41.4	8.8	0	0	64	236	127	103	75	19	1	0	0	0
15:00	**823**	50	40.5	9.5	1	23	76	304	194	125	75	14	10	1	0	0
16:00	**1061**	48.3	37.9	10.2	2	58	161	431	193	122	70	17	5	1	1	0
17:00	**1138**	47.7	36.8	10.9	12	80	211	390	224	149	49	13	6	4	0	0
18:00	**816**	51.5	42.6	8.7	0	4	55	268	206	151	94	31	4	3	0	0
19:00	**537**	54.3	45.7	8.2	0	0	9	129	149	120	74	38	16	1	1	0
20:00	**343**	54.6	46.8	7.8	0	0	2	68	84	94	60	24	7	4	0	0
21:00	**310**	55.2	47.3	7.6	0	0	2	53	77	76	66	32	3	1	0	0
22:00	**165**	55.3	46.1	8.1	0	0	0	41	49	31	22	19	2	0	1	0
23:00	**104**	54.2	46.1	8.3	0	0	1	28	17	33	14	6	5	0	0	0
12H,7-19	**10970**	**49**	**36.6**	**12.4**	**474**	**974**	**1436**	**3548**	**2036**	**1445**	**766**	**220**	**55**	**14**	**2**	**0**
16H,6-22	**12800**	**50.1**	**38.1**	**12.4**	**474**	**974**	**1456**	**3921**	**2488**	**1910**	**1087**	**361**	**102**	**23**	**3**	**1**
18H,6-24	**13069**	**50.2**	**38.2**	**12.3**	**474**	**974**	**1457**	**3990**	**2554**	**1974**	**1123**	**386**	**109**	**23**	**4**	**1**
24H,0-24	**13575**	**50.5**	**38.6**	**12.3**	**474**	**975**	**1462**	**4080**	**2663**	**2109**	**1227**	**428**	**124**	**27**	**5**	**1**

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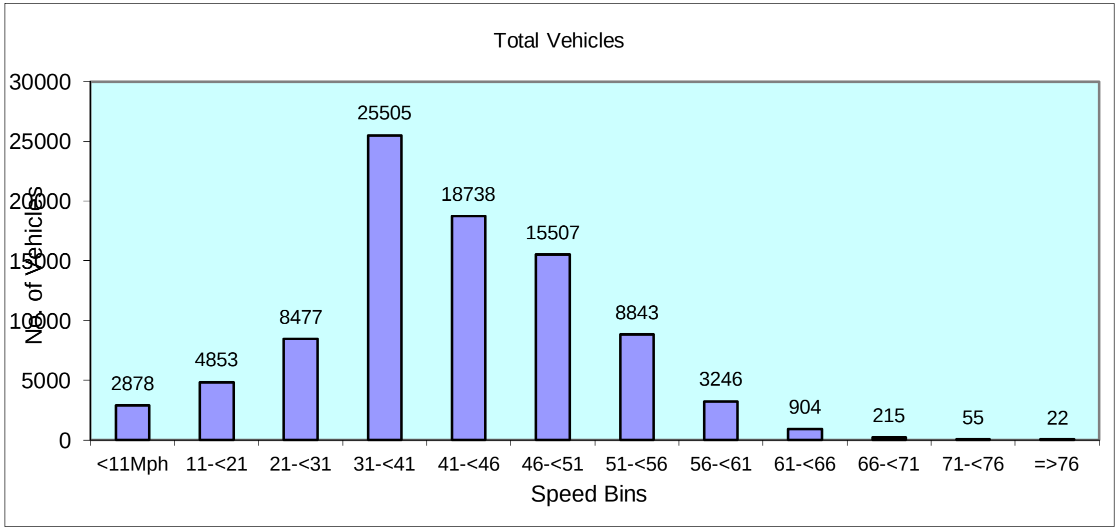
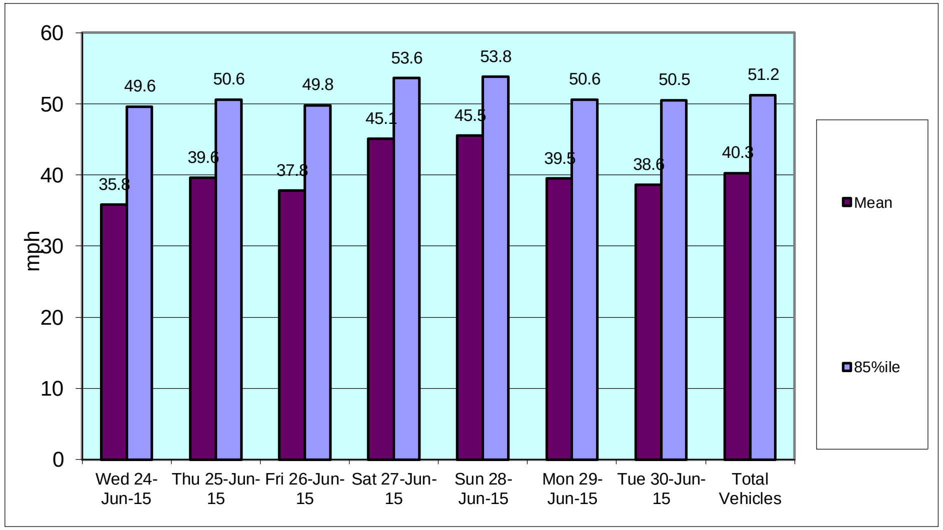
19028 **RUDHEATH** **Site No: 19028010** **Location Site 10, A556, Rudheath (LC 411)**

Wed 24-Jun-15 to Tue 30-Jun-15 **Channel: Eastbound**

Time Period	Total Vehicles	85%ile Speed	Mean Speed	Stand Dev.	<11Mph	11-<21	21-<31	31-<41	41-<46	46-<51	51-<56	56-<61	61-<66	66-<71	71-<76	=>76
Daily Totals																
Wed 24-Jun-15	**13978**	49.6	35.8	14.2	1461	1167	1370	3900	2597	1942	1051	366	92	25	6	1
Thu 25-Jun-15	**14194**	50.6	39.6	11.6	251	865	1589	4124	2976	2449	1302	471	130	26	10	1
Fri 26-Jun-15	**14584**	49.8	37.8	12.1	437	1008	2130	4550	2712	2031	1153	414	107	33	5	4
Sat 27-Jun-15	**10192**	53.6	45.1	8.3	0	10	251	2673	2586	2382	1446	604	179	44	12	5
Sun 28-Jun-15	**9081**	53.8	45.5	8	0	16	154	2145	2357	2265	1414	533	155	26	11	5
Mon 29-Jun-15	**13639**	50.6	39.5	11.6	255	812	1521	4033	2847	2329	1250	430	117	34	6	5
Tue 30-Jun-15	**13575**	50.5	38.6	12.3	474	975	1462	4080	2663	2109	1227	428	124	27	5	1
Total Vehicles																
[--]	**89243**	51.2	40.3	11.2	2878	4853	8477	25505	18738	15507	8843	3246	904	215	55	22





AXIOM Traffic Limited

Data produced by
Axiom Traffic Ltd

19028		RUDHEATH		Site No: 19028010		Location	Site 10, A556, Rudheath (LC 411)	
				Channel: Eastbound					
TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av
Week Begin: 24-Jun-15									
00:00	**49**	60	61	103	121	38	38	49	67
01:00	**17**	27	32	58	40	23	11	22	30
02:00	**36**	50	35	52	48	29	42	38	42
03:00	**55**	54	48	57	41	61	51	54	52
04:00	**83**	92	97	75	57	108	90	94	86
05:00	**281**	260	278	150	116	289	274	276	235
06:00	**720**	659	570	159	110	645	640	647	500
07:00	**1328**	1347	1216	339	204	1385	1354	1326	1025
08:00	**1211**	1364	1289	510	270	1325	1340	1306	1044
09:00	**1192**	964	917	626	461	927	991	998	868
10:00	**908**	721	727	791	652	687	696	748	740
11:00	**750**	700	796	768	693	655	646	709	715
12:00	**736**	788	847	816	710	733	781	777	773
13:00	**711**	741	777	761	727	712	699	728	733
14:00	**716**	777	867	771	747	720	625	741	746
15:00	**792**	835	942	717	742	878	823	854	818
16:00	**1069**	1124	1254	704	765	1087	1061	1119	1009
17:00	**1065**	1129	1157	733	786	1179	1138	1134	1027
18:00	**847**	936	973	630	599	858	816	886	808
19:00	**537**	592	682	471	448	496	537	569	538
20:00	**327**	371	390	307	314	303	343	347	336
21:00	**272**	263	279	241	228	240	310	273	262
22:00	**174**	207	199	193	118	168	165	183	175
23:00	**102**	133	151	160	84	93	104	117	118
12H,7-19	**11325**	**11426**	**11762**	**8166**	**7356**	**11146**	**10970**	**11326**	**10307**
16H,6-22	**13181**	**13311**	**13683**	**9344**	**8456**	**12830**	**12800**	**13161**	**11944**
18H,6-24	**13457**	**13651**	**14033**	**9697**	**8658**	**13091**	**13069**	**13460**	**12237**
24H,0-24	**13978**	**14194**	**14584**	**10192**	**9081**	**13639**	**13575**	**13994**	**12749**
Am	**07:00**	**08:00**	**08:00**	**10:00**	**11:00**	**07:00**	**07:00**	**-**	**-**
Peak	**1328**	**1364**	**1289**	**791**	**693**	**1385**	**1354**	**1344**	**1172**
Pm	**16:00**	**17:00**	**16:00**	**12:00**	**17:00**	**17:00**	**17:00**	**-**	**-**
Peak	**1069**	**1129**	**1254**	**816**	**786**	**1179**	**1138**	**1154**	**1053**

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Data produced by
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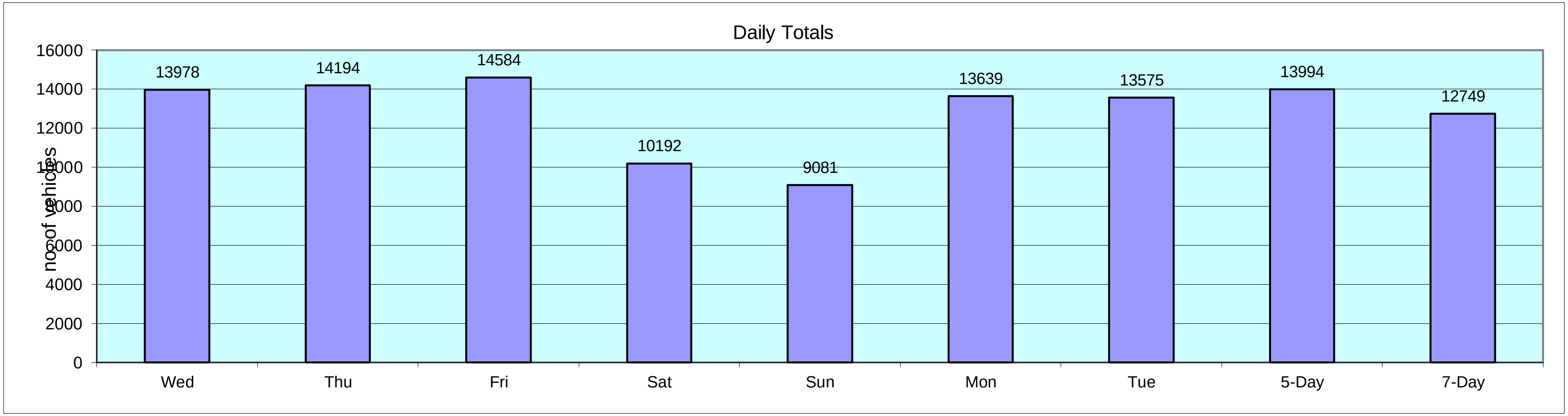
19028	RUDHEATH	Site No: 19028010 Channel: Eastbound	Location	Site 10, A556, Rudheath (LC 411)					
TIME PERIOD	Wed 24/06/15	Thu 25/06/15	Fri 26/06/15	Sat 27/06/15	Sun 28/06/15	Mon 29/06/15	Tue 30/06/15	5-Day Av	7-Day Av



Data produced by
Axiom Traffic Ltd

Classification Schemes

Scheme F Classification Scheme (Non-metric)

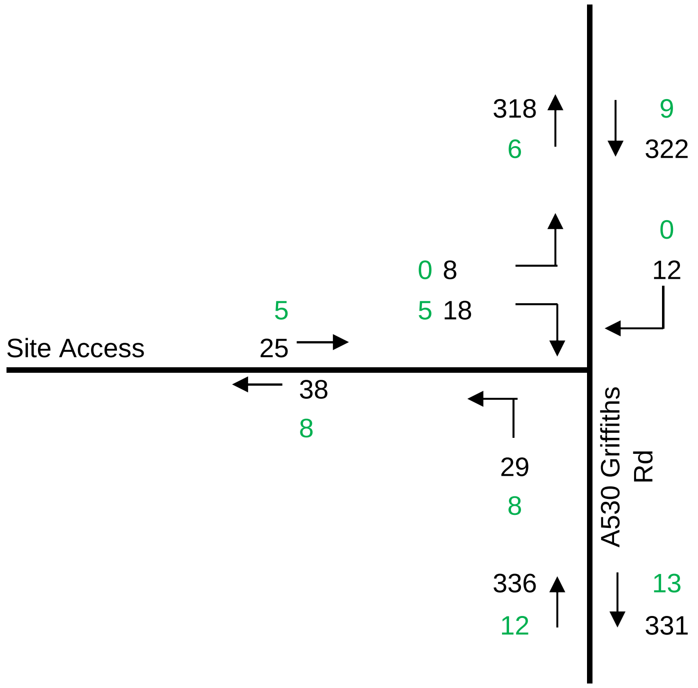
Scheme F is an attempt to implement the FWHA's visual classification scheme as an axle-based classification scheme. This is one of several interpretations.

Class	Vehicle Type	No. of Axles	Axle spacing in feet				
			Axle 1 to 2	Axle 2 to 3	Axle 3 to 4	Axle 4 to 5	Axle 5 to 6
1	motorcycle	2	<6.0				
2	passenger car	2	6.0 - 10.0				
	car + 1 axle trailer	3	<10.0	10.0 - 18.0			
	car + 2 axle trailer	4	<10.0		<3.5		
3	pickup	2	10.0 - 15.0				
	pickup + 1 axle trailer	3	10.0 - 15.0	10.0 - 18.0			
	pickup + 2 axle trailer	4	10.0 -15.0		<3.5		
	pickup + 3 axle trailer	5	9.9 - 15.0			<3.5	
4	Traditional bus/coach	2	>20.0				
	Traditional bus/coach	3	>19.0				
5	single unit truck/bus - dual rear axle	2	14.9 - 20.0			<3.5	
6	3 axle truck	3		<18.0			
7	4 axle truck	4					
8	2S1	3		>18.0			
	2S2	4		>5.0	>3.5		
	3S1	4		<5.0	>10.0		
9	3S2	5		<6.1		3.5 - 8.0	
	5 axle combination	5					
10	6 axle combination	6			3.5 - 5.0		
	3S3	6					
11	2S1-2	5		>6.0			
12	3S1-2	6					>10.0
13	truck	7 or more					

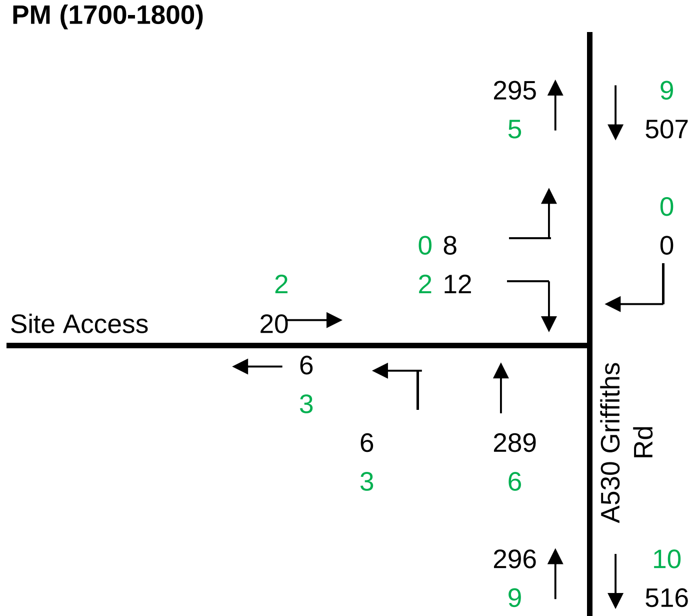
Annex 6.A.4: Existing Site Access Traffic Flows

2015 (ATC)

AM (0800-0900)



PM (1700-1800)



Key:

xx	**Total Vehicls**
xx	**HGVs**

Annex 6.A.5: PICADY 9 Results – Site Access

Junctions 9
PICADY 9 - Priority Intersection Module
Version: 9.0.0.4211 [] © Copyright TRL Limited, 2015
For sales and distribution information, program advice and maintenance, contact TRL: Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk
The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Junction 9 - 2015-2017-2017+com-2017+com+dev.j9
Path: P:\JNY8507 - AD Plant, Lostock Works\Transport\Picady
Report generation date: 01/10/2015 15:44:39

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
	BASELINE 2015							
Stream B-C	0.0	7.18	0.02	A	0.0	6.81	0.02	A
Stream B-A	0.1	9.52	0.05	A	0.0	10.27	0.04	B
Stream C-AB	0.0	6.63	0.02	A	0.0	0.00	0.00	A
Stream C-A								
Stream A-B								
Stream A-C								
	BASELINE 2017							
Stream B-C	0.0	7.25	0.02	A	0.0	6.82	0.02	A
Stream B-A	0.1	9.67	0.05	A	0.0	10.33	0.04	B
Stream C-AB	0.0	6.75	0.02	A	0.0	0.00	0.00	A
Stream C-A								
Stream A-B								
Stream A-C								
	BASELINE 2017 + COMMITTED							
Stream B-C	0.0	7.83	0.02	A	0.0	7.71	0.03	A
Stream B-A	0.1	12.62	0.10	B	0.1	14.70	0.11	B
Stream C-AB	0.0	6.91	0.03	A	0.0	0.00	0.00	A
Stream C-A								
Stream A-B								
Stream A-C								
	BASELINE 2017 + COMMITTED + DEV							
Stream B-C	0.0	7.97	0.02	A	0.0	7.95	0.03	A
Stream B-A	0.1	13.87	0.12	B	0.2	15.38	0.16	C
Stream C-AB	0.0	6.97	0.04	A	0.0	0.00	0.00	A
Stream C-A								
Stream A-B								
Stream A-C								

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	JNY6882: Lostock SEP, 2020 Baseline + Development
Location	A530 Griffin's Road / Site Access Junction
Site number	
Date	14/06/2010
Version	
Status	
Identifier	
Client	Resource Recovery Solutions (Cheshire) L
Jobnumber	JNY6882
Enumerator	EUR"alice.nolan
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Demand Set Summary

Scenario name	Time Period name	Description	Traffic profile type	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)	Run automatically
BASELINE 2015	AM	JNY6882: Lostock SEP, 2020 Baseline + Development AM Peak	ONE HOUR	07:45	09:15	15	✓
BASELINE 2015	PM	JNY6882: Lostock SEP, 2020 Baseline + Development PM Peak	ONE HOUR	16:30	18:00	15	✓
BASELINE 2017	AM	JNY6882: Lostock SEP, 2020 Baseline + Development AM Peak	ONE HOUR	07:45	09:15	15	✓
BASELINE 2017	PM	JNY6882: Lostock SEP, 2020 Baseline + Development PM Peak	ONE HOUR	16:30	18:00	15	✓
BASELINE 2017 + COMMITTED	AM	JNY6882: Lostock SEP, 2020 Baseline + Development AM Peak	ONE HOUR	07:45	09:15	15	✓
BASELINE 2017 + COMMITTED	PM	JNY6882: Lostock SEP, 2020 Baseline + Development PM Peak	ONE HOUR	16:30	18:00	15	✓
BASELINE 2017 + COMMITTED + DEV	AM	JNY6882: Lostock SEP, 2020 Baseline + Development AM Peak	ONE HOUR	07:45	09:15	15	✓
BASELINE 2017 + COMMITTED + DEV	PM	JNY6882: Lostock SEP, 2020 Baseline + Development PM Peak	ONE HOUR	16:30	18:00	15	✓

BASELINE 2015, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	0.45	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	A530 Griffin's Road (South)		Major
B	Site Access		Minor
C	A530 Griffin's Road (North)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	7.00			100.0	✓	1.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare	10.00	6.70	4.80	4.50	4.50	✓	3.00	25	30

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/hr)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
1	B-A	542.439	0.094	0.239	0.150	0.341
1	B-C	595.297	0.087	0.221	-	-
1	C-B	631.874	0.234	0.234	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)	Run automatically
D3	BASELINE 2015	AM	JNY6882: Lostock SEP, 2020 Baseline + Development AM Peak	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	318.00	100.000
B		ONE HOUR	✓	26.00	100.000
C		ONE HOUR	✓	334.00	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0.000	0.000	318.000
	B	18.000	0.000	8.000
	C	322.000	12.000	0.000

Proportions

		To		
		A	B	C
From	A	0.00	0.00	1.00
	B	0.69	0.00	0.31
	C	0.96	0.04	0.00

Vehicle Mix

Heavy Vehicle proportion

		To		
		A	B	C
From	A	0	28	2
	B	0	0	0
	C	3	0	0

Average PCU Per Veh

		To		
		A	B	C
From	A	1.000	1.280	1.020
	B	1.000	1.000	1.000
	C	1.030	1.000	1.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.02	7.18	0.0	A	7.34	11.01
B-A	0.05	9.52	0.1	A	16.52	24.78
C-AB	0.02	6.63	0.0	A	11.14	16.70
C-A					295.35	443.02
A-B					0.00	0.00
A-C					291.80	437.70

Main Results for each time segment

Main results: (07:45-08:00)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	6.02	6.02	1.51	0.00	537.29	0.011	5.98	0.0	0.0	6.775	A
B-A	13.55	13.55	3.39	0.00	443.51	0.031	13.43	0.0	0.0	8.369	A
C-AB	9.09	9.09	2.27	0.00	578.50	0.016	9.03	0.0	0.0	6.321	A
C-A	242.36	242.36	60.59	0.00			242.36				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	239.41	239.41	59.85	0.00			239.41				

Main results: (08:00-08:15)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	7.19	7.19	1.80	0.00	525.79	0.014	7.18	0.0	0.0	6.940	A
B-A	16.18	16.18	4.05	0.00	424.33	0.038	16.15	0.0	0.0	8.819	A
C-AB	10.89	10.89	2.72	0.00	569.11	0.019	10.88	0.0	0.0	6.448	A
C-A	289.37	289.37	72.34	0.00			289.37				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	285.88	285.88	71.47	0.00			285.88				

Main results: (08:15-08:30)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	8.81	8.81	2.20	0.00	509.95	0.017	8.79	0.0	0.0	7.182	A
B-A	19.82	19.82	4.95	0.00	397.78	0.050	19.77	0.0	0.1	9.522	A
C-AB	13.42	13.42	3.35	0.00	556.75	0.024	13.40	0.0	0.0	6.624	A
C-A	354.32	354.32	88.58	0.00			354.32				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	350.12	350.12	87.53	0.00			350.12				

Main results: (08:30-08:45)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	8.81	8.81	2.20	0.00	509.89	0.017	8.81	0.0	0.0	7.183	A
B-A	19.82	19.82	4.95	0.00	397.80	0.050	19.82	0.1	0.1	9.523	A
C-AB	13.42	13.42	3.35	0.00	556.79	0.024	13.42	0.0	0.0	6.627	A
C-A	354.32	354.32	88.58	0.00			354.32				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	350.12	350.12	87.53	0.00			350.12				

Main results: (08:45-09:00)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	7.19	7.19	1.80	0.00	525.69	0.014	7.21	0.0	0.0	6.942	A
B-A	16.18	16.18	4.05	0.00	424.38	0.038	16.23	0.1	0.0	8.821	A
C-AB	10.89	10.89	2.72	0.00	569.19	0.019	10.91	0.0	0.0	6.448	A
C-A	289.37	289.37	72.34	0.00			289.37				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	285.88	285.88	71.47	0.00			285.88				

Main results: (09:00-09:15)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	6.02	6.02	1.51	0.00	537.11	0.011	6.03	0.0	0.0	6.780	A
B-A	13.55	13.55	3.39	0.00	443.57	0.031	13.58	0.0	0.0	8.372	A
C-AB	9.09	9.09	2.27	0.00	578.53	0.016	9.11	0.0	0.0	6.324	A
C-A	242.36	242.36	60.59	0.00			242.36				
A-B	0.00	0.00	0.00	0.00			0.00				
A-C	239.41	239.41	59.85	0.00			239.41				

BASELINE 2015, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	0.21	A

Junction Network Options

[same as above]

Arms

Arms

[same as above]

Major Arm Geometry

[same as above]

Minor Arm Geometry

[same as above]

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)	Run automatically
D4	BASELINE 2015	PM	JNY6882: Lostock SEP, 2020 Baseline + Development PM Peak	ONE HOUR	16:30	18:00	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	301.00	100.000
B		ONE HOUR	✓	20.00	100.000
C		ONE HOUR	✓	507.00	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0.000	6.000	295.000
	B	12.000	0.000	8.000
	C	507.000	0.000	0.000

Proportions

		To		
		A	B	C
From	A	0.00	0.02	0.98
	B	0.60	0.00	0.40
	C	1.00	0.00	0.00

Vehicle Mix

Heavy Vehicle proportion

		To		
		A	B	C
From	A	0	41	2
	B	0	0	0
	C	2	0	0

Average PCU Per Veh

		To		
		A	B	C
From	A	1.000	1.410	1.020
	B	1.000	1.000	1.000
	C	1.020	1.000	1.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.02	6.81	0.0	A	7.34	11.01
B-A	0.04	10.27	0.0	B	11.01	16.52
C-AB	0.00	0.00	0.0	A	0.00	0.00
C-A					465.23	697.85
A-B					5.51	8.26
A-C					270.70	406.05

Main Results for each time segment

Main results: (16:30-16:45)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	6.02	6.02	1.51	0.00	563.96	0.011	5.98	0.0	0.0	6.451	A
B-A	9.03	9.03	2.26	0.00	414.22	0.022	8.95	0.0	0.0	8.880	A
C-AB	0.00	0.00	0.00	0.00	1154.67	0.000	0.00	0.0	0.0	0.000	A
C-A	381.70	381.70	95.42	0.00			381.70				
A-B	4.52	4.52	1.13	0.00			4.52				
A-C	222.09	222.09	55.52	0.00			222.09				

Main results: (16:45-17:00)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	7.19	7.19	1.80	0.00	552.87	0.013	7.18	0.0	0.0	6.596	A
B-A	10.79	10.79	2.70	0.00	393.09	0.027	10.76	0.0	0.0	9.416	A
C-AB	0.00	0.00	0.00	0.00	1133.50	0.000	0.00	0.0	0.0	0.000	A
C-A	455.78	455.78	113.95	0.00			455.78				
A-B	5.39	5.39	1.35	0.00			5.39				
A-C	265.20	265.20	66.30	0.00			265.20				

Main results: (17:00-17:15)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	8.81	8.81	2.20	0.00	537.62	0.016	8.79	0.0	0.0	6.806	A
B-A	13.21	13.21	3.30	0.00	363.78	0.036	13.17	0.0	0.0	10.266	B
C-AB	0.00	0.00	0.00	0.00	1104.23	0.000	0.00	0.0	0.0	0.000	A
C-A	558.22	558.22	139.55	0.00			558.22				
A-B	6.61	6.61	1.65	0.00			6.61				
A-C	324.80	324.80	81.20	0.00			324.80				

Main results: (17:15-17:30)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	8.81	8.81	2.20	0.00	537.54	0.016	8.81	0.0	0.0	6.807	A
B-A	13.21	13.21	3.30	0.00	363.82	0.036	13.21	0.0	0.0	10.267	B
C-AB	0.00	0.00	0.00	0.00	1104.23	0.000	0.00	0.0	0.0	0.000	A
C-A	558.22	558.22	139.55	0.00			558.22				
A-B	6.61	6.61	1.65	0.00			6.61				
A-C	324.80	324.80	81.20	0.00			324.80				

Main results: (17:30-17:45)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	7.19	7.19	1.80	0.00	552.71	0.013	7.21	0.0	0.0	6.601	A
B-A	10.79	10.79	2.70	0.00	393.18	0.027	10.82	0.0	0.0	9.415	A
C-AB	0.00	0.00	0.00	0.00	1133.50	0.000	0.00	0.0	0.0	0.000	A
C-A	455.78	455.78	113.95	0.00			455.78				
A-B	5.39	5.39	1.35	0.00			5.39				
A-C	265.20	265.20	66.30	0.00			265.20				

Main results: (17:45-18:00)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	6.02	6.02	1.51	0.00	563.71	0.011	6.03	0.0	0.0	6.457	A
B-A	9.03	9.03	2.26	0.00	414.37	0.022	9.06	0.0	0.0	8.882	A
C-AB	0.00	0.00	0.00	0.00	1154.67	0.000	0.00	0.0	0.0	0.000	A
C-A	381.70	381.70	95.42	0.00			381.70				
A-B	4.52	4.52	1.13	0.00			4.52				
A-C	222.09	222.09	55.52	0.00			222.09				

BASELINE 2017, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	0.42	A

Junction Network Options

[same as above]

Arms

Arms

[same as above]

Major Arm Geometry

[same as above]

Minor Arm Geometry

[same as above]

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)	Run automatically
D5	BASELINE 2017	AM	JNY6882: Lostock SEP, 2020 Baseline + Development AM Peak	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	351.00	100.000
B		ONE HOUR	✓	26.00	100.000
C		ONE HOUR	✓	339.00	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0.000	29.000	322.000
	B	18.000	0.000	8.000
	C	327.000	12.000	0.000

Proportions

		To		
		A	B	C
From	A	0.00	0.08	0.92
	B	0.69	0.00	0.31
	C	0.96	0.04	0.00

Vehicle Mix

Heavy Vehicle proportion

		To		
		A	B	C
From	A	0	28	2
	B	0	0	0
	C	3	0	0

Average PCU Per Veh

		To		
		A	B	C
From	A	1.000	1.280	1.020
	B	1.000	1.000	1.000
	C	1.030	1.000	1.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.02	7.25	0.0	A	7.34	11.01
B-A	0.05	9.67	0.1	A	16.52	24.78
C-AB	0.02	6.75	0.0	A	11.14	16.71
C-A					299.93	449.90
A-B					26.61	39.92
A-C					295.47	443.21

Main Results for each time segment

Main results: (07:45-08:00)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	6.02	6.02	1.51	0.00	534.16	0.011	5.98	0.0	0.0	6.815	A
B-A	13.55	13.55	3.39	0.00	439.55	0.031	13.43	0.0	0.0	8.447	A
C-AB	9.10	9.10	2.27	0.00	571.34	0.016	9.03	0.0	0.0	6.402	A
C-A	246.12	246.12	61.53	0.00			246.12				
A-B	21.83	21.83	5.46	0.00			21.83				
A-C	242.42	242.42	60.60	0.00			242.42				

Main results: (08:00-08:15)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	7.19	7.19	1.80	0.00	522.05	0.014	7.18	0.0	0.0	6.991	A
B-A	16.18	16.18	4.05	0.00	419.61	0.039	16.15	0.0	0.0	8.923	A
C-AB	10.90	10.90	2.72	0.00	560.61	0.019	10.88	0.0	0.0	6.547	A
C-A	293.86	293.86	73.46	0.00			293.86				
A-B	26.07	26.07	6.52	0.00			26.07				
A-C	289.47	289.47	72.37	0.00			289.47				

Main results: (08:15-08:30)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	8.81	8.81	2.20	0.00	505.35	0.017	8.79	0.0	0.0	7.249	A
B-A	19.82	19.82	4.95	0.00	391.99	0.051	19.77	0.0	0.1	9.670	A
C-AB	13.43	13.43	3.36	0.00	546.43	0.025	13.41	0.0	0.0	6.752	A
C-A	359.82	359.82	89.95	0.00			359.82				
A-B	31.93	31.93	7.98	0.00			31.93				
A-C	354.53	354.53	88.63	0.00			354.53				

Main results: (08:30-08:45)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	8.81	8.81	2.20	0.00	505.29	0.017	8.81	0.0	0.0	7.250	A
B-A	19.82	19.82	4.95	0.00	392.02	0.051	19.82	0.1	0.1	9.671	A
C-AB	13.43	13.43	3.36	0.00	546.47	0.025	13.43	0.0	0.0	6.752	A
C-A	359.82	359.82	89.95	0.00			359.82				
A-B	31.93	31.93	7.98	0.00			31.93				
A-C	354.53	354.53	88.63	0.00			354.53				

Main results: (08:45-09:00)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	7.19	7.19	1.80	0.00	521.94	0.014	7.21	0.0	0.0	6.996	A
B-A	16.18	16.18	4.05	0.00	419.65	0.039	16.23	0.1	0.0	8.926	A
C-AB	10.90	10.90	2.72	0.00	560.69	0.019	10.92	0.0	0.0	6.548	A
C-A	293.86	293.86	73.46	0.00			293.86				
A-B	26.07	26.07	6.52	0.00			26.07				
A-C	289.47	289.47	72.37	0.00			289.47				

Main results: (09:00-09:15)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	6.02	6.02	1.51	0.00	533.98	0.011	6.03	0.0	0.0	6.820	A
B-A	13.55	13.55	3.39	0.00	439.61	0.031	13.58	0.0	0.0	8.452	A
C-AB	9.10	9.10	2.27	0.00	571.38	0.016	9.11	0.0	0.0	6.404	A
C-A	246.12	246.12	61.53	0.00			246.12				
A-B	21.83	21.83	5.46	0.00			21.83				
A-C	242.42	242.42	60.60	0.00			242.42				

BASELINE 2017, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	0.21	A

Junction Network Options

[same as above]

Arms

Arms

[same as above]

Major Arm Geometry

[same as above]

Minor Arm Geometry

[same as above]

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)	Run automatically
D6	BASELINE 2017	PM	JNY6882: Lostock SEP, 2020 Baseline + Development PM Peak	ONE HOUR	16:30	18:00	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	305.00	100.000
B		ONE HOUR	✓	20.00	100.000
C		ONE HOUR	✓	514.00	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0.000	6.000	299.000
	B	12.000	0.000	8.000
	C	514.000	0.000	0.000

Proportions

		To		
		A	B	C
From	A	0.00	0.02	0.98
	B	0.60	0.00	0.40
	C	1.00	0.00	0.00

Vehicle Mix

Heavy Vehicle proportion

		To		
		A	B	C
From	A	0	41	2
	B	0	0	0
	C	2	0	0

Average PCU Per Veh

		To		
		A	B	C
From	A	1.000	1.410	1.020
	B	1.000	1.000	1.000
	C	1.020	1.000	1.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.02	6.82	0.0	A	7.34	11.01
B-A	0.04	10.33	0.0	B	11.01	16.52
C-AB	0.00	0.00	0.0	A	0.00	0.00
C-A					471.66	707.48
A-B					5.51	8.26
A-C					274.37	411.55

Main Results for each time segment

Main results: (16:30-16:45)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	6.02	6.02	1.51	0.00	563.25	0.011	5.98	0.0	0.0	6.459	A
B-A	9.03	9.03	2.26	0.00	412.73	0.022	8.95	0.0	0.0	8.913	A
C-AB	0.00	0.00	0.00	0.00	1153.23	0.000	0.00	0.0	0.0	0.000	A
C-A	386.97	386.97	96.74	0.00			386.97				
A-B	4.52	4.52	1.13	0.00			4.52				
A-C	225.10	225.10	56.28	0.00			225.10				

Main results: (16:45-17:00)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	7.19	7.19	1.80	0.00	552.01	0.013	7.18	0.0	0.0	6.606	A
B-A	10.79	10.79	2.70	0.00	391.32	0.028	10.76	0.0	0.0	9.460	A
C-AB	0.00	0.00	0.00	0.00	1131.78	0.000	0.00	0.0	0.0	0.000	A
C-A	462.08	462.08	115.52	0.00			462.08				
A-B	5.39	5.39	1.35	0.00			5.39				
A-C	268.79	268.79	67.20	0.00			268.79				

Main results: (17:00-17:15)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	8.81	8.81	2.20	0.00	536.57	0.016	8.79	0.0	0.0	6.820	A
B-A	13.21	13.21	3.30	0.00	361.60	0.037	13.17	0.0	0.0	10.330	B
C-AB	0.00	0.00	0.00	0.00	1102.12	0.000	0.00	0.0	0.0	0.000	A
C-A	565.92	565.92	141.48	0.00			565.92				
A-B	6.61	6.61	1.65	0.00			6.61				
A-C	329.21	329.21	82.30	0.00			329.21				

Main results: (17:15-17:30)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	8.81	8.81	2.20	0.00	536.48	0.016	8.81	0.0	0.0	6.821	A
B-A	13.21	13.21	3.30	0.00	361.64	0.037	13.21	0.0	0.0	10.331	B
C-AB	0.00	0.00	0.00	0.00	1102.12	0.000	0.00	0.0	0.0	0.000	A
C-A	565.92	565.92	141.48	0.00			565.92				
A-B	6.61	6.61	1.65	0.00			6.61				
A-C	329.21	329.21	82.30	0.00			329.21				

Main results: (17:30-17:45)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	7.19	7.19	1.80	0.00	551.85	0.013	7.21	0.0	0.0	6.609	A
B-A	10.79	10.79	2.70	0.00	391.41	0.028	10.82	0.0	0.0	9.459	A
C-AB	0.00	0.00	0.00	0.00	1131.78	0.000	0.00	0.0	0.0	0.000	A
C-A	462.08	462.08	115.52	0.00			462.08				
A-B	5.39	5.39	1.35	0.00			5.39				
A-C	268.79	268.79	67.20	0.00			268.79				

Main results: (17:45-18:00)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	6.02	6.02	1.51	0.00	562.99	0.011	6.03	0.0	0.0	6.465	A
B-A	9.03	9.03	2.26	0.00	412.88	0.022	9.06	0.0	0.0	8.915	A
C-AB	0.00	0.00	0.00	0.00	1153.23	0.000	0.00	0.0	0.0	0.000	A
C-A	386.97	386.97	96.74	0.00			386.97				
A-B	4.52	4.52	1.13	0.00			4.52				
A-C	225.10	225.10	56.28	0.00			225.10				

BASELINE 2017 + COMMITTED, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	0.73	A

Junction Network Options

[same as above]

Arms

Arms

[same as above]

Major Arm Geometry

[same as above]

Minor Arm Geometry

[same as above]

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)	Run automatically
D7	BASELINE 2017 + COMMITTED	AM	JNY6882: Lostock SEP, 2020 Baseline + Development AM Peak	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	391.00	100.000
B		ONE HOUR	✓	37.00	100.000
C		ONE HOUR	✓	382.00	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0.000	45.000	346.000
	B	29.000	0.000	8.000
	C	367.000	15.000	0.000

Proportions

		To		
		A	B	C
From	A	0.00	0.12	0.88
	B	0.78	0.00	0.22
	C	0.96	0.04	0.00

Vehicle Mix

Heavy Vehicle proportion

		To		
		A	B	C
From	A	0	34	2
	B	23	0	0
	C	2	0	0

Average PCU Per Veh

		To		
		A	B	C
From	A	1.000	1.340	1.020
	B	1.230	1.000	1.000
	C	1.020	1.000	1.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.02	7.83	0.0	A	7.34	11.01
B-A	0.10	12.62	0.1	B	26.61	39.92
C-AB	0.03	6.91	0.0	A	14.00	21.00
C-A					336.53	504.79
A-B					41.29	61.94
A-C					317.50	476.24

Main Results for each time segment

Main results: (07:45-08:00)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	6.02	6.02	1.51	0.00	501.09	0.012	5.97	0.0	0.0	7.270	A
B-A	21.83	21.83	5.46	0.00	361.74	0.060	21.58	0.0	0.1	10.576	B
C-AB	11.41	11.41	2.85	0.00	564.61	0.020	11.32	0.0	0.0	6.506	A
C-A	276.18	276.18	69.05	0.00			276.18				
A-B	33.88	33.88	8.47	0.00			33.88				
A-C	260.49	260.49	65.12	0.00			260.49				

Main results: (08:00-08:15)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	7.19	7.19	1.80	0.00	487.56	0.015	7.18	0.0	0.0	7.493	A
B-A	26.07	26.07	6.52	0.00	343.08	0.076	26.00	0.1	0.1	11.350	B
C-AB	13.69	13.69	3.42	0.00	553.03	0.025	13.67	0.0	0.0	6.673	A
C-A	329.72	329.72	82.43	0.00			329.72				
A-B	40.45	40.45	10.11	0.00			40.45				
A-C	311.05	311.05	77.76	0.00			311.05				

Main results: (08:15-08:30)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	8.81	8.81	2.20	0.00	468.82	0.019	8.79	0.0	0.0	7.825	A
B-A	31.93	31.93	7.98	0.00	317.26	0.101	31.81	0.1	0.1	12.606	B
C-AB	16.91	16.91	4.23	0.00	538.00	0.031	16.89	0.0	0.0	6.907	A
C-A	403.68	403.68	100.92	0.00			403.68				
A-B	49.55	49.55	12.39	0.00			49.55				
A-C	380.95	380.95	95.24	0.00			380.95				

Main results: (08:30-08:45)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	8.81	8.81	2.20	0.00	468.74	0.019	8.81	0.0	0.0	7.827	A
B-A	31.93	31.93	7.98	0.00	317.27	0.101	31.93	0.1	0.1	12.615	B
C-AB	16.91	16.91	4.23	0.00	538.04	0.031	16.91	0.0	0.0	6.910	A
C-A	403.68	403.68	100.92	0.00			403.68				
A-B	49.55	49.55	12.39	0.00			49.55				
A-C	380.95	380.95	95.24	0.00			380.95				

Main results: (08:45-09:00)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	7.19	7.19	1.80	0.00	487.41	0.015	7.21	0.0	0.0	7.496	A
B-A	26.07	26.07	6.52	0.00	343.11	0.076	26.18	0.1	0.1	11.362	B
C-AB	13.69	13.69	3.42	0.00	553.10	0.025	13.72	0.0	0.0	6.674	A
C-A	329.72	329.72	82.43	0.00			329.72				
A-B	40.45	40.45	10.11	0.00			40.45				
A-C	311.05	311.05	77.76	0.00			311.05				

Main results: (09:00-09:15)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	6.02	6.02	1.51	0.00	500.85	0.012	6.03	0.0	0.0	7.277	A
B-A	21.83	21.83	5.46	0.00	361.78	0.060	21.91	0.1	0.1	10.596	B
C-AB	11.41	11.41	2.85	0.00	564.64	0.020	11.43	0.0	0.0	6.507	A
C-A	276.18	276.18	69.05	0.00			276.18				
A-B	33.88	33.88	8.47	0.00			33.88				
A-C	260.49	260.49	65.12	0.00			260.49				

BASELINE 2017 + COMMITTED, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	0.65	A

Junction Network Options

[same as above]

Arms

Arms

[same as above]

Major Arm Geometry

[same as above]

Minor Arm Geometry

[same as above]

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)	Run automatically
D8	BASELINE 2017 + COMMITTED	PM	JNY6882: Lostock SEP, 2020 Baseline + Development PM Peak	ONE HOUR	16:30	18:00	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	356.00	100.000
B		ONE HOUR	✓	39.00	100.000
C		ONE HOUR	✓	547.00	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0.000	17.000	339.000
	B	28.000	0.000	11.000
	C	547.000	0.000	0.000

Proportions

		To		
		A	B	C
From	A	0.00	0.05	0.95
	B	0.72	0.00	0.28
	C	1.00	0.00	0.00

Vehicle Mix

Heavy Vehicle proportion

		To		
		A	B	C
From	A	0	26	2
	B	33	0	0
	C	2	0	0

Average PCU Per Veh

		To		
		A	B	C
From	A	1.000	1.260	1.020
	B	1.330	1.000	1.000
	C	1.020	1.000	1.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.03	7.71	0.0	A	10.09	15.14
B-A	0.11	14.70	0.1	B	25.69	38.54
C-AB	0.00	0.00	0.0	A	0.00	0.00
C-A					501.94	752.91
A-B					15.60	23.40
A-C					311.07	466.61

Main Results for each time segment

Main results: (16:30-16:45)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	8.28	8.28	2.07	0.00	510.98	0.016	8.22	0.0	0.0	7.160	A
B-A	21.08	21.08	5.27	0.00	320.93	0.066	20.80	0.0	0.1	11.984	B
C-AB	0.00	0.00	0.00	0.00	1134.28	0.000	0.00	0.0	0.0	0.000	A
C-A	411.81	411.81	102.95	0.00			411.81				
A-B	12.80	12.80	3.20	0.00			12.80				
A-C	255.22	255.22	63.80	0.00			255.22				

Main results: (16:45-17:00)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	9.89	9.89	2.47	0.00	497.62	0.020	9.87	0.0	0.0	7.380	A
B-A	25.17	25.17	6.29	0.00	301.98	0.083	25.09	0.1	0.1	12.997	B
C-AB	0.00	0.00	0.00	0.00	1109.15	0.000	0.00	0.0	0.0	0.000	A
C-A	491.74	491.74	122.94	0.00			491.74				
A-B	15.28	15.28	3.82	0.00			15.28				
A-C	304.75	304.75	76.19	0.00			304.75				

Main results: (17:00-17:15)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	12.11	12.11	3.03	0.00	479.08	0.025	12.09	0.0	0.0	7.709	A
B-A	30.83	30.83	7.71	0.00	275.70	0.112	30.69	0.1	0.1	14.686	B
C-AB	0.00	0.00	0.00	0.00	1074.40	0.000	0.00	0.0	0.0	0.000	A
C-A	602.26	602.26	150.56	0.00			602.26				
A-B	18.72	18.72	4.68	0.00			18.72				
A-C	373.25	373.25	93.31	0.00			373.25				

Main results: (17:15-17:30)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	12.11	12.11	3.03	0.00	478.96	0.025	12.11	0.0	0.0	7.711	A
B-A	30.83	30.83	7.71	0.00	275.73	0.112	30.82	0.1	0.1	14.699	B
C-AB	0.00	0.00	0.00	0.00	1074.40	0.000	0.00	0.0	0.0	0.000	A
C-A	602.26	602.26	150.56	0.00			602.26				
A-B	18.72	18.72	4.68	0.00			18.72				
A-C	373.25	373.25	93.31	0.00			373.25				

Main results: (17:30-17:45)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	9.89	9.89	2.47	0.00	497.40	0.020	9.91	0.0	0.0	7.387	A
B-A	25.17	25.17	6.29	0.00	302.04	0.083	25.30	0.1	0.1	13.014	B
C-AB	0.00	0.00	0.00	0.00	1109.15	0.000	0.00	0.0	0.0	0.000	A
C-A	491.74	491.74	122.94	0.00			491.74				
A-B	15.28	15.28	3.82	0.00			15.28				
A-C	304.75	304.75	76.19	0.00			304.75				

Main results: (17:45-18:00)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	8.28	8.28	2.07	0.00	510.63	0.016	8.30	0.0	0.0	7.168	A
B-A	21.08	21.08	5.27	0.00	321.03	0.066	21.16	0.1	0.1	12.008	B
C-AB	0.00	0.00	0.00	0.00	1134.28	0.000	0.00	0.0	0.0	0.000	A
C-A	411.81	411.81	102.95	0.00			411.81				
A-B	12.80	12.80	3.20	0.00			12.80				
A-C	255.22	255.22	63.80	0.00			255.22				

BASELINE 2017 + COMMITTED + DEV, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	0.91	A

Junction Network Options

[same as above]

Arms

Arms

[same as above]

Major Arm Geometry

[same as above]

Minor Arm Geometry

[same as above]

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)	Run automatically
D9	BASELINE 2017 + COMMITTED + DEV	AM	JNY6882: Lostock SEP, 2020 Baseline + Development AM Peak	ONE HOUR	07:45	09:15	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	403.00	100.000
B		ONE HOUR	✓	41.00	100.000
C		ONE HOUR	✓	384.00	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0.000	57.000	346.000
	B	33.000	0.000	8.000
	C	367.000	17.000	0.000

Proportions

		To		
		A	B	C
From	A	0.00	0.14	0.86
	B	0.80	0.00	0.20
	C	0.96	0.04	0.00

Vehicle Mix

Heavy Vehicle proportion

		To		
		A	B	C
From	A	0	33	2
	B	32	0	0
	C	2	0	0

Average PCU Per Veh

		To		
		A	B	C
From	A	1.000	1.330	1.020
	B	1.320	1.000	1.000
	C	1.020	1.000	1.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.02	7.97	0.0	A	7.34	11.01
B-A	0.12	13.87	0.1	B	30.28	45.42
C-AB	0.04	6.97	0.0	A	15.91	23.86
C-A					336.46	504.68
A-B					52.30	78.46
A-C					317.50	476.24

Main Results for each time segment

Main results: (07:45-08:00)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	6.02	6.02	1.51	0.00	494.10	0.012	5.97	0.0	0.0	7.375	A
B-A	24.84	24.84	6.21	0.00	338.12	0.073	24.53	0.0	0.1	11.467	B
C-AB	12.94	12.94	3.24	0.00	562.65	0.023	12.85	0.0	0.0	6.548	A
C-A	276.15	276.15	69.04	0.00			276.15				
A-B	42.91	42.91	10.73	0.00			42.91				
A-C	260.49	260.49	65.12	0.00			260.49				

Main results: (08:00-08:15)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	7.19	7.19	1.80	0.00	480.08	0.015	7.18	0.0	0.0	7.611	A
B-A	29.67	29.67	7.42	0.00	320.36	0.093	29.58	0.1	0.1	12.376	B
C-AB	15.55	15.55	3.89	0.00	550.90	0.028	15.52	0.0	0.0	6.723	A
C-A	329.66	329.66	82.42	0.00			329.66				
A-B	51.24	51.24	12.81	0.00			51.24				
A-C	311.05	311.05	77.76	0.00			311.05				

Main results: (08:15-08:30)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	8.81	8.81	2.20	0.00	460.65	0.019	8.79	0.0	0.0	7.967	A
B-A	36.33	36.33	9.08	0.00	295.79	0.123	36.19	0.1	0.1	13.856	B
C-AB	19.24	19.24	4.81	0.00	535.80	0.036	19.20	0.0	0.0	6.967	A
C-A	403.55	403.55	100.89	0.00			403.55				
A-B	62.76	62.76	15.69	0.00			62.76				
A-C	380.95	380.95	95.24	0.00			380.95				

Main results: (08:30-08:45)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	8.81	8.81	2.20	0.00	460.55	0.019	8.81	0.0	0.0	7.968	A
B-A	36.33	36.33	9.08	0.00	295.80	0.123	36.33	0.1	0.1	13.873	B
C-AB	19.24	19.24	4.81	0.00	535.84	0.036	19.24	0.0	0.0	6.967	A
C-A	403.55	403.55	100.89	0.00			403.55				
A-B	62.76	62.76	15.69	0.00			62.76				
A-C	380.95	380.95	95.24	0.00			380.95				

Main results: (08:45-09:00)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	7.19	7.19	1.80	0.00	479.91	0.015	7.21	0.0	0.0	7.618	A
B-A	29.67	29.67	7.42	0.00	320.39	0.093	29.81	0.1	0.1	12.396	B
C-AB	15.55	15.55	3.89	0.00	550.99	0.028	15.58	0.0	0.0	6.726	A
C-A	329.66	329.66	82.42	0.00			329.66				
A-B	51.24	51.24	12.81	0.00			51.24				
A-C	311.05	311.05	77.76	0.00			311.05				

Main results: (09:00-09:15)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	6.02	6.02	1.51	0.00	493.81	0.012	6.03	0.0	0.0	7.382	A
B-A	24.84	24.84	6.21	0.00	338.15	0.073	24.94	0.1	0.1	11.496	B
C-AB	12.94	12.94	3.24	0.00	562.68	0.023	12.97	0.0	0.0	6.548	A
C-A	276.15	276.15	69.04	0.00			276.15				
A-B	42.91	42.91	10.73	0.00			42.91				
A-C	260.49	260.49	65.12	0.00			260.49				

BASELINE 2017 + COMMITTED + DEV, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction Type	Major road direction	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way	0.92	A

Junction Network Options

[same as above]

Arms

Arms

[same as above]

Major Arm Geometry

[same as above]

Minor Arm Geometry

[same as above]

Slope / Intercept / Capacity

[same as above]

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Description	Traffic profile type	Model start time (HH:mm)	Model finish time (HH:mm)	Time segment length (min)	Run automatically
D10	BASELINE 2017 + COMMITTED + DEV	PM	JNY6882: Lostock SEP, 2020 Baseline + Development PM Peak	ONE HOUR	16:30	18:00	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
A		ONE HOUR	✓	360.00	100.000
B		ONE HOUR	✓	52.00	100.000
C		ONE HOUR	✓	547.00	100.000

Origin-Destination Data

Demand (Veh/hr)

		To		
		A	B	C
From	A	0.000	21.000	339.000
	B	40.000	0.000	12.000
	C	547.000	0.000	0.000

Proportions

		To		
		A	B	C
From	A	0.00	0.06	0.94
	B	0.77	0.00	0.23
	C	1.00	0.00	0.00

Vehicle Mix

Heavy Vehicle proportion

		To		
		A	B	C
From	A	0	40	2
	B	33	0	0
	C	2	0	0

Average PCU Per Veh

		To		
		A	B	C
From	A	1.000	1.400	1.020
	B	1.330	1.000	1.000
	C	1.020	1.000	1.000

Results

Results Summary for whole modelled period

Stream	Max RFC	Max delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/hr)	Total Junction Arrivals (Veh)
B-C	0.03	7.95	0.0	A	11.01	16.52
B-A	0.16	15.38	0.2	C	36.70	55.06
C-AB	0.00	0.00	0.0	A	0.00	0.00
C-A					501.94	752.91
A-B					19.27	28.90
A-C					311.07	466.61

Main Results for each time segment

Main results: (16:30-16:45)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	9.03	9.03	2.26	0.00	500.07	0.018	8.96	0.0	0.0	7.330	A
B-A	30.11	30.11	7.53	0.00	323.99	0.093	29.71	0.0	0.1	12.218	B
C-AB	0.00	0.00	0.00	0.00	1131.46	0.000	0.00	0.0	0.0	0.000	A
C-A	411.81	411.81	102.95	0.00			411.81				
A-B	15.81	15.81	3.95	0.00			15.81				
A-C	255.22	255.22	63.80	0.00			255.22				

Main results: (16:45-17:00)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	10.79	10.79	2.70	0.00	485.91	0.022	10.77	0.0	0.0	7.576	A
B-A	35.96	35.96	8.99	0.00	304.73	0.118	35.84	0.1	0.1	13.382	B
C-AB	0.00	0.00	0.00	0.00	1105.79	0.000	0.00	0.0	0.0	0.000	A
C-A	491.74	491.74	122.94	0.00			491.74				
A-B	18.88	18.88	4.72	0.00			18.88				
A-C	304.75	304.75	76.19	0.00			304.75				

Main results: (17:00-17:15)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	13.21	13.21	3.30	0.00	466.13	0.028	13.19	0.0	0.0	7.948	A
B-A	44.04	44.04	11.01	0.00	278.05	0.158	43.83	0.1	0.2	15.356	C
C-AB	0.00	0.00	0.00	0.00	1070.29	0.000	0.00	0.0	0.0	0.000	A
C-A	602.26	602.26	150.56	0.00			602.26				
A-B	23.12	23.12	5.78	0.00			23.12				
A-C	373.25	373.25	93.31	0.00			373.25				

Main results: (17:15-17:30)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	13.21	13.21	3.30	0.00	465.98	0.028	13.21	0.0	0.0	7.950	A
B-A	44.04	44.04	11.01	0.00	278.08	0.158	44.03	0.2	0.2	15.380	C
C-AB	0.00	0.00	0.00	0.00	1070.29	0.000	0.00	0.0	0.0	0.000	A
C-A	602.26	602.26	150.56	0.00			602.26				
A-B	23.12	23.12	5.78	0.00			23.12				
A-C	373.25	373.25	93.31	0.00			373.25				

Main results: (17:30-17:45)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	10.79	10.79	2.70	0.00	485.65	0.022	10.81	0.0	0.0	7.580	A
B-A	35.96	35.96	8.99	0.00	304.79	0.118	36.16	0.2	0.1	13.413	B
C-AB	0.00	0.00	0.00	0.00	1105.79	0.000	0.00	0.0	0.0	0.000	A
C-A	491.74	491.74	122.94	0.00			491.74				
A-B	18.88	18.88	4.72	0.00			18.88				
A-C	304.75	304.75	76.19	0.00			304.75				

Main results: (17:45-18:00)

Stream	Total Demand (Veh/hr)	Junction demand (Veh/hr)	Junction Arrivals (Veh)	Bypass demand (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	Start queue (Veh)	End queue (Veh)	Delay (s)	LOS
B-C	9.03	9.03	2.26	0.00	499.68	0.018	9.05	0.0	0.0	7.339	A
B-A	30.11	30.11	7.53	0.00	324.08	0.093	30.24	0.1	0.1	12.258	B
C-AB	0.00	0.00	0.00	0.00	1131.46	0.000	0.00	0.0	0.0	0.000	A
C-A	411.81	411.81	102.95	0.00			411.81				
A-B	15.81	15.81	3.95	0.00			15.81				
A-C	255.22	255.22	63.80	0.00			255.22				

Annex 6.A.6: Committed Development Traffic Data

A530 north of Site Access

Time	5 Day Average									7 Day Average									Saturday									Sunday								
	Northbound			Southbound			Two Way			Northbound			Southbound			Two Way			Northbound			Southbound			Two Way			Northbound			Southbound			Two Way		
Begin	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's
00.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24 hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Site Access

Time	5 Day Average									7 Day Average									Saturday									Sunday								
	Eastbound			Westbound			Two Way			Eastbound			Westbound			Two Way			Eastbound			Westbound			Two Way			Eastbound			Westbound			Two Way		
Begin	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's
00.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07.00	4	2	2	18	16	2	22	18	4	3	2	1	14	13	1	17	15	2	1	1	0	8	8	0	9	9	0	0	0	0	0	0	0	0	0	0
08.00	5	2	3	5	2	3	10	4	6	4	2	2	4	2	2	8	4	4	1	1	0	1	1	0	2	2	0	0	0	0	0	0	0	0	0	0
09.00	5	2	3	5	2	3	10	4	6	4	2	2	4	2	2	8	4	4	1	1	0	1	1	0	2	2	0	0	0	0	0	0	0	0	0	0
10.00	15	1	14	15	1	14	30	2	28	13	1	12	13	1	12	26	2	24	14	1	13	14	1	13	28	2	26	0	0	0	0	0	0	0	0	0
11.00	14	1	13	14	1	13	28	2	26	12	1	11	12	1	11	24	2	22	12	0	12	12	0	12	24	0	24	0	0	0	0	0	0	0	0	0
12.00	4	1	3	4	1	3	8	2	6	3	1	2	3	1	2	6	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13.00	4	1	3	4	1	3	8	2	6	3	1	2	3	1	2	6	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14.00	14	1	13	14	1	13	28	2	26	10	1	9	10	1	9	20	2	18	1	1	0	1	1	0	2	2	0	0	0	0	0	0	0	0	0	0
15.00	15	1	14	15	1	14	30	2	28	11	1	10	11	1	10	22	2	20	1	1	0	1	1	0	2	2	0	0	0	0	0	0	0	0	0	0
16.00	5	2	3	5	2	3	10	4	6	4	2	2	4	2	2	8	4	4	1	1	0	1	1	0	2	2	0	0	0	0	0	0	0	0	0	0
17.00	5	2	3	5	2	3	10	4	6	4	2	2	4	2	2	8	4	4	1	1	0	1	1	0	2	2	0	0	0	0	0	0	0	0	0	0
18.00	16	16	0	2	2	0	18	18	0	13	13	0	2	2	0	15	15	0	8	8	0	1	1	0	9	9	0	0	0	0	0	0	0	0	0	0
19.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 hr	106	32	74	106	32	74	212	64	148	84	29	55	84	29	55	168	58	110	41	16	25	41	16	25	82	32	50	0	0	0	0	0	0	0	0	0
18 hr	106	32	74	106	32	74	212	64	148	84	29	55	84	29	55	168	58	110	41	16	25	41	16	25	82	32	50	0	0	0	0	0	0	0	0	0
24 hr	106	32	74	106	32	74	212	64	148	84	29	55	84	29	55	168	58	110	41	16	25	41	16	25	82	32	50	0	0	0	0	0	0	0	0	0

A530 south of Site Access

Time	5 Day Average									7 Day Average									Saturday									Sunday								
	Northbound			Southbound			Two Way			Northbound			Southbound			Two Way			Northbound			Southbound			Two Way			Northbound			Southbound			Two Way		
Begin	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's
00.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07.00	18	16	2	4	2	2	22	18	4	14	13	1	3	2	1	17	14	3	8	8	0	1	1	0	9	9	0	0	0	0	0	0	0	0	0	0
08.00	5	2	3	5	2	3	10	4	6	4	2	2	4	2	2	7	3	4	1	1	0	1	1	0	2	2	0	0	0	0	0	0	0	0	0	0
09.00	5	2	3	5	2	3	10	4	6	4	2	2	4	2	2	7	3	4	1	1	0	1	1	0	2	2	0	0	0	0	0	0	0	0	0	0
10.00	15	1	14	15	1	14	30	2	28	13	1	12	13	1	12	25	2	24	14	1	13	14	1	13	28	2	26	0	0	0	0	0	0	0	0	0
11.00	14	1	13	14	1	13	28	2	26	12	1	11	12	1	11	23	1	22	12	0	12	12	0	12	24	0	24	0	0	0	0	0	0	0	0	0
12.00	4	1	3	4	1	3	8	2	6	3	1	2	3	1	2	6	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13.00	4	1	3	4	1	3	8	2	6	3	1	2	3	1	2	6	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14.00	14	1	13	14	1	13	28	2	26	10	1	9	10	1	9	20	2	19	1	1	0	1	1	0	2	2	0	0	0	0	0	0	0	0	0	0
15.00	15	1	14	15	1	14	30	2	28	11	1	10	11	1	10	22	2	20	1	1	0	1	1	0	2	2	0	0	0	0	0	0	0	0	0	0
16.00	5	2	3	5	2	3	10	4	6	4	2	2	4	2	2	7	3	4	1	1	0	1	1	0	2	2	0	0	0	0	0	0	0	0	0	0
17.00	5	2	3	5	2	3	10	4	6	4	2	2	4	2	2	7	3	4	1	1	0	1	1	0	2	2	0	0	0	0	0	0	0	0	0	0
18.00	2	2	0	16	16	0	18	18	0	2	2	0	13	13	0	14	14	0	1	1	0	8	8	0	9	9	0	0	0	0	0	0	0	0	0	0
19.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 hr	106	32	74	106	32	74	212	64	148	82	25	56	82	25	56	163	50	113	41	16	25	41	16	25	82	32	50	0	0	0	0	0	0	0	0	0
18 hr	106	32	74	106	32	74	212	64	148	82	25	56	82	25	56	163	50	113	41	16	25	41	16	25	82	32	50	0	0	0	0	0	0	0	0	0
24 hr	106	32	74	106	32	74	212	64	148	82	25	56	82	25	56	163	50	113	41	16	25	41	16	25	82	32	50	0	0	0	0	0	0	0	0	0

A530 North of A556

	5 Day Average									7 Day Average									Saturday									Sunday								
Time	Northbound			Southbound			Two Way			Northbound			Southbound			Two Way			Northbound			Southbound			Two Way			Northbound			Southbound			Two Way		
Begin	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's
00.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07.00	16	14	2	4	2	2	20	16	4	13	11	1	3	1	1	15	13	3	7	7	0	1	1	0	8	8	0	0	0	0	0	0	0	0	0	0
08.00	5	2	3	5	2	3	9	4	5	3	1	2	3	1	2	7	3	4	1	1	0	1	1	0	2	2	0	0	0	0	0	0	0	0	0	0
09.00	5	2	3	5	2	3	9	4	5	3	1	2	3	1	2	7	3	4	1	1	0	1	1	0	2	2	0	0	0	0	0	0	0	0	0	0
10.00	14	1	13	14	1	13	27	2	25	11	1	11	11	1	11	23	2	21	13	1	12	13	1	12	25	2	23	0	0	0	0	0	0	0	0	0
11.00	13	1	12	13	1	12	25	2	23	11	1	10	11	1	10	21	1	20	11	0	11	11	0	11	22	0	22	0	0	0	0	0	0	0	0	0
12.00	4	1	3	4	1	3	7	2	5	3	1	2	3	1	2	5	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13.00	4	1	3	4	1	3	7	2	5	3	1	2	3	1	2	5	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14.00	13	1	12	13	1	12	25	2	23	9	1	8	9	1	8	18	2	17	1	1	0	1	1	0	2	2	0	0	0	0	0	0	0	0	0	0
15.00	14	1	13	14	1	13	27	2	25	10	1	9	10	1	9	20	2	18	1	1	0	1	1	0	2	2	0	0	0	0	0	0	0	0	0	0
16.00	5	2	3	5	2	3	9	4	5	3	1	2	3	1	2	7	3	4	1	1	0	1	1	0	2	2	0	0	0	0	0	0	0	0	0	0
17.00	5	2	3	5	2	3	9	4	5	3	1	2	3	1	2	7	3	4	1	1	0	1	1	0	2	2	0	0	0	0	0	0	0	0	0	0
18.00	2	2	0	14	14	0	16	16	0	1	1	0	11	11	0	13	13	0	1	1	0	7	7	0	8	8	0	0	0	0	0	0	0	0	0	0
19.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 hr	95	29	67	95	29	67	191	58	133	73	23	51	73	23	51	147	45	102	37	14	23	37	14	23	74	29	45	0	0	0	0	0	0	0	0	0
18 hr	95	29	67	95	29	67	191	58	133	73	23	51	73	23	51	147	45	102	37	14	23	37	14	23	74	29	45	0	0	0	0	0	0	0	0	0
24 hr	95	29	67	95	29	67	191	58	133	73	23	51	73	23	51	147	45	102	37	14	23	37	14	23	74	29	45	0	0	0	0	0	0	0	0	0

A556 east of A530

	5 Day Average									7 Day Average									Saturday									Sunday								
Time	Eastbound			Westbound			Two Way			Eastbound			Westbound			Two Way			Eastbound			Westbound			Two Way			Eastbound			Westbound			Two Way		
Begin	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's
00.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07.00	1	1	1	5	5	1	6	5	1	1	0	0	4	4	0	5	4	1	0	0	0	2	2	0	3	3	0	0	0	0	0	0	0	0	0	0
08.00	1	1	1	1	1	1	3	1	2	1	0	1	1	0	1	2	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
09.00	1	1	1	1	1	1	3	1	2	1	0	1	1	0	1	2	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
10.00	4	0	4	4	0	4	9	1	8	4	0	3	4	0	3	7	0	7	4	0	4	4	0	4	8	1	8	0	0	0	0	0	0	0	0	0
11.00	4	0	4	4	0	4	8	1	8	3	0	3	3	0	3	7	0	6	3	0	3	3	0	3	7	0	7	0	0	0	0	0	0	0	0	0
12.00	1	0	1	1	0	1	2	1	2	1	0	1	1	0	1	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13.00	1	0	1	1	0	1	2	1	2	1	0	1	1	0	1	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14.00	4	0	4	4	0	4	8	1	8	3	0	3	3	0	3	6	0	5	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
15.00	4	0	4	4	0	4	9	1	8	3	0	3	3	0	3	6	0	6	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
16.00	1	1	1	1	1	1	3	1	2	1	0	1	1	0	1	2	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
17.00	1	1	1	1	1	1	3	1	2	1	0	1	1	0	1	2	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
18.00	5	5	0	1	1	0	5	5	0	4	4	0	0	0	0	4	4	0	2	2	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0
19.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 hr	31	9	21	31	9	21	61	19	43	24	7	16	24	7	16	47	15	33	12	5	7	12	5	7	24	9	15	0	0	0	0	0	0	0	0	0
18 hr	31	9	21	31	9	21	61	19	43	24	7	16	24	7	16	47	15	33	12	5	7	12	5	7	24	9	15	0	0	0	0	0	0	0	0	0
24 hr	31	9	21	31	9	21	61	19	43	24	7	16	24	7	16	47	15	33	12	5	7	12	5	7	24	9	15	0	0	0	0	0	0	0	0	0

A530 south of A556

	5 Day Average									7 Day Average									Saturday									Sunday								
Time	Northbound			Southbound			Two Way			Northbound			Southbound			Two Way			Northbound			Southbound			Two Way			Northbound			Southbound			Two Way		
Begin	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's
00.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07.00	5	5	1	1	1	1	6	5	1	4	4	0	1	0	0	5	4	1	2	2	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0
08.00	1	1	1	1	1	1	3	1	2	1	0	1	1	0	1	2	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
09.00	1	1	1	1	1	1	3	1	2	1	0	1	1	0	1	2	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
10.00	4	0	4	4	0	4	9	1	8	4	0	3	4	0	3	7	0	7	4	0	4	4	0	4	8	1	8	0	0	0	0	0	0	0	0	0
11.00	4	0	4	4	0	4	8	1	8	3	0	3	3	0	3	7	0	6	3	0	3	3	0	3	7	0	7	0	0	0	0	0	0	0	0	0
12.00	1	0	1	1	0	1	2	1	2	1	0	1	1	0	1	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13.00	1	0	1	1	0	1	2	1	2	1	0	1	1	0	1	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14.00	4	0	4	4	0	4	8	1	8	3	0	3	3	0	3	6	0	5	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
15.00	4	0	4	4	0	4	9	1	8	3	0	3	3	0	3	6	0	6	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
16.00	1	1	1	1	1	1	3	1	2	1	0	1	1	0	1	2	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
17.00	1	1	1	1	1	1	3	1	2	1	0	1	1	0	1	2	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
18.00	1	1	0	5	5	0	5	5	0	0	0	0	4	4	0	4	4	0	0	0	0	2	2	0	3	3	0	0	0	0	0	0	0	0	0	0
19.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 hr	31	9	21	31	9	21	61	19	43	24	7	16	24	7	16	47	15	33	12	5	7	12	5	7	24	9	15	0	0	0	0	0	0	0	0	0
18 hr	31	9	21	31	9	21	61	19	43	24	7	16	24	7	16	47	15	33	12	5	7	12	5	7	24	9	15	0	0	0	0	0	0	0	0	0
24 hr	31	9	21	31	9	21	61	19	43	24	7	16	24	7	16	47	15	33	12	5	7	12	5	7	24	9	15	0	0	0	0	0	0	0	0	0

A556 west of A530

	5 Day Average									7 Day Average									Saturday									Sunday								
Time	Eastbound			Westbound			Two Way			Eastbound			Westbound			Two Way			Eastbound			Westbound			Two Way			Eastbound			Westbound			Two Way		
Begin	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's
00.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07.00	6	5	1	1	1	1	7	6	1	4	4	0	1	1	0	5	5	1	3	3	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0
08.00	2	1	1	2	1	1	3	1	2	1	1	1	1	1	1	2	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
09.00	2	1	1	2	1	1	3	1	2	1	1	1	1	1	1	2	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
10.00	5	0	4	5	0	4	10	1	9	4	0	4	4	0	4	8	1	8	4	0	4	4	0	4	9	1	8	0	0	0	0	0	0	0	0	0
11.00	4	0	4	4	0	4	9	1	8	4	0	4	4	0	4	7	0	7	4	0	4	4	0	4	8	0	8	0	0	0	0	0	0	0	0	0
12.00	1	0	1	1	0	1	3	1	2	1	0	1	1	0	1	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13.00	1	0	1	1	0	1	3	1	2	1	0	1	1	0	1	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14.00	4	0	4	4	0	4	9	1	8	3	0	3	3	0	3	6	1	6	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
15.00	5	0	4	5	0	4	10	1	9	3	0	3	3	0	3	7	1	6	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
16.00	2	1	1	2	1	1	3	1	2	1	1	1	1	1	1	2	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
17.00	2	1	1	2	1	1	3	1	2	1	1	1	1	1	1	2	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
18.00	1	1	0	5	5	0	6	6	0	1	1	0	4	4	0	5	5	0	0	0	0	3	3	0	3	3	0	0	0	0	0	0	0	0	0	0
19.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 hr	34	10	24	34	10	24	68	20	47	26	8	18	26	8	18	52	16	36	13	5	8	13	5	8	26	10	16	0	0	0	0	0	0	0	0	0
18 hr	34	10	24	34	10	24	68	20	47	26	8	18	26	8	18	52	16	36	13	5	8	13	5	8	26	10	16	0	0	0	0	0	0	0	0	0
24 hr	34	10	24	34	10	24	68	20	47	26	8	18	26	8	18	52	16	36	13	5	8	13	5	8	26	10	16	0	0	0	0	0	0	0	0	0

A530 north of Site Access																																				
	5 Day Average									7 Day Average									Saturday									Sunday								
Time	Northbound			Southbound			Two Way			Northbound			Southbound			Two Way			Northbound			Southbound			Two Way			Northbound			Southbound			Two Way		
Begin	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's
00.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18 hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24 hr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Site Access																																				
	5 Day Average									7 Day Average									Saturday									Sunday								
Time	Eastbound			Westbound			Two Way			Eastbound			Westbound			Two Way			Eastbound			Westbound			Two Way			Eastbound			Westbound			Two Way		
Begin	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's
00.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06.00	0	0	0	11	11	0	11	11	0	0	0	0	11	11	0	11	11	0	0	0	0	11	11	0	11	11	0	0	0	0	11	11	0	11	11	0
07.00	4	0	4	4	0	4	8	0	8	4	0	4	4	0	4	8	0	8	3	0	3	3	0	3	6	0	6	3	0	3	3	0	3	6	0	6
08.00	5	0	5	5	0	5	10	0	10	4	0	4	4	0	4	8	0	8	3	0	3	3	0	3	6	0	6	3	0	3	3	0	3	6	0	6
09.00	4	0	4	4	0	4	8	0	8	4	0	4	4	0	4	8	0	8	3	0	3	3	0	3	6	0	6	3	0	3	3	0	3	6	0	6
10.00	4	0	4	4	0	4	8	0	8	4	0	4	4	0	4	8	0	8	3	0	3	3	0	3	6	0	6	3	0	3	3	0	3	6	0	6
11.00	4	0	4	4	0	4	8	0	8	4	0	4	4	0	4	8	0	8	3	0	3	3	0	3	6	0	6	3	0	3	3	0	3	6	0	6
12.00	4	0	4	4	0	4	8	0	8	4	0	4	4	0	4	8	0	8	3	0	3	3	0	3	6	0	6	3	0	3	3	0	3	6	0	6
13.00	4	0	4	4	0	4	8	0	8	4	0	4	4	0	4	8	0	8	3	0	3	3	0	3	6	0	6	3	0	3	3	0	3	6	0	6
14.00	4	0	4	4	0	4	8	0	8	4	0	4	4	0	4	8	0	8	3	0	3	3	0	3	6	0	6	3	0	3	3	0	3	6	0	6
15.00	4	0	4	4	0	4	8	0	8	3	0	3	3	0	3	6	0	6	2	0	2	2	0	2	4	0	4	2	0	2	2	0	2	4	0	4
16.00	4	0	4	4	0	4	8	0	8	4	0	4	4	0	4	8	0	8	3	0	3	3	0	3	6	0	6	3	0	3	3	0	3	6	0	6
17.00	5	0	5	5	0	5	10	0	10	4	0	4	4	0	4	8	0	8	3	0	3	3	0	3	6	0	6	3	0	3	3	0	3	6	0	6
18.00	4	0	4	4	0	4	8	0	8	4	0	4	4	0	4	8	0	8	3	0	3	3	0	3	6	0	6	3	0	3	3	0	3	6	0	6
19.00	11	11	0	0	0	0	11	11	0	11	11	0	0	0	0	11	11	0	11	11	0	0	0	0	11	11	0	11	11	0	0	0	0	11	11	0
20.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 hr	50	0	50	50	0	50	100	0	100	47	0	47	47	0	47	94	0	94	35	0	35	35	0	35	70	0	70	35	0	35	35	0	35	70	0	70
18 hr	61	11	50	61	11	50	122	22	100	58	11	47	58	11	47	116	22	94	46	11	35	46	11	35	92	22	70	46	11	35	46	11	35	92	22	70
24 hr	61	11	50	61	11	50	122	22	100	58	11	47	58	11	47	116	22	94	46	11	35	46	11	35	92	22	70	46	11	35	46	11	35	92	22	70

A530 south of Site Access

	5 Day Average									7 Day Average									Saturday									Sunday								
Time	Northbound			Southbound			Two Way			Northbound			Southbound			Two Way			Northbound			Southbound			Two Way			Northbound			Southbound			Two Way		
Begin	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's
00.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06.00	11	11	0	0	0	0	11	11	0	11	11	0	0	0	0	11	11	0	11	11	0	0	0	0	11	11	0	11	11	0	0	0	0	11	11	0
07.00	4	0	4	4	0	4	8	0	8	4	0	4	4	0	4	7	0	7	3	0	3	3	0	3	6	0	6	3	0	3	3	0	3	6	0	6
08.00	5	0	5	5	0	5	10	0	10	4	0	4	4	0	4	9	0	9	3	0	3	3	0	3	6	0	6	3	0	3	3	0	3	6	0	6
09.00	4	0	4	4	0	4	8	0	8	4	0	4	4	0	4	7	0	7	3	0	3	3	0	3	6	0	6	3	0	3	3	0	3	6	0	6
10.00	4	0	4	4	0	4	8	0	8	4	0	4	4	0	4	7	0	7	3	0	3	3	0	3	6	0	6	3	0	3	3	0	3	6	0	6
11.00	4	0	4	4	0	4	8	0	8	4	0	4	4	0	4	7	0	7	3	0	3	3	0	3	6	0	6	3	0	3	3	0	3	6	0	6
12.00	4	0	4	4	0	4	8	0	8	4	0	4	4	0	4	7	0	7	3	0	3	3	0	3	6	0	6	3	0	3	3	0	3	6	0	6
13.00	4	0	4	4	0	4	8	0	8	4	0	4	4	0	4	7	0	7	3	0	3	3	0	3	6	0	6	3	0	3	3	0	3	6	0	6
14.00	4	0	4	4	0	4	8	0	8	4	0	4	4	0	4	7	0	7	3	0	3	3	0	3	6	0	6	3	0	3	3	0	3	6	0	6
15.00	4	0	4	4	0	4	8	0	8	3	0	3	3	0	3	7	0	7	2	0	2	2	0	2	4	0	4	2	0	2	2	0	2	4	0	4
16.00	4	0	4	4	0	4	8	0	8	4	0	4	4	0	4	7	0	7	3	0	3	3	0	3	6	0	6	3	0	3	3	0	3	6	0	6
17.00	5	0	5	5	0	5	10	0	10	4	0	4	4	0	4	9	0	9	3	0	3	3	0	3	6	0	6	3	0	3	3	0	3	6	0	6
18.00	4	0	4	4	0	4	8	0	8	4	0	4	4	0	4	7	0	7	3	0	3	3	0	3	6	0	6	3	0	3	3	0	3	6	0	6
19.00	0	0	0	11	11	0	11	11	0	0	0	0	11	11	0	11	11	0	0	0	0	11	11	0	11	11	0	0	0	0	11	11	0	11	11	0
20.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 hr	50	0	50	50	0	50	100	0	100	46	0	46	46	0	46	91	0	91	35	0	35	35	0	35	70	0	70	35	0	35	35	0	35	70	0	70
18 hr	61	11	50	61	11	50	122	22	100	57	11	46	57	11	46	113	22	91	46	11	35	46	11	35	92	22	70	46	11	35	46	11	35	92	22	70
24 hr	61	11	50	61	11	50	122	22	100	57	11	46	57	11	46	113	22	91	46	11	35	46	11	35	92	22	70	46	11	35	46	11	35	92	22	70

A530 North of A556

	5 Day Average									7 Day Average									Saturday									Sunday								
Time	Northbound			Southbound			Two Way			Northbound			Southbound			Two Way			Northbound			Southbound			Two Way			Northbound			Southbound			Two Way		
Begin	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's
00.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06.00	10	10	0	0	0	0	10	10	0	10	10	0	0	0	0	10	10	0	10	10	0	0	0	0	10	10	0	10	10	0	0	0	0	10	10	0
07.00	4	0	4	4	0	4	7	0	7	3	0	3	3	0	3	7	0	7	3	0	3	3	0	3	5	0	5	3	0	3	3	0	3	5	0	5
08.00	5	0	5	5	0	5	9	0	9	4	0	4	4	0	4	8	0	8	3	0	3	3	0	3	5	0	5	3	0	3	3	0	3	5	0	5
09.00	4	0	4	4	0	4	7	0	7	3	0	3	3	0	3	7	0	7	3	0	3	3	0	3	5	0	5	3	0	3	3	0	3	5	0	5
10.00	4	0	4	4	0	4	7	0	7	3	0	3	3	0	3	7	0	7	3	0	3	3	0	3	5	0	5	3	0	3	3	0	3	5	0	5
11.00	4	0	4	4	0	4	7	0	7	3	0	3	3	0	3	7	0	7	3	0	3	3	0	3	5	0	5	3	0	3	3	0	3	5	0	5
12.00	4	0	4	4	0	4	7	0	7	3	0	3	3	0	3	7	0	7	3	0	3	3	0	3	5	0	5	3	0	3	3	0	3	5	0	5
13.00	4	0	4	4	0	4	7	0	7	3	0	3	3	0	3	7	0	7	3	0	3	3	0	3	5	0	5	3	0	3	3	0	3	5	0	5
14.00	4	0	4	4	0	4	7	0	7	3	0	3	3	0	3	7	0	7	3	0	3	3	0	3	5	0	5	3	0	3	3	0	3	5	0	5
15.00	4	0	4	4	0	4	7	0	7	3	0	3	3	0	3	6	0	6	2	0	2	2	0	2	4	0	4	2	0	2	2	0	2	4	0	4
16.00	4	0	4	4	0	4	7	0	7	3	0	3	3	0	3	7	0	7	3	0	3	3	0	3	5	0	5	3	0	3	3	0	3	5	0	5
17.00	5	0	5	5	0	5	9	0	9	4	0	4	4	0	4	8	0	8	3	0	3	3	0	3	5	0	5	3	0	3	3	0	3	5	0	5
18.00	4	0	4	4	0	4	7	0	7	3	0	3	3	0	3	7	0	7	3	0	3	3	0	3	5	0	5	3	0	3	3	0	3	5	0	5
19.00	0	0	0	10	10	0	10	10	0	0	0	0	10	10	0	10	10	0	0	0	0	10	10	0	10	10	0	0	0	0	10	10	0	10	10	0
20.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 hr	45	0	45	45	0	45	90	0	90	41	0	41	41	0	41	82	0	82	32	0	32	32	0	32	63	0	63	32	0	32	32	0	32	63	0	63
18 hr	55	10	45	55	10	45	110	20	90	51	10	41	51	10	41	102	20	82	41	10	32	41	10	32	83	20	63	41	10	32	41	10	32	83	20	63
24 hr	55	10	45	55	10	45	110	20	90	51	10	41	51	10	41	102	20	82	41	10	32	41	10	32	83	20	63	41	10	32	41	10	32	83	20	63

A556 east of A530

	5 Day Average									7 Day Average									Saturday									Sunday								
Time	Eastbound			Westbound			Two Way			Eastbound			Westbound			Two Way			Eastbound			Westbound			Two Way			Eastbound			Westbound			Two Way		
Begin	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's
00.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06.00	0	0	0	3	3	0	3	3	0	0	0	0	3	3	0	3	3	0	0	0	0	3	3	0	3	3	0	0	0	0	3	3	0	3	3	0
07.00	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
08.00	1	0	1	1	0	1	3	0	3	1	0	1	1	0	1	3	0	3	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
09.00	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
10.00	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
11.00	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
12.00	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
13.00	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
14.00	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
15.00	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1
16.00	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
17.00	1	0	1	1	0	1	3	0	3	1	0	1	1	0	1	3	0	3	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
18.00	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
19.00	3	3	0	0	0	0	3	3	0	3	3	0	0	0	0	3	3	0	3	3	0	0	0	0	3	3	0	3	3	0	0	0	0	3	3	0
20.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 hr	15	0	15	15	0	15	29	0	29	13	0	13	13	0	13	27	0	27	10	0	10	10	0	10	20	0	20	10	0	10	10	0	10	20	0	20
18 hr	18	3	15	18	3	15	35	6	29	16	3	13	16	3	13	33	6	27	13	3	10	13	3	10	27	6	20	13	3	10	13	3	10	27	6	20
24 hr	18	3	15	18	3	15	35	6	29	16	3	13	16	3	13	33	6	27	13	3	10	13	3	10	27	6	20	13	3	10	13	3	10	27	6	20

A530 south of A556

Time	5 Day Average									7 Day Average									Saturday									Sunday								
	Northbound			Southbound			Two Way			Northbound			Southbound			Two Way			Northbound			Southbound			Two Way			Northbound			Southbound			Two Way		
Begin	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's
00.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06.00	3	3	0	0	0	0	3	3	0	3	3	0	0	0	0	3	3	0	3	3	0	0	0	0	3	3	0	3	3	0	0	0	0	3	3	0
07.00	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
08.00	1	0	1	1	0	1	3	0	3	1	0	1	1	0	1	3	0	3	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
09.00	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
10.00	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
11.00	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
12.00	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
13.00	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
14.00	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
15.00	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1
16.00	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
17.00	1	0	1	1	0	1	3	0	3	1	0	1	1	0	1	3	0	3	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
18.00	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
19.00	0	0	0	3	3	0	3	3	0	0	0	0	3	3	0	3	3	0	0	0	0	3	3	0	3	3	0	0	0	0	3	3	0	3	3	0
20.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 hr	15	0	15	15	0	15	29	0	29	13	0	13	13	0	13	27	0	27	10	0	10	10	0	10	20	0	20	10	0	10	10	0	10	20	0	20
18 hr	18	3	15	18	3	15	35	6	29	16	3	13	16	3	13	33	6	27	13	3	10	13	3	10	27	6	20	13	3	10	13	3	10	27	6	20
24 hr	18	3	15	18	3	15	35	6	29	16	3	13	16	3	13	33	6	27	13	3	10	13	3	10	27	6	20	13	3	10	13	3	10	27	6	20

A556 west of A530

Time	5 Day Average									7 Day Average									Saturday									Sunday								
	Eastbound			Westbound			Two Way			Eastbound			Westbound			Two Way			Eastbound			Westbound			Two Way			Eastbound			Westbound			Two Way		
Begin	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's	Total	Lights	HGV's
00.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06.00	4	4	0	0	0	0	4	4	0	4	4	0	0	0	0	4	4	0	4	4	0	0	0	0	4	4	0	4	4	0	0	0	0	4	4	0
07.00	1	0	1	1	0	1	3	0	3	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
08.00	2	0	2	2	0	2	3	0	3	1	0	1	1	0	1	3	0	3	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
09.00	1	0	1	1	0	1	3	0	3	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
10.00	1	0	1	1	0	1	3	0	3	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
11.00	1	0	1	1	0	1	3	0	3	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
12.00	1	0	1	1	0	1	3	0	3	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
13.00	1	0	1	1	0	1	3	0	3	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
14.00	1	0	1	1	0	1	3	0	3	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
15.00	1	0	1	1	0	1	3	0	3	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0	1
16.00	1	0	1	1	0	1	3	0	3	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
17.00	2	0	2	2	0	2	3	0	3	1	0	1	1	0	1	3	0	3	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
18.00	1	0	1	1	0	1	3	0	3	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2	1	0	1	1	0	1	2	0	2
19.00	0	0	0	4	4	0	4	4	0	0	0	0	4	4	0	4	4	0	0	0	0	4	4	0	4	4	0	0	0	0	4	4	0	4	4	0
20.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12 hr	16	0	16	16	0	16	32	0	32	15	0	15	15	0	15	29	0	29	11	0	11	11	0	11	22	0	22	11	0	11	11	0	11	22	0	22
18 hr	20	4	16	20	4	16	39	7	32	18	4	15	18	4	15	36	7	29	15	4	11	15	4	11	29	7	22	15	4	11	15	4	11	29	7	22
24 hr	20	4	16	20	4	16	39	7	32	18	4	15	18	4	15	36	7	29	15	4	11	15	4	11	29	7	22	15	4	11	15	4	11	29	7	22

Weekday

TIME PERIOD		Link 2	Link 3	Link 4	Link 5			Link 6			Link 7		
		Site Access	Griffiths Rd (	A530 (N)	A556 e			A530 (s)			A556 (w)		
	Two Way				EB	WB	Two Way	NB	SB	two way	EB	WB	Two Way
Total (24h)	86	n/a	86	251	53	52	105	26	29	56	45	46	91
00:00	0		0	1	0	0	0	0	0	0	0	0	0
01:00	0		0	1	0	0	0	0	0	0	0	0	0
02:00	0		0	1	0	0	0	0	0	0	0	0	0
03:00	0		0	1	0	0	0	0	0	0	0	0	0
04:00	0		0	1	0	0	0	0	0	0	0	0	0
05:00	1		1	4	1	1	2	0	0	1	1	1	1
06:00	2		2	7	2	1	3	1	1	2	1	1	3
07:00	5		5	16	3	3	7	2	2	4	3	3	6
08:00	7		7	19	4	4	8	2	2	4	3	3	7
09:00	6		6	16	3	3	7	2	2	4	3	3	6
10:00	5		5	15	3	3	6	2	2	3	3	3	5
11:00	5		5	15	3	3	6	2	2	3	3	3	5
12:00	6		6	16	3	3	7	2	2	4	3	3	6
13:00	6		6	16	3	3	7	2	2	4	3	3	6
14:00	6		6	17	4	3	7	2	2	4	3	3	6
15:00	7		7	18	4	4	7	2	2	4	3	3	6
16:00	8		8	20	4	4	8	2	2	5	4	4	7
17:00	8		8	22	5	5	9	2	3	5	4	4	8
18:00	6		6	17	4	4	7	2	2	4	3	3	6
19:00	4		4	11	2	2	5	1	1	2	2	2	4
20:00	2		2	7	1	1	3	1	1	2	1	1	2
21:00	1		1	5	1	1	2	1	1	1	1	1	2
22:00	1		1	4	1	1	2	0	0	1	1	1	1
23:00	0		0	2	0	0	1	0	0	0	0	0	1
24 H	86		86	251	53	52	105	26	29	56	45	46	91

7 day average

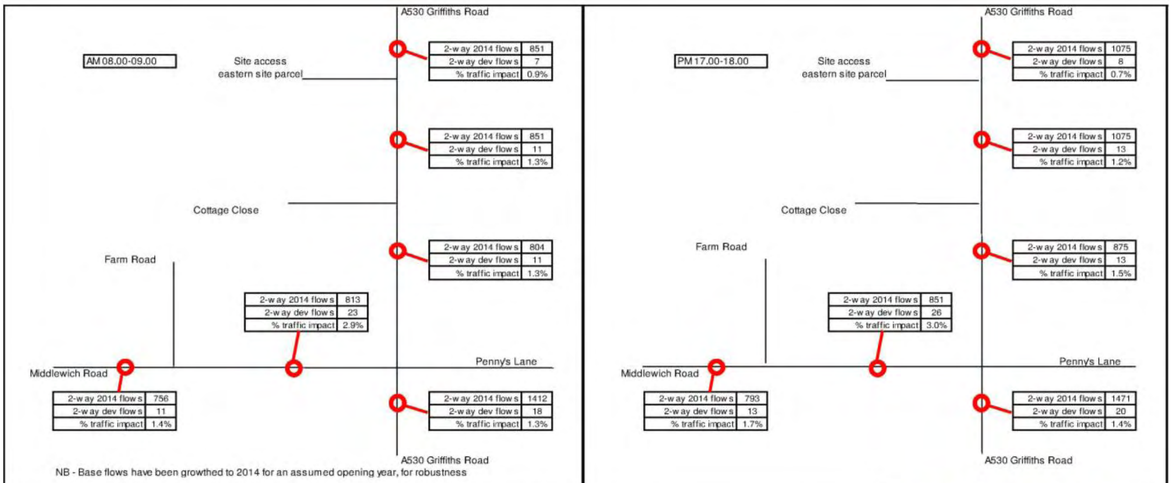
TIME PERIOD	Link 1	Link 2	Link 3	Link 4	Link 5			Link 6			Link 7		
	Griffiths Rd (	Site Access	Griffiths Rd (	A530 (N)	A556 e			A530 (s)			A556 (w)		
					EB	WB	Two Way	NB	SB	two way	EB	WB	Two Way
Total (24h)	78	0	77	228	45	46	90	26	29	55	37	37	75
00:00	0		0	1	0	0	0	0	0	0	0	0	0
01:00	0		0	1	0	0	0	0	0	0	0	0	0
02:00	0		0	1	0	0	0	0	0	0	0	0	0
03:00	0		0	1	0	0	0	0	0	0	0	0	0
04:00	0		0	1	0	0	0	0	0	0	0	0	0
05:00	1		1	3	1	1	1	0	0	1	1	1	1
06:00	2		2	6	1	1	2	1	1	1	1	1	2
07:00	4		4	12	3	3	5	1	2	3	2	2	4
08:00	5		5	15	3	3	6	2	2	4	3	3	5
09:00	5		5	14	3	3	6	2	2	3	2	2	5
10:00	5		5	14	3	3	6	2	2	3	2	2	5
11:00	5		5	15	3	3	6	2	2	4	2	2	5
12:00	6		6	16	3	3	6	2	2	4	3	3	5
13:00	6		6	16	3	3	6	2	2	4	3	3	5
14:00	6		6	16	3	3	6	2	2	4	3	3	5
15:00	6		6	17	3	3	7	2	2	4	3	3	6
16:00	7		7	18	4	4	7	2	2	4	3	3	6
17:00	7		7	19	4	4	8	2	2	5	3	3	6
18:00	5		5	15	3	3	6	2	2	4	3	3	5
19:00	3		3	10	2	2	4	1	1	2	2	2	3
20:00	2		2	6	1	1	2	1	1	2	1	1	2
21:00	1		1	5	1	1	2	1	1	1	1	1	2
22:00	1		1	3	1	1	1	0	0	1	1	1	1
23:00	0		0	2	0	0	1	0	0	0	0	0	1
24 H	78		77	228	45	46	90	25	30	55	38	37	75

Saturday

TIME PERIOD	Link 1	Link 2	Link 3	Link 4	Link 5			Link 6			Link 7		
	Griffiths Rd (	Site Access	Griffiths Rd (	A530 (N)	A556 e			A530 (s)			A556 (w)		
					EB	WB	Two Way	NB	SB	two way	EB	WB	Two Way
Total (24h)	65	n/a	64	192	39	38	77	20	22	42	8	8	16
00:00	0		0	1	0	0	0	0	0	0	0	0	0
01:00	0		0	1	0	0	0	0	0	0	0	0	0
02:00	0		0	1	0	0	0	0	0	0	0	0	0
03:00	0		0	1	0	0	0	0	0	0	0	0	0
04:00	0		0	1	0	0	0	0	0	0	0	0	0
05:00	1		1	3	1	1	1	0	0	1	0	0	0
06:00	1		1	3	1	1	1	0	0	1	0	0	0
07:00	1		1	5	1	1	2	1	1	1	0	0	0
08:00	3		3	8	2	2	3	1	1	2	0	0	1
09:00	4		4	11	2	2	4	1	1	2	0	0	1
10:00	6		5	14	3	3	6	2	2	3	1	1	1
11:00	6		6	18	4	4	7	2	2	4	1	1	1
12:00	7		7	19	4	4	8	2	2	4	1	1	2
13:00	6		6	16	3	3	7	2	2	4	1	1	1
14:00	6		6	14	3	3	5	1	2	3	1	1	1
15:00	6		5	15	3	3	6	2	2	3	1	1	1
16:00	5		5	15	3	3	6	2	2	3	1	1	1
17:00	4		4	13	3	3	5	1	2	3	1	1	1
18:00	3		3	11	2	2	4	1	1	2	0	0	1
19:00	3		3	8	2	1	3	1	1	2	0	0	1
20:00	2		2	5	1	1	2	1	1	1	0	0	0
21:00	1		1	4	1	1	1	0	0	1	0	0	0
22:00	1		1	3	1	1	1	0	0	1	0	0	0
23:00	1		1	3	1	1	1	0	0	1	0	0	0
24 H	65		64	192	39	38	77	20	22	42	8	8	16

Sunday

	Link 1	Link 2	Link 3	Link 4	Link 5			Link 6			Link 7		
TIME PERIOD	Griffiths Rd ((	Site Access	Griffiths Rd ((	A530 (N)	A556 e			A530 (s)			A556 (w)		
					EB	WB	Two Way	NB	SB	two way	EB	WB	Two Way
Total (24h)	49	n/a	48	150	12	20	32	23	42	65	29	24	53
00:00	0		0	2	0	0	0	0	1	1	0	0	1
01:00	0		0	1	0	0	0	0	0	0	0	0	0
02:00	0		0	1	0	0	0	0	0	0	0	0	0
03:00	0		0	0	0	0	0	0	0	0	0	0	0
04:00	0		0	1	0	0	0	0	0	0	0	0	0
05:00	0		0	2	0	0	0	0	0	1	0	0	1
06:00	0		1	2	0	0	0	0	0	1	0	0	1
07:00	1		1	3	0	0	1	0	1	1	1	0	1
08:00	1		1	3	0	0	1	1	1	1	1	1	1
09:00	2		2	7	1	1	1	1	2	3	1	1	2
10:00	4		4	11	1	1	2	2	3	5	2	2	4
11:00	4		4	12	1	2	3	2	3	5	2	2	4
12:00	5		5	14	1	2	3	2	4	6	3	2	5
13:00	5		5	14	1	2	3	2	4	6	3	2	5
14:00	5		5	14	1	2	3	2	4	6	3	2	5
15:00	5		5	14	1	2	3	2	4	6	3	2	5
16:00	4		4	12	1	2	3	2	3	5	2	2	4
17:00	3		3	10	1	1	2	2	3	4	2	2	3
18:00	3		3	9	1	1	2	1	2	4	2	1	3
19:00	2		2	7	1	1	1	1	2	3	1	1	2
20:00	2		1	5	0	1	1	1	1	2	1	1	2
21:00	1		1	3	0	0	1	1	1	1	1	1	1
22:00	1		1	3	0	0	1	0	1	1	0	0	1
23:00	0		0	1	0	0	0	0	0	0	0	0	0
24 H	49		48	150	12	20	32	23	42	65	29	24	53



Drawing No. APPENDIX 7	Drawing Title PERCENTAGE TRAFFIC IMPACT OF DEVELOPMENT
Date MAY 2012	Project Title PROPOSED RESIDENTIAL DEVELOPMENT, FARM ROAD / GRIFFITHS ROAD, RUDHEATH

SCP Transportation Planning : Infrastructure Design

Distribution

A556 East	20%
A556 West	40%
Gadbrook Road North	20%
A530 South	20%

Links

1	A530 north of Site Access	0%
2	Site Access f Site Access	0%
3	A530 North of Middlewich Road	0%
4	A530 North of A556	0%
5	A530 south of A556	0%
6	A556 east of A530	20%
7	A556 west of A530	20%

Link to the east of Gadbrook Park

5 day Weekday

	Link 1	Link 2	Link 3	Link 4	Link 6			Link 5			Link 7		
	Griffiths Rd (n)	Site Access	ns Rd (south	A530 (N)	A556 e			A530 (s)			A556 (w)		
					EB	WB	Two Way	NB	SB	two way	EB	WB	Two Way
	0%	0%	0%	0%	20%			0%			20%		
00:00					0	0	0				0	0	0
01:00					0	0	0				0	0	0
02:00					0	0	0				0	0	0
03:00					0	0	0				0	0	0
04:00					0	0	0				0	0	0
05:00					0	0	0				0	0	0
06:00					0	1	1				0	1	1
07:00					0	3	4				0	3	4
08:00					1	7	8				1	7	8
09:00					1	4	5				1	4	5
10:00					1	2	3				1	2	3
11:00					1	1	2				1	1	2
12:00					2	1	4				2	1	4
13:00					2	2	3				2	2	3
14:00					1	1	3				1	1	3
15:00					2	1	3				2	1	3
16:00					5	1	6				5	1	6
17:00					6	1	7				6	1	7
18:00					2	0	2				2	0	2
19:00					0	0	0				0	0	0
20:00					0	0	0				0	0	0
21:00					0	0	0				0	0	0
22:00					0	0	0				0	0	0
23:00					0	0	0				0	0	0
24 H					24	26	50				24	26	50

7 day Average

	Link 1	Link 2	Link 3	Link 4	Link 5			Link 6			Link 7		
	Griffiths Rd (n)	Site Access	ns Rd (south	A530 (N)	A556 e			A530 (s)			A556 (w)		
					EB	WB	Two Way	NB	SB	two way	EB	WB	Two Way
	0%	0%	0%	0%	20%			0%			20%		
00:00					0	0	0				0	0	0
01:00					0	0	0				0	0	0
02:00					0	0	0				0	0	0
03:00					0	0	0				0	0	0
04:00					0	0	0				0	0	0
05:00					0	0	0				0	0	0
06:00					0	1	1				0	1	1
07:00					0	3	4				0	3	4
08:00					1	7	8				1	7	8
09:00					1	4	5				1	4	5
10:00					1	2	3				1	2	3
11:00					1	1	2				1	1	2
12:00					2	1	4				2	1	4
13:00					2	2	3				2	2	3
14:00					1	1	3				1	1	3
15:00					2	1	3				2	1	3
16:00					5	1	6				5	1	6
17:00					6	1	7				6	1	7
18:00					2	0	2				2	0	2
19:00					0	0	0				0	0	0
20:00					0	0	0				0	0	0
21:00					0	0	0				0	0	0
22:00					0	0	0				0	0	0
23:00					0	0	0				0	0	0
24 H					24	26	50				24	26	50

Saturday

	Link 1	Link 2	Link 3	Link 4	Link 5			Link 6			Link 7		
	Griffiths Rd (n)	Site Access	ıs Rd (south	A530 (N)	A556 e			A530 (s)			A556 (w)		
					EB	WB	Two Way	NB	SB	two way	EB	WB	Two Way
	0%	0%	0%	0%	20%			0%			20%		
00:00					0	0	0						0
01:00					0	0	0						0
02:00					0	0	0						0
03:00					0	0	0						0
04:00					0	0	0						0
05:00					0	0	0						0
06:00					0	0	0						0
07:00					0	0	0						0
08:00					0	0	0						0
09:00					0	0	0						0
10:00					0	0	0						0
11:00					0	0	0						0
12:00					0	0	0						0
13:00					0	0	0						0
14:00					0	0	0						0
15:00					0	0	0						0
16:00					0	0	0						0
17:00					0	0	0						0
18:00					0	0	0						0
19:00					0	0	0						0
20:00					0	0	0						0
21:00					0	0	0						0
22:00					0	0	0						0
23:00					0	0	0						0
24 H					0	0	0						0

Sunday

	Link 1	Link 2	Link 3	Link 4	Link 5			Link 6			Link 7		
	Griffiths Rd (n)	Site Access	ıs Rd (south	A530 (N)	A556 e			A530 (s)			A556 (w)		
					EB	WB	Two Way	NB	SB	two way	EB	WB	Two Way
	0%	0%	0%	0%	20%			0%			20%		
00:00							0						0
01:00							0						0
02:00							0						0
03:00							0						0
04:00							0						0
05:00							0						0
06:00							0						0
07:00							0						0
08:00							0						0
09:00							0						0
10:00							0						0
11:00							0						0
12:00							0						0
13:00							0						0
14:00							0						0
15:00							0						0
16:00							0						0
17:00							0						0
18:00							0						0
19:00							0						0
20:00							0						0
21:00							0						0
22:00							0						0
23:00							0						0
24 H							0						0

	5 day Average Weekday												
	Link 1	Link 2	Link 3	Link 4	Link 5			Link 6			Link 7		
TIME PERIOD	Griffiths Rd (	Site Access	Griffiths Rd (	A530 (N)	A556 e			A530 (s)			A556 (w)		
					EB	WB	Two Way	NB	SB	two way	EB	WB	Two Way
Total (24h)	177	n/a	177	680	142	141	283	80	72	151	122	123	245
00:00	0		0	2	1	1	1	0	0	1	1	1	1
01:00	0		0	1	0	0	1	0	0	1	0	0	1
02:00	0		0	2	0	0	1	0	0	1	0	0	1
03:00	0		0	2	0	0	1	1	0	1	0	0	1
04:00	1		1	3	1	1	2	1	1	1	1	1	1
05:00	2		2	10	2	2	4	2	2	4	2	2	4
06:00	4		4	19	5	5	11	3	3	6	4	4	8
07:00	10		10	43	12	12	24	6	6	12	10	10	20
08:00	14		14	52	13	13	26	6	5	11	12	12	24
09:00	11		12	44	9	9	18	5	4	9	8	8	17
10:00	10		10	40	7	7	14	4	4	8	6	6	12
11:00	10		10	40	7	7	14	4	3	7	6	6	12
12:00	12		12	44	7	7	15	4	4	8	6	7	13
13:00	12		12	44	7	7	15	4	4	8	6	6	12
14:00	12		12	45	8	8	16	5	5	10	7	7	13
15:00	14		14	49	10	10	19	5	5	10	8	8	16
16:00	16		16	55	12	12	24	7	6	13	10	10	20
17:00	17		17	60	13	13	26	7	7	14	11	11	22
18:00	13		12	47	10	10	21	6	5	11	9	9	18
19:00	8		8	30	6	6	12	3	3	6	5	5	11
20:00	4		4	19	4	4	7	2	2	4	3	3	7
21:00	3		3	14	3	3	5	2	1	3	3	3	5
22:00	2		2	10	2	2	4	1	1	2	2	2	4
23:00	1		1	5	1	1	3	1	1	1	1	1	2
24 H (check)	177		177	680	142	141	283	80	72	151	122	123	245

	7 day Average												
	Link 1	Link 2	Link 3	Link 4	Link 5			Link 6			Link 7		
TIME PERIOD	Griffiths Rd (	Site Access	Griffiths Rd (	A530 (N)	A556 e			A530 (s)			A556 (w)		
					EB	WB	Two Way	NB	SB	two way	EB	WB	Two Way
Total (24h)	160		160	563	110	112	222	68	70	137	99	98	197
00:00	1		1	2	0	1	1	0	1	1	0	0	1
01:00	0		0	1	0	0	1	0	0	1	0	0	1
02:00	0		0	2	0	0	1	0	0	1	0	0	1
03:00	0		0	1	0	0	1	0	0	1	0	0	1
04:00	1		1	3	1	1	1	1	1	1	1	1	1
05:00	2		2	8	2	2	3	2	2	3	1	1	3
06:00	3		3	15	4	4	8	2	2	5	3	3	6
07:00	8		8	32	9	9	17	5	4	9	7	7	14
08:00	11		11	39	10	10	19	5	4	9	9	9	17
09:00	10		10	35	7	7	14	4	4	8	6	6	13
10:00	10		10	34	6	6	12	4	4	7	5	5	10
11:00	10		10	35	6	6	12	4	4	7	5	5	10
12:00	12		12	39	6	6	12	4	5	9	6	6	11
13:00	12		12	39	6	6	12	4	5	9	6	5	11
14:00	12		12	39	7	7	13	5	5	10	6	6	12
15:00	13		13	42	8	8	15	5	5	10	7	7	13
16:00	14		14	45	9	9	19	6	6	11	8	8	16
17:00	14		14	48	10	10	20	6	6	12	9	9	17
18:00	11		11	38	8	8	16	5	5	9	7	7	14
19:00	7		7	25	5	5	9	3	3	6	4	4	9
20:00	4		4	16	3	3	6	2	2	3	3	3	5
21:00	3		3	11	2	2	4	1	1	3	2	2	4
22:00	2		2	8	2	2	4	1	1	2	2	2	3
23:00	1		1	4	1	1	2	1	1	1	1	1	2
24 H (check)	160		160	563	110	112	222	68	70	137	99	98	197

	Saturday												
	Link 1	Link 2	Link 3	Link 4	Link 5			Link 6			Link 7		
TIME PERIOD	Griffiths Rd (	Site Access	Griffiths Rd (	A530 (N)	A556 e			A530 (s)			A556 (w)		
					EB	WB	Two Way	NB	SB	two way	EB	WB	Two Way
Total (24h)	135	n/a	133	133	27	26	53	14	15	29	6	5	11
00:00	1		1	1	0	0	1	0	0	0	0	0	0
01:00	0		0	1	0	0	0	0	0	0	0	0	0
02:00	0		0	0	0	0	0	0	0	0	0	0	0
03:00	0		0	0	0	0	0	0	0	0	0	0	0
04:00	0		1	1	0	0	0	0	0	0	0	0	0
05:00	1		1	2	0	0	1	0	0	1	0	0	0
06:00	1		2	2	0	0	1	0	0	1	0	0	0
07:00	3		3	4	1	1	2	1	1	1	0	0	0
08:00	6		6	5	1	1	3	1	1	2	0	0	1
09:00	8		8	8	2	2	3	1	1	2	0	0	1
10:00	12		11	10	2	2	4	1	1	2	0	0	1
11:00	13		13	12	2	2	5	1	1	2	0	0	1
12:00	14		14	13	2	2	4	1	1	2	0	0	1
13:00	12		12	11	2	2	4	1	1	2	0	0	1
14:00	12		12	9	2	2	4	1	1	2	0	0	1
15:00	11		11	10	2	2	4	1	1	2	0	0	1
16:00	10		9	10	2	2	4	1	1	2	0	0	1
17:00	8		8	9	2	2	4	1	1	2	0	0	1
18:00	6		6	8	2	1	3	1	1	2	0	0	1
19:00	5		5	5	1	1	2	1	1	1	0	0	0
20:00	4		4	4	1	1	2	0	0	1	0	0	0
21:00	3		3	2	1	1	1	0	0	1	0	0	0
22:00	2		2	2	1	1	1	0	0	1	0	0	0
23:00	2		2	2	1	1	1	0	0	0	0	0	0
24 H (check)	135		133	133	27	26	53	14	15	29	6	5	11

	Sunday												
	Link 1	Link 2	Link 3	Link 4	Link 5			Link 6			Link 7		
TIME PERIOD	Griffiths Rd (	Site Access	Griffiths Rd (	A530 (N)	A556 e			A530 (s)			A556 (w)		
					EB	WB	Two Way	NB	SB	two way	EB	WB	Two Way
Total (24h)	101	n/a	99	405	33	53	86	62	114	176	77	66	143
00:00	1		1	5	0	1	1	1	1	2	1	1	2
01:00	1		1	3	0	0	1	0	1	1	0	0	1
02:00	0		0	2	0	0	0	0	1	1	0	0	1
03:00	0		0	1	0	0	0	0	0	0	0	0	0
04:00	0		0	2	0	0	0	0	1	1	0	0	1
05:00	1		1	4	0	1	1	1	1	2	1	1	2
06:00	1		1	5	0	1	1	1	1	2	1	1	2
07:00	1		1	7	1	1	2	1	2	3	1	1	3
08:00	2		2	9	1	1	2	1	3	4	2	1	3
09:00	4		4	19	2	2	4	3	5	8	4	3	7
10:00	8		8	29	2	4	6	4	8	13	6	5	10
11:00	9		8	33	3	4	7	5	9	14	6	5	12
12:00	10		10	39	3	5	8	6	11	17	7	6	14
13:00	11		10	39	3	5	8	6	11	17	7	6	14
14:00	11		11	39	3	5	8	6	11	17	7	6	14
15:00	11		10	37	3	5	8	6	10	16	7	6	13
16:00	8		8	32	3	4	7	5	9	14	6	5	11
17:00	7		7	26	2	3	6	4	7	12	5	4	9
18:00	5		5	23	2	3	5	4	7	10	4	4	8
19:00	4		4	18	1	2	4	3	5	8	3	3	6
20:00	3		3	13	1	2	3	2	4	6	3	2	5
21:00	2		2	9	1	1	2	1	3	4	2	1	3
22:00	1		1	7	1	1	1	1	2	3	1	1	2
23:00	0		0	3	0	0	1	0	1	1	1	0	1
24 H (check)	101		99	405	33	53	86	62	114	176	77	66	143

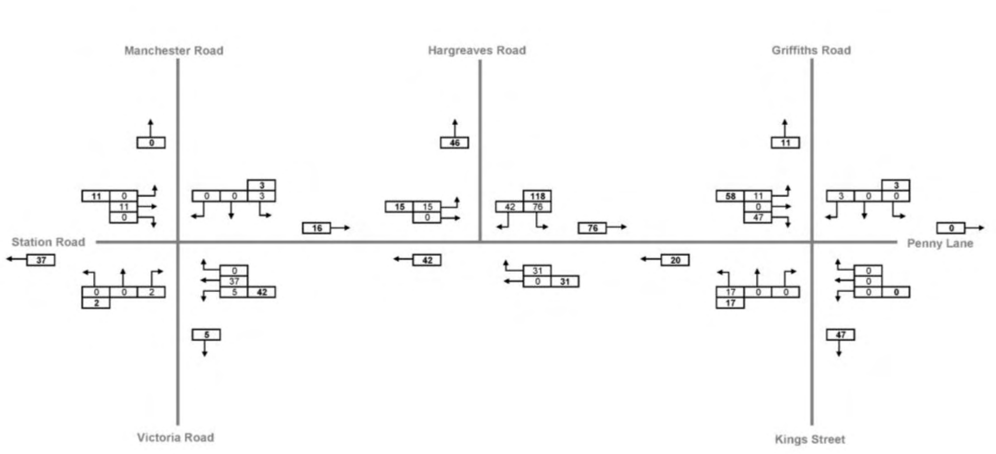


Figure TS15a	Total Development - AM Peak (08:00-09:00)	
1404-01	Proposed Residential & Retirement Village Development, Griffiths Park, Northwich	August 2013

axis Camellia House, 76 Water Lane, Wilmslow, Cheshire, SK9 5BB

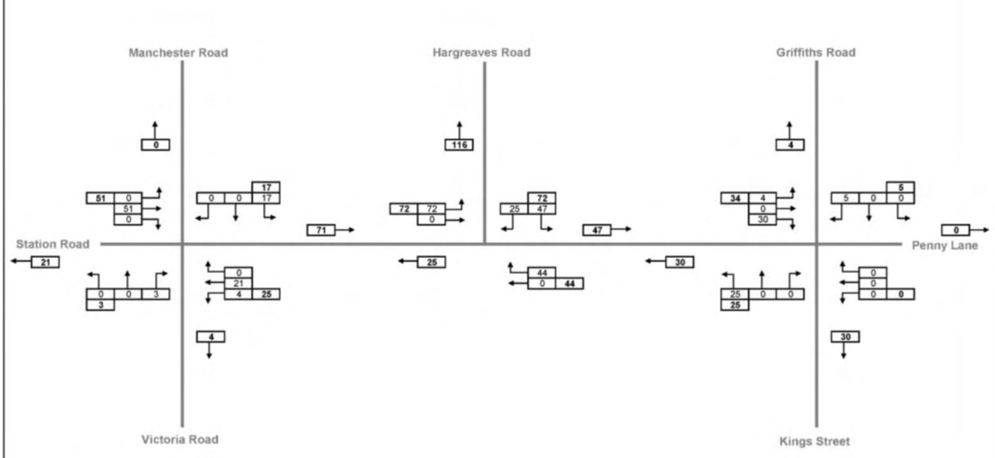


Figure TS15b	Total Development - PM Peak (17:00-18:00)	
1404-01	Proposed Residential & Retirement Village Development, Griffiths Park, Northwich	August 2013

axis Camellia House, 76 Water Lane, Wilmslow, Cheshire, SK9 5BB

Main Destinations Predicted Percentage

Elesmere Port and North via M56 / A559 North	10%
Manchester via M6	20%
Crewe via A530	35%
Northwich and local area via B5075 West	35%

Distribution Percentages taken from proposed Wincham Waste Treatment Plant transport assessment Appendix 7 planning application number 09/02430/WAS

Assumed 25% take A556 and
10% take A530

Percentage via Links

Links

1	A530 north of Site Access	10%
2	Site Access of Site Access	0%
3	A530 North of Middlewich Road	10%
4	A530 North of A556	10%
4	A530 South of Middlewich Road	10%
5	A530 south of A556	35%
6	A556 east of A530	25%
7	A556 west of A530	0%

Weekday

	Link 1	Link 2	Link 3	Link 4	Link 5			Link 6			Link 7		
	Griffiths Rd (n)	Site Access	ths Rd (south c	A530 (N)	A556 e			A530 (s)			A556 (w)		
					EB	WB	Two Way	NB	SB	two way	EB	WB	Two Way
	10%	0%	10%	10%	25%			35%			0%		
00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	3	0	3	3	6	2	8	8	3	12	0	0	0
07:00	8	0	8	8	15	5	20	20	7	28	0	0	0
08:00	9	0	9	9	17	6	23	23	9	32	0	0	0
09:00	5	0	5	5	6	6	12	8	9	17	0	0	0
10:00	4	0	4	4	5	6	11	7	8	15	0	0	0
11:00	5	0	5	5	6	7	13	8	10	18	0	0	0
12:00	6	0	6	6	8	6	14	11	9	20	0	0	0
13:00	4	0	4	4	5	5	11	7	8	15	0	0	0
14:00	4	0	4	4	5	6	11	7	9	16	0	0	0
15:00	5	0	5	5	4	8	13	6	12	18	0	0	0
16:00	6	0	6	6	4	12	16	5	17	22	0	0	0
17:00	8	0	8	8	5	14	19	7	19	26	0	0	0
18:00	2	0	2	2	3	2	6	5	3	8	0	0	0
19:00	2	0	2	2	4	2	6	5	3	9	0	0	0
20:00	2	0	2	2	2	2	4	3	2	6	0	0	0
21:00	1	0	1	1	2	2	3	2	2	5	0	0	0
22:00	3	0	3	3	3	4	7	4	6	10	0	0	0
23:00	1	0	1	1	1	2	3	1	2	4	0	0	0
24 H	80	0	80	80	100	99	199	0	0	0	0	0	0

7 day average

	Link 1	Link 2	Link 3	Link 4	Link 5			Link 6			Link 7		
	Griffiths Rd (n)	Site Access	ths Rd (south c	A530 (N)	A556 e			A530 (s)			A556 (w)		
					EB	WB	Two Way	NB	SB	two way	EB	WB	Two Way
					0%	0%	0%	0%	0%	0%	0%	0%	0%
00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	2	0	2	2	4	2	6	6	2	8	0	0	0
07:00	6	0	6	6	11	4	15	15	6	21	0	0	0
08:00	7	0	7	7	12	6	18	17	8	25	0	0	0
09:00	4	0	4	4	5	5	10	7	7	14	0	0	0
10:00	4	0	4	4	4	5	9	6	7	12	0	0	0
11:00	5	0	5	5	6	7	12	8	9	17	0	0	0
12:00	4	0	4	4	6	5	11	8	7	16	0	0	0
13:00	4	0	4	4	4	4	9	6	6	12	0	0	0
14:00	4	0	4	4	4	5	9	6	7	13	0	0	0
15:00	5	0	5	5	4	7	11	6	10	16	0	0	0
16:00	5	0	5	5	3	9	12	5	13	17	0	0	0
17:00	6	0	6	6	4	10	15	6	15	21	0	0	0
18:00	3	0	3	3	4	3	8	6	5	11	0	0	0
19:00	2	0	2	2	3	2	4	4	2	6	0	0	0
20:00	1	0	1	1	2	1	3	2	2	4	0	0	0
21:00	1	0	1	1	1	1	2	2	2	3	0	0	0
22:00	2	0	2	2	2	3	5	3	4	7	0	0	0
23:00	1	0	1	1	1	1	2	1	2	3	0	0	0
24 H	65	0	65	65	81	81	162	113	113	226	0	0	0

SATURDAY

	Link 1	Link 2	Link 3	Link 4	Link 5			Link 6			Link 7		
	Griffiths Rd (n)	Site Access	ths Rd (south c	A530 (N)	A556 e			A530 (s)			A556 (w)		
					EB	WB	Two Way	NB	SB	two way	EB	WB	Two Way
	10%	0%	10%	10%	25%			35%			0%		
00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	1	0	1	1	1	2	2	1	2	3	0	0	0
08:00	2	0	2	2	1	4	5	1	6	7	0	0	0
09:00	2	0	2	2	2	2	4	2	3	5	0	0	0
10:00	2	0	2	2	2	2	4	2	3	6	0	0	0
11:00	4	0	4	4	3	7	10	4	10	15	0	0	0
12:00	1	0	1	1	1	2	3	2	3	4	0	0	0
13:00	1	0	1	1	2	1	3	3	1	4	0	0	0
14:00	1	0	1	1	2	1	3	3	2	5	0	0	0
15:00	2	0	2	2	4	2	6	5	3	8	0	0	0
16:00	1	0	1	1	1	2	3	2	3	4	0	0	0
17:00	2	0	2	2	5	1	6	6	2	8	0	0	0
18:00	6	0	6	6	11	3	14	15	4	19	0	0	0
19:00	0	0	0	0	0	0	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0
24 H	26	0	26	26	34	30	64	48	42	90	0	0	0

SUNDAY

	Link 1	Link 2	Link 3	Link 4	Link 5			Link 6			Link 7		
	Griffiths Rd (n)	Site Access	ths Rd (south c	A530 (N)	A556 e			A530 (s)			A556 (w)		
					EB	WB	Two Way	NB	SB	two way	EB	WB	Two Way
	10%	0%	10%	10%	25%			35%			0%		
00:00	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00	1	0	1	1	1	1	2	1	1	2	0	0	0
08:00	2	0	2	2	2	3	5	2	4	6	0	0	0
09:00	2	0	2	2	3	2	4	4	2	6	0	0	0
10:00	2	0	2	2	2	3	5	3	4	7	0	0	0
11:00	4	0	4	4	7	4	11	10	5	16	0	0	0
12:00	2	0	2	2	2	2	4	3	3	6	0	0	0
13:00	2	0	2	2	2	3	5	3	4	7	0	0	0
14:00	2	0	2	2	2	2	4	3	2	5	0	0	0
15:00	4	0	4	4	2	7	9	3	10	13	0	0	0
16:00	1	0	1	1	2	1	4	3	2	5	0	0	0
17:00	1	0	1	1	2	2	4	2	3	5	0	0	0
18:00	5	0	5	5	3	10	13	4	13	18	0	0	0
19:00	0	0	0	0	0	0	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0	0	0	0	0	0	0
24 H	28	0	28	28	30	39	69	42	54	96	0	0	0

5 day weekday

	Link 1	Link 2	Link 3	Link 4	Link 5			Link 6			Link 7		
TIME PERIOD	Griffiths Rd (	Site Access	Griffiths Rd (	A530 (N)	A556 e			A530 (s)			A556 (w)		
					EB	WB	Two Way	NB	SB	two way	EB	WB	Two Way
Total (24h)	*532*	*n/a*	*532*	*1486*	*310*	*309*	*619*	*156*	*174*	*331*	*267*	*269*	*536*
00:00	1		1	4	*1*	*1*	2	*1*	*1*	2	*1*	*1*	2
01:00	1		1	3	*1*	*1*	1	*1*	*1*	1	*1*	*1*	1
02:00	1		1	4	*1*	*1*	2	*1*	*1*	2	*1*	*1*	2
03:00	1		1	4	*1*	*1*	2	*1*	*1*	2	*1*	*1*	2
04:00	2		2	7	*2*	*2*	3	*1*	*2*	3	*1*	*1*	3
05:00	6		6	22	*4*	*4*	9	*4*	*5*	9	*4*	*4*	8
06:00	12		13	43	*12*	*12*	24	*6*	*7*	13	*9*	*9*	18
07:00	30		31	93	*26*	*26*	52	*12*	*14*	26	*21*	*22*	43
08:00	41		42	114	*28*	*28*	57	*12*	*13*	25	*26*	*26*	52
09:00	34		35	96	*20*	*19*	39	*9*	*10*	19	*18*	*18*	36
10:00	31		31	87	*16*	*16*	32	*8*	*9*	16	*13*	*14*	27
11:00	31		31	87	*15*	*15*	30	*7*	*8*	16	*13*	*13*	26
12:00	36		36	97	*16*	*16*	32	*9*	*10*	18	*14*	*14*	28
13:00	36		35	97	*16*	*16*	32	*9*	*10*	18	*13*	*13*	27
14:00	36		35	99	*18*	*18*	36	*10*	*11*	22	*15*	*15*	29
15:00	42		41	106	*21*	*21*	42	*11*	*12*	22	*17*	*18*	35
16:00	47		47	120	*26*	*26*	53	*13*	*15*	28	*22*	*22*	45
17:00	52		51	132	*28*	*28*	57	*14*	*16*	30	*24*	*25*	49
18:00	38		37	103	*23*	*23*	45	*11*	*12*	23	*20*	*20*	39
19:00	23		23	66	*13*	*13*	26	*6*	*7*	13	*12*	*12*	24
20:00	12		12	41	*8*	*8*	16	*4*	*4*	8	*7*	*7*	14
21:00	9		9	30	*6*	*6*	12	*3*	*3*	6	*6*	*6*	11
22:00	7		7	21	*5*	*5*	10	*2*	*3*	5	*4*	*4*	9
23:00	3		3	10	*3*	*3*	6	*1*	*2*	3	*3*	*3*	5
24 H check	532		532	1486			619			331			536

7 day average

	Link 1	Link 2	Link 3	Link 4	Link 5			Link 6			Link 7		
TIME PERIOD	Griffiths Rd (	Site Access	Griffiths Rd (	A530 (N)	A556 e			A530 (s)			A556 (w)		
					EB	WB	Two Way	NB	SB	two way	EB	WB	Two Way
Total (24h)	*481*	*0*	*479*	*1235*			*495*			*293*			*446*
00:00	2	0	2	5	1	1	2	1	1	2	1	1	2
01:00	1	0	1	3	1	1	1	1	1	1	1	1	1
02:00	1	0	1	3	1	1	1	1	1	2	1	1	1
03:00	1	0	1	3	1	1	2	1	1	2	1	1	2
04:00	2	0	2	6	1	1	3	1	1	3	1	1	2
05:00	5	0	5	18	4	4	7	3	4	7	3	3	6
06:00	10	0	10	33	9	9	18	5	5	10	7	7	14
07:00	23	0	24	70	19	19	39	9	11	20	16	16	32
08:00	33	0	33	87	21	21	43	9	10	20	20	20	39
09:00	30	0	31	78	15	15	31	8	9	16	15	15	29
10:00	31	0	30	75	13	13	26	7	9	16	12	12	24
11:00	31	0	31	78	13	13	26	7	9	16	12	12	24
12:00	36	0	36	86	14	14	27	8	10	18	13	13	26
13:00	35	0	35	85	14	14	27	8	10	18	12	12	25
14:00	35	0	35	85	15	15	30	9	11	20	13	13	26
15:00	39	0	38	91	17	17	34	9	11	21	15	15	30
16:00	41	0	41	99	21	21	42	11	13	24	18	18	37
17:00	43	0	42	106	22	22	44	12	14	25	20	20	39
18:00	32	0	32	84	18	18	36	9	11	20	16	16	32
19:00	21	0	20	55	10	11	21	5	6	12	10	10	20
20:00	12	0	12	34	6	6	13	3	4	7	6	6	12
21:00	8	0	8	25	5	5	10	3	3	6	5	5	10
22:00	6	0	6	18	4	4	8	2	3	5	4	4	8
23:00	3	0	3	9	3	3	5	1	2	3	2	2	5
24 H check	481	0	479	1235	247	249	495	134	159	293	224	223	446

Saturday

	Link 1	Link 2	Link 3	Link 4	Link 5			Link 6			Link 7		
TIME PERIOD	Griffiths Rd (	Site Access	Griffiths Rd (	A530 (N)	A556 e			A530 (s)			A556 (w)		
					EB	WB	Two Way	NB	SB	two way	EB	WB	Two Way
Total (24h)	*406*	*n/a*	*399*	*606*	*124*	*119*	*244*	*64*	*69*	*133*	*117*	*112*	*230*
00:00	2		2	3	*1*	*1*	3	*1*	*1*	2	*1*	*1*	3
01:00	1		1	3	*1*	*1*	2	*0*	*0*	1	*1*	*1*	2
02:00	1		1	2	*1*	*1*	1	*1*	*1*	1	*1*	*1*	1
03:00	1		1	2	*1*	*1*	1	*1*	*1*	1	*1*	*1*	1
04:00	1		2	3	*1*	*1*	2	*1*	*1*	2	*1*	*1*	2
05:00	4		4	9	*2*	*2*	3	*2*	*2*	4	*1*	*1*	3
06:00	4		5	10	*2*	*2*	4	*2*	*2*	3	*2*	*2*	4
07:00	8		9	17	*4*	*4*	7	*3*	*3*	5	*3*	*3*	7
08:00	18		18	25	*6*	*6*	12	*4*	*4*	8	*5*	*5*	10
09:00	24		23	35	*7*	*7*	15	*4*	*4*	8	*7*	*7*	14
10:00	35		33	45	*9*	*9*	18	*4*	*5*	9	*9*	*9*	18
11:00	39		39	56	*11*	*10*	21	*4*	*5*	9	*10*	*10*	19
12:00	43		42	59	*10*	*10*	19	*5*	*5*	9	*10*	*9*	19
13:00	36		35	51	*10*	*9*	19	*4*	*5*	9	*9*	*9*	18
14:00	36		35	43	*9*	*8*	17	*4*	*5*	9	*8*	*8*	17
15:00	34		33	48	*9*	*8*	17	*4*	*5*	9	*8*	*8*	16
16:00	29		28	46	*9*	*9*	18	*4*	*5*	9	*9*	*8*	17
17:00	24		23	43	*9*	*8*	17	*4*	*5*	9	*8*	*8*	16
18:00	19		19	35	*7*	*7*	14	*4*	*4*	8	*7*	*7*	14
19:00	16		16	24	*5*	*5*	11	*3*	*3*	5	*5*	*5*	10
20:00	11		11	16	*4*	*4*	7	*2*	*2*	3	*4*	*3*	7
21:00	8		8	11	*3*	*3*	6	*1*	*1*	3	*3*	*3*	6
22:00	7		7	10	*3*	*3*	5	*1*	*1*	2	*2*	*2*	5
23:00	6		6	10	*2*	*2*	5	*1*	*1*	2	*2*	*2*	4
24 H check	406		399	606			244			133			230

SUNDAY

TIME PERIOD	Link 1 Griffiths Rd (	Link 2 Site Access	Link 3 Griffiths Rd (	Link 4 A530 (N)	Link 5 A556 e			Link 6 A530 (s)			Link 7 A556 (w)		
					EB	WB	Two Way	NB	SB	two way	EB	WB	Two Way
Total (24h)	302	n/a	298	606	49	79	128	93	171	264	116	99	214
00:00	3		3	7	1	1	2	1	2	3	1	1	3
01:00	2		2	4	0	1	1	1	1	2	1	1	1
02:00	1		1	4	0	0	1	1	1	2	1	1	1
03:00	0		0	1	0	0	0	0	0	1	0	0	1
04:00	1		1	3	0	0	1	0	1	1	1	0	1
05:00	3		3	6	1	1	1	1	2	3	1	1	2
06:00	3		4	7	1	1	2	1	2	3	1	1	3
07:00	3		4	11	1	1	2	2	3	5	2	2	4
08:00	5		5	14	1	2	3	2	4	6	3	2	5
09:00	13		13	29	2	4	6	4	8	12	5	5	10
10:00	23		23	43	4	6	9	7	12	19	8	7	15
11:00	26		25	50	4	6	10	8	14	22	9	8	18
12:00	30		29	58	5	8	12	9	16	25	11	9	20
13:00	32		31	59	5	8	12	9	16	25	11	10	21
14:00	34		33	58	5	8	12	9	16	25	11	10	21
15:00	32		31	56	5	7	12	9	16	24	11	9	20
16:00	23		23	48	4	6	10	7	14	21	9	8	17
17:00	21		20	40	3	5	8	6	11	17	8	6	14
18:00	16		16	35	3	5	7	5	10	15	7	6	12
19:00	12		11	26	2	3	6	4	7	12	5	4	9
20:00	10		9	20	2	3	4	3	6	9	4	3	7
21:00	6		6	14	1	2	3	2	4	6	3	2	5
22:00	4		4	10	1	1	2	2	3	5	2	2	4
23:00	1		1	5	0	1	1	1	1	2	1	1	2
24 H check	302		298	606			128			264			214

Recorded Weekday Peak Hour Traffic Generation Associated With the Existing Site Uses (pcu)

Mode	New Warrington Road Main Access				Chapel Street Main Access			
	Am Peak		Pm Peak		Am Peak		Pm Peak	
	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
Vehs	0	0	1	0	33	7	16	23

Trip Rates (Per Unit) and Trip Generation Associated With the Proposed 1050 Houses

Mode	Weekday AM Peak Hour (8 to 9)				Weekday PM Peak Hour (17 to 18)			
	Arrivals		Departures		Arrivals		Departures	
	Rates	Flow	Rates	Flow	Rates	Flow	Rates	Flow
Vehs	0.152	160	0.409	429	0.377	396	0.207	217

Net Traffic Generation

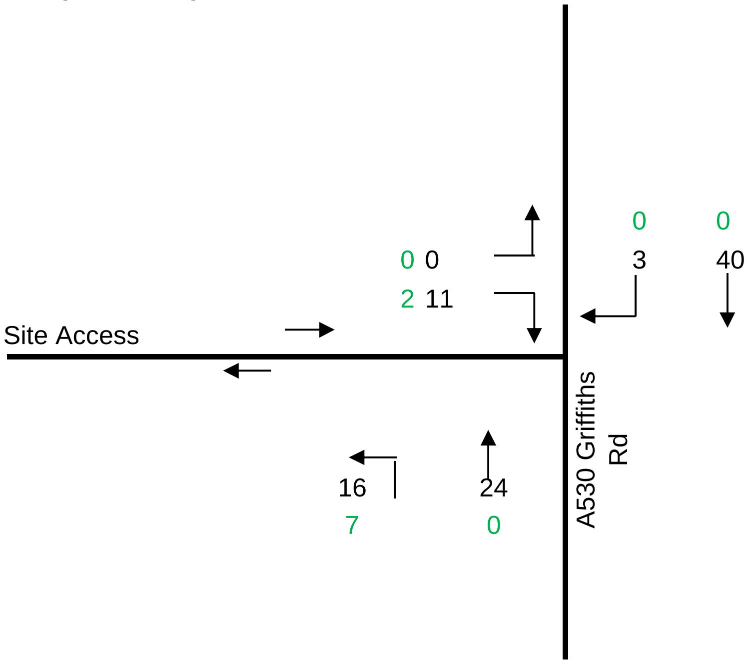
Mode	Weekday AM Peak Hour (8 to 9)		Weekday PM Peak Hour (17 to 18)	
	Arrivals	Departures	Arrivals	Departures
Vehs	127	422	379	194

Route	% assignmen	%	
A	A559 Marstoı	11.28	
B	Dark Lane (N)	1.62	
C	B3591 Churcl	18.02	
D	A559 Manche	16.4	
E	A530 Griffiths	7.78	
F	*B5082 Statioı*	*14.78*	*5.768% remains in Rudheath*
G	A559 Chester	13.93	
H	Leicester Stre	16.2	

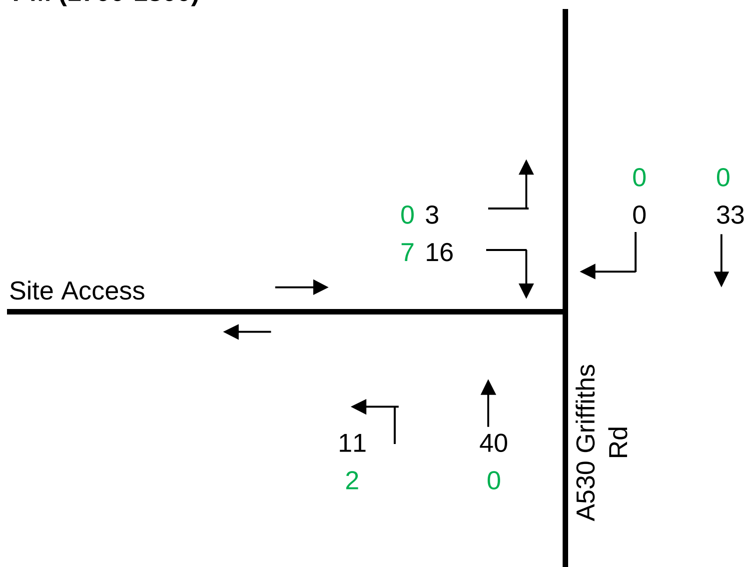
Annex 6.A.7: Total Committed Development Link Flows

Committed Development Traffic Flows

AM (0800-0900)



PM (1700-1800)



Key:

xx	**Total Vehicls**
xx	**HGVs**

Annex 6.A.8: 2011 Origin–Destination Census Data

WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level)
ONS Crown Copyright Reserved [from Nomis on 24 June 2015]

population
units
date
place of work MSOA 018

usual residence : 2011 super output area - middle layer	Key journey origin	Driving a car or van	Driving a car or van	Direction of travel	Route	% Traffic by directin of travel - arriving
Cheshire West and Chester 002	Frodsham	25	1%	1) Wb/Sb	1) M56/Northwich Road/A559/A530 (@5	0.4%
				2) Eb/Nb	2)Norley Road/A556/A530 (@50%)	0.4%
Cheshire West and Chester 003	Acton Bridge	153	5%	Eb/Nb	A533/A559/A530	5%
Cheshire West and Chester 012	Barnton	262	8%	Eb/Sb	A533/A559/A530	8%
Cheshire West and Chester 015	Kingsley	47	2%	1) Eb/Sb	1) B5153/A559/A530 (@50%)	1%
				2) Eb/Nb	2) Norley Road/A556/A530(@50%)	1%
Cheshire West and Chester 017	Rudheath/Middlewich	291	9%	Eb/Nb	Middlewich Road/A530	9%
Cheshire West and Chester 018	Northwich (Iwinnington)	260	8%	Eb/Sb	A530	8%
Cheshire West and Chester 019	Weaverham	217	7%	Eb/Nb	B5153/A533/A559/A530	7%
Cheshire West and Chester 020	Greenbank	262	8%	Eb/Nb	A56/M56/A559/A530	8%
Cheshire West and Chester 021	Leftwich/Rudheath	406	13%	1) Sb/Eb/Nb	1) London Rd/A556/A530 (@50%)	7%
				2) Eb/Nb	2)Middlweich Rd/A530 (@50%)	7%
Cheshire West and Chester 023	Hartford	327	11%	Eb/Nb	A556/A530	11%
Cheshire West and Chester 024	Sandiway	179	6%	Eb/Nb	A556/A530	6%
Cheshire West and Chester 026	Moulton	174	6%	Eb/Nb	London Rd/A556/A530	6%
Cheshire West and Chester 035	*Winsford*	*105*	*3%*	*Nb/Eb/Nb*	*see total 035-047 below*	*see total 035-042 below*
Cheshire West and Chester 037	*Winsford*	*109*	*4%*	*Nb/Eb/Nb*		
Cheshire West and Chester 038	*Winsford*	*87*	*3%*	*Nb/Eb/Nb*		
Cheshire West and Chester 040	*Winsford*	*63*	*2%*	*Nb/Eb/Nb*		
Cheshire West and Chester 042	*Winsford*	*85*	*3%*	*Nb/Eb/Nb*		
Total: Cheshire West and Chester 035 - 0	Winsford	449	15%	Nb/Eb/Nb	1) A533/A556/A530 (@50%)	7%
				Nb	2) A54/A530 (@50%)	7%
Cheshire West and Chester 045	Taporley	32	1%	Eb/Nb	A49/A556/A530	1%
		3,084	**100%**			

Jct	Direction of Travel	% Traffic Arriving
A559/A530	Eb/SB	18%
	Wb/SB	0%
A556/A530	Eb/Nb	59%
	Wb/Nb	
	N	7%
Middlewich Rd/A1530	Eb/Nb	16%

Jct	Direction of Travel (arriving)	% Traffic	turning % at jct
A559/A530	Eb/SB	18%	98%
	Wb/SB	0%	2%
A556/A530	Eb/Nb	59%	89%
	Wb/Nb	0%	0%
	N	7%	11%
Middlewich Rd	Eb/Nb	16%	100%

Jct	Direction of Travel	% Traffic arriving	Assignment
A530/Site Acce	Nb (frm the south)	82%	**A530 (s)**
	Sb (from the north)	18%	**A530 (n)**

Annex 6.A.9: Total Development Link Flows

Link 1: A530 Griffiths Road North (Site 1)							
	5 Day (weekday) Average						
	NB		SB		**Two Way**		
PERIOD	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00							
01:00							
02:00							
03:00							
04:00							
05:00							
06:00	0	0	1	0	1	0	0
07:00	0	0	0	0	0	0	0
08:00	0	0	2	0	2	0	0
09:00	0	0	0	0	0	0	0
10:00	0	0	0	0	0	0	0
11:00	0	0	0	0	0	0	0
12:00	0	0	0	0	0	0	0
13:00	0	0	0	0	0	0	0
14:00	0	0	0	0	0	0	0
15:00	1	0	0	0	1	0	0
16:00	0	0	0	0	0	0	0
17:00	2	0	0	0	2	0	0
18:00	0	0	0	0	0	0	0
19:00	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0

Link 2: Site Access (Site 2)							
	5 Day (weekday) Average						
TIME	IB		OB		**Two Way**		
PERIOD	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00							
01:00							
02:00							
03:00							
04:00							
05:00							
06:00	5	0	0	0	5	0	0
07:00	4	4	6	4	10	8	1
08:00	14	4	4	4	18	8	0
09:00	4	4	4	4	8	8	1
10:00	4	4	4	4	8	8	1
11:00	4	4	4	4	8	8	1
12:00	4	4	4	4	8	8	1
13:00	4	4	4	4	8	8	1
14:00	6	4	4	4	10	8	1
15:00	4	4	9	4	13	8	1
16:00	4	4	4	4	8	8	1
17:00	4	4	14	4	18	8	0
18:00	4	4	4	4	8	8	1
19:00	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0
22:00	2	0	0	0	2	0	0
23:00	0	0	2	0	2	0	0

Link 3: A530 Griffiths Road South (Site 3)							
	5 Day (weekday) Average						
TIME PERIOD	NB		SB		Two Way		
	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00							
01:00							
02:00							
03:00							
04:00							
05:00							
06:00	3	0	0	0	3	0	0
07:00	4	4	5	4	9	8	1
08:00	12	4	4	4	16	8	0
09:00	4	4	4	4	8	8	1
10:00	4	4	4	4	8	8	1
11:00	4	4	4	4	8	8	1
12:00	4	4	4	4	8	8	1
13:00	4	4	4	4	8	8	1
14:00	6	4	4	4	10	8	1
15:00	4	4	7	4	11	8	1
16:00	4	4	4	4	8	8	1
17:00	4	4	12	4	16	8	0
18:00	4	4	4	4	8	8	1
19:00	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0
22:00	2	0	0	0	2	0	0
23:00	0	0	2	0	2	0	0

Link 4: A530 North of A556 (Site 4)							
	5 Day (weekday) Average						
TIME PERIOD	NB		SB		Two Way		
	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00							
01:00							
02:00							
03:00							
04:00							
05:00							
06:00	3	0	0	0	3	0	0
07:00	4	4	5	4	9	8	1
08:00	10	4	4	4	14	8	1
09:00	4	4	4	4	8	8	1
10:00	4	4	4	4	8	8	1
11:00	4	4	4	4	8	8	1
12:00	4	4	4	4	8	8	1
13:00	4	4	4	4	8	8	1
14:00	6	4	4	4	10	8	1
15:00	4	4	7	4	11	8	1
16:00	4	4	4	4	8	8	1
17:00	4	4	10	4	14	8	1
18:00	4	4	4	4	8	8	1
19:00	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0
22:00	2	0	0	0	2	0	0
23:00	0	0	1	0	1	0	0

Link 5: A556 East (Sites 5 + 6)							
	5 Day (weekday) Average						
TIME	EB		WB		**Two Way**		
PERIOD	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00							
01:00							
02:00							
03:00							
04:00							
05:00							
06:00	0	0	0	0	0	0	0
07:00	2	2	2	2	4	4	1
08:00	2	2	2	2	4	4	1
09:00	2	2	2	2	4	4	1
10:00	2	2	2	2	4	4	1
11:00	2	2	2	2	4	4	1
12:00	2	2	2	2	4	4	1
13:00	2	2	2	2	4	4	1
14:00	2	2	2	2	4	4	1
15:00	2	2	2	2	4	4	1
16:00	2	2	2	2	4	4	1
17:00	2	2	2	2	4	4	1
18:00	2	2	2	2	4	4	1
19:00	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0

Link 6: A530 South of A556 (sites 7 + 8)							
	5 Day (weekday) Average						
TIME	NB		SB		**Two Way**		
PERIOD	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00							
01:00							
02:00							
03:00							
04:00							
05:00							
06:00	0	0	0	0	0	0	0
07:00	1	1	1	1	2	2	1
08:00	2	1	1	1	3	2	1
09:00	1	1	1	1	2	2	1
10:00	1	1	1	1	2	2	1
11:00	1	1	1	1	2	2	1
12:00	1	1	1	1	2	2	1
13:00	1	1	1	1	2	2	1
14:00	1	1	1	1	2	2	1
15:00	1	1	1	1	2	2	1
16:00	1	1	1	1	2	2	1
17:00	1	1	2	1	3	2	1
18:00	1	1	1	1	2	2	1
19:00	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0
22:00	0	0	0	0	0	0	0
23:00	0	0	0	0	0	0	0

Link 7: A556 West (Sites 9 + 10)							
	5 Day (weekday) Average						
TIME PERIOD	EB		WB		**Two Way**		
	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00							
01:00							
02:00							
03:00							
04:00							
05:00							
06:00	3	0	0	0	3	0	0
07:00	1	1	2	1	4	2	1
08:00	7	1	1	1	8	2	0
09:00	1	1	1	1	3	2	0
10:00	1	1	1	1	3	2	0
11:00	1	1	1	1	3	2	0
12:00	1	1	1	1	3	2	0
13:00	1	1	1	1	3	2	0
14:00	3	1	1	1	5	2	0
15:00	1	1	4	1	5	2	0
16:00	1	1	1	1	3	2	0
17:00	1	1	7	1	8	2	0
18:00	1	1	1	1	3	2	0
19:00	0	0	0	0	0	0	0
20:00	0	0	0	0	0	0	0
21:00	0	0	0	0	0	0	0
22:00	2	0	0	0	2	0	0
23:00	0	0	1	0	1	0	0

Annex 6.A.10: TEMPRO Growth Rates

Time Period:	AM Weekday Peak			PM Weekday Peak			Average Day			Average WEEKDAY			Saturday (all times)		
Dataset Version:	62			62			62			62			62		
Result Type:	Trip ends by time period			Trip ends by time period			Trip ends by time period			Trip ends by time period			Trip ends by time period		
Base Year:	2015			2015			2015			**2015**			**2015**		
Future Year:	2017			2017			2017			2017			2017		
Trip Purpose Group:	All purposes			All purposes			Car Driver			All purposes			All purposes		
Time Period:	Weekday AM peak period (0700 - 0959)			Weekday PM peak period (1600 - 1859)			Average Day			**Average Weekday**			Saturdays (all times of day)		
Trip End Type:	Origin/Destination			Origin/Destination			Origin/Destination			Origin/Destination			Origin/Destination		
Alternative Assumptions applied:	No			No			No			No			No		
Growth Factor															
Area Description		All purposes			All purposes			All purposes			All purposes			All purposes	
Level	Name	Origin	Destination	Name	Origin	Destination	Name	Origin	Destination	Name	Origin	Destination	Name	Origin	Destination
13UH3	Northwich	1.0086	1.009	Northwich	1.0099	1.0097	Northwich	1.0099	1.0099	Northwich	1.0095	1.0096	Northwich	1.011	1.0111
Base Year - Future Year															
Area Description		All purposes			All purposes			All purposes			All purposes			All purposes	
Level	Name	Origin	Destination	Name	Origin	Destination	Name	Origin	Destination	Name	Origin	Destination	Name	Origin	Destination
13UH3	Northwich	124	134	Northwich	167	161	Northwich	627	631	Northwich	647	652	Northwich	662	667
Base Year															
Area Description		All purposes			All purposes			All purposes			All purposes			All purposes	
Level	Name	Origin	Destination	Name	Origin	Destination	Name	Origin	Destination	Name	Origin	Destination	Name	Origin	Destination
13UH3	Northwich	14356	14836	Northwich	16736	16559	Northwich	63183	63172	Northwich	67720	67722	Northwich	59931	59901
Future Year															
Area Description		All purposes			All purposes			All purposes			All purposes			All purposes	
Level	Name	Origin	Destination	Name	Origin	Destination	Name	Origin	Destination	Name	Origin	Destination	Name	Origin	Destination
13UH3	Northwich	14480	14970	Northwich	16903	16720	Northwich	63811	63804	Northwich	68367	68374	Northwich	60593	60567
NTM adjusted with Tempro	Area														
Level	Northwich	Local Growth Figure		Area	Local Growth Figure		Area	Local Growth Figure		Area	Local Growth Figure		Area	Local Growth Figure	
13UH3		1.024497055		Northwich	1.025512615		Northwich	1.025614171		Northwich	1.02525873		Northwich	1.02678207	

Annex 6.A.11: 2017 Traffic Flows

2015 + Growth to 2017

Link 1: A530 Griffiths Road North (Site 1)																					
	5 Day (weekday) Average							7 day average							Saturday						
	NB		SB		Two Way			NB		SB		Two Way			NB		SB		Two Way		
TIME PERIOD	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00	11	2	10	1	21	3	13%	14	2	12	1	27	3	10%	20	3	15	3	35	4	12%
01:00	8	2	9	2	16	4	25%	9	2	10	2	19	4	18%	7	2	12	2	20	4	21%
02:00	6	1	7	2	14	3	23%	6	1	7	2	13	3	22%	5	1	9	1	14	1	7%
03:00	8	2	10	2	18	5	27%	7	2	8	2	15	4	26%	7	3	5	3	12	3	25%
04:00	16	2	18	4	34	6	19%	13	2	16	3	29	5	18%	5	1	17	1	23	2	9%
05:00	38	4	54	7	92	11	12%	35	4	45	6	80	9	12%	33	4	25	4	57	7	13%
06:00	87	3	103	12	190	15	8%	70	4	82	10	152	13	9%	35	6	34	6	69	11	16%
07:00	247	6	224	12	470	18	4%	188	5	174	10	361	15	4%	57	2	67	2	124	6	5%
08:00	326	7	330	9	656	16	2%	261	6	261	7	521	14	3%	162	12	125	12	287	18	6%
09:00	291	7	253	8	544	15	3%	253	5	218	7	472	12	3%	213	3	164	3	377	6	2%
10:00	258	5	239	10	497	15	3%	254	4	232	9	486	13	3%	280	3	269	3	549	11	2%
11:00	243	7	242	6	486	13	3%	246	6	247	6	493	12	2%	303	6	318	6	621	12	2%
12:00	270	10	306	9	576	18	3%	270	8	309	7	579	16	3%	295	5	395	5	690	11	2%
13:00	253	6	316	9	569	16	3%	254	5	307	8	562	13	2%	283	4	291	4	574	9	2%
14:00	234	5	332	12	566	17	3%	239	5	323	9	562	14	2%	262	3	304	3	566	6	1%
15:00	280	9	381	9	661	18	3%	264	7	359	7	623	13	2%	232	3	313	3	545	4	1%
16:00	300	8	453	9	754	17	2%	259	7	396	7	655	14	2%	182	2	274	2	456	3	1%
17:00	302	6	520	9	822	15	2%	254	5	435	8	688	12	2%	141	1	238	1	379	5	1%
18:00	251	8	346	9	596	17	3%	211	6	294	7	506	13	3%	119	2	181	2	300	5	2%
19:00	161	4	211	5	372	10	3%	146	4	183	4	329	8	2%	123	0	132	0	256	4	2%
20:00	93	3	104	2	198	5	2%	90	2	99	2	190	4	2%	97	0	85	0	182	0	0%
21:00	69	2	77	2	145	4	3%	64	2	70	2	134	4	3%	67	0	54	0	121	2	2%
22:00	47	2	63	3	109	5	5%	43	2	60	2	103	4	4%	35	0	74	0	109	0	0%
23:00	16	1	26	2	42	3	8%	17	1	30	2	47	3	6%	28	0	69	0	97	0	0%
8h	190	18	237	32	427	50	12%	172	17	211	27	383	43	11%	140	21	187	21	327	33	10%
18h	3728	99	4527	138	8254	237	3%	3382	85	4080	113	7463	197	3%	2913	53	3388	53	6301	116	2%
24 H	3815	113	4634	156	8449	269	3%	3467	97	4178	128	7647	225	3%	2990	68	3473	68	6463	138	2%

Link 2: Site Access (Site 2)

TIME PERIOD	5 Day (weekday) Average							7 day average							Saturday						
	IB		OB		Two Way			IB		OB		Two Way			IB		OB		Two Way		
	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00	0	0	1	1	1	1	43%	0	0	2	1	2	1	64%	0	0	5	5	5	5	100%
01:00	1	0	0	0	2	0	25%	1	0	0	0	1	0	29%	1	0	0	0	1	0	0%
02:00	0	0	1	1	2	1	56%	1	0	1	1	1	1	71%	0	0	0	0	0	0	#DIV/0!
03:00	1	0	1	1	2	1	42%	1	0	1	0	2	1	36%	0	0	1	0	1	0	0%
04:00	1	0	2	2	3	2	69%	1	0	2	1	3	2	52%	1	0	0	0	1	0	0%
05:00	8	1	6	2	13	3	22%	7	1	5	1	11	2	19%	3	0	3	0	6	0	0%
06:00	41	5	18	1	59	7	11%	40	4	17	1	49	5	11%	12	1	11	0	24	1	4%
07:00	80	6	13	3	93	9	10%	72	5	11	3	71	7	10%	15	2	4	0	20	2	11%
08:00	39	8	26	5	65	13	20%	45	6	20	4	49	10	21%	2	1	9	3	11	4	36%
09:00	30	6	31	7	60	13	22%	27	5	23	5	47	11	23%	5	4	4	0	9	4	44%
10:00	23	6	35	7	58	13	21%	33	4	26	5	43	9	21%	4	1	4	0	8	1	13%
11:00	34	7	35	6	69	13	18%	31	6	28	6	53	11	21%	8	3	12	4	21	7	35%
12:00	24	4	36	5	60	9	15%	16	3	28	4	46	7	15%	6	0	12	1	18	1	6%
13:00	25	6	30	4	55	10	18%	22	5	22	3	42	7	18%	6	1	1	0	7	1	14%
14:00	21	6	32	5	53	11	20%	21	4	25	4	40	8	20%	1	0	2	1	3	1	33%
15:00	13	6	62	5	74	11	14%	10	4	46	4	57	8	14%	6	1	10	0	16	1	6%
16:00	12	5	61	4	73	8	11%	15	3	48	3	56	6	11%	3	1	11	1	14	2	14%
17:00	7	3	20	2	27	5	19%	8	2	16	2	22	4	18%	3	0	4	2	7	2	29%
18:00	15	2	24	2	40	4	9%	12	2	21	1	36	3	8%	12	1	11	0	24	1	4%
19:00	2	0	8	1	10	2	18%	2	0	7	1	9	1	16%	5	0	4	0	9	0	0%
20:00	3	1	11	1	14	1	10%	4	0	8	1	11	1	10%	1	0	2	1	3	1	33%
21:00	1	0	1	1	2	1	42%	1	0	1	1	2	1	36%	0	0	0	0	0	0	#DIV/0!
22:00	1	0	1	1	3	1	54%	0	1	1	1	2	1	64%	2	1	0	0	2	1	50%
23:00	3	1	2	0	5	1	32%	6	1	2	0	4	1	32%	2	0	3	1	5	1	20%
8h	55	8	33	8	88	16	19%	57	6	29	7	74	13	18%	20	1	24	6	43	7	17%
18h	372	72	448	60	820	132	16%	365	55	350	48	641	104	16%	95	17	107	14	202	32	16%
24 H	383	74	460	67	844	140	17%	376	57	360	54	662	110	17%	101	17	116	20	217	37	17%

Link 3: A530 Griffiths Road South (Site 3)

TIME PERIOD	5 Day (weekday) Average							7 day average							Saturday						
	NB		SB		Two Way			NB		SB		Two Way			NB		SB		Two Way		
	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00	11	2	11	2	22	3	16%	15	1	13	2	15	3	20%	21	1	17	3	38	4	11%
01:00	9	2	8	3	16	5	30%	10	2	9	2	11	4	34%	8	2	12	2	21	4	20%
02:00	6	2	8	2	14	4	28%	6	1	7	2	9	4	41%	5	1	6	1	11	2	18%
03:00	8	2	9	3	18	5	29%	8	2	8	2	10	4	41%	7	3	6	0	13	3	23%
04:00	15	2	18	5	33	7	21%	13	2	17	4	19	4	24%	6	1	20	0	26	1	4%
05:00	40	5	55	8	95	14	14%	37	4	46	7	51	7	13%	34	4	27	3	61	7	12%
06:00	112	7	101	12	213	19	9%	91	6	82	10	88	10	11%	43	6	40	4	83	10	12%
07:00	303	9	210	9	513	18	4%	231	7	165	8	173	14	8%	75	4	70	4	145	8	6%
08:00	345	12	339	13	684	26	4%	274	11	268	11	279	21	8%	157	14	133	11	291	26	9%
09:00	311	11	272	12	584	23	4%	269	9	233	9	242	17	7%	215	6	169	3	384	9	2%
10:00	263	11	251	13	514	24	5%	258	8	241	10	250	20	8%	280	2	267	8	547	10	2%
11:00	251	13	257	12	508	25	5%	254	11	259	11	270	20	7%	313	7	323	8	637	15	2%
12:00	271	11	319	13	591	24	4%	270	10	319	10	329	20	6%	285	5	399	4	685	9	1%
13:00	265	13	319	11	584	24	4%	263	10	311	9	321	21	7%	279	5	303	3	582	8	1%
14:00	240	12	343	12	583	24	4%	246	9	331	10	339	19	6%	275	3	302	2	577	5	1%
15:00	268	12	408	11	676	23	3%	254	9	379	9	388	19	5%	220	4	322	3	542	7	1%
16:00	294	12	485	14	779	25	3%	255	9	421	11	431	19	4%	186	2	280	2	466	4	1%
17:00	303	9	529	10	832	20	2%	255	7	442	8	449	16	4%	146	2	231	0	377	2	1%
18:00	251	9	363	9	614	18	3%	212	7	308	8	316	18	6%	122	2	185	2	307	4	1%
19:00	160	5	210	5	371	10	3%	145	5	184	4	188	13	7%	122	1	137	4	259	5	2%
20:00	89	4	112	2	201	7	3%	87	3	105	2	108	11	10%	97	0	87	1	184	1	1%
21:00	68	3	79	2	147	5	3%	65	2	71	1	74	7	9%	70	0	55	0	125	0	0%
22:00	47	3	64	3	110	6	6%	43	3	61	2	65	5	8%	37	1	75	0	112	1	1%
23:00	18	2	27	3	45	5	10%	18	1	31	2	32	3	9%	29	0	70	2	99	2	2%
8h	219	24	237	38	456	62	14%	196	21	214	31	234	38	16%	153	18	198	15	351	34	10%
18h	3860	158	4690	168	8549	326	4%	3490	130	4212	136	4342	272	6%	2951	66	3450	63	6401	128	2%
24 H	3948	173	4799	190	8748	364	4%	3577	144	4312	155	4456	298	7%	3032	78	3538	72	6570	150	2%

Link 4: A530 North of A556 (Site 4)

	5 Day (weekday) Average							7 day average							Saturday						
TIME	NB		SB		Two Way			NB		SB		Two Way			NB		SB		Two Way		
PERIOD	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00	24	1	23	2	46	3	7%	32	1	29	2	61	3	5%	47	1	33	2	80	3	4%
01:00	19	2	13	2	33	4	13%	22	2	17	2	38	4	9%	20	2	28	1	47	3	7%
02:00	23	1	15	3	38	4	11%	26	1	16	3	42	4	9%	31	1	18	2	49	3	6%
03:00	23	2	16	3	39	5	13%	21	2	16	2	37	4	12%	24	3	17	0	41	3	8%
04:00	29	2	44	5	73	7	9%	27	1	39	4	66	5	8%	21	1	33	1	53	2	4%
05:00	73	5	166	8	240	13	5%	68	4	141	6	209	10	5%	65	3	100	2	164	5	3%
06:00	189	9	269	13	458	22	5%	154	7	217	11	371	18	5%	82	5	111	5	193	10	5%
07:00	431	11	571	16	1002	27	3%	339	9	449	13	789	22	3%	147	4	186	5	333	9	3%
08:00	513	16	714	23	1227	39	3%	428	13	565	18	992	32	3%	330	11	269	12	599	24	4%
09:00	535	18	499	20	1034	38	4%	473	14	442	17	915	31	3%	412	5	373	12	784	17	2%
10:00	470	17	470	18	940	35	4%	461	13	451	15	913	28	3%	520	6	489	11	1008	17	2%
11:00	464	16	478	16	941	32	3%	461	14	486	15	947	28	3%	531	9	609	9	1140	18	2%
12:00	497	15	543	19	1040	35	3%	487	14	548	16	1035	30	3%	493	12	638	10	1130	23	2%
13:00	501	17	538	21	1039	38	4%	490	15	532	17	1023	32	3%	482	8	553	5	1035	13	1%
14:00	489	18	580	25	1069	43	4%	481	14	551	19	1032	33	3%	490	7	466	4	956	11	1%
15:00	518	15	625	19	1143	34	3%	486	12	590	15	1076	27	3%	422	3	516	8	938	11	1%
16:00	585	16	711	24	1296	40	3%	518	13	645	19	1163	32	3%	407	4	498	6	905	10	1%
17:00	**697**	**15**	**726**	**19**	**1423**	**34**	2%	**590**	**12**	**631**	**16**	**1222**	**28**	2%	**350**	**1**	**459**	**6**	**809**	**7**	1%
18:00	546	10	565	10	1111	21	2%	469	9	499	8	969	17	2%	302	7	374	2	676	9	1%
19:00	334	5	380	10	715	15	2%	305	5	339	8	644	13	2%	260	5	260	5	520	10	2%
20:00	216	3	220	3	437	7	2%	204	3	204	3	407	6	1%	186	1	172	1	358	2	1%
21:00	159	3	160	3	319	7	2%	150	3	145	3	296	6	2%	138	1	121	1	259	2	1%
22:00	120	2	111	3	230	5	2%	111	2	107	2	218	4	2%	102	1	113	0	215	1	0%
23:00	59	2	50	2	109	5	4%	59	2	55	2	115	4	3%	82	0	105	1	187	1	1%
8h	439	24	597	38	1035	63	6%	433	24	590	38	1023	62	6%	371	16	445	14	815	31	4%
18h	7323	210	8212	265	15534	475	3%	7235	208	8114	262	15349	470	3%	5733	92	6312	106	12044	198	2%
24 H	7514	223	8489	288	16003	512	3%	7424	221	8388	285	15812	505	3%	5939	104	6541	114	12480	218	2%

Link 5: A556 East (Sites 5 + 6)

	5 Day (weekday) Average							7 day average							Saturday						
TIME	EB		WB		Two Way			EB		WB		Two Way			EB		WB		Two Way		
PERIOD	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00	59	13	69	8	128	21	16%	79	13	92	7	171	20	12%	113	16	174	1	242	27	11%
01:00	32	10	47	7	80	16	21%	40	9	59	6	99	16	16%	70	13	99	3	148	22	15%
02:00	44	17	44	10	88	26	30%	46	15	48	10	93	24	26%	47	12	53	8	108	24	22%
03:00	66	24	35	13	102	37	36%	67	22	39	12	106	35	33%	77	24	47	8	128	38	30%
04:00	115	16	61	11	177	26	15%	104	14	60	11	164	25	15%	81	16	43	6	152	31	20%
05:00	285	28	195	26	480	55	11%	244	24	172	24	414	48	12%	167	17	91	13	303	42	14%
06:00	817	63	461	42	1278	105	8%	638	51	372	36	1010	87	9%	225	29	112	14	412	54	13%
07:00	1665	111	1131	58	2796	169	6%	1276	86	876	50	2153	136	6%	378	32	182	20	675	71	11%
08:00	1699	116	1356	70	3055	186	6%	1344	91	1078	57	2423	147	6%	582	37	259	13	1088	72	7%
09:00	1178	90	918	73	2096	163	8%	1020	72	795	59	1814	131	7%	725	40	347	16	1351	76	6%
10:00	900	71	794	69	1694	140	8%	875	61	767	60	1642	120	7%	895	44	602	30	1693	88	5%
11:00	836	77	791	70	1627	148	9%	843	67	806	58	1649	125	8%	944	47	722	18	1910	86	5%
12:00	875	74	842	67	1717	140	8%	878	63	843	56	1721	119	7%	940	44	820	18	1810	85	5%
13:00	871	82	848	69	1720	151	9%	875	67	868	56	1744	123	7%	925	36	1011	20	1752	66	4%
14:00	914	84	1009	75	1924	160	8%	886	69	991	62	1877	131	7%	840	31	1120	23	1609	64	4%
15:00	1053	79	1204	70	2258	149	7%	985	67	1133	56	2119	123	6%	821	37	1176	29	1557	54	3%
16:00	1306	88	1520	78	2826	166	6%	1172	74	1386	62	2558	136	5%	818	38	1256	24	1662	62	4%
17:00	1280	55	1773	99	3053	154	5%	1143	49	1557	77	2700	126	5%	825	28	1245	20	1613	53	3%
18:00	1035	47	1410	61	2445	108	4%	922	42	1257	48	2179	90	4%	658	18	1123	17	1287	33	3%
19:00	652	30	757	31	1409	61	4%	608	25	711	27	1319	52	4%	509	10	705	17	996	29	3%
20:00	377	16	472	19	849	36	4%	362	15	453	16	815	31	4%	306	8	446	10	672	15	2%
21:00	287	11	340	11	627	22	3%	272	10	336	10	608	20	3%	239	4	346	7	548	13	2%
22:00	201	11	323	13	524	24	5%	191	9	312	10	504	19	4%	210	4	304	1	476	9	2%
23:00	132	17	204	9	336	26	8%	135	16	210	8	346	23	7%	193	13	200	5	446	16	4%
8h	1552	187	1117	125	2669	312	12%	1352	164	1053	114	2404	278	12%	973	142	819	60	1939	254	13%
18h	16080	1124	16154	983	32234	2107	7%	14424	932	14753	810	29181	1741	6%	11034	501	11976	303	21556	948	4%
24 H	16683	1231	16606	1057	33289	2289	7%	15003	1029	15223	880	30229	1909	6%	11589	601	12484	343	22637	1130	5%

Link 6: A530 South of A556 (sites 7 + 8)																					
	5 Day (weekday) Average							7 day average							Saturday						
TIME	NB		SB		Two Way			NB		SB		Two Way			NB		SB		Two Way		
PERIOD	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00	55	20	43	9	98	29	30%	77	20	49	9	126	30	24%	123	27	64	13	187	40	21%
01:00	44	15	29	9	73	24	33%	57	15	31	8	88	23	26%	46	9	41	7	87	16	19%
02:00	58	17	38	18	96	34	36%	68	17	38	16	106	31	29%	55	6	46	17	102	24	23%
03:00	71	23	43	18	113	41	36%	70	23	40	17	110	40	37%	70	29	41	23	111	51	46%
04:00	81	16	87	25	168	41	24%	77	16	78	22	155	36	23%	77	12	78	20	155	32	21%
05:00	168	22	306	28	473	50	11%	153	22	267	26	419	46	11%	135	15	204	24	339	39	12%
06:00	320	37	359	29	679	66	10%	280	37	284	27	564	59	10%	195	23	125	27	320	49	15%
07:00	668	42	716	29	1384	71	5%	538	42	569	27	1107	60	5%	239	14	257	31	496	45	9%
08:00	779	41	541	34	1319	75	6%	676	41	438	30	1114	64	6%	513	20	247	29	761	48	6%
09:00	572	47	432	48	1004	95	9%	532	47	378	40	910	80	9%	490	25	292	26	781	50	6%
10:00	482	50	400	41	882	91	10%	471	50	377	36	848	80	9%	501	25	362	28	864	52	6%
11:00	429	51	415	39	844	90	11%	434	51	398	33	832	81	10%	484	34	389	20	873	53	6%
12:00	456	48	527	44	983	91	9%	429	48	498	35	926	79	9%	400	34	474	14	875	48	6%
13:00	410	38	582	41	993	79	8%	408	38	538	32	947	70	7%	451	46	389	13	840	60	7%
14:00	496	43	671	46	1168	89	8%	469	43	599	39	1068	80	8%	461	33	382	24	843	56	7%
15:00	546	45	655	38	1202	83	7%	494	45	602	33	1096	76	7%	422	42	398	22	820	64	8%
16:00	656	38	839	34	1495	72	5%	574	38	750	28	1323	61	5%	440	16	413	21	853	37	4%
17:00	661	32	965	27	1626	59	4%	576	32	837	23	1413	51	4%	412	13	448	10	859	24	3%
18:00	554	28	707	24	1261	52	4%	489	28	633	21	1122	45	4%	355	16	354	11	710	28	4%
19:00	319	11	381	22	700	34	5%	277	11	350	21	627	30	5%	217	6	271	22	488	28	6%
20:00	202	10	221	15	423	25	6%	184	10	205	13	390	22	6%	152	5	168	11	320	16	5%
21:00	168	11	172	13	340	24	7%	151	11	162	11	314	19	6%	119	2	147	6	266	8	3%
22:00	140	12	136	12	275	24	9%	122	12	129	11	251	20	8%	101	4	117	6	218	10	5%
23:00	75	18	94	9	169	28	16%	73	18	93	8	166	24	14%	95	10	109	4	204	14	7%
8h	872	168	997	145	1869	313	17%	854	168	882	133	1734	288	17%	797	131	708	135	1505	266	18%
18h	7932	601	8815	545	16747	1146	7%	7176	601	7841	468	15017	1002	7%	6048	369	5343	323	11391	692	6%
24 H	8409	714	9359	652	17768	1366	8%	7678	714	8345	566	16021	1208	8%	6554	467	5818	427	12372	894	7%

Link 7: A556 West (Sites 9 + 10)																					
	5 Day (weekday) Average							7 day average							Saturday						
TIME	EB		WB		Two Way			EB		WB		Two Way			EB		WB		Two Way		
PERIOD	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00	50	1	68	9	118	12	10%	69	3	90	8	159	11	7%	106	3	133	7	239	10	4%
01:00	23	0	44	6	66	11	16%	30	4	56	8	86	12	14%	60	4	85	15	145	20	13%
02:00	39	0	43	5	83	20	24%	43	13	47	6	90	19	21%	53	14	61	8	114	23	20%
03:00	55	0	42	9	97	27	28%	54	15	43	8	96	23	24%	59	15	48	5	107	21	19%
04:00	96	0	52	8	149	26	17%	88	16	53	8	142	23	17%	77	18	67	10	144	29	20%
05:00	283	3	132	13	415	37	9%	241	20	119	12	360	32	9%	154	13	104	14	258	28	11%
06:00	663	7	328	33	991	81	8%	513	38	274	26	788	63	8%	163	15	174	9	337	25	7%
07:00	1359	8	953	49	2313	182	8%	1051	99	740	39	1792	139	8%	348	20	258	21	606	40	7%
08:00	1339	13	1448	66	2787	194	7%	1071	97	1134	53	2204	150	7%	524	27	446	27	969	53	6%
09:00	1023	6	928	55	1951	137	7%	891	67	805	45	1694	112	7%	643	40	624	32	1267	72	6%
10:00	767	4	690	58	1457	121	8%	759	54	691	49	1450	103	7%	812	41	836	39	1648	80	5%
11:00	727	5	693	70	1421	131	9%	734	52	743	59	1476	111	8%	789	36	1022	35	1810	71	4%
12:00	797	7	726	55	1523	132	9%	793	64	767	47	1559	111	7%	838	34	940	35	1777	69	4%
13:00	746	10	698	55	1444	123	9%	751	58	730	45	1482	103	7%	781	39	880	21	1661	60	4%
14:00	760	8	815	57	1575	129	8%	765	63	800	48	1565	111	7%	792	47	754	30	1545	77	5%
15:00	876	8	1002	58	1878	130	7%	839	63	933	46	1772	109	6%	736	33	770	14	1506	47	3%
16:00	1147	10	1259	59	2406	141	6%	1035	70	1121	46	2156	115	5%	723	31	825	15	1547	46	3%
17:00	1162	9	1464	73	2626	146	6%	1053	62	1247	58	2300	120	5%	753	38	721	22	1473	60	4%
18:00	908	8	1199	46	2107	94	4%	829	43	1030	35	1858	78	4%	647	23	619	7	1266	30	2%
19:00	583	8	685	21	1268	50	4%	551	26	616	17	1167	43	4%	484	17	439	8	923	26	3%
20:00	356	4	423	13	779	27	3%	345	14	398	11	743	24	3%	315	10	347	3	662	13	2%
21:00	280	3	327	5	607	17	3%	269	11	307	4	575	15	3%	247	5	274	4	522	9	2%
22:00	187	3	292	9	479	16	3%	179	7	270	7	449	14	3%	198	6	252	4	450	10	2%
23:00	120	2	163	7	283	10	4%	121	4	165	6	286	9	3%	164	3	222	0	386	3	1%
8h	1330	13	872	90	2202	224	10%	1160	112	847	80	2007	192	10%	836	87	893	70	1729	157	9%
18h	13800	123	14095	788	27895	1862	7%	12550	891	12771	640	25317	1530	6%	9957	465	10400	325	20357	791	4%
24 H	14347	128	14476	838	28824	1994	7%	13076	962	13179	688	26251	1650	6%	10465	534	10898	386	21363	920	4%

Annex 6.A.12: 2017 + Committed Development Link Flows

2017 + Committed Development

Link 1: A530 Griffiths Road North (Site 1)																					
	5 Day (weekday) Average							7 day average							Saturday						
	NB		SB		Two Way			NB		SB		Two Way			NB		SB		Two Way		
TIME PERIOD	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00					23	3	12%					29	3	10%					38	4	11%
01:00					18	4	23%					21	4	17%					21	4	19%
02:00					15	3	21%					15	3	20%					16	1	7%
03:00					19	5	24%					17	4	24%					13	3	23%
04:00					37	6	17%					31	5	16%					25	2	8%
05:00					101	11	11%					88	9	11%					63	7	11%
06:00					216	15	7%					173	13	8%					80	11	14%
07:00					527	18	3%					405	15	4%					141	6	4%
08:00					730	16	2%					580	14	2%					320	18	6%
09:00					600	15	2%					520	12	2%					414	6	1%
10:00					548	15	3%					535	13	2%					603	11	2%
11:00					536	13	2%					545	12	2%					684	12	2%
12:00					636	18	3%					638	16	2%					756	11	1%
13:00					627	16	2%					618	13	2%					629	9	1%
14:00					628	17	3%					623	14	2%					625	6	1%
15:00					734	18	2%					691	13	2%					603	4	1%
16:00					831	17	2%					722	14	2%					500	3	1%
17:00					910	15	2%					762	12	2%					420	5	1%
18:00					655	17	3%					556	13	2%					334	5	2%
19:00					409	10	2%					362	8	2%					280	4	1%
20:00					218	5	2%					209	4	2%					199	0	0%
21:00					160	4	3%					148	4	2%					133	2	2%
22:00					127	5	4%					118	4	4%					123	0	0%
23:00					52	3	6%					57	3	5%					110	0	0%
8h					480	50	10%					432	43	10%					367	33	9%
18h					9144	237	3%					8263	197	2%					6953	116	2%
24 H					9357	269	3%					8464	225	3%					7129	138	2%

Link 2: Site Access (Site 2)

	5 Day (weekday) Average							7 day average							Saturday						
	IB		OB		Two Way			IB		OB		Two Way			IB		OB		Two Way		
TIME PERIOD	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00					1	1	43%					2	1	64%					5	5	100%
01:00					2	0	25%					1	0	29%					1	0	0%
02:00					2	1	56%					1	1	71%					0	0	#DIV/0!
03:00					2	1	42%					2	1	36%					1	0	0%
04:00					3	2	69%					3	2	52%					1	0	0%
05:00					13	3	22%					11	2	19%					6	0	0%
06:00					81	7	8%					71	5	7%					46	1	2%
07:00					143	31	22%					116	27	24%					55	18	33%
08:00					103	39	38%					83	32	39%					37	20	54%
09:00					88	37	42%					73	33	45%					27	20	74%
10:00					106	59	55%					87	51	59%					52	43	82%
11:00					115	57	49%					95	51	54%					61	47	78%
12:00					86	33	39%					70	29	41%					34	17	49%
13:00					81	34	42%					66	29	45%					23	17	73%
14:00					110	55	50%					89	44	49%					32	17	53%
15:00					133	57	43%					106	44	41%					43	15	35%
16:00					101	32	32%					82	28	35%					32	18	56%
17:00					65	31	48%					56	26	47%					33	18	54%
18:00					76	22	29%					69	21	30%					49	17	35%
19:00					21	2	9%					20	1	7%					20	0	0%
20:00					14	1	10%					11	1	10%					3	1	33%
21:00					2	1	42%					2	1	36%					0	0	#DIV/0!
22:00					13	1	11%					12	1	11%					12	1	9%
23:00					16	1	9%					15	1	9%					16	1	6%
8h					121	16	13%					107	13	13%					76	7	9%
18h					1354	500	37%					1125	428	38%					576	272	47%
24 H					1378	508	37%					1146	434	38%					591	277	47%

Link 3: A530 Griffiths Road South (Site 3)

	5 Day (weekday) Average							7 day average							Saturday						
	NB		SB		Two Way			NB		SB		Two Way			NB		SB		Two Way		
TIME PERIOD	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00					24	3	15%					17	3	17%					41	4	10%
01:00					18	5	28%					13	4	30%					22	4	18%
02:00					15	4	26%					10	4	36%					12	2	17%
03:00					19	5	26%					12	4	36%					15	3	21%
04:00					36	7	19%					21	4	21%					28	1	4%
05:00					104	14	13%					58	7	11%					66	7	11%
06:00					253	19	8%					123	10	8%					108	10	10%
07:00					613	40	7%					255	34	14%					190	24	13%
08:00					790	52	7%					366	44	12%					342	42	12%
09:00					670	47	7%					316	39	12%					438	25	6%
10:00					613	70	11%					341	61	18%					643	52	8%
11:00					605	69	11%					363	60	16%					739	55	8%
12:00					676	48	7%					410	42	10%					764	25	3%
13:00					667	48	7%					400	43	11%					652	24	4%
14:00					693	68	10%					439	55	13%					655	21	3%
15:00					797	69	9%					494	56	11%					616	21	3%
16:00					884	49	6%					522	40	8%					528	20	4%
17:00					950	46	5%					550	39	7%					436	18	4%
18:00					708	36	5%					398	35	9%					365	20	6%
19:00					418	10	2%					231	13	5%					293	5	2%
20:00					221	7	3%					127	11	9%					200	1	1%
21:00					162	5	3%					87	7	8%					137	0	0%
22:00					129	6	5%					82	5	6%					128	1	1%
23:00					56	5	8%					43	3	7%					114	2	2%
8h					525	62	12%					298	38	13%					407	34	8%
18h					9905	694	7%					5548	597	11%					7347	368	5%
24 H					10121	732	7%					5679	622	11%					7532	390	5%

Link 4: A530 North of A556 (Site 4)

TIME PERIOD	5 Day (weekday) Average							7 day average							Saturday						
	NB		SB		Two Way			NB		SB		Two Way			NB		SB		Two Way		
	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00					53	3	6%					68	3	5%					85	3	4%
01:00					38	4	11%					43	4	8%					51	3	6%
02:00					44	4	9%					47	4	8%					52	3	6%
03:00					45	5	11%					42	4	10%					44	3	7%
04:00					84	7	8%					75	5	7%					58	2	4%
05:00					276	13	5%					239	10	4%					178	5	3%
06:00					547	22	4%					443	18	4%					225	10	5%
07:00					1204	48	4%					947	41	4%					389	25	6%
08:00					1454	63	4%					1170	53	5%					661	39	6%
09:00					1222	61	5%					1069	51	5%					856	33	4%
10:00					1130	77	7%					1079	66	6%					1120	56	5%
11:00					1131	73	6%					1117	65	6%					1268	55	4%
12:00					1228	57	5%					1202	50	4%					1238	38	3%
13:00					1225	61	5%					1187	53	4%					1130	29	3%
14:00					1284	83	6%					1217	67	5%					1047	27	3%
15:00					1372	76	6%					1271	61	5%					1036	25	2%
16:00					1524	63	4%					1355	52	4%					994	26	3%
17:00					**1678**	**58**	3%					1431	49	3%					**899**	**23**	3%
18:00					1315	38	3%					1139	34	3%					758	25	3%
19:00					835	15	2%					745	13	2%					566	10	2%
20:00					504	7	1%					464	6	1%					383	2	1%
21:00					369	7	2%					338	6	2%					276	2	1%
22:00					274	5	2%					257	4	2%					236	1	0%
23:00					132	5	3%					137	4	3%					208	1	0%
8h					1219	63	5%					1094	52	5%					901	31	3%
18h					18427	819	4%					16569	695	4%					13291	426	3%
24 H					18967	855	5%					17083	726	4%					13759	446	3%

Link 5: A556 East (Sites 5 + 6)

TIME PERIOD	5 Day (weekday) Average							7 day average							Saturday						
	EB		WB		Two Way			EB		WB		Two Way			EB		WB		Two Way		
	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00	61	13	71	8	132	21	16%	80	13	94	7	175	20	11%	115	16	201	1	246	27	11%
01:00	34	10	49	7	82	16	20%	41	9	60	6	102	16	15%	71	13	100	3	150	22	14%
02:00	46	17	45	10	91	26	29%	47	15	49	10	96	24	25%	48	12	54	8	109	24	22%
03:00	68	24	37	13	105	37	35%	68	22	41	12	109	35	32%	78	24	48	8	130	38	29%
04:00	118	16	64	11	182	26	15%	106	14	62	11	169	25	15%	82	16	44	6	154	31	20%
05:00	293	28	202	26	495	55	11%	249	24	177	24	429	48	11%	170	17	94	13	308	42	14%
06:00	842	63	487	42	1328	105	8%	656	51	392	36	1057	87	8%	228	29	118	14	424	54	13%
07:00	1727	116	1190	63	2918	179	6%	1323	92	923	55	2267	147	6%	389	36	195	24	697	80	11%
08:00	1769	122	1421	75	3190	198	6%	1398	96	1131	62	2550	159	6%	597	41	276	18	1120	81	7%
09:00	1223	95	967	78	2189	174	8%	1057	78	836	65	1904	143	8%	742	44	365	21	1394	85	6%
10:00	941	80	836	78	1777	158	9%	910	69	804	68	1723	137	8%	920	52	626	38	1741	105	6%
11:00	877	86	834	79	1710	164	10%	880	75	845	67	1731	142	8%	971	55	753	26	1961	102	5%
12:00	917	79	883	72	1800	152	8%	914	68	879	62	1800	130	7%	961	49	842	23	1853	94	5%
13:00	911	87	888	75	1799	162	9%	909	72	904	62	1820	134	7%	947	40	1031	24	1794	74	4%
14:00	959	93	1055	84	2014	177	9%	924	77	1030	70	1963	146	7%	860	35	1139	27	1648	72	4%
15:00	1103	88	1257	78	2360	167	7%	1027	75	1178	64	2217	139	6%	843	41	1195	33	1598	63	4%
16:00	1364	94	1581	83	2945	177	6%	1220	80	1436	68	2672	148	6%	838	42	1276	28	1703	70	4%
17:00	1344	61	1840	104	3184	165	5%	1196	55	1611	83	2825	138	5%	847	32	1265	24	1657	62	4%
18:00	1086	51	1454	66	2541	117	5%	966	47	1295	53	2276	100	4%	687	23	1142	22	1330	42	3%
19:00	680	30	781	31	1461	61	4%	631	25	730	27	1369	52	4%	521	10	714	17	1015	29	3%
20:00	392	16	487	19	879	36	4%	374	15	465	16	844	31	4%	312	8	451	10	682	15	2%
21:00	299	11	351	11	650	22	3%	281	10	345	10	629	20	3%	244	4	350	7	557	13	2%
22:00	212	11	335	13	547	24	4%	200	9	321	10	524	19	4%	214	4	308	1	484	9	2%
23:00	138	17	210	9	349	26	7%	140	16	216	8	357	23	6%	197	13	204	5	453	16	4%
8h	1599	187	1165	125	2764	312	11%	1388	164	1091	114	2494	278	11%	989	142	863	60	1975	254	13%
18h	16784	1202	16857	1061	33640	2263	7%	15006	1009	15341	887	30530	1897	6%	11318	560	12248	362	22112	1067	5%
24 H	17403	1309	17324	1135	34727	2445	7%	15598	1106	15825	958	31610	2064	7%	11882	660	12789	402	23210	1249	5%

Link 6: A530 South of A556 (sites 7 + 8)																					
	5 Day (weekday) Average							7 day average							Saturday						
TIME	NB		SB		Two Way			NB		SB		Two Way			NB		SB		Two Way		
PERIOD	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00	56	20	44	9	100	29	29%	79	20	51	9	129	30	24%	124	27	65	13	190	40	21%
01:00	46	15	30	9	75	24	32%	58	15	32	8	90	23	25%	47	9	42	7	89	16	19%
02:00	59	17	39	18	99	34	35%	69	17	40	16	108	31	28%	56	6	47	17	103	24	23%
03:00	72	23	44	18	116	41	35%	71	23	42	17	112	40	36%	71	29	42	23	112	51	46%
04:00	84	16	89	25	173	41	24%	79	16	80	22	159	36	22%	78	12	79	20	157	32	20%
05:00	174	22	313	28	487	50	10%	158	22	273	26	431	46	11%	137	15	207	24	344	39	11%
06:00	347	37	373	29	720	66	9%	303	37	295	27	597	59	10%	207	23	130	27	334	49	15%
07:00	716	45	754	32	1470	77	5%	575	45	600	30	1175	66	6%	249	17	275	33	520	50	10%
08:00	830	44	574	38	1404	82	6%	717	45	467	34	1183	72	6%	527	22	260	31	789	53	7%
09:00	600	50	461	51	1061	102	10%	556	50	404	43	959	87	9%	501	27	304	28	805	55	7%
10:00	509	57	429	48	938	105	11%	495	57	405	43	901	90	10%	517	31	387	34	896	65	7%
11:00	456	58	445	45	901	103	11%	460	58	429	39	889	90	10%	501	40	406	25	914	65	7%
12:00	485	51	555	47	1041	99	9%	455	51	526	39	980	86	9%	412	36	486	17	899	53	6%
13:00	436	41	609	45	1046	86	8%	432	41	565	36	998	77	8%	463	49	401	16	864	64	7%
14:00	533	49	705	53	1238	102	8%	501	48	630	45	1132	89	8%	479	35	395	26	873	61	7%
15:00	577	52	699	45	1276	97	8%	522	51	643	39	1164	85	7%	436	44	417	24	853	68	8%
16:00	688	42	883	37	1571	79	5%	601	42	788	32	1389	67	5%	452	19	425	23	877	42	5%
17:00	696	36	1019	31	1715	67	4%	607	36	882	27	1489	58	4%	428	16	466	13	892	28	3%
18:00	580	31	737	27	1318	58	4%	514	31	662	24	1176	51	4%	379	19	365	14	748	32	4%
19:00	335	11	398	22	733	34	5%	290	11	366	21	656	30	5%	221	6	278	22	499	28	6%
20:00	212	10	230	15	442	25	6%	192	10	214	13	406	22	5%	155	5	171	11	326	16	5%
21:00	175	11	180	13	355	24	7%	158	11	168	11	327	19	6%	121	2	149	6	270	8	3%
22:00	153	12	146	12	299	24	8%	134	12	137	11	271	20	7%	108	4	119	6	227	10	5%
23:00	79	18	105	9	184	28	15%	76	18	103	8	179	24	13%	97	10	159	4	214	14	7%
8h	917	168	1037	145	1954	313	16%	892	168	916	133	1807	288	16%	817	131	771	135	1543	266	17%
18h	8409	655	9302	599	17711	1254	7%	7588	655	8283	521	15871	1093	7%	6252	404	5592	359	11801	763	6%
24 H	8901	768	9861	706	18762	1474	8%	8102	768	8801	619	16901	1298	8%	6765	503	6074	463	12796	965	8%

Link 7: A556 West (Sites 9 + 10)																					
	5 Day (weekday) Average							7 day average							Saturday						
TIME	EB		WB		Two Way			EB		WB		Two Way			EB		WB		Two Way		
PERIOD	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00	52	1	69	9	122	12	10%	71	3	92	8	163	11	7%	107	3	135	7	242	10	4%
01:00	24	0	45	6	68	11	16%	32	4	57	8	88	12	13%	60	4	86	15	146	20	13%
02:00	41	0	45	5	85	20	24%	44	13	48	6	93	19	20%	54	14	61	8	115	23	20%
03:00	57	0	43	9	100	27	27%	55	15	44	8	99	23	24%	59	15	49	5	108	21	19%
04:00	99	0	55	8	153	26	17%	90	16	55	8	145	23	16%	78	18	68	10	145	29	20%
05:00	290	3	138	13	428	37	9%	247	20	124	12	370	32	9%	156	13	105	14	261	28	11%
06:00	682	7	344	33	1025	81	8%	525	38	287	26	815	63	8%	169	15	176	9	345	25	7%
07:00	1401	10	993	51	2394	186	8%	1079	101	771	41	1854	142	8%	355	20	263	21	618	42	7%
08:00	1384	15	1500	68	2884	199	7%	1105	99	1175	55	2279	154	7%	531	28	453	28	984	55	6%
09:00	1057	8	965	57	2021	141	7%	917	68	834	47	1751	115	7%	652	41	633	33	1285	74	6%
10:00	796	10	720	64	1516	132	9%	785	59	717	54	1502	113	8%	828	46	851	44	1679	90	5%
11:00	756	10	722	76	1479	142	10%	759	56	769	63	1527	120	8%	805	41	1037	40	1842	80	4%
12:00	825	9	754	57	1578	136	9%	818	65	791	49	1609	114	7%	850	35	951	36	1801	71	4%
13:00	773	12	725	57	1498	128	9%	775	60	754	47	1530	107	7%	793	40	891	21	1683	61	4%
14:00	791	13	847	62	1639	140	9%	792	67	827	52	1620	119	7%	803	48	764	31	1567	79	5%
15:00	912	14	1039	64	1951	142	7%	870	67	963	50	1833	117	6%	746	33	780	15	1527	49	3%
16:00	1191	13	1300	61	2490	145	6%	1072	71	1154	47	2225	119	5%	734	32	835	16	1569	48	3%
17:00	1211	12	1508	75	2719	152	6%	1093	64	1282	60	2375	124	5%	763	39	731	23	1494	61	4%
18:00	944	9	1237	47	2181	96	4%	861	44	1061	37	1918	81	4%	656	24	630	8	1286	32	2%
19:00	602	8	707	21	1310	50	4%	570	26	635	17	1202	43	4%	489	17	448	8	938	26	3%
20:00	367	4	435	13	802	27	3%	355	14	408	11	762	24	3%	319	10	351	3	670	13	2%
21:00	289	3	337	5	625	17	3%	276	11	315	4	591	15	3%	251	5	277	4	528	9	2%
22:00	195	3	299	9	494	16	3%	185	7	276	7	461	14	3%	201	6	254	4	455	10	2%
23:00	124	2	168	7	292	10	4%	125	4	168	6	293	9	3%	167	3	224	0	391	3	1%
8h	1367	13	907	90	2273	224	10%	1187	112	875	80	2065	192	9%	850	87	904	70	1754	157	9%
18h	14299	162	14599	827	28899	1941	7%	12963	920	13187	672	26150	1596	6%	10111	484	10549	345	20660	829	4%
24 H	14861	167	14995	878	29855	2073	7%	13500	992	13607	721	27108	1715	6%	10625	553	11053	405	21678	958	4%

Annex 6.A.13: 2017 + Committed Development + Proposed Development Link Flows

2017 + Committed Development + Development Traffic

Link 1: A530 Griffiths Road North (Site 1)																					
	5 Day (weekday) Average							7 day average							Saturday						
	NB		SB		Two Way			NB		SB		Two Way			NB		SB		Two Way		
TIME PERIOD	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00					23	3	12%					29	3	10%					38	4	11%
01:00					18	4	23%					21	4	17%					21	4	19%
02:00					15	3	21%					15	3	20%					16	1	7%
03:00					19	5	24%					17	4	24%					13	3	23%
04:00					37	6	17%					31	5	16%					25	2	8%
05:00					101	11	11%					88	9	11%					63	7	11%
06:00					217	15	7%					174	13	7%					81	11	14%
07:00					527	18	3%					405	15	4%					142	6	4%
08:00					732	16	2%					582	14	2%					322	18	6%
09:00					600	15	2%					520	12	2%					414	6	1%
10:00					548	15	3%					535	13	2%					603	11	2%
11:00					536	13	2%					545	12	2%					684	12	2%
12:00					636	18	3%					638	16	2%					756	11	1%
13:00					627	16	2%					618	13	2%					629	9	1%
14:00					628	17	3%					624	14	2%					625	6	1%
15:00					734	18	2%					691	13	2%					604	4	1%
16:00					831	17	2%					722	14	2%					500	3	1%
17:00					912	15	2%					764	12	2%					422	5	1%
18:00					655	17	3%					556	13	2%					334	5	2%
19:00					409	10	2%					362	8	2%					280	4	1%
20:00					218	5	2%					209	4	2%					199	0	0%
21:00					160	4	3%					148	4	2%					133	2	2%
22:00					127	5	4%					119	4	4%					124	0	0%
23:00					52	3	6%					58	3	5%					111	0	0%
8h					482	50	10%					433	43	10%					368	33	9%
18h					9151	237	3%					8270	197	2%					6960	116	2%
24 H					9364	269	3%					8471	225	3%					7136	138	2%

Link 2: Site Access (Site 2)

TIME PERIOD	5 Day (weekday) Average							7 day average							Saturday						
	IB		OB		Two Way			IB		OB		Two Way			IB		OB		Two Way		
	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00					1	1	43%					2	1	64%					5	5	100%
01:00					2	0	25%					1	0	29%					1	0	0%
02:00					2	1	56%					1	1	71%					0	0	#DIV/0!
03:00					2	1	42%					2	1	36%					1	0	0%
04:00					3	2	69%					3	2	52%					1	0	0%
05:00					13	3	22%					11	2	19%					6	0	0%
06:00					86	7	8%					76	5	7%					51	1	2%
07:00					153	39	25%					125	35	28%					64	26	40%
08:00					120	47	39%					101	40	40%					55	28	51%
09:00					96	45	47%					81	40	50%					35	28	80%
10:00					114	66	58%					95	59	62%					60	51	85%
11:00					123	64	52%					103	59	57%					68	55	80%
12:00					94	41	44%					78	37	47%					42	25	59%
13:00					88	41	47%					74	37	50%					31	25	80%
14:00					120	63	52%					99	52	52%					42	25	59%
15:00					146	64	44%					119	51	43%					56	23	40%
16:00					109	40	37%					90	36	40%					40	26	64%
17:00					83	39	47%					73	34	46%					51	26	51%
18:00					83	29	35%					77	29	37%					56	25	44%
19:00					21	2	9%					20	1	7%					20	0	0%
20:00					14	1	10%					11	1	10%					3	1	33%
21:00					2	1	42%					2	1	36%					0	0	#DIV/0!
22:00					15	1	10%					14	1	9%					14	1	7%
23:00					18	1	8%					17	1	8%					18	1	6%
8h					128	16	13%					114	13	12%					83	7	9%
18h					1484	592	40%					1255	520	41%					706	364	52%
24 H					1508	600	40%					1276	526	41%					721	369	51%

Link 3: A530 Griffiths Road South (Site 3)

TIME PERIOD	5 Day (weekday) Average							7 day average							Saturday						
	NB		SB		Two Way			NB		SB		Two Way			NB		SB		Two Way		
	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00					24	3	15%					17	3	17%					41	4	10%
01:00					18	5	28%					13	4	30%					22	4	18%
02:00					15	4	26%					10	4	36%					12	2	17%
03:00					19	5	26%					12	4	36%					15	3	21%
04:00					36	7	19%					21	4	21%					28	1	4%
05:00					104	14	13%					58	7	11%					66	7	11%
06:00					256	19	8%					127	10	8%					111	10	9%
07:00					623	48	8%					264	42	16%					199	32	16%
08:00					805	59	7%					382	52	14%					357	49	14%
09:00					677	55	8%					324	46	14%					446	33	7%
10:00					621	77	12%					349	69	20%					650	60	9%
11:00					613	77	12%					370	67	18%					746	63	8%
12:00					684	56	8%					418	50	12%					772	33	4%
13:00					675	56	8%					408	50	12%					660	32	5%
14:00					703	76	11%					449	63	14%					665	29	4%
15:00					808	76	9%					505	63	13%					627	29	5%
16:00					892	57	6%					529	48	9%					535	28	5%
17:00					966	53	6%					566	47	8%					452	26	6%
18:00					716	44	6%					405	43	11%					373	28	7%
19:00					418	10	2%					231	13	5%					293	5	2%
20:00					221	7	3%					127	11	9%					200	1	1%
21:00					162	5	3%					87	7	8%					137	0	0%
22:00					131	6	5%					85	5	6%					130	1	1%
23:00					58	5	8%					45	3	6%					115	2	2%
8h					530	62	12%					303	38	13%					411	34	8%
18h					10027	785	8%					5670	688	12%					7469	459	6%
24 H					10243	823	8%					5801	713	12%					7654	481	6%

Link 4: A530 North of A556 (Site 4)																					
	5 Day (weekday) Average							7 day average							Saturday						
TIME	NB		SB		Two Way			NB		SB		Two Way			NB		SB		Two Way		
PERIOD	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00					53	3	6%					68	3	5%					85	3	4%
01:00					38	4	11%					43	4	8%					51	3	6%
02:00					44	4	9%					47	4	8%					52	3	6%
03:00					45	5	11%					42	4	10%					44	3	7%
04:00					84	7	8%					75	5	7%					58	2	4%
05:00					276	13	5%					239	10	4%					178	5	3%
06:00					550	22	4%					446	18	4%					228	10	4%
07:00					1213	55	5%					956	49	5%					398	32	8%
08:00					1468	71	5%					1184	61	5%					675	47	7%
09:00					1229	68	6%					1077	59	5%					864	40	5%
10:00					1138	85	7%					1087	74	7%					1128	64	6%
11:00					1139	80	7%					1124	72	6%					1275	63	5%
12:00					1235	65	5%					1210	58	5%					1245	46	4%
13:00					1233	68	6%					1195	60	5%					1138	36	3%
14:00					1294	91	7%					1227	74	6%					1057	34	3%
15:00					1383	84	6%					1282	69	5%					1047	32	3%
16:00					1532	70	5%					1362	60	4%					1002	33	3%
17:00					1693	66	4%					1445	57	4%					913	30	3%
18:00					1323	46	3%					1146	42	4%					765	32	4%
19:00					835	15	2%					745	13	2%					566	10	2%
20:00					504	7	1%					464	6	1%					383	2	1%
21:00					369	7	2%					338	6	2%					276	2	1%
22:00					276	5	2%					259	4	2%					239	1	0%
23:00					134	5	3%					138	4	3%					209	1	0%
8h					1223	63	5%					1099	52	5%					906	31	3%
18h					18545	910	5%					16687	786	5%					13409	517	4%
24 H					19084	946	5%					17201	817	5%					13877	537	4%

Link 5: A556 East (Sites 5 + 6)																					
	5 Day (weekday) Average							7 day average							Saturday						
TIME	EB		WB		Two Way			EB		WB		Two Way			EB		WB		Two Way		
PERIOD	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00	61	13	71	8	132	21	16%	80	13	94	7	175	20	11%	115	16	201	1	246	27	11%
01:00	34	10	49	7	82	16	20%	41	9	60	6	102	16	15%	71	13	100	3	150	22	14%
02:00	46	17	45	10	91	26	29%	47	15	49	10	96	24	25%	48	12	54	8	109	24	22%
03:00	68	24	37	13	105	37	35%	68	22	41	12	109	35	32%	78	24	48	8	130	38	29%
04:00	118	16	64	11	182	26	15%	106	14	62	11	169	25	15%	82	16	44	6	154	31	20%
05:00	293	28	202	26	495	55	11%	249	24	177	24	429	48	11%	170	17	94	13	308	42	14%
06:00	842	63	487	42	1328	105	8%	656	51	392	36	1057	87	8%	228	29	118	14	424	54	13%
07:00	1729	118	1192	65	2922	183	6%	1325	93	925	57	2271	151	7%	391	38	197	26	701	84	12%
08:00	1771	124	1423	77	3194	202	6%	1400	98	1133	64	2554	163	6%	598	43	277	19	1124	85	8%
09:00	1224	97	968	80	2193	178	8%	1058	79	837	67	1908	147	8%	744	46	366	22	1398	89	6%
10:00	943	82	838	79	1781	162	9%	912	71	806	70	1727	141	8%	921	54	627	40	1745	109	6%
11:00	879	87	835	80	1714	168	10%	882	77	846	68	1735	146	8%	973	57	754	28	1965	106	5%
12:00	919	81	884	74	1804	156	9%	916	70	881	64	1804	134	7%	963	50	844	25	1857	98	5%
13:00	912	89	890	76	1803	166	9%	911	74	905	64	1824	138	8%	948	42	1033	26	1798	78	4%
14:00	961	94	1057	86	2018	181	9%	926	78	1032	71	1967	150	8%	862	37	1141	29	1652	76	5%
15:00	1105	90	1259	80	2364	171	7%	1029	76	1180	66	2221	143	6%	845	43	1197	35	1602	67	4%
16:00	1365	96	1583	85	2949	181	6%	1221	81	1438	70	2676	152	6%	840	44	1277	30	1707	74	4%
17:00	1345	63	1842	106	3188	169	5%	1198	57	1612	85	2829	142	5%	849	34	1266	26	1661	66	4%
18:00	1088	53	1456	68	2545	121	5%	967	49	1297	55	2280	104	5%	688	25	1143	24	1334	46	3%
19:00	680	30	781	31	1461	61	4%	631	25	730	27	1369	52	4%	521	10	714	17	1015	29	3%
20:00	392	16	487	19	879	36	4%	374	15	465	16	844	31	4%	312	8	451	10	682	15	2%
21:00	299	11	351	11	650	22	3%	281	10	345	10	629	20	3%	244	4	350	7	557	13	2%
22:00	212	11	335	13	547	24	4%	200	9	321	10	524	19	4%	214	4	308	1	484	9	2%
23:00	138	17	210	9	349	26	7%	140	16	216	8	357	23	6%	197	13	204	5	453	16	4%
8h	1599	187	1165	125	2764	312	11%	1388	164	1091	114	2494	278	11%	989	142	863	60	1975	254	13%
18h	16804	1222	16877	1081	33688	2311	7%	15026	1030	15361	907	30578	1945	6%	11338	581	12268	383	22160	1115	5%
24 H	17423	1329	17344	1156	34775	2493	7%	15618	1127	15845	978	31658	2112	7%	11902	680	12810	423	23258	1297	6%

Link 6: A530 South of A556 (sites 7 + 8)

TIME	5 Day (weekday) Average							7 day average							Saturday						
	NB		SB		Two Way			NB		SB		Two Way			NB		SB		Two Way		
PERIOD	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00	56	20	44	9	100	29	29%	79	20	51	9	129	30	24%	124	27	65	13	190	40	21%
01:00	46	15	30	9	75	24	32%	58	15	32	8	90	23	25%	47	9	42	7	89	16	19%
02:00	59	17	39	18	99	34	35%	69	17	40	16	108	31	28%	56	6	47	17	103	24	23%
03:00	72	23	44	18	116	41	35%	71	23	42	17	112	40	36%	71	29	42	23	112	51	46%
04:00	84	16	89	25	173	41	24%	79	16	80	22	159	36	22%	78	12	79	20	157	32	20%
05:00	174	22	313	28	487	50	10%	158	22	273	26	431	46	11%	137	15	207	24	344	39	11%
06:00	347	37	373	29	720	66	9%	303	37	295	27	598	59	10%	207	23	130	27	335	49	15%
07:00	717	46	755	33	1472	79	5%	576	46	601	31	1177	68	6%	250	18	276	34	522	52	10%
08:00	832	45	575	39	1407	84	6%	719	45	468	35	1186	73	6%	529	23	260	32	792	55	7%
09:00	600	51	462	52	1062	103	10%	556	51	405	44	961	89	9%	502	28	305	29	807	57	7%
10:00	510	58	430	49	940	106	11%	496	58	406	44	902	92	10%	518	32	388	35	898	66	7%
11:00	457	59	446	46	903	105	12%	461	58	430	40	890	92	10%	502	41	406	26	916	67	7%
12:00	486	52	556	48	1042	100	10%	456	52	526	40	982	88	9%	413	37	487	18	901	55	6%
13:00	437	42	610	45	1048	87	8%	433	42	566	37	999	78	8%	464	49	402	17	865	66	8%
14:00	534	50	706	53	1240	103	8%	502	49	631	46	1133	91	8%	480	36	396	27	875	63	7%
15:00	578	52	700	46	1278	98	8%	523	52	644	40	1166	87	7%	437	45	418	24	855	70	8%
16:00	688	43	884	38	1572	81	5%	602	43	789	33	1390	69	5%	453	20	426	24	879	43	5%
17:00	697	37	1020	32	1718	68	4%	608	37	883	28	1492	59	4%	429	17	468	13	895	30	3%
18:00	581	32	738	27	1319	59	4%	515	32	663	25	1178	53	4%	380	20	366	15	750	34	5%
19:00	335	11	398	22	733	34	5%	290	11	366	21	656	30	5%	221	6	278	22	499	28	6%
20:00	212	10	230	15	442	25	6%	192	10	214	13	406	22	5%	155	5	171	11	326	16	5%
21:00	175	11	180	13	355	24	7%	158	11	168	11	327	19	6%	121	2	149	6	270	8	3%
22:00	154	12	146	12	299	24	8%	134	12	137	11	271	20	7%	108	4	119	6	227	10	5%
23:00	79	18	105	9	184	28	15%	76	18	104	8	179	24	13%	97	10	159	4	214	14	7%
8h	918	168	1037	145	1954	313	16%	893	168	916	133	1807	288	16%	817	131	771	135	1544	266	17%
18h	8421	665	9314	609	17736	1274	7%	7600	665	8295	531	15895	1113	7%	6263	414	5603	369	11826	783	7%
24 H	8912	778	9873	716	18786	1494	8%	8113	778	8812	630	16925	1319	8%	6776	513	6085	473	12820	985	8%

Link 7: A556 West (Sites 9 + 10)

TIME	5 Day (weekday) Average							7 day average							Saturday						
	EB		WB		Two Way			EB		WB		Two Way			EB		WB		Two Way		
PERIOD	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %	Total Veh	HGV	Total Veh	HGV	Total Veh	HGV	HGV %
00:00	52	1	69	9	122	12	10%	71	3	92	8	163	11	7%	107	3	135	7	242	10	4%
01:00	24	0	45	6	68	11	16%	32	4	57	8	88	12	13%	60	4	86	15	146	20	13%
02:00	41	0	45	5	85	20	24%	44	13	48	6	93	19	20%	54	14	61	8	115	23	20%
03:00	57	0	43	9	100	27	27%	55	15	44	8	99	23	24%	59	15	49	5	108	21	19%
04:00	99	0	55	8	153	26	17%	90	16	55	8	145	23	16%	78	18	68	10	145	29	20%
05:00	290	3	138	13	428	37	9%	247	20	124	12	370	32	9%	156	13	105	14	261	28	11%
06:00	685	7	344	33	1028	81	8%	527	38	287	26	818	63	8%	172	15	176	9	348	25	7%
07:00	1402	11	996	53	2398	188	8%	1080	102	774	42	1858	144	8%	357	22	265	23	622	44	7%
08:00	1391	17	1501	69	2893	201	7%	1112	100	1176	56	2288	156	7%	538	29	454	29	992	57	6%
09:00	1058	10	966	59	2024	143	7%	918	69	836	48	1754	117	7%	653	42	634	34	1287	76	6%
10:00	797	11	721	65	1519	134	9%	786	60	718	55	1505	115	8%	829	47	852	45	1681	92	5%
11:00	757	11	724	77	1481	144	10%	760	58	770	65	1530	122	8%	806	42	1038	41	1844	82	4%
12:00	826	10	755	58	1581	138	9%	819	67	792	50	1612	116	7%	851	36	952	37	1803	73	4%
13:00	774	13	726	59	1500	130	9%	777	61	756	48	1533	109	7%	794	41	892	23	1686	63	4%
14:00	795	14	848	63	1643	142	9%	796	68	828	53	1624	121	7%	806	49	765	32	1571	81	5%
15:00	913	15	1043	65	1956	144	7%	871	68	968	51	1839	119	6%	748	35	784	16	1532	51	3%
16:00	1192	14	1301	62	2493	147	6%	1073	73	1156	49	2228	121	5%	735	33	836	18	1571	50	3%
17:00	1212	13	1515	77	2727	154	6%	1094	66	1289	61	2384	126	5%	764	40	738	24	1502	63	4%
18:00	945	11	1238	48	2183	98	5%	863	45	1062	38	1921	83	4%	657	25	631	9	1289	34	3%
19:00	602	8	707	21	1310	50	4%	570	26	635	17	1202	43	4%	489	17	448	8	938	26	3%
20:00	367	4	435	13	802	27	3%	355	14	408	11	762	24	3%	319	10	351	3	670	13	2%
21:00	289	3	337	5	625	17	3%	276	11	315	4	591	15	3%	251	5	277	4	528	9	2%
22:00	197	3	299	9	496	16	3%	187	7	276	7	463	14	3%	203	6	254	4	457	10	2%
23:00	124	2	169	7	293	10	4%	125	4	170	6	294	9	3%	167	3	226	0	392	3	1%
8h	1370	13	908	90	2277	224	10%	1190	112	876	80	2069	192	9%	853	87	905	70	1758	157	9%
18h	14327	177	14626	843	28953	1965	7%	12991	935	13214	687	26205	1620	6%	10139	500	10575	360	20714	853	4%
24 H	14889	182	15021	893	29910	2097	7%	13528	1007	13633	736	27162	1739	6%	10653	568	11079	420	21732	982	5%

Appendix 7.A: Details of Relevant Legislation

A.1 The assessment has been prepared taking account of the following legislation and guidance.

The Conservation of Habitats and Species Regulations 2010

A.2 The Conservation of Habitats and Species Regulations 2010 (known as 'the Habitats Regulations') transpose the European Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora ('Habitats Directive') and some requirements of Council Directive 79/409/EEC on the conservation of wild birds ('Birds Directive') into national law.

A.3 Article 6(3) of the Habitats Directive, which applies to both Special Areas of Conservation (SAC) designated under that directive, and also to Special Protection Areas (SPA) designated under the Birds Directive (as specified in Article 7) requires that:

"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either indirectly or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public."

A.4 This requirement is incorporated into UK law by Regulation 61 of the Habitats Regulations. As explained in Chapter 7, the proposed development will not require consideration in terms of Regulation 61.

A.5 Regulation 41 of the Habitats Regulations makes it an offence (subject to exceptions set out in Regulation 42) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2 (European protected species of animals), or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 4 (European protected species of plant). New developments for which development works would contravene the protection afforded to European protected species require derogation from these provisions in the form of a licence.

The Wildlife and Countryside Act 1981

A.6 The Wildlife and Countryside Act 1981 (as amended) is the principal mechanism for the legislative protection of wildlife in Great Britain.

A.7 Under Section 28 I of the Act, Local Planning Authorities (LPAs) are required to consult Natural England before granting planning permission for development which might damage a Site of Special Scientific Interest (SSSI). Under the Town and Country Planning (Development Management Procedure (England)Order (DMPO) (2010) Schedule 5, LPAs have a duty to consult Natural England before granting planning permission on any development that is in or likely to affect a SSSI or is within a consultation area around a SSSI notified to the LPA by Natural England. Natural England has published a set of mapped Impact Risk Zones (IRZs) for SSSIs for use by LPAs and developers to consider whether a proposed development is likely to affect an SSSI and determine whether they will need to consult Natural England to seek advice on the nature of any potential SSSI impacts and how they might be avoided or mitigated. Natural England has been consulted as detailed in Chapter 7, and the consultation response is at Appendix 7.B.

A.8 LPAs are required to consult Natural England if the development is considered likely to affect an SSSI, even if the application site falls outside the SSSI and surrounding consultation area.

The Protection of Badgers Act 1992

A.9 Badgers are protected, primarily for reasons of animal welfare rather than conservation, under the Protection of Badgers Act 1992. The Act makes it a criminal offence to kill, injure or take a badger, or to damage or interfere with a badger sett.

Biodiversity – Code of Practice

A.10 BS 42020 Biodiversity-Code of Practice for Planning and Development (BSI 2013) was published in August 2013. The standard provides advice regarding ecological survey work and the requirement for appropriate and qualified ecologists to undertake such work. It emphasises the importance of provision of adequate information to inform the assessment process.

The UK Biodiversity Action Plan (BAP) and Natural Environment and Rural Communities Act Section 41

A.11 In response to the Convention on Biological Diversity, signed in Rio in 1992, the UK government identified a number of habitats and species, each of which were to have a detailed Action Plan for their protection and where necessary, restoration. The UK List of Priority Species and Habitats now covers 1150 species and 65 habitats and the conservation approach for these is now being developed by a partnership of statutory and non-statutory agencies and bodies. The duties of government departments in regard to the UK BAP were first set out in Section 74 of the Countryside and Rights of Way Act (CRoW) 2000 and accompanying guidance.

A.12 As a result of new drivers and requirements, the 'UK Post-2010 Biodiversity Framework', published in July 2012, has succeeded the UK BAP. In particular, due to devolution and the creation of country-level biodiversity strategies, much of the work previously carried out under the UK BAP is now focussed at a country level.

A.13 The UK BAP lists of priority species and habitats remain important and are valuable reference sources. Notably, they have been used to help draw up statutory lists of priority species and habitats in England, as required under Section 41 (England) of the Natural Environment and Rural Communities (NERC) Act 2006.

Cheshire Biodiversity Action Plan

A.14 The Cheshire Biodiversity Action Plan (CrBAP) lists the priority species and habitats, and their action plans, for the county of Cheshire.

Appendix 7.B: Natural England Consultation Response

Date: 08 June 2015
Our ref: 155942
Your ref: Data Request, Lostock Works

Louisa Medland
Senior Ecologist - RPS Planning & Development
20 Western Avenue
Milton Park
Abingdon
Oxfordshire
OX14 4SH

Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire
CW1 6GJ

T 0300 060 3900

BY EMAIL ONLY

Dear Ms Medland

Data request re: Land at 'Lostock Works' off the 4530 Griffiths Road, near Lostock Gralam (grid ref 367920, 374201)

Thank you for your consultation on the above which was received by Natural England on 4 June 2015. This site is in close proximity to the Witton Lime Beds Site of Special Scientific Interest (SSSI).

For further information on statutory sites for nature conservation we recommend that you look at the Multi-Agency Geographic Information for the Countryside (MAGIC) Project website (http://magic.defra.gov.uk/), which collates information from Defra, Natural England, Environment Agency, Forestry Commission and English Heritage. Natural England's website, www.naturalengland.org.uk, also provides information on SSSIs that can be downloaded.

Natural England does not routinely hold detailed information on the distribution of species and habitats but forwards data it has to the appropriate local record centre (LRC). You have informed us that you have contacted the LRC, rECOrd and we advise that you direct other similar queries in the future to the LRC, who will have the most comprehensive data records for the area.

I hope this information will help you complete your search and would encourage you to forward biological records you have to the appropriate Local Record Centre, so that they might be included in the data sets to enhance future information requests.

Yours sincerely

Helen Rogers
Consultations Team

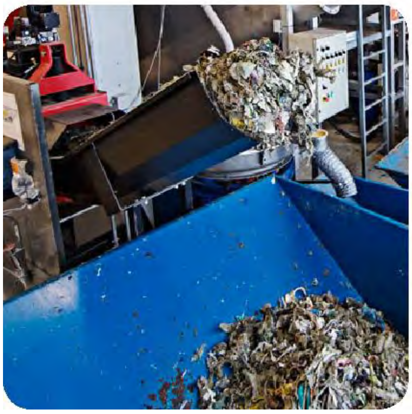
Appendix 7.C: Ecology Appraisal

Appendix 7.C: Ecology Appraisal

REnescience Northwich








Quality Management

Prepared by:	Louisa Medland BSc (Hons) MCIEEM	Senior Ecologist	Medland	02/10/15
Reviewed & checked by:	Kerry Shakespeare BSc (Hons) MCIEEM CEnv	Technical Director	K Shakespeare	02/10/15
Authorised by:	Kerry Shakespeare BSc (Hons) MCIEEM CEnv	Technical Director	K Shakespeare	02/10/15
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Revision History				
Rev	**Date**	**Status**	**Reason for revision**	**Additional comments**
0	31/07/15	Draft	-	-
1	15/09/15	Draft	Initial internal review	TAD
2	21/09/15	Draft	Draft for client review	-
3	2/10/15	Final	Finalise	-

Executive Summary

RPS was commissioned to carry out an ecology appraisal to inform the proposed REnescience Northwich development on the site of a former chemical works within Lostock Works, off the A530 Griffiths Road, near Lostock Gralam and Northwich in Cheshire.

The objectives of the ecology appraisal were to: locate statutory wildlife sites within 5 km of the site and non-statutory wildlife sites within 2 km of it; locate records of protected or otherwise notable species within 2 km of the site (extended to 5 km for bats and otters); identify and map the habitats present within the site boundary; assess the potential for legally protected fauna and flora to be present; and assess the requirement for further ecological surveys.

A search area of 2 km from the site was used to gather records of protected and notable species and details of non-statutory wildlife sites.

A wider search of 5 km from the site was used to gather details of statutory wildlife sites and records of otters and bats, as these were considered more sensitive receptors that could potentially be affected by activity at a greater distance away and because they are highly mobile species that can utilise habitat a long way from where they have been recorded.

Requests for data on designated wildlife sites and/or species records were sent to a range of relevant organisations and individuals, detailed in Annex 7.C.1.

Previous ecology surveys, which were undertaken on the site in 2010 by Wardell Armstrong on behalf of Viridor Waste Management Ltd to inform a proposal for a waste treatment plant on this site, have been reviewed.

The Phase 1 Habitat Survey of the proposed REnescience Northwich development site was carried out on 9th June 2015 to map all habitats present within the site boundary and to identify any potential for protected species to be present.

The survey took account of the standard Phase 1 Habitat Survey methodology as set out by the Joint Nature Conservation Committee (JNCC) in the Handbook for Phase 1 Habitat Survey; a technique for environmental audit (JNCC, 2010).

A total of four statutory designated sites, comprising three Sites of Special Scientific Interest (SSSIs) and one Local Nature Reserve (LNR) were identified within 5 km of the proposed development site. A total of five non-statutory designated sites, all Local Wildlife Sites (LWS) are present within 2 km of the site.

A number of protected or notable flora and fauna were recorded within the 2 km and 5 km search areas. Otter and at least eight species of bat were recorded within 5 km of the site. Five other species of mammal, 73 birds, two amphibians, six invertebrates and five plants were recorded within 2 km of the site. Four invasive plants were recorded within 2 km of the site.

Previous surveys undertaken on the site found the habitats to be of relatively low ecological value and no protected species were found to be present. Orchids and cinnabar moth caterpillars were present.

The Phase 1 Habitat Survey found that the site predominantly comprised areas of hard standing and bare ground associated with the former chemical works on the site. Some of these areas had begun to be colonised by ephemeral/short perennial and tall ruderal vegetation. Small areas of scrub and scattered young trees and saplings had also established.

Some habitats along the site boundary appeared less disturbed, including an area of species-poor grassland, young tree lines and an area of bracken.

The habitats on the site are considered to be of relatively low ecological value. However, a disused gatehouse building just outside the application site boundary, at the site entrance, was found to have potential to support bat roosts. Based on the Phase 1 survey, there is considered also to be potential for badgers to be present within 30 m of the site boundary and potential for water vole and otter to be using the Wade Brook river corridor to the south of the site. Further surveys have been undertaken to determine whether the proposals for the site could affect these species and the findings are reported in Appendices 7.D, 7.E and 7.F to the Environmental Statement (ES).

Some trees and areas of scrub on the site had the potential to support nesting birds and fragrant orchid was found to occur occasionally in the east of the site.

Recommendations are made at the end of the report for measures to ensure these features are not adversely affected by the proposed development on the site.

Contents

Tables, Figures and Annexes

Tables

Figures

Annexes

1 Introduction

1.1 RPS was commissioned to carry out an ecology appraisal to inform the proposed REnescience Northwich development on the site of a former chemical works within Lostock Works, off the A530 Griffiths Road, near Lostock Gralam and Northwich in Cheshire.

1.2 The main site (excluding the shared access road within Lostock Works) is approximately 3.37 ha in size and centred on national grid reference 367920, 374201. It is located on land at part of the Lostock Works chemical industry site, adjacent to a number of other industrial operators. It was formerly used for chlorine production until 2001. At present, the site is cleared, with only some foundation slabs, hardstanding/roadways and a disused one-storey security hut outside the entrance gate remaining. The site is enclosed by a palisade fence.

1.3 The objectives of the ecology appraisal were to:

- locate statutory wildlife sites within 5 km of the site and non-statutory wildlife sites within 2 km of it;
- locate records of protected or otherwise notable species within 2 km of the site (extended to 5 km for bats and otters);
- identify and map the habitats present within the site boundary;
- assess the potential for legally protected fauna and flora to be present; and
- assess the requirement for further ecological surveys.

1.4 This report outlines the methods used (Section 2), presents the results obtained (Section 3), and sets out the conclusions reached (Section 4).

2 Methodology

Desk Study

Search Area

2.1 A search area of 2 km from the site was used to gather records of protected and notable species and details of non-statutory wildlife sites.

2.2 A wider search of 5 km from the site was used to gather details of statutory wildlife sites and records of otters and bats, as these were considered more sensitive receptors that could potentially be affected by activity at a greater distance away and because they are highly mobile species that can utilise habitat a long way from where they have been recorded.

Data Request

2.3 Requests for data on designated wildlife site and/or species records were sent to the organisations and individuals listed in Table 2.1. The responses received are included in Annex 7.C.1.

Table 2.1: Organisations from which ecology data was requested

Consultee
RECORD (Biodiversity Information System for Cheshire, Halton, Warrington and Wirral)
Cheshire West and Chester (Local Authority)
Environment Agency
Natural England
Cheshire Wildlife Trust
Cheshire and Wirral Ornithological Society
Cheshire Butterfly County Recorder

2.4 In addition to these requests, the 'MAGIC' website was consulted for information on any Special Areas of Conservation (SACs), Special Protection Areas (SPAs), Ramsar Sites, National Nature Reserves (NNRs) and Sites of Special Scientific Interest (SSSIs). The JNCC website was also consulted for additional details of any SACs, SPAs, and Ramsar Sites.

2.5 The legal and conservation status of the species for which records were received was determined using the *Spreadsheet of Conservation Designations for UK Taxa* (JNCC, 2010).

Previous surveys

2.6 Previous ecology surveys were undertaken on the site in 2010 by Wardell Armstrong on behalf of Viridor Waste Management Ltd to inform a proposal for a waste treatment plant. The following reports were reviewed as part of the desk study to identify ecological features present in 2009 and 2010:

- Extended Phase 1 Habitat Survey – Update, Aug 2010
- Bat Survey Report, May 2009
- Great Crested Newt Survey Report, June 2009

Phase 1 Habitat Survey

2.7 The Phase 1 Habitat Survey of the proposed REnescience Northwich development site was carried out on 9th June 2015 to map all habitats present within the site boundary and to identify any potential for protected species to be present.

2.8 The survey took account of the standard Phase 1 Habitat Survey methodology as set out by the Joint Nature Conservation Committee (JNCC) in the Handbook for Phase 1 Habitat Survey; a technique for environmental audit (JNCC, 2010).

2.9 The area was surveyed and habitats were mapped onto Ordnance Survey base maps using the JNCC Phase 1 Habitat Survey categories. Typical plant species were recorded for each category of habitat and species names used follow Stace (2010).

2.10 The survey was undertaken during the optimal time for Phase 1 habitat surveys; between March and September, when most plant species are evident or in flower.

2.11 Habitats potentially suitable for legally protected animal species were noted, and any signs of such species (e.g. sightings, tracks, droppings, burrows, etc.) were recorded.

2.12 Target notes were created for any features of interest and are listed at Annex 7.C.2. A full species list is provided in Annex 7.C.3 and site photos are shown in Annex 7.C.4.

3 Results

Desk Study

Consultation Responses

3.1 The responses received from consultees are summarised in Table 3.1, below.

Table 3.1: Responses received from consultees

Consultee	Response
RECORD (Biodiversity Information System for Cheshire, Halton, Warrington and Wirral)	Provided protected and notable species records and invasive species records
Cheshire West and Chester (Local Authority)	Recommended searching previous planning applications in the area for relevant ecology information. Informed of protected species known within 1 km and recommended contacting some additional local wildlife groups and recorders. Also provided link to website to search for non-statutory designated sites.
Environment Agency	Provided records of otter and water vole within the search areas
Natural England	Informed that the site is in close proximity to the Witton Lime Beds SSSI and provided links to MAGIC and Natural England websites for more information. Informed that Natural England forwards data on the distribution of species and habitats to RECORD.
Cheshire Wildlife Trust	Provided details of non-statutory designated sites within 2 km of the site.
Cheshire and Wirral Ornithological Society	Response not yet received
Cheshire Butterfly County Recorder	Informed that RECORD would have the required information as all bufferfly records are sent annually to them. Indicated that the most significant butterfly sightings are of the scarce Dingy Skipper colonies on Ashton's Flashes.

3.2 The data received from the consultees concerning wildlife sites and protected and notable species records is summarised below.

Statutory Designated Sites

3.3 Four statutory designated sites are located within 5 km of the site, which are listed in Table 3.2 and shown on Figure 7.A.

Table 3.2: Statutory Designated Sites within 5km of the site

Site name	Designation	Distance to site (km)	Description
Witton Lime Beds	SSSI	1.5	Lowland calcareous grassland habitat situated on lime beds covers half the site and the remaining area comprises mature woodland and semi-improved grassland. A range of calcareous plant species occur.
Plumley Lime Beds	SSSI	2.5	The site differs from the nearby lime beds at Witton in that lime has washed out from the beds into the surrounding land creating variable soil condition. A wider range of habitats also occurs including woodland, a pool and marshland and an area of soil deposited on part of the lime beds.
Marshall's Arm, Hartford	LNR	3.0	The three main habitats are woodland, grassland/meadows and Wetland/open water. Three fingers of woodland are remnants of the ancient hunting Forest of Mara. An old meander of the River Weaver cut off when canalised. Variety of wetland habitats.
Tabley Mere	SSSI	4.7	The Meres & Mosses of the north west Midlands form a nationally important series of open water and peatland sites which have developed in natural depressions due to glaciation. Although the majority of the meres are nutrient rich (eutrophic) the water chemistry is very variable reflecting the heterogeneous nature of the surrounding drift deposits. Associated fringing habitats such as reedswamp, fen, carr and damp pasture add to the value of the meres.

3.4 Three of the statutory designated sites are SSSIs and one was a Local Nature Reserve (LNR). The two designated sites closest to the site are lime beds, which support lowland calcareous grassland. Witton Lime Beds SSSI is closest to the site, located approximately 1.5 km to the west.

Non-statutory designated sites

3.5 There are five non-statutory sites designated as Local Wildlife Sites (LWS) located within 2 km of the site. These are listed in Table 3.3 and shown on Figure 7.B.

Table 3.3: Non-Statutory Designated Sites within 2km of the site

Site name	Designation	Distance to site (km)	Description
Ashton's and Neumann's Flashes	LWS	0.9	An area of neutral grassland, restorable grassland, fens, swamps, bogs and reedbeds. Provides a wildlife corridor/buffer.
Wincham Brook Valley	LWS	1.2	An area of neutral grassland, restorable grassland, fens, swamps, bogs and reedbeds. Provides a wildlife corridor/buffer.
Marston Flashes	LWS	1.3	An area of marshy grassland, restorable grassland, fens, swamps, bogs and reedbeds. Provides a wildlife corridor/buffer.

Site name	Designation	Distance to site (km)	Description
Marbury Lime Bed and Forge Pool	LWS	1.8	An area of restorable grassland, fens, swamps, bogs and reedbeds. Provides a wildlife corridor/buffer.
Marston Meadows	LWS	2	An area of restorable grassland and undetermined grassland. Provides a wildlife corridor/buffer.

3.6 All of the LWS located within 2 km of the site comprise grasslands, fens, swamps, bogs and reedbeds. They provide wildlife corridors across the landscape and form buffers.

3.7 Wincham Brook Valley LWS is located northeast of the site and the remaining sites are located to the northwest and grouped together. Ashton's and Neumann's Flashes LWS is nearest to the site.

Records of Protected and Other Notable or Invasive Species

3.8 'Protected or notable species' refers to any species specially protected or listed under the following legislation:

Protected Species

- The Conservation of Habitats and Species Regulations 2010 (Annex 4) (European Protected Species) (EPS);
- Council Directive 79/409/EEC on the Conservation of Wild Birds ("Birds Directive") (BDIR);
- Wildlife and Countryside Act 1981 (as amended) (Schedules 1, 5 and 8) (WCA1/WCA5/WCA8);
- The Protection of Badgers Act 1992 (PBA);

Other Notable Species

- UK Biodiversity Action Plan Species (UKBAP);
- The Natural Environment and Rural Communities (NERC) Act 2006. Section 41: Habitats and Species of Principal Importance in England (S41);
- Cheshire Local Biodiversity Action Plan Species (LBAP);
- RSPB UK Red or Amber listed birds (Red or Amber);
- IUCN Global Red List Species (CE – Critically Endangered, EN – Endangered, NT – Near Threatened, VU – Vulnerable);
- The Vascular Plant Red Data List for Great Britain (Nationally Scarce [NS], Nationally Rare [NR]); and

Invasive Species

- Wildlife and Countryside Act 1981 (as amended) (Schedule 9) (WCA9).

3.9 The records received from consultees of protected and otherwise notable or invasive species recorded since 2000 are summarised in Table 3.4 to Table 3.10, below, and shown on Figures 7.C to 7.J.

Mammals – bats

Table 3.4: Summary of bat records within 5 km of the site

Common name	Taxon name	Protected Status
Bat	*Chiroptera*	EPS, WCA5
Noctule Bat	*Nyctalus noctula*	EPS, WCA5, S41, UKBAP, LBAP
Pipistrelle Bat species	*Pipistrellus*	EPS, WCA5
Common Pipistrelle	*Pipistrellus pipistrellus*	EPS, WCA5
Soprano Pipistrelle	*Pipistrellus pygmaeus*	EPS, WCA5, S41, UKBAP, LBAP
Nathusius's Pipistrelle	*Pipistrellus nathusii*	EPS, WCA5
Myotis Bat species	*Myotis*	EPS, WCA5
Daubenton's Bat	*Myotis daubentonii*	EPS, WCA5, LBAP
Natterer's Bat	*Myotis nattereri*	EPS, WCA5, LBAP
Whiskered Bat	*Myotis mystacinus*	EPS, WCA5, LBAP
Brown Long-eared Bat	*Plecotus auritus*	EPS, WCA5, S41, UKBAP, LBAP

3.10 At least eight species of bat have been recorded within 5 km of the site and the recorded locations are shown on Figure 7.C.

Mammals – other

Table 3.5: Summary of other protected and notable mammal records within 5 km and 2 km of the site

Common name	Taxon name	Protected Status
Eurasian Badger	*Meles meles*	PBA
Brown Hare	*Lepus europaeus*	S41, UKBAP, LBAP
European Otter	*Lutra lutra*	EPS, WCA5, S41, UKBAP, LBAP
European Water Vole	*Arvicola amphibius*	WCA5, S41, UKBAP, LBAP
Polecat	*Mustela putorius*	S41, UKBAP, LBAP
West European Hedgehog	*Erinaceus europaeus*	S41, UKBAP

3.11 A total of six other protected and notable mammals have been recorded within the search areas, shown on Figure 7.D.

3.12 Hedgehog and badger were recorded most frequently within the survey area. Brown hare was recorded once 20 km east from the site and polecat was recorded twice, more than 1 km south-west from the site.

3.13 Water vole was recorded in two locations along the Wade Brook approximately 1 km west of the site.

Birds

Table 3.6: Summary of protected and notable bird records within 2 km of the site

Common name	Taxon name	Protected Status
Wood Sandpiper	*Tringa glareola*	WCA1, BDir, Amber
Black Tern	*Chlidonias niger*	WCA1, BDir, Amber
Peregrine Falcon	*Falco peregrinus*	WCA1, BDir
Fieldfare	*Turdus pilaris*	WCA1, Red
Redwing	*Turdus iliacus*	WCA1, Red
Whimbrel	*Numenius phaeopus*	WCA1, Red
Black-tailed Godwit	*Limosa limosa*	WCA1, Red, UKBAP, S41
Barn Owl	*Tyto alba*	WCA1, Amber, LBAP
Common Goldeneye	*Bucephala clangula*	WCA1, Amber
Whooper Swan	*Cygnus Cygnus*	WCA1, Amber
Pied Avocet	*Recurvirostra avosetta*	WCA1, Amber
Northern Pintail	*Anas acuta*	WCA1, Amber
Mediterranean Gull	*Larus melanocephalus*	WCA1, Amber
Common Kingfisher	*Alcedo atthis*	WCA1, Amber
Green Sandpiper	*Tringa ochropus*	WCA1, Amber
Garganey	*Anas querquedula*	WCA1, Amber
Eurasian Hobby	*Falco subbuteo*	WCA1
Northern Goshawk	*Accipiter gentilis*	WCA1
Little Plover	*Charadrius dubius*	WCA1
Common Greenshank	*Tringa nebularia*	WCA1
Dunlin	*Calidris alpine*	BDir, Red
Little Egret	*Egretta garzetta*	BDir, Amber
European Golden Plover	*Pluvialis apricaria*	BDir, Amber
Arctic Tern	*Sterna paradisaea*	BDir, Amber
Barnacle Goose	*Branta leucopsis*	BDir, Amber
Short-eared Owl	*Asio flammeus*	BDir, Amber
House Sparrow	*Passer domesticus*	LBAP, Red, S41, UKBAP
Northern Lapwing	*Vanellus vanellus*	LBAP, Red, S41, UKBAP

Common name	**Taxon name**	**Protected Status**
Yellowhammer	*Emberiza citrinella*	LBAP, Red, S41, UKBAP
Sky Lark	*Alauda arvensis*	LBAP, Red, S41, UKBAP
Song Thrush	*Turdus philomelos*	LBAP, Red, S41, UKBAP
Common Starling	*Sturnus vulgaris*	LBAP, Red, S41, UKBAP
Reed Bunting	*Emberiza schoeniclus*	LBAP, Amber, S41, UKBAP
Common Bullfinch	*Pyrrhula pyrrhula*	LBAP, Amber
Ring Ouzel	*Turdus torquatus*	Red, S41, UKBAP
Yellow Wagtail	*Motacilla flava*	Red, S41, UKBAP
Herring Gull	*Larus argentatus*	Red, S41, UKBAP
Common Grasshopper Warbler	*Locustella naevia*	Red, S41, UKBAP
Common Cuckoo	*Cuculus canorus*	Red, S41, UKBAP
Eurasian Curlew	*Numenius arquata*	Amber, S41, UKBAP
Greylag Goose	*Anser anser*	Amber
Common Redshank	*Tringa tetanus*	Amber
Black-headed Gull	*Chroicocephalus ridibundus*	Amber
Great Black-backed Gull	*Larus marinus*	Amber
Common Swift	*Apus apus*	Amber
Green Woodpecker	*Picus viridis*	Amber
House Martin	*Delichon urbicum*	Amber
Jack Snipe	*Lymnocryptes minimus*	Amber
Common Snipe	*Gallinago gallinago*	Amber
Common Tern	*Sterna hirundo*	Amber
Eurasian Oystercatcher	*Haematopus ostralegus*	Amber
Gadwall	*Anas strepera*	Amber
Common Kestrel	*Falco tinnunculus*	Amber
Barn Swallow	*Hirundo rustica*	Amber
Little Grebe	*Tachybaptus ruficollis*	Amber
Black-legged Kittiwake	*Rissa tridactyla*	Amber
Ruddy Shelduck	*Tadorna ferruginea*	Amber
Northern Shoveler	*Anas clypeata*	Amber
Ringed Plover	*Charadrius hiaticula*	Amber
Willow Warbler	*Phylloscopus trochilus*	Amber
Whinchat	*Saxicola rubetra*	Amber
Tufted Duck	*Aythya fuligula*	Amber
Grey Wagtail	*Motacilla cinerea*	Amber

Common name	Taxon name	Protected Status
Common Guillemot	*Uria aalge*	Amber
Sand Martin	*Riparia riparia*	Amber
Eurasian Teal	*Anas crecca*	Amber
Mallard	*Anas platyrhynchos*	Amber
Lesser Black-backed Gull	*Larus fuscus*	Amber
Common Gull	*Larus canus*	Amber
Common Whitethroat	*Sylvia communis*	Amber
Hedge Accentor (Dunnock)	*Prunella modularis*	Amber
Eurasian Woodcock	*Scolopax rusticola*	Amber
Mistle Thrush	*Turdus viscivorus*	Amber

3.14 A total of 73 protected or notable birds have been recorded within 2 km of the site, as shown on Figure 7.E.

3.15 A total of 20 of the birds recorded were listed under Schedule 1 of the Wildlife and Countryside Act, nine were listed under Annex 1 of the Bird's Directive, 14 were UKBAP Priority Species and listed under Section 41 of the NERC Act, and all records were either red or amber listed. One bird, barn owl, was a local BAP species.

Herpetofauna

Table 3.7: Summary of protected and notable herpetofauna records within 2 km of the site

Common name	Taxon name	Protected Status
Common Frog	*Rana temporaria*	WCA5
Common Toad	*Bufo bufo*	WCA5, S41, UKBAP

3.16 Two species of herpetofauna (both amphibians) have been recorded within 2 km of the site. Both are partially protected under the Wildlife and Countryside Act against trade activities. Their locations are shown on Figure 7.F

Invertebrates

Table 3.8: Summary of protected and notable invertebrate records within 2 km of the site

Common name	Taxon name	Protected Status
Dingy Skipper	*Erynnis tages*	LBAP, VU, S41, UKBAP
Grayling	*Hipparchia semele*	VU, S41, UKBAP
Small Heath	*Coenonympha pamphilus*	NT, S41, UKBAP
Wall	*Lasiommata megera*	NT, S41, UKBAP

Common name	Taxon name	Protected Status
Stiletto-fly	*Cliorismia rustica*	S41, UKBAP
Ringlet	*Aphantopus hyperantus*	LBAP

3.17 Six notable invertebrates have been recorded within 2 km of the site, at the locations shown on Figure 7.G.

3.18 Five of the records are butterflies, which utilise a variety of habitats including open, warm sites, sheltered and sparsely vegetated sites, coastal areas and woodland clearings. The stiletto-fly is found around lowland rivers and requires areas of bare sand.

Plants

Table 3.9: Summary of protected and notable plant records within 2 km of the site

Common name	Taxon name	Protected Status
Bluebell	*Hyacinthoides non-scripta*	LBAP, WCA8
Freiberg's Screw-moss	*Tortula freibergii*	NT, NR, S41, UKBAP
Welsh Poppy	*Meconopsis cambrica*	NS
Scots Pine	*Pinus sylvestris*	NS
Black Poplar	*Populus nigra subsp. betulifolia*	LBAP

3.19 Five notable plants have been recorded within 2 km of the site, shown on Figure 7.H.

Invasive plants

Table 3.10: Summary of invasive plants records within 2 km of the site

Common name	Taxon name	Protected Status
Japanese Knotweed	*Fallopia japonica*	WCA9
Indian Balsam	*Impatiens glandulifera*	WCA9
Montbretia	*Crocosmia pottsii x aurea = C. x crocosmiiflora*	WCA9
Rhododendron	*Rhododendron ponticum*	WCA9

3.20 Four invasive plants have been recorded within 2km of the site, shown on Figure 7.I.

Previous Surveys

3.21 A summary of the findings of previous surveys undertaken on the site are provided below.

Extended Phase 1 Habitat Survey – Update, Aug 2010

3.22 The survey found the site to comprise buildings and industrial structures, areas of hard-standing/inert gravel, disused rail sidings and relatively few undisturbed areas of semi-natural habitat. The habitats identified on the site were:

- hard-standing and buildings;
- scrub;
- disturbed ground;
- wet grassland;
- water bodies (outside site boundary);
- ditches/drains (concrete channels beneath the main building); and
- invasive species.

3.23 An assessment for protected species was undertaken and the findings are summarised below.

- Badger – no signs of badger being present within 30 m of the site.
- Bats – foraging and commuting opportunities due to the presence of scrub and roosting opportunities within some buildings.
- Amphibians – water bodies with potential to support amphibians, including great crested newt were identified within 500 m of the site but the site itself was found to support no suitable waterbodies and poor value terrestrial habitat. An addition, barriers such as Wade Brook, railways, roads and heavy industrial uses were present between the ponds and the site.
- Terrestrial invertebrates – the site was found to be relatively poor in semi-natural habitats although cinnabar *Tyria jacobaeae* moth caterpillars were identified on ragwort on the site. Cinnabar is a UKBAP Priority Species.
- Nesting birds – the buildings and scrub on the site were found to provide suitable nesting sites for breeding birds.
- Reptiles – the site was not considered suitable habitat for reptiles.
- Water vole – Wade Brook was found to provide suitable habitat for water vole but no signs of them were found to be present.
- Otter – no signs of otter were found to be present.
- Flora – fragrant orchid and marsh orchid sp. were identified within scrub to the south of the site.

Bat Survey Report – May 2009

3.24 Emergence and activity surveys were carried out around the buildings present on the site at that time. No bats were observed emerging from the buildings and activity levels were very low, with only one bat being recorded during three of four survey visits and two bats being recorded on the remaining survey visit. All records were from pipistrelle *Pipistrellus sp.* bats.

Great Crested Newt Survey Report – June 2009

3.25 A survey was undertaken on six concrete drainage channels/concrete bays within the site boundary and on four of five waterbodies within 500 m of the site (the fifth being inaccessible). Three of the four ponds were found to be ephemeral and were dry at the time of the survey.

3.26 Smooth newts were identified within all six concrete drainage channels and bays within the site boundary. No newts were identified in the pond holding water within 500 m of the site or during terrestrial searches around the dry ephemeral ponds.

3.27 Great crested newts were considered absent as they were not identified during the survey and because the habitats present were considered to be poor value for them.

Phase 1 Habitat Survey

Site Overview

3.28 The proposed development site was formally the site of a chlorine plant within the wider Lostock Works chemical industry site. The site was lined with palisade fencing along all boundaries with a gated access along the eastern boundary. All of the buildings associated with the former works had been demolished at the time of the survey and the majority of the site comprised the bases of the former buildings surrounded by existing access roads and areas of gravel hard-standing. The site was flat with the exception of steep declines along the western and southern boundaries.

3.29 Vegetation was largely absent from these areas accept for early recolonisation of the gravel areas. Several young trees and areas of scrub, tall ruderals, grassland and bracken occurred around the site boundaries.

3.30 The site was bordered to the east by the active Lostock Works site comprising large industrial buildings and structures and associated roads. The area to the west of the site appeared to have also been previously used for industrial uses and comprised a large gravel area with varying levels of plant colonisation. An access track to this area lay immediately north of the site and rail tracks lay beyond it. The southern boundary was defined by the river corridor of Wade Brook.

3.31 A summary of the habitats identified during the survey is given below. Their locations within the site, and associated target note numbers, are shown on the Phase 1 Habitat Plan (Figure 7.J). A description of each target note is provided in Annex 7.C.2 and a full species list is provided at Annex 7.C.3.

Broadleaved tree

3.32 Young broadleaved trees occurred in lines (TN3, TN4, TN11) or within areas of scrub around the periphery of the site (TN4, TN5, TN9). The species present were predominantly silver birch *Betula pendula* and willow *Salix sp.* but alder *Alnus glutinous,* horse chestnut *Aesculus* *hippocastenum,* rowan *Sorbus aucuparia* and sycamore *Acer pseudoplatanus* also occurred. Saplings also occurred over some areas of gravel hard-standing and within cracks in roads and building bases.

Scrub

3.33 Two small areas of dense willow scrub occurred along the northern boundary and in the north-west of the site, and a larger area occurred in the south-west corner (TN4, TN5, TN9).

3.34 Scattered scrub occurred in the south and west of the site in less disturbed areas and comprised willow, hawthorn *Crataegus monogyna,* elder *Sambucus nigra,* dog rose *Rosa canina,* buddleia *Buddleia davidii* and bramble *Rubus fruticosus*. Young scattered scrub was beginning to colonise some areas of bare ground.

Poor semi-improved grassland

3.35 A narrow strip of grassland occurred along the western boundary, which had not been subject to the same level of disturbance as the rest of the site (TN7). Moss species and fescues *Festuca sp.* occurred frequently within more open areas and tall ruderals such as rosebay willowherb *Chamerion angustifolium*, groundsel *Senscio vulgaris* and creeping thistle *Cirsium arvense* were becoming established. Scattered bramble scrub covered the grassland along the western fence line.

Continuous bracken

3.36 Dense bracken *Pteridium aquilinum* occurred along the southern boundary of the site and continued beyond it on the upper banks of the Wade Brook (TN14).

Tall ruderals

3.37 Areas comprising tall ruderals and scattered scrub occurred on a bank in the south of the site and along the southern boundary (TN12, TN14). Rosebay willowherb and creeping thistle were the dominant species present but stinging nettle *Urtica dioica* occurred occasionally and scattered patches of short grasses and moss were also present.

Standing water

3.38 Two small areas of standing water were present at the edge of an area of hard-standing, measuring approximately 5 m x 3 m, and may have been the remnants of drainage channels associated with the former works (TN10). Both had formed over the concrete hard-standing and neither supported any aquatic or marginal vegetation. Unless fed by a water source the pools are likely to become dry during period of dry weather.

Ephemeral/short perennial

3.39 Vegetation was colonising some areas of hard-standing, particularly the areas of gravel surrounding the former buildings. The amount of vegetation varied between approximately 20-50% vegetation cover. Some areas of hard-standing associated with building bases supported small amounts of vegetation, typically less than 10%, and have therefore been recorded as bare ground.

3.40 The species composition across these areas was more or less uniform and comprised frequent rosebay willowherb and buddleia saplings. Stinging nettle, creeping thistle, hemp-agrimony *Eupatorium cannabinum* and perforate St. John's-wort *Hypericum perforatum* were locally frequent and groundsel, ragwort *Senecio jacobaea,* common centaury, fairy flax *Linum catharticum* and lamb's-ear *Stachys byzantina* occurred occasionally. Great mullein *Verbascum thapsus* occurred rarely.

3.41 Biting stonecrop *Sedum acre* was abundant within an area of gravel in the south of the site (TN13) and fragrant orchid *Gymnadenia conopsea* occurred rarely within an area of gravel in the east of the site (TN1) and through cracks in hard-standing around the security building.

3.42 The saplings of young trees and scrub were also scattered throughout these areas.

Other habitat

3.43 A large pile of logs and brash was present along the western site boundary (TN8) and is presumably formed from vegetation previously cleared from the site.

3.44 A stand of dead Japanese knotweed *Fallopia japonica* was present in the west of the site (TN6). No new growth was evident.

Buildings

3.45 A small building was located just outside of the site boundary to the east and was a former gatehouse at the site entrance (TN19). At the time of the survey the building was not in use. It comprised a single storey brick building with a pitched, tiled roof and large windows present along three sides. The brickwork and windows were intact but the slate tiled roof was in poor condition with a number of tiles missing or misaligned.

Habitats outside of the site boundary

3.46 The area to the east of the site within the active Lostock Works comprised concrete hard-standing and industrial buildings and structures (TN18). Vegetation distribution was limited.

3.47 A large area to the west and access track and rail track to the north comprised ephemeral/short perennial and tall ruderal vegetation establishing over gravel similar to that found on the site (TN16, TN17).

3.48 The area to the south of the site comprised the Wade Brook river corridor (TN15). The stream measured approximately 2-3 m wide and was lined by steep banks measuring approximately 15-20 m high. The banks comprised dense bracken, bramble scrub and scattered trees.

Potential for Protected or Otherwise Notable Species

3.49 The potential for protected and otherwise notable species to be present on the site is discussed below.

Plants and Habitats

3.50 No protected plants were recorded within the site. It is considered unlikely that protected plants would be present based on the habitats present, which are typically recent in origin and have been subject to high levels of disturbance.

3.51 The protected and notable plants recorded in the desk study were not identified on the site and are typical of habitats not found on the site.

3.52 Fragrant orchid is listed on The Vascular Plant Red Data List for Great Britain (2006) as a species of 'Least Concern'. Species of least concern are those which are neither threatened nor near threatened.

3.53 None of the habitats present meet the criteria of those listed under Annex 1 of the Habitats Directive or list of UKBAP Priority Habitats. The site shows some characteristics of the UKBAP Habitat *Open Mosaic Habitats on Previously Developed Land (OMH)* as it contains large areas of ephemeral/short perennial vegetation and bare ground. However, the ephemeral/short perennial vegetation only supports a few sparsely spread annuals, such as common centaury and fairy flax and is predominantly comprised of buddleia saplings, scattered rosebay willowherb and creeping thistle. It therefore does not contain the species diversity or features typical of the OMH habitat.

Bats

3.54 UK bat species are European Protected Species (EPS) protected under the Habitats Regulations 2010 and Wildlife and Countryside Act 1981 (as amended). Some species are also listed as UK BAP Priority Species and Species of Principal Importance in England. Any works that could potentially affect a bat or its roost can only be conducted under a licence obtained in advance from Natural England.

3.55 The site provides limited opportunities for bats to forage due to the sparse vegetation and absence of more mature vegetation, particularly trees. The site is exposed and unlikely to support an abundance of night flying insects which bats prey upon. The southern boundary of the site is the area providing the most suitable habitat for bats as it contains more scrub and trees and it borders more established vegetation and higher value foraging habitats along the Wade Brook river corridor.

3.56 The absence of linear strips of vegetation crossing the site may also reduce opportunities for some bats to commute across it, particularly those that avoid open spaces.

3.57 The active works to the east of the site is operational over 24 hours and results in light spill onto the site, which may also act as a deterrent to bat species that avoid artificial lighting.

3.58 The disused gatehouse building to the east of the site boundary provides features suitable for a bat roost. A separate bat roost assessment report provides the findings of further bat surveys undertaken on the building (Appendix 7.D).

Badgers

3.59 Badgers (*Meles meles*) are protected in the UK under the Protection of Badgers Act 1992. The Act makes it an offence to undertake a number of activities, including, wilfully killing, injuring or taking a badger, or attempting to do so; or damaging or destroying part or all of a badger sett, obstructing access to any entrance to a sett or disturbing a badger whilst it is occupying a sett.

3.60 Badger records were provided within 2 km of the site, indicating presence of badger within this area.

3.61 A badger survey has been undertaken on the site and the findings are reported separately (Appendix 7.E).

Birds

3.62 All wild birds are protected at a European level under the EC Directive on the Conservation of Wild Birds 1979 (79/409/EEC) (the Birds Directive) and species listed in Annex 1 are specially protected. All species of wild bird in the UK (other than a few pest species) are given general protection under Part 1 Section 1(1) of the Wildlife and Countryside Act 1981 and birds listed under Schedule 1 of the Act are further protected.

3.63 The habitats present within the site boundary provide limited opportunities for nesting birds. Many of the trees and areas of scrub are too young to support nests. However, some of the taller stands of dense scrub and taller trees (TN2, TN4, TN5, TN9) provide suitable nesting sites.

3.64 The large pile of logs and brash (TN8) also provides suitable nesting habitat.

Great crested newt

3.65 The great crested newt is a European Protected Species protected under the Habitats Regulations (2010) and the Wildlife and Countryside Act 1981 (as amended). Any works that could potentially affect a great crested newt or its place of rest can only be conducted under a licence required in advance from Natural England.

3.66 The smooth and palmate newts, the common frog and the common toad are protected under section 9.5 of the Wildlife and Countryside Act 1981, which makes it an offence to sell these species or make them available for sale.

3.67 The great crested newt and common toad are also UK Biodiversity Action Plan Priority Species and Species of Principal Importance in England.

3.68 The two areas of standing water on site do not provide suitable habitat for amphibians, including great crested newts. They contain no natural substrate, support no aquatic vegetation and are not surrounded by or near to any suitable terrestrial habitat. They are also likely to be ephemeral in nature.

3.69 The site does provide some areas of suitable terrestrial habitat in the south of the site within areas of scrub and tall ruderals. However, these areas are small and quite isolated from larger areas of suitable habitat off site.

3.70 Ponds are present within 500 m north and west of the site, which could potentially provide suitable habitat for great crested newts. However, previous surveys of these waterbodies did not find great crested newts to be present and found their habitat suitability to be low as most were ephemeral. The site is also separated from the ponds by rail tracks and a gravel access track which do not provide suitable habitat for newts and are likely to provide a barrier to newt dispersal towards the site.

3.71 The areas of suitable terrestrial habitat on the site are located near to the southern boundary, so should newts reach the site from the north, they would have a large area of open, exposed ground to cross to reach an area of relatively low value habitat. Aerial photography suggests the ponds off-site are surrounded by grassland, trees and scrub, which would be considered higher value terrestrial habitat than that found on site and would suggest newts are unlikely to leave this area and cross large areas of unsuitable habitat.

Reptiles

3.72 The four common reptiles, slow-worm *Anguis fragilis*, common lizard *Lacerta vivipara*, adder *Vipera berus* and grass snake *Natrix natrix,* are partially protected by the Wildlife and Countryside Act 1981 (as amended). The Act protects them against intentional or reckless killing and injuring and against sale and transporting for sale.

3.73 The site is largely unsuitable habitat for any of the four common reptiles. Small, isolated patches of tall ruderals and scrub provided limited opportunities but are isolated from areas of higher value habitat off-site such as the bracken, scrub and trees along the Wade Brook river corridor.

3.74 No records of reptiles were provided from within 2 km of the site in the desk study. Reptiles are considered likely to be absent from the site.

Water vole and otter

3.75 The water vole is fully protected under the Wildlife and Countryside Act 1981 (as amended). Any works that could potentially affect a water vole or its place of rest can only be conducted under a licence from Natural England. Water vole is also a UK BAP Priority Species.

3.76 Otter is an EPS protected under the Habitats Regulations 2010 and Wildlife and Countryside Act 1981 (as amended). Any works that could potentially affect an otter or its place of rest can only be conducted under a licence from Natural England. It is also listed as a UK BAP Priority Species.

3.77 There are no watercourses within the site boundary but the Wade Brook river corridor connects to the site along the southern boundary and this area has the potential to support water vole and otter.

3.78 A water vole and otter survey has been undertaken on the site and the findings are reported separately (Appendix 7.F).

Terrestrial invertebrates

3.79 The habitats on site were considered to be poor for terrestrial invertebrates due to the lack of floral diversity and large areas of bare ground/hard-standing, resulting in a lack of foraging opportunities. The site is considered likely to support a variety of common and widespread invertebrates but unlikely to support any protected or notable species. Records of six notable species were provided in the desk study but the habitats required by these species are largely absent on the site.

3.80 Cinnabar caterpillars were identified on ragwort during a previous survey of the site. Ragwort was not found to be prevalent within the vegetation on the site and may have been largely lost during site clearance woks undertaken since the previous survey. No cinnabar caterpillars were identified but there is potential for low numbers to be present on the remaining plants.

3.81 Areas of higher value habitat for invertebrates are located outside of the site boundary, particularly the Wade Brook river corridor, which provides a variety of habitats including flowing water, ruderals, scrub and bracken.

Invasive plants

3.82 The stand of Japanese knotweed found on the site was completely dead and had no signs of fresh growth. No other invasive species were recorded on the site.

4 Conclusions

4.1 Four statutory designated sites comprising three SSSIs and one LNR were identified within 5 km of the site. Witton Lime Beds SSSI was closest to the site, located approximately 1.5 km to the west.

4.2 Five non-statutory designated sites, all LWS, were present within 2 km of the site. All of the LWS comprise grasslands, fens, swamps, bogs and reedbeds. Ashton’s and Neumann’s Flashes LWS was nearest to the site (900 m away).

4.3 A number of protected or notable flora and fauna were recorded within the 2 km and 5 km search areas. Otter and at least eight species of bat were recorded within 5 km of the site. Five other species of mammal, 73 birds, two amphibians, six invertebrates and five plants were recorded within 2 km of the site. Four invasive plants were recorded within 2 km of the site. Based on the desk search, there was considered to be potential for some of the protected and notable species recorded in the wider area to be present on the site.

4.4 Previous surveys undertaken on the site in 2009 and 2010 found the habitats to be of relatively low ecological value and no protected species were found to be present. Orchids and cinnabar moth caterpillars were present.

4.5 The Phase 1 Habitat Survey undertaken in June 2015 found that the site predominantly comprised areas of hard standing and bare ground associated with the former chemical works on the site. Some of these areas had begun to be colonised by ephemeral/short perennial and tall ruderal vegetation. Small areas of scrub and scattered young trees and saplings had also established.

4.6 Some habitats along the site boundary appeared less disturbed, including an area of species-poor grassland, young tree lines and an area of bracken.

4.7 The Wade Brook river corridor was located beyond the southern boundary and comprised more established habitats, considered to be of greater ecological value than the site.

4.8 The habitats on the site were considered to be of relatively low ecological value. However, a disused gatehouse building just outside the site boundary at the entrance gate was found to have potential to support bat roosts, there was potential for badgers to be present within 30 m of the site boundary and there was potential for water vole and otter to be using the Wade Brook river corridor to the south of the site. Further surveys have been undertaken to determine whether the proposals for the site could affect these species and the findings are reported in Appendices 7.D, 7.E and 7.F.

4.9 Some trees and areas of scrub on the site had the potential to support nesting birds and fragrant orchid was found to occur occasionally in the east of the site. There is potential for cinnabar moth caterpillars to be present, as ragwort occurs occasionally on the site.

4.10 Recommendations are made below for measures to ensure these features are not adversely affected by future development on the site.

Recommendations

Nesting birds

4.11 Any work which could potentially affect features suitable for nesting birds, such as the larger trees and shrubs, areas of dense scrub and large debris pile (TN2, TN4, TN5, TN8, TN9, TN14) should be undertaken between October and mid-February to avoid the bird nesting season.

4.12 If any works were required to these features during the nesting period, they should first be checked by an ecologist for active nests. If any were found, the nest and a 5 m radius around it must not be disturbed until an ecologist had confirmed that the young birds had fledged.

4.13 The site could be further enhanced for birds by providing nest boxes on buildings and by planting trees and shrubs which would provide suitable nest sites when mature. Introducing more native plants in any future landscaping plans would provide more foraging opportunities for birds.

Fragrant orchid

4.14 It is desirable that measures should be taken, where feasible, to conserve fragrant orchid on the site. In-situ mitigation is considered the optimal strategy, whereby the existing plants on the site are retained in their current locations. Where this is not possible, the orchids should be translocated into an area of retained habitat on the site, together with their existing substrate, as part of the landscaping and habitat proposals for the proposed development. A management plan should be produced detailing the location of this retained habitat and how it would be managed in the future to benefit the orchids present.

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Annexes

Annex 7.C.1: Consultee Responses

Environment Agency

The response received from the Environment Agency on the 16th July 2015 is provided below.

Dear Louisa,

Enquiry regarding Land at 'Lostock Works' off the 4530 Griffiths Road, near Lostock Gralam (grid ref 367920, 374201).

Thank you for your enquiry which was received on 5/6/15 and subsequent payment received on 14/7/15.

We respond to requests under the Freedom of Information Act 2000 and Environmental Information Regulations 2004.

Please find attached the records we have within the distance criteria supplied.

There are non-statutory designated sites within the area but the data is not ours. It will be available from the council and/or RECORD.

I have attached our Standard Notice or licence which explains the permitted use of this information.

Please get in touch if you have any further queries or contact us within two months if you'd like us to review the information we have sent.

We would be very grateful if you would use the link below to leave your feedback.

http://www.smartsurvey.co.uk/s/EnvironmentAgencyCustomerSurvey/

Yours sincerely,

Anne

Anne Ball - Customer and Engagement Officer

Greater Manchester, Merseyside and Cheshire
Direct line: 01925 542937

Email: **Inforequests.GMMC@environment-agency.gov.uk**

Office address: Richard Fairclough House, Knutsford Road, Latchford, Warrington, WA4 1HT

RECORD

The email response received from RECORD on the 18th June 2015 is provided below.

Many thanks for sending the invoice and purchase order information.

I have completed the data search within a 2km buffer for all species and statutory sites and the 5km buffer for bats and otters.

I have attached two PDF reports which contain all protected, notable and invasive non-native species records from Record and the NBN. Both of the reports contain the same information but the 'detailed' one contains the full records mapped by taxon group and the 'summary' report shows all those records on one summarised map. Both the reports show statutory designated sites. Also attached is a spreadsheet containing all raw species data with designation codes and a key.

We cannot provide Local Wildlife Sites information for sites in Cheshire West and Chester and so if you would like information for these please contact Andrea Powell at Cheshire Wildlife Trust (apowell@cheshirewt.org.uk).

I have also attached the invoice, please forward this to the relevant person or department.

If you require any further information please do not hesitate to contact me.

Kind regards,

Lucy Boyett

Commercial Services Officer

Tel: 01244 383749

WWW.RECORD-LRC.CO.UK

RECORD is a registered charity and not-for-profit company

Charity Number: 1095859 Company number: 4046886

CWCC

The email response received from Cheshire West and Chester Council on the 17th June 2015 is provided below.

Louisa

Thanks for your email. There has been an **extensive** amount of ecological surveying undertaken in this area in connection with development proposals over the last 5 years. Some of this data may have been deposited with the record centre but this is not always the case.

Most of the ecological surveys are available on the council's planning website but it will require trawling through individual planning applications. If you search for the planning applications via the mapping function/tab and look at the documents within the individual planning applications. Link below

http://www.cheshirewestandchester.gov.uk/residents/planning%20and%20building%20consulta.aspx

Protected Species within 1km: great crested newts (to the north and south); water voles to the south; otter on rivers Weaver and Dane and canal network. Badger setts and activity within 1km.

Breeding birds: Peregrine were using the industrial plant to the east, possible for nesting.

CAWOS hold extensive records of bird data but I don't think this has been passed to record centre. Probably worth also contacting the Mid Cheshire Barn Owl Group. I am aware of a sighting of Barn owl flying over the A556 to the east.

Invertebrates: Northwich area is a hotspot for Dingy Skipper. Contact local Butterfly Conservation group

Non-statutory designated sites: the location of Local Wildlife Sites (formerly Sites of Biological Importance) are available on CWAC website www.cheshirewestandchester.gov.uk

Search for Interactive Mapping: Map Data; Environment and Planning; Local Wildlife Sites

I assume that you aware of the previous application on the site 10/01834/WAS which went to planning appeal. Wardell Armstong undertook surveys in 2009.

Kind regards

Alun

Alun Evans

Total Environment Team Leader
Cheshire West and Chester Council

Tel: 01244 973177

Email: alun.evans@cheshirewestandchester.gov.uk
Location: The Forum, Chester CH1 2HS
Visit: cheshirewestandchester.gov.uk

Cheshire Wildlife Trust

The email response received from Cheshire West and Chester Council on the 15th July 2015 is provided below.

Hi Louisa,

My apologies, please find attached the data you requested... Please let me know you have received it okay this time.

Best wishes,

Andrea

Andrea Powell

Conservation Officer

T 01948 820728

E apowell@cheshirewt.org.uk

Cheshire Wildlife Trust, Bickley Hall Farm, Bickley, Malpas, Cheshire SY14 8EF

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Cheshire Butterfly County Recorder

The email response received from Barry Shaw, Cheshire Butterfly County Recorder on the 17th June 2015 is provided below.

Dear Louise,

I am just writing to confirm that all butterfly records for the county are sent annually to rECOrd who will have the details you require. Most significant butterfly sightings will be of the scarce Dingy Skipper colonies on Ashton's Flash (SJ6674).

Regards,

Barry T. Shaw

Cheshire Butterfly County Recorder

Annex 7.C.2: Phase 1 Target Notes

Target No.	Description
1	An area of ephemeral vegetation over gravel which includes occasional fragrant orchid
2	Young willow tree with low potential to support nesting birds
3	Line of young silver birch unlikely to support nesting birds
4	A cluster of willow scrub, occasional young silver birch and young alder saplings and a line of young alder, willow and horse chestnut with potential to support nesting birds
5	Dense willow scrub with occasional young silver birch and sycamore saplings. Potential to support nesting birds.
6	A stand of dead Japanese knotweed, no signs of growth
7	A strip of grassland with encroaching tall ruderals and scrub
8	A large pile of cut woody vegetation approximately 3m high. Potential to support nesting birds.
9	A larger area of more mature dense willow scrub on a bank
10	Two pools of standing water within an area of hard standing
11	A line of young silver birch and willow trees
12	An area of tall ruderals comprising willowherb and thistles with scattered willow, hawthorn and young rowan.
13	Bare gravel with ephemeral vegetation along northern edge containing biting stonecrop.
14	Site boundary comprising tall ruderals and scattered scrub plus an area of dense bracken extending beyond the site boundary onto the banks of the Wade Brook.
15	Wade Brook river corridor comprising a steep, high bank down to the channel comprising dense bracken, tall ruderals, scattered and dense scrub and mature trees. The channel was approximately 2-3m wide, deep with a moderate flow rate. Abundant marginal vegetation including areas of dense common reed *Fragmities australis*.
16	A large area of derelict land comprising gravel with ephemeral vegetation as found on the site. Tall ruderals become abundant along the southern boundary.
17	A gravel access track to the land to the west and rail tracks. Some tall ruderal vegetation and scattered scrub present.
18	The active Lostock Works site including a large industrial building east of the site boundary.
19	Disused gatehouse. A single storey brick built building with pitched, tiled roof. The roof was in poor condition with tiles misplaced or missing in each lower corner and gaps present under tile where they finish at the gable end.

Annex 7.C.3: Phase 1 Species List

Silver birch *Betula pendula*

Willow *Salix sp.*

Alder *Alnus glutinous*

Horse chestnut *Aesculus hippocastenum*

Rowan *Sorbus aucuparia*

Sycamore *Acer pseudoplatanus*

Hawthorn *Crataegus monogyna*

Elder *Sambucus nigra*

Dog rose *Rosa canina*

Buddleia *Buddleia davidii*

Bramble *Rubus fruticosus*

Fescues *Festuca sp.*

Rosebay willowherb *Chamerion angustifolium*

Groundsel *Senscio vulgaris*

Creeping thistle *Cirsium arvense*

Bracken *Pteridium aquilinum*

Stinging nettle *Urtica dioica*

Perforate St. John's-wort *Hypericum perforatum*

Fairy flax *Linum catharticum*

Lamb's-ear *Stachys byzantina*

Hemp-agrimony *Eupatorium cannabinum*

Ragwort *Senecio jacobaea*

Great mullein *Verbascum thapsus*

Biting stonecrop *Sedum acre*

Fragrant orchid *Gymnadenia conopsea*

Japanese knotweed *Fallopia japonica*

Annex 7.C.4: Site Photos

Photo from west of site looking east

Photo from east of site looking west along northern boundary

Fragrant orchid in gravel near eastern boundary (TN1)

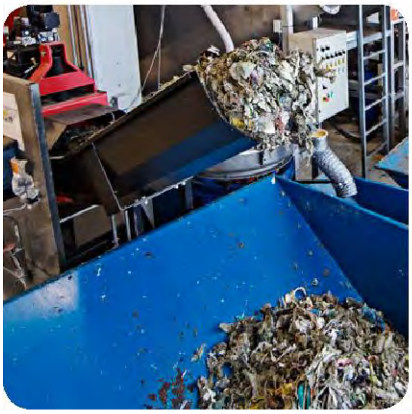
Fragrant orchid in paving near gatehouse

Photo of disused gatehouse building

Appendix 7.D: Bat Roost Assessment

Appendix 7.D: Bat Roost Assessment

REnescience Northwich



Quality Management

Prepared by:	Louisa Medland BSc (Hons) MCIEEM	Senior Ecologist	Medland	02/10/15
Reviewed & checked by:	Kerry Shakespeare BSc (Hons) MCIEEM CEnv	Technical Director	K Shakespeare	02/10/15
Authorised by:	Kerry Shakespeare BSc (Hons) MCIEEM CEnv	Technical Director	K Shakespeare	02/10/15
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Revision History				
Rev	**Date**	**Status**	**Reason for revision**	**Additional comments**
0	06/08/15	Draft	-	-
1	16/09/15	Draft	Initial internal review	TAD
2	21/09/15	Draft	Draft for client review	-
3	02/10/15	Final	Finalise	-

Executive Summary

RPS was commissioned to carry out a bat roost assessment to inform the proposed REnescience Northwich development on the site of a former chemical works within Lostock Works off the A530 Griffiths Road, near Lostock Gralam and Northwich in Cheshire.

The objectives of the bat roost assessment were to: undertake a daytime building assessment to determine whether any features present in the security hut had the potential to support bat roosts; identify signs that could indicate the presence of roosting bats during the assessment; determine from the findings of the assessment whether further surveys (i.e. dusk emergence and/or dawn swarming surveys) were required; and undertake further surveys to confirm the presence of roosting bats and identify the species, number of bats and the type of roost, should one be present.

All bats and their roosts are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010.

An external and internal inspection of the gatehouse building was carried on the 18th June 2015 and two evening emergence and one dawn swarming survey were carried out on the gatehouse building on the 18th June, 9th July and 31st July 2015. All surveys were undertaken by two suitably experienced ecologists, following guidelines published by the Bat Conservation Trust (BCT) (2012).

The bat roost assessment identified a small common pipistrelle roost within the building at the top of the gable end at the northern end of the building.

It is recommended that the building is retained and protected from any risk of disturbance during proposed development works. This should include preventing additional light spill onto the building, particularly the western and southern side of it.

If works affecting the building were needed, it would be necessary to obtain a licence from Natural England in advance. A licence can only be applied for when the proposed development has full planning permission. Such a licence would also need to demonstrate mitigation in place to reduce any adverse impact on bats, such as the provision of alternative, permanent roosting opportunities.

Contents

1 Introduction

1.1 RPS was commissioned to carry out a bat roost assessment to inform the proposed REnescience Northwich development on the site of a former chemical works within Lostock Works off the A530 Griffiths Road, near Lostock Gralam and Northwich in Cheshire.

1.2 The main site (excluding the shared access road within Lostock Works) is approximately 3.37 ha in size and centred on national grid reference 367920, 374201. It is located on land at part of the Lostock Works chemical industry site, adjacent to a number of other industrial operators. It was formerly used for chlorine production until 2001. At present, the site is cleared, with only some foundation slabs, hard-standing/roadways and a disused one-storey security hut outside the entrance gate remaining.

1.3 A Phase 1 Habitat Survey (Appendix 7.C to the Environmental Statement) found the security hut to have the potential to support a bat roost.

1.4 The objectives of the bat roost assessment were to:

- undertake a daytime building assessment to determine whether any features present in the security hut had the potential to support bat roosts;
- identify signs that could indicate the presence of roosting bats during the assessment;
- determine from the findings of the assessment whether further surveys (i.e. dusk emergence and/or dawn swarming surveys) were required; and
- undertake further surveys to confirm the presence of roosting bats and identify the species, number of bats and the type of roost, should one be present.

1.5 This report outlines the survey methods used (Section 2), presents the results obtained (Section 3) and sets out the conclusions reached (Section 4).

Legislation

1.6 All bats and their roosts are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010. As such it is an offence to kill, injure, capture or disturb bats or to obstruct access to, damage or destroy bat roosts. This protection has been extended by the Countryside and Rights of Way Act 2000 to include reckless damage, destruction or disturbance of a roost.

1.7 Seven UK bats are also UK Biodiversity Action Plan Priority Species and listed under Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006) making them Species of Principal Importance in England.

1.8 Any works that could potentially affect a bat or its roost can only be conducted under a licence obtained in advance from Natural England.

2 Methodology

Building Inspection

2.1 An external and internal inspection of the gatehouse building was carried on the 18th June 2015 by two suitably experienced ecologists, following guidelines published by the Bat Conservation Trust (BCT) (2012). The location of the building is shown on Figure 7.K.

2.2 The exterior of the building was searched initially for potential entry points into features suitable for bat roosts, including misplaced or missing tiles, holes in brickwork and gaps around window frames, barge boards and soffit boxes. Signs that could indicate bat activity were also searched for, including scratching and staining around potential entry points, bat droppings in or around the entrance and flies around the entry point.

2.3 The interior of the building, including the loft space, was then thoroughly inspected for suitable roosting sites, such as cracks and crevices in masonry, gaps behind interior wall and roof linings, torn or loosely fitted roofing felt, gaps around beam joints and gaps into cavity walls.

2.4 A search was undertaken to identify any roosting bats, presence of bat corpses or skeletons and noises made by bats. The floor boarding, insulation and other flat surfaces such as window sills and beams in the loft were inspected for bat droppings and fallen feeding remains. The walls and roof lining were inspected for urine staining.

2.5 A high powered torch and endoscope were used to assist the survey where necessary.

Dusk Emergence and Dawn Swarming Survey

2.6 Two evening emergence surveys and one dawn swarming survey were carried out on the gatehouse building on the 18th June, 9th July and 31st July 2015. The surveys were undertaken in accordance with the *Bat Surveys: Good Practice Guidelines* (BCT, 2012).

2.7 The dusk emergence surveys commenced ½ to ¼ of an hour before sunset and continued until approximately 2 hours after sunset. The dawn swarming survey commenced 2 to 1½ hours before sunrise and continued until sunrise.

2.8 During each survey visit, the building was surveyed continuously by two surveyors. Observations were made of where bats emerged/re-entered in the building and in what direction they were flying to or from. Behavioural observations were also recorded for bats encountered on site or within the vicinity, including direction of flight, and activity observed (e.g. foraging or commuting).

2.9 Bat detectors were used to detect echolocation calls from bats emerging from the building. Bat Box Duet and ANABAT SD2 CF bat detectors (both frequency division) were used. Recordings of bat calls were made on portable MP3 players and CF cards.

2.10 The data recorded was subsequently analysed on computer using BatScan v.9 and Analook software, which allows the display of sonograms and power spectra of bat calls, and together with the measurement of call parameters such as peak call frequency, pulse length and repetition rate, assists in identifying calls to species or species groups. Identification was guided by information provided in Russ, British Bat Calls: A Guide to Species Identification (2012).

3 Results

Building Inspection

Site Location

3.1 The disused gatehouse building is located to the south-east of the site boundary. The building is surrounded by buildings and areas of hard standing associated with the Lostock Works, including the proposed development site (not in use at present), an active industrial building and an electricity substation, all of which provide low value foraging habitat for bats.

3.2 The Wade Brook river corridor lies approximately 30 m south of the building, comprising a stream lined by trees, scrub, tall ruderals and bracken and which provide good foraging and commuting opportunities for bats.

External Inspection

3.3 The building was a single storey, brick built building with a pitched, slate tiled roof with gable ends at the northern and southern sides of the building. Sheets of wooden cladding lined the upper sections of wall at the gable ends and soffit boxes were present around the entire building at the base of the roof. Windows were present along the northern side of the building and along the majority of the eastern and western sides. Photographs of the building are in Annex 7.D.1.

3.4 The brickwork and windows were intact, presented no potential access points into the building and showed no features suitable as a bat roost. The roof was found to be in a poor state of repair and contained a number of features which provided suitable roosting locations for bats or opportunities for bats to access the interior of the building. These are listed below.

- Northeast corner: concrete fill between one roof tile and soffit box at the base of the gable end was missing, providing access to space between tiles and roof lining and potentially leading to access into the soffit box, roof space and wall cavity.
- Southeast corner: a broken and misplaced tile at the base of the roof, providing access to space between tiles and roof lining and potentially leading to access into soffit box, roof space and cavity wall.
- Southwest corner: concrete fill between roof tiles and soffit box missing, exposing seven roof battens, and tiles misplaced on the western side of the southern gable end providing access to space between tiles and roof lining, potentially leading to access into the soffit box, roof space and wall cavity.
- Northwest corner: concrete fill between roof tiles and soffit box at the base of the gable end was missing and the adjoining wooden barge board was damaged, providing access to space between tiles and roof lining and access into the soffit box. This could potentially also lead to access to the roof space and wall cavity.

- Western wall: a vent at the southern end of the wall with covering partially raised, providing potential access point into building interior.

3.5 The building was found to have a number of features in the roof that provided access to suitable roosting sites between the roof tiles and roof lining and may have potentially led to further suitable roosting sites within the roof space, cavity wall and soffit boxes.

3.6 The potential access points were inspected for signs of bat use, such as scratching and staining around entry points and bat droppings around or below them, but no signs were found.

Interior Inspection

Ground level

3.7 The building comprised one main room at ground level which was well lit by windows along the northern, eastern and western sides of the building. The southern end of the building was divided into three smaller rooms comprising a kitchen, toilet and store room. The kitchen in the southwest corner had a window and a vent entering it. A loft hatch was present in the kitchen leading to the roof space and was firmly sealed. The toilet and store room had no windows and the toilet had a vent.

3.8 The only potential access for bats into the building was via the uncovered vent into the kitchen. From here, bats could access the main room but the doors to the toilet and store room were closed, preventing bats from reaching them. The main room and the kitchen were well lit and the walls and ceilings were intact, providing no cracks or crevices for bats to roost in. An inspection of all surfaces found no bat droppings, feeding remains or other signs of use by bats.

Roof space

3.9 The roof was of trussed rafter construction comprising two long trusses extending from the ridge diagonally outwards to the floor and two smaller trusses returning back the rafters. Under felt was present between the rafters and the tiles and it was found to be intact and well fitted throughout, providing no potential access points into the roof space from the gaps under tiles identified in the external inspection.

3.10 Insulation was present on the floor between the beams and extended beyond the wall plate to the base of the rafters in places. A thin gap was present along the entire length of the building at the base of the tiles and rafters. In places this was covered by the insulation and in other places a metal grill was present, which would prevent bats from using it to access the roof space. However, in some locations the gap was open and could potentially provide an access point.

3.11 An intact breeze block wall was present at the northern gable end. A cavity may be present between this wall and the external brickwork wall which could potentially be accessed from the gaps in the roof at the northern end of the building. The southern gable end wall was covered in thin wooden boarding. There is potential for there to also be a small cavity between the boarding and external brickwork, which could be accessed from the gaps in the roof at the southern end of the building.

3.12 An inspection of the roof space found no bats or bat corpses to be present and opportunities for bats to roost within the main roof space were limited due to the absence of damaged or hanging roofing felt or gaps between rafters and trusses. All flat surfaces, including insulation and beams, were inspected for signs of bat use such as droppings and feeding remains, but none were found.

3.13 Overall, the areas with greatest potential for bat roosts were the gaps between the roof tiles and roofing felt, spaces within soffit boxes and wall cavities. These areas could not be fully accessed to determine whether bats were present and therefore dusk emergence and dawn swarming surveys were undertaken.

Dusk Emergence and Dawn Swarming Survey

3.14 The result of the dusk emergence and dawn swarming survey is provided below and shown on Figure 7.K.

3.15 During all three survey visits, the exterior of the northern and eastern sides of the building was found to be well lit by artificial lighting from the industrial building to the northeast.

Survey 1 – 18/06/2015

3.16 A dusk emergence survey commenced at 21.25, 15 minutes before sunset, and continued until 23.40.

3.17 One bat was observed emerging from the top of the gable end at the northern end of the building and flying southwards down the western side of the building at 22.23. The bat appeared to emerge from under the ridge tile.

3.18 No bat call was heard during the survey, but analysis of recordings made during the survey identified a common pipistrelle social call at the time the bat emerged. The size of the bat and the flight characteristics observed were consistent with those of common pipistrelle *Pipistrellus pipistrellus*.

3.19 No other bat activity was recorded.

Survey 2 – 09/07/2015

3.20 A dusk emergence survey commenced at 21.25, 10 minutes before sunset, and continued until 23.35.

3.21 One bat was observed emerging from the top of the gable end at the northern end of the building and flying southwards down the western side of the building at 22.11. The bat appeared to emerge from under the point where the two soffit boxes met.

3.22 No bat call was heard as the bat emerged but shortly after (within 60 seconds), a common pipistrelle was recorded briefly. No other bat activity was recorded by the surveyor in this location.

3.23 The surveyor positioned south-east of the building recorded three faint and brief bat contacts at 22.48, 22.52 and 23.02. Two of the contacts were too faint for the bat recording equipment to detect. The contact at 22.52 provided a faint recording and appeared most characteristic of a Myotis bat.

Survey 3 – 31/07/2015

3.24 A dawn swarming survey commenced at 03.55, 1.5 hours before sunrise, and continued until 05.25.

3.25 At 04.58 one bat was observed flying northwards along the western side of the building and then flying around and over the building before approaching the top of the gable end at the northern end. The bat then turned and flew northwards along the eastern boundary of the proposed development site and did not return. Visual observations and analysis of bat calls identified the bat to be a common pipistrelle.

3.26 No other bat activity was recorded.

4 Conclusion

4.1 The bat roost assessment identified a small common pipistrelle roost at the top of the gable end at the northern end of the building surveyed. One common pipistrelle was observed emerging during each of the two dusk surveys and one common pipistrelle was observed approaching the roost entrance during the dawn survey before flying away from it.

4.2 No signs of a bat roost were identified within the interior of the building, suggesting that the roost is within the soffit box or under the ridge tile.

4.3 Bats were recorded using or approaching the roost during each visit, suggesting that it is in regular use and is therefore likely to be a summer roost. Use by a single bat at this time of year suggests it is not a maternity roost and is used by a solitary male.

4.4 The roost entrance was well lit by artificial lighting but the emerging bat was observed on each occasion flying along the western side of the building, which was unlit, into habitats to the south which were also unlit.

4.5 Levels of bat activity during the survey were very low, indicating the area immediately around the building is of low value to bats for foraging or commuting. Low levels of activity were recorded during one survey to the south-east of the building and may have been from bats using the river corridor to the south. It is recommended that the building is retained and protected from any risk of disturbance during proposed development works. This should include preventing additional light spill onto the building, particularly the western and southern side of it. Any new lighting around the known bat roost should be designed to the specifications set out in the Bat Conservation Trust 'Bats and Lighting in the UK' 2008 guidelines (Annex 7.D.2).

4.6 If works affecting the building were needed, it would be necessary to obtain a licence from Natural England in advance. Such a licence would need to demonstrate mitigation in place to reduce any adverse impact on bats, such as the provision of alternative roosting opportunities.

4.7 It should be noted that a Natural England licence cannot be applied for to either destroy or disturb a known bat roost without full planning permission being granted first. In this scenario, full mitigation would need to be in place prior to works commencing on the site.

References

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Annexes

Annex 7.D.1: Security Hut Photographs

Security hut northern aspect from north-west.

Security hut; northeast corner.

Security hut; southwest corner.

Annex 7.D.2: Bat Conservation Trust 'Bats and Lighting in the UK' 2008 Guidelines

BATS AND LIGHTING IN THE UK
Bats and the Built Environment Series

This document is aimed at lighting engineers, lighting designers, planning officers, developers, bat workers and anyone specifying lighting. It is intended to raise awareness of the impacts of lighting on bats and mitigation is suggested for various scenarios. It also offers an explanation of the facts associated with the lighting industry for the benefit of bat workers.

This is a working document and as such the information contained will be updated in line with advances in our knowledge both into the impact on bats and also to reflect the advances in technology available in the lighting industry.

ABOUT BATS – FOR THE LIGHTING INDUSTRY

General Ecology

Bats are the only true flying mammals. Like us, they are warm-blooded, give birth and suckle their young. They are also long-lived, intelligent and have a complex social life. In Britain there are 17 species, all of which are small (most weigh less than a £1 coin) and eat insects.

Bats have evolved a number of unusual features, mainly connected with their ability to fly. Their wings are formed from a web of highly elastic skin stretched over greatly elongated finger bones, the legs and tail, though their thumbs remain free to help them cling on when roosting. Bats have also developed a highly sophisticated echolocation system that allows them to avoid obstacles and catch tiny insects, which they seize in flight or pick off water, the ground or foliage, even in complete darkness. When they're flying, bats produce a stream of high-pitched calls and listen to the echoes to produce a sound picture of their surroundings.

Some bats specialise in catching large insects such as beetles or moths but others eat large numbers of very small insects, such as gnats, midges and mosquitoes. Bats gather to feed wherever there are lots of insects, so the best places for them include traditional pasture, woodland, marshes, ponds and slow moving rivers.

During the winter there are relatively few insects available, so bats hibernate. In September and October they put on weight and then, as the weather gets colder, they seek out appropriate sheltered roosts, let their body temperature drop to close to that of their surroundings and slow their heart rate to only a few beats per minute. This greatly reduces their energy requirements so that their food reserves last as long as possible. Bats don't hibernate right through the winter but may wake up and go out to feed on mild evenings when insects are active.

During the spring and summer period female bats gather together into maternity colonies for a few weeks to give birth and rear their young (called pups). Usually only one pup is born each year. This is looked after carefully and suckled for between four and six weeks until it is old enough to fly out and hunt for itself. Bats don't build nests and don't bring food back to the roost to feed their young, so the baby lives only on its mother's milk until it is old enough to fly. Once the baby is independent, the colony breaks up and the bats generally move to other roosts. Bats may gather together from a large area to form these maternity roosts, so any disaster at the summer breeding site can affect the whole colony of bats from a wide surrounding area. Many of these maternity sites are used every summer as bats have a strong tradition of returning to the same site year after year.

Legal Protection of bats

Due to the decline in bat numbers, all species of bat are protected by the Wildlife & Countryside Act (1981) (as amended) and the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). This makes it illegal to: kill, injure, capture or disturb bats, obstruct access to bat roosts or damage/destroy bat roosts. Lighting in the vicinity of a bat roost causing disturbance could constitute an offence, so it is important that Natural England, Countryside Council for Wales, Scottish Natural Heritage or Environment and Heritage Service, Northern Ireland is consulted and allowed time to provide advice on lighting proposals in the vicinity of bats and roosts.

Impacts on bats

Roosts

Illuminating a bat roost creates disturbance and may cause the bats to desert the roost. Light falling on a roost access point will at least delay bats from emerging and this shortens the amount of time available to them for foraging. As the main peak of nocturnal insect abundance occurs at and soon after dusk, a delay in emergence means this vital time for feeding is missed.

Insects and foraging

In addition to causing disturbance to bats at the roost, artificial lighting can also affect the feeding behaviour of bats. There are two aspects to this. One is the attraction that light from certain types of lamps has to a range of insects; the other is the presence of lit conditions.

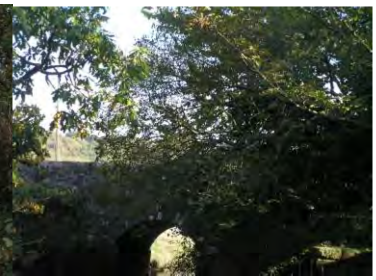
Many night flying species of insect are attracted to light, especially those lamps that emit an ultra-violet component and particularly if it is a single light source in a dark area. As well as moths a range of other insects can be attracted to light such as craneflies, midges and lacewings. Studies have shown that, although noctules, Leisler's, serotine and pipistrelle bats swarm around white mercury street lights (this would also apply to metal halide) feeding on the insects attracted to the light, this behaviour is not true for all bat species. The slower flying broad winged species such as long-eared bats, *Myotis* species (which include Brandt's, whiskered, Daubenton's, Natterer's and Bechstein's), Barbastelle and greater and lesser horseshoe bats generally avoid street lights. In addition it is also thought that insects are attracted to lit areas from further afield. This is thought to result in adjacent habitats supporting reduced numbers of insects. This is a further impact on the ability of the light avoiding bats to be able to feed. It is noticeable that most of Britain's rarest bats are among those species listed as avoiding light. Clearly, effective mitigation where there is potential for impact on bats has importance in the conservation of these species.

Artificial lighting is thought to increase the chances of bats being preyed upon. Many avian predators will hunt bats which may be one reason why bats avoid flying in the day. Observations have been made of kestrels (diurnal raptors) hunting at night under the artificial light along motorways.

Lighting can be particularly harmful if used along river corridors, near woodland edges and near hedgerows used by bats. In mainland Europe, in areas where there are foraging or 'commuting' bats, stretches of road are left unlit or lighting is designed in such a way as to avoid isolation of bat colonies.

Other behaviours
Artificial lighting disrupts the normal 24-hour pattern of light and dark which is likely to affect the natural behaviour of bats. Bright light may reduce social flight activity and cause bats to move away from the light area. Studies have shown that continuous lighting along roads creates barriers which some bat species cannot cross. For example, Daubenton's bats move their flight paths to avoid street lamps. The following images indicate possible scenarios where bats' commuting routes may cross a road. They are linear features such as tree lines, river corridors, hedgerows or where tree canopies form a link over the road.





ABOUT THE LIGHTING – FOR BAT WORKERS

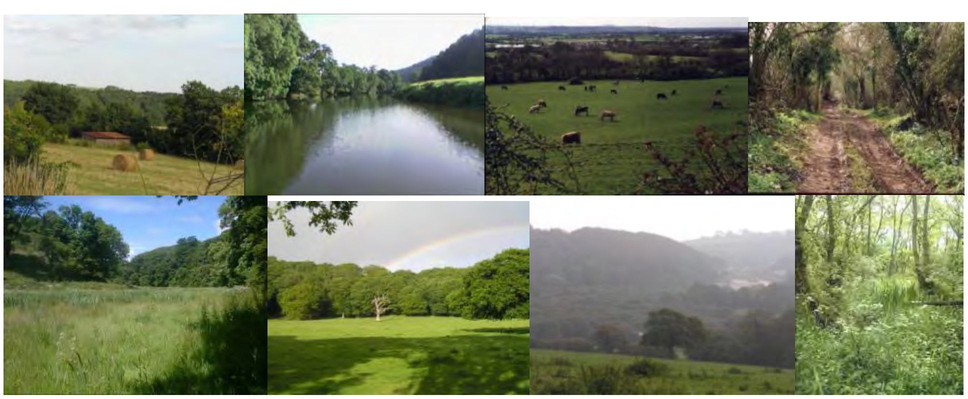
Types of lights in use
A range of lighting equipment is available:

1) **Low pressure sodium lamps (SOX)** (typical orange lamps seen along roadsides). Light is emitted at one wavelength, contains no ultraviolet (UV) light and has a low attraction to insects. The lamps tend to be large which makes it more difficult to focus the light from these lamps. These are in the gradual process of being removed or replaced.
2) **High pressure sodium lamps (SON) (**brighter pinkish-yellow lamps). Commonly used as road lighting. Light is emitted over a moderate band of long wavelengths including a small UV component. Insects are attracted to the brighter light. The lamp is of medium size and the light can be more easily directed than low pressure sodium. This is the predominant lamp now in use.
3) **Mercury lamps (MBF)** (bluish-white lamps). These emit light over a moderate spectrum including a larger component of UV light to which insects are particularly sensitive. Insects are attracted in large numbers along with high densities of bat species. (Rydell & Racey 1993). They are rare now and are not used in new developments.
4) **White SON.** This is whiter than High Pressure Sodium and has a larger component of UV light.
5) **Metal Halide**. A small lamp and therefore more easy to focus light and make directional. Emits less UV light than mercury but more than high pressure sodium. It comes in three forms a) Quartz arc tube (HQI); b) Ceramic arc tube (CDM-T) and c) Cosmo which is a new ceramic form.

6) **Light Emitting Diodes** (LEDs). Predicted to compete with metal halide and high pressure sodium as a widely used light source within the next few years. The light emitted is more directional. The light is produced in a narrow beam. It is instant light.
7) **Tungsten Halogen** (more directional). It is not used in new lighting schemes but may be encountered as security light on a private household.
8) **Compact Fluorescent** Mostly in use in residential street lighting. It produces a white light that does include UV light. It can be used at a low wattage and therefore on a low output to achieve low lux.

Legal requirements for lighting
There is no legislation requiring an area or road to be lit.
The Building Regulations specify that 150 W is the maximum for exterior lighting of buildings but this does not apply to private individuals.
There are a number of British Standards that relate to various components of lighting and there are also guidelines that relate to crime prevention, prevention of vehicular accidents and amenity use.
Many County councils and less often District and Borough councils set out standards in local guidance policy documents. These are sometimes based on the advice given by the Highways Authority 'TA49 – Approval of new and replacement lighting on trunk roads and trunk road motorways'.
In assessing the need for lighting it would be beneficial to ask the local authority for their lighting policy document as this should incorporate all of the above.

The installation of lighting and the planning system
Domestic lighting needs no planning permission and depends on direct advice being given to the householder. Lighting associated with new development or a listed building does require planning permission. Planning officers or developers when dealing with applications for lighting in an area of suitable bat habitat eg. woodland, old pasture, linking hedgerows and water habitats) should seek information on bat roosts in the area.



If assistance is needed they can contact the BCT Bat Helpline 0845 1300 228 who may be able to suggest how best to access information on bat roosts known in the area. If bat roosts are suspected, it may be necessary to conduct a bat survey. A survey may need to

determine the species of bat affected, their population levels, the likely impact of the lighting on the bats and possible mitigation.
The need to install lighting should be questioned. Where lighting is permitted, as may be necessary for public safety, conditions should be imposed to ensure the impact of the lighting on the bats is kept to a minimum. The use of a lighting design computer program that predicts where light will fall should be used to predict the potential impact and to plan mitigation.
The consultation on the addition to PPS23 on Pollution Control of Annex 3 on lighting is on hold at the present time (July 2007) until the outcome of the Baker review is known.

MITIGATION OF LIGHTING IMPACTS ON BATS

1. BAT ROOSTS

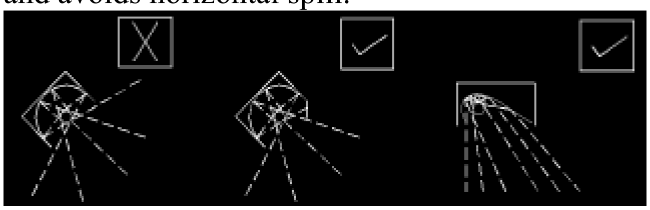
No bat roost (including access points) should be directly illuminated. If it is considered necessary to illuminate a building known to be used by roosting bats, the lights should be positioned to avoid the sensitive areas. Close offset accent lighting causes less light pollution; it is more specific and can be designed to avoid bat sensitive areas, and better highlights the features of the subject of the illumination.

2. FORAGING AND COMMUTING

Type of lamp (light source)
The impact on bats can be minimised by the use of low pressure sodium lamps or high pressure sodium instead of mercury or metal halide lamps where glass glazing is preferred due to its uv filtration characteristics.
Luminaire and light spill accessories
Lighting should be directed to where it is needed and light spillage avoided. This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvres and shields to direct the light to the intended area only. Planting can also be used as a barrier or manmade features that are required within the build can be positioned so as to form a barrier.
Lighting column
The height of lighting columns in general should be as short as is possible as light at a low level reduces the ecological impact. However, there are cases where a taller column will enable light to be directed downwards at a more acute angle and thereby reduce horizontal spill. For pedestrian lighting this can take the form of low level lighting that is as directional as possible and below 3 lux at ground level. The acceptable level of lighting may vary dependent upon the surroundings and on the species of bat affected.
Predicting where the light cone and light spill will occur
There are lighting design computer programs that are widely in use which produce an image of the site in question, showing how the area will be affected by light spill when all the factors of the lighting components listed above are taken into consideration. This should be a useful tool to inform the mitigation process.

Light levels
The light should be as low as guidelines permit. If lighting is not needed, don't light.
Timing of lighting
The times during which the lighting is on should be limited to provide some dark periods. Roads or trackways in areas important for foraging bats should contain stretches left unlit to avoid isolation of bat colonies. These unlit stretches should be 10 metres in length either side of commuting route.

3. FLOODLIGHTING OF SPORTS OR EVENTS
The use of asymmetric beam floodlights (as opposed to symmetric) orientated so that the glass is parallel to the ground will ensure that the light is cast in a downward direction and avoids horizontal spill.



See the National Trust guide to 'Events, concerts and bats' at www.nationaltrust.org.uk/main/w-bat05_event.pdf for further advice on ways to reduce the impact of event lighting.

4. SECURITY LIGHTING
Power It is rarely necessary to use a lamp of greater than 2000 lumens (150 W) in security lights. The use of a higher power is not as effective for the intended function and will be more disturbing for bats.
Movement sensors Many security lights are fitted with movement sensors which, if well installed and aimed, will reduce the amount of time a light is on each night. This is more easily achieved in a system where the light unit and the movement sensor are able to be separately aimed.
Timers If the light is fitted with a timer this should be adjusted to the minimum to reduce the amount of 'lit time'.
Aim of light The light should be aimed to illuminate only the immediate area required by using as sharp a downward angle as possible. This lit area must avoid being directed at, or close to, any bats' roost access points or flight paths from the roost. A shield or hood can be used to control or restrict the area to be lit. Avoid illuminating at a wider angle as this will be more disturbing to foraging and commuting bats as well as people and other wildlife.
Alternatives
It may be a better solution for security lighting on domestic properties to use a porch light.

Ongoing areas of research

- The impact of light on commuting corridors used by lesser horseshoe bats. Emma Stone, University of Bristol
- The effects of lighting on prime bat foraging areas within London, concentrating on riparian habitats and open spaces. Alison Fure.
- The effect of light and noise on British bat species. Frank Greenaway.

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Glossary of terms
(used in this article or that may be used by the lighting industry)

Arc tube	A tube normally ceramic or quartz enclosed by the outer glass envelope of a HID lamp that contains the arc stream.
Asymmetric beams	Lamp is off-centre in a reflector more steeply curved at one end.
Candela	The intensity of a light source in a specific direction. Unit of Luminous intensity
Contrast	The relationship between the luminance of an object and its background. The higher the contrast the more likely it is an object can be seen.
Cowl	Physical light spill control accessory.
Diffuse	Term describing dispersed light distribution referring to the scattering of light.
Efficacy	A measure of light output against energy consumption measured in lumens per watt.
HID	High Intensity Discharge. Describes mercury vapour, metal halide and high pressure sodium lamps.
High Pressure Sodium Lamp	A HID lamp whose light is produced by radiation from high pressure sodium vapour which usually includes a small

	amount of UV light.
Hood	Physical light spill control accessory.
Illuminance	Illuminance is the quantity of light, or luminous flux, falling on a unit area of a surface. It is designated by the symbol E. The unit is the lux (lx).
Lamp	Light source.
Light cone	The angle at which the beam falls off to 50% of peak intensity.
Light Pollution	The spillage of light into areas where it is not required. Also known as obtrusive light.
Light spill	The light that falls outside the light cone.
Light Trespass (nuisance)	Light that impacts on a surface outside of the area designed to be lit by a lighting installation. The correct legal term is nuisance.
Louvres	Physical light spill control accessory.
Low Pressure Sodium	A discharge lamp in which light is produced by radiation from low pressure sodium vapour. Emits light at only 589nm ie. monochromatic.
Lumen	The unit of light output from a lamp.
Luminaire	Light fitting or unit designed to distribute light from a lamp or lamps.
Luminance	The physical measure of the stimulus that produces the sensation of brightness measured by the luminous intensity reflected in a given direction. The unit is the candela per square metre (cd/m^2).
Lux (LX)	Illuminance is the quantity of light or luminous flux, falling on a unit area of a surface in the environment. It is designated by the symbol E. The unit is lux (lx).
Metal Halide (includes CDM-T)	A type of HID lamp in which most of the light us produced by radiation of metal halide and mercury vapours in the arc tube. Emits UV light. UV poor variants are available. It comes in three forms a) Quartz arc tube (HQI); b) Ceramic arc tube (CDM-T) and c) Cosmo which is a new ceramic form

Mercury	High pressure white light lamp that emits significant UV light.
Optic	The components of a luminaire such as reflectors, refractors, protectors which make up the directional light control section.
Photocell	A unit which senses light to control luminaires.
Reflector	A device used to reflect light in a given direction.
Refractor	A device used to redirect the light output from a lamp when the light passes through it. It is usually made from prismatic glass or plastic.
Shield	Physical light spill control accessory.
Sky glow	The brightening of the night sky caused by artificial lighting.
Symmetric beams	Lamp mounted in the centre of the reflector.
Ultra violet (UV)	Radiation that is shorter in wavelength and higher in frequency than visible violet light.
Voltage	The difference in electrical potential between two points of an electrical circuit.
Watt (W)	The unit for measuring electrical power.

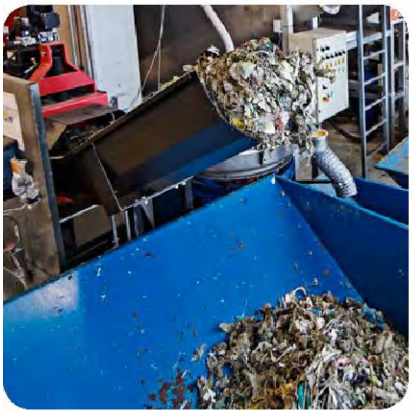
Appendix 7.E: Badger Survey

Appendix 7.E: Badger Survey

REnescience Northwich







Quality Management

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2	21/09/15	Draft	Draft for client review	-
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Executive Summary

RPS was commissioned to carry out a badger *Meles meles* survey to inform the proposed REnescience Northwich development on the site of a former chemical works at Lostock Works off the A530 Griffiths Road, near Lostock Gralam and Northwich in Cheshire.

The objectives of the survey were: to determine whether badgers were present within 30m of the site; to assess the type of use by badgers; identify those features likely to be of particular value to badgers; and, to use the information to minimise any potential impacts on the population.

The survey covered all features within the site boundary and boundary features up to 30m outside of it. In particular, woodland areas, banks, lines of trees and streams were concentrated upon.

The badger survey was carried on the 18th June 2015 by two suitably experienced ecologists.

The site was found to provide low value habitat for badger but areas of higher value were present to the south of the site within 30m. However, the survey found no signs to indicate that badger were present.

Contents

1 Introduction

1.1 RPS was commissioned to carry out a badger *Meles meles* survey to inform the proposed REnescience Northwich development on the site of a former chemical works at Lostock Works off the A530 Griffiths Road, near Lostock Gralam and Northwich in Cheshire.

1.2 The main site (excluding the shared access road within Lostock Works) is approximately 3.37 ha in size and centred on national grid reference 367920, 374201. It is located on land at part of the Lostock Works chemical industry site, adjacent to a number of other industrial operators. It was formerly used for chlorine production until 2001. At present, the site is cleared, with only some foundation slabs, hard-standing/roadways and a disused one-storey security hut outside the entrance gate remaining. The site is enclosed by a palisade fence.

1.3 A Phase 1 Habitat Survey (Appendix 7.C to the Environmental Statement) found the site to be predominantly hard standing but areas surrounding the site were considered to have greater potential to support badgers.

1.4 The objectives of the badger survey were:

- to determine whether badgers were present within 30m of the site;
- to assess the type of use by badgers;
- identify those features likely to be of particular value to badgers; and
- to use the information to minimise any potential impacts on the population.

1.5 This report describes the methods used in the survey in Section 2 and presents the results that were obtained Section 3, concluding that there were no signs that badgers are present on the site.

Legislation

1.6 Badgers (*Meles meles*) are protected in the UK under the Protection of Badgers Act 1992. This makes it an offence to wilfully kill, injure or take a badger, or attempt to do so; or to possess or control a dead badger or parts or derivatives of a badger. The Act makes an offence of cruelly ill-treating badgers, using badger-tongs or digging for a badger, causing a dog to enter a badger sett or using inappropriate firearms to kill badgers. The Act also makes it an offence, more relevantly to a proposed development site, to damage or destroy part or all of a badger sett, obstruct access to any entrance to a sett or disturb a badger whilst it is occupying a sett.

1.7 There is a mechanism whereby in some circumstances for development, a licence may be granted by the appropriate authority (currently Natural England) to interfere with a badger sett, either by disturbing it or destroying it. Disturbance has been generally accepted to include development activity using large machinery within 30m of any sett entrance, small machinery within 20m and hand work within 10m. Damaging or destroying a sett would require evidence of a suitable mitigation strategy to ensure that any badgers un-housed by such actions would have appropriate alternative accommodation within their existing social group's territory prior to closure and damage to their existing sett.

2 Methodology

2.1 The badger survey was carried on the 18th June 2015 by two suitably experienced ecologists.

2.2 The survey covered all features within the site boundary and boundary features up to 30m outside of it. In particular, woodland areas, banks, lines of trees and streams were concentrated upon. The survey area is shown in Figure 7.L.

2.3 The survey sought to identify and record all signs of badger activity. Evidence of badger activity can be identified in the following ways.

Setts

2.4 A sett is defined as "any structure or place, which displays signs indicating current use by a badger". English Nature (now Natural England) has, in the past, interpreted "current use" as having been used at any point in the last 12 months. These can be large structures with numerous entrances/exits or single hole setts. Setts are identified on the basis of their size, location and form. To establish relatively recent badger activity, and to confirm that the structure really is a sett, spoil heaps are inspected for badger hair or footprints. Activity is gauged by general demeanour, with fresh spoil and unobstructed holes. They are categorised as follows.

- **Well used:** being clear of any debris or vegetation, or obviously in regular use, and may or may not have been excavated recently.
- **Partially used:** not in regular use and have debris such as leaves and twigs in the entrance, or have moss and/or other plants growing in or around the entrance. Partially used holes could be in regular use after a minimal amount of clearance.
- **Disused:** not having been in use for some time, partially or completely blocked, and could not be used without a considerable amount of clearance. If the hole has been disused for some time, all that may be visible is a depression in the ground where the hole used to be, and remains of the spoil heap, which may be covered in moss or plants.

2.5 Setts are generally classified as one of four types, as follows.

- **Main:** normally the focal point sett of a social group of badgers. Occupied the majority of the time, main setts usually have several active holes with radiating tracks, latrines and other signs of activity. The actual number of holes can vary greatly, depending on social group size and soil conditions.
- **Annexe:** a secondary sett, close to the main sett. Will normally be connected to the sett with very obvious tracks. Annexes may not be occupied constantly, even when the main sett is very active.

- **Subsidiary:** occurring at a greater distance from the main sett, and not as clearly linked to it as an annexe. These setts will fall clearly within the territory of a social group and may be seasonally used by badgers.
- **Outlier:** less frequently used, these setts may be colonised by other species when not in use by badgers. Outliers may represent a temporary sett, or a habitation for migrating individuals, or those excluded from a social group.

Dung Pits

2.6 The normal method of excretion for badgers is to defecate into a small scrape or pit, which is left uncovered.

Latrines

2.7 Collective name for a series of dung pits within an area. These are used by badger social groups to demarcate their territory, and may be used for other behavioural purposes. Latrines are therefore an important part of badger social life.

Track

2.8 A main arterial route frequently used by badgers. May be clearly visible over a considerable distance, even along flat, even ground.

Run

2.9 A less frequently used route, which may only be visible where it crosses some obstacle, such as a bank, a hedge or a fence. Badger hair can sometimes be collected along tracks and runs where they have pushed under barbed wire fences.

Foraging Area

2.10 An area which shows signs of foraging activity. Most often occurs as some form of “snuffle holes” and rooting up of turf or ground cover, overturning of dried cow manure, when in search of earthworms. Other foraging evidence may appear as holes left from digging out wasp or bees’ nests, or in arable areas, “rolling” of cereal crops.

Prints

2.11 Can be detected where badgers have crossed areas of bare ground and are easily distinguishable from other mammal prints.

3 Results

Habitat Description

3.1 The habitats within the site boundary were of relatively low value to badger. The majority of the site comprised bare ground or areas of ephemeral/short perennial vegetation, which were of limited value to badger for foraging.

3.2 A bank ran parallel to the western and southern boundaries where the ground sloped downwards from the main part of the site towards the boundaries. The bank could potentially provide an area suitable for badgers to build setts and areas of scrub on the bank provided additional seclusion and shelter.

3.3 A palisade fence lined the entire site boundary, which may restrict badger movement onto the site, particularly where hard standing was present at the base preventing badgers from digging under it.

3.4 The area to the east of the site outside the boundary contained the active Lostock Works, which comprised industrial buildings and structures and areas of hard standing. This area was not considered suitable habitat for badger.

3.5 The area to the west of the site outside the boundary comprised a large area of disused ground of gravel and ephemeral/short perennial vegetation similar to that on the site itself, and therefore of limited value to badger for foraging. The area was level and therefore of limited value to badger for sett building.

3.6 The area north of the site outside the boundary comprised a gravel track and rail tracks, which did not provide suitable habitat for badger. However, some areas of scrub and scattered young trees were present, which may have provided suitable sett building locations at their bases.

3.7 The area to the south of the site outside the boundary was occupied by the Wade Brook river corridor, which comprised high, steep banks of tall ruderals, scrub and trees, including a small area of woodland. This area provided the greatest potential for badger to be present due to the presence of higher value foraging opportunities and suitable locations for setts.

Badger Survey Results

3.8 All areas within the site and up to 30m from the site boundary, where accessible, were examined for signs of badgers. No signs were identified.

3.9 No evidence of large mammals, such as tracks, runs or entrance holes were identified within the site boundary or in the areas to the north, east or west. Mammal runs were identified along the northern bank of the Wade Brook (to the south of the site) but these were followed across the survey area and no setts, or other signs of badger activity such as dung pits, latrines or feeding remains were found.

3.10 The runs were more characteristic of fox than badger due to the presence of overhanging vegetation and absence of claw marks when crossing fallen logs; badgers are lower to the ground than foxes and therefore typically create well worn tracks where they push their way through vegetation, whereas foxes are taller and walk over the vegetation.

3.11 The runs continued eastwards along the river corridor outside of the survey area and in the opposite direction crossed a bridge over the watercourse south-west of the site.

Conclusion

3.12 The site was found to provide low value habitat for badger but areas of higher value were present to the south of the site within 30m.

3.13 A survey of the site and 30m buffer around it found no signs to indicate that badger were present.

References

English Nature. 2002. *Badgers and Development*. English Nature, Peterborough.

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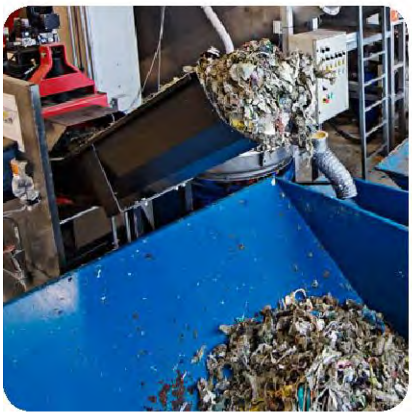
Appendix 7.F: Otter and Water Vole Survey

Appendix 7.F: Water Vole and Otter Survey

REnescience Northwich







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Quality Management

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1	16/09/15	Draft	Initial internal review	TAD
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Executive Summary

RPS was commissioned to carry out a water vole *Arvicola amphibious* and otter *Lutra lutra* survey to inform the proposed REnescience Northwich development on the site of a former chemical works at Lostock Works off the A530 Griffiths Road, near Lostock Gralam and Northwich in Cheshire.

The objectives of the survey were: to determine whether water voles or otters are present within the brook; to assess the status of the water vole population present and the type of use by otters; identify those features likely to be of particular value to otters or water voles on the site; and to use the information to minimise any potential impacts on the population.

The water vole and otter survey was carried on the 18th June 2015 by two suitably experienced ecologists.

Wade Brook was found to provide suitable habitat for water vole and otter. However, a survey of the watercourse found no signs to indicate that either species was present.

Contents

1 Introduction

1.1 RPS was commissioned to carry out a water vole *Arvicola amphibious* and otter *Lutra lutra* survey to inform the proposed REnescience Northwich development on the site of a former chemical works at Lostock Works off the A530 Griffiths Road, near Lostock Gralam and Northwich in Cheshire.

1.2 The main site (excluding the shared access road within Lostock Works) is approximately 3.37 ha in size and centred on national grid reference 367920, 374201. It is located on land at part of the Lostock Works chemical industry site, adjacent to a number of other industrial operators. It was formerly used for chlorine production until 2001. At present, the site is cleared, with only some foundation slabs, hardstanding/roadways and a disused one-storey security hut outside the entrance gate remaining. The site is enclosed by a palisade fence.

1.3 The Wade Brook river corridor is located beyond the southern boundary of the site and during a Phase 1 Habitat Survey (Appendix 7.C to the Environmental Statement) the river corridor was found to provide suitable habitat for water vole and otter. The proposed development will continue to use the existing outfall into the Wade Brook for clean surface water drainage, at a discharge rate no greater than existing.

1.4 The objectives of the survey were:

- to determine whether water voles or otters are present within the brook;
- to assess the status of the water vole population present and the type of use by otters;
- identify those features likely to be of particular value to otters or water voles on the site; and
- to use the information to minimise any potential impacts on the population.

1.5 This report describes the methods used in the survey in Section 2 and presents the results that were obtained in Section 3, concluding that there are no signs of otter or water vole in the survey area.

Legislation

Water vole

1.6 Water voles are fully protected under Section 9 of the Wildlife and Countryside Act 1981 (as amended), through inclusion in Schedule 5. The legalisation makes it an offence to:

- intentionally kill, injure or take (capture) a water vole;
- possess or control a live or dead water vole, or any part of the water vole;
- intentionally or recklessly damage, destroy or obstruct access to any structure or place which water voles use for shelter or protection, or disturb water voles while they are using such place; and

- sell, offer for sale or advertise for sale live or dead water voles.

1.7 The Wildlife and Countryside Act 1981 (as amended) provides a defence where an action is the incidental result of an otherwise lawful operation and could not reasonably have been avoided. There would be a need to rely on this if undertaking works affecting water vole habitat, having made a judgement as to whether the proposed actions are covered by that provision. In that scenario, appropriate mitigation measures might be required to achieve this.

1.8 There are no licensing purposes that explicitly cover development activities affecting water vole. Where capture or translocation is considered to be the best method of ensuring an offense under the Wildlife and Countryside Act 1981 is not committed, a translocation license for the purpose of conservation may be required (Natural England 2011). Water voles are also a UK BAP Priority Species and their inclusion under Section 41 of the NERC Act makes them a Species of Principal Importance in England.

Otter

1.9 Otters are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010. As such it is an offence to kill, injure, capture or disturb otters or to obstruct access to, damage or destroy their places of rest. This protection has been extended by the Countryside and Rights of Way Act 2000 to include reckless damage, destruction or disturbance to places of rest.

1.10 Otter is also a priority UK Biodiversity Action Plan (BAP) species and its inclusion under Section 41 of the NERC Act makes it a Species of Principal Importance in England.

1.11 If the proposed development could not avoid disturbance to otters or could damage or destroy an otter's place of rest, appropriate mitigation measures would need to be agreed and a license from Natural England obtained.

2 Methodology

2.1 The water vole and otter survey was carried on the 18th June 2015 by two suitably experienced ecologists.

Water vole

2.2 Although they do not hibernate, water voles are not very active above ground during the winter, so surveys are best carried out between April and October when field signs are most abundant. The survey was carried out in accordance with guidelines of best practice set out in the *Water Vole Conservation Handbook – Third Edition* (Strachan et al, 2011).

2.3 The survey covered the section of Wade Brook that ran parallel with the southern site boundary.

2.4 The brook was walked and examined in detail for evidence of the presence of water voles in the form of characteristic field signs. Wherever possible, the banks were inspected on both sides of the channel from the water's edge to the top of the bank.

2.5 The following field signs were sought.

Latrines

2.6 Droppings are the most distinctive field sign. They are approximately 8 – 12mm in length and 4 – 5mm in diameter, cylindrical with blunt ends. The colour is variable though often green. They have the texture of putty when fresh but when dry may show green concentric rings of fine plant material if broken open. They are generally odourless or have a faint musky smell. Most droppings are deposited at discrete latrine sites, used to mark range boundaries or favoured spots close to burrows. Latrines are typically maintained between February and November and often consist of a flattened mass of old droppings topped with fresh ones.

Feeding stations

2.7 Water voles often bring pieces of cut vegetation to favoured feeding stations close to the water's edge and leave remains in neat piles. The sections of vegetation are typically up to 10cm in length and show the marks of the two large incisors. They are often taken into the burrow entrances by the voles and laid up as stores along the tunnels or in chambers.

Burrows

2.8 Water vole burrows are typically wider than they are high, with a diameter of 4 – 8cm. Around the burrow entrances tend to be well-grazed lawns where the water vole has been feeding without fully leaving the hole.

Nests

2.9 Both male and female water voles take bedding underground to line nest chambers in the burrow system. Nurseries consist of a large ball of finely shredded grasses or reed and the chamber entrance may be plugged by the female with loose soil or grass. Where vegetation cover is dense and the water table is high, nests roughly the size and shape of a rugby ball can sometimes be found above ground, often woven into the bases of rushes, sedges or reed.

Footprints

2.10 Water vole footprints are easily confused with brown rat *Rattus norvegicus* footprints. As with all rodents, the imprints show four toes in a star arrangement from the fore foot and five toes of the hind foot with the outer ones splayed. The hind foot typically measures between 26 – 34mm and is noticeably smaller than that of the brown rat at 40 – 45mm (heel to claw measurements). The brown rat is also heavier and so leaves a deeper impression. Typically, water vole footprints occur at the water's edge and lead into vegetation cover.

Runways in vegetation

2.11 These are typically found within two metres of the water's edge and take the form of low tunnels pushed through the vegetation. The pathways may measure 5 – 9cm in width and often branch many times, leading to the water's edge, burrow entrances or favoured feeding stations. Brown rat runs are usually conspicuous as clear or bare pathways linking burrows or running along the bankside away from the water's edge.

Assessing population size

2.12 Water voles live in colonies, but string themselves out along a watercourse through a series of contiguous territories. Breeding female water voles are territorial but may share territory with their female offspring. Males have home ranges that overlap with the territories of a number of females and other males. A female's territory length typically varies between 30m to 150m and a male's home range varies from 60m to 300m.

2.13 The number of water vole latrines present gives an indication of the strength of the water vole colony. Approximately 6 latrines are maintained per breeding female. However, larger and more robust populations show a large number of closely packed latrines. Typically, fewer maintained latrines are present when water vole populations are small and fragmented.

Otter

2.14 The surveys searched for signs of otter presence including otter spraints (droppings), footprints, holts, couches/lay-ups, slides or runs, and feeding remains. The most important sign for indicating the presence of otters is the presence of spraints, which are typically found at prominent bankside locations, close to the water, such as on bridges and stones.

Spraints

2.15 Otter spraints are black or dark greenish and tar-like when fresh. They are loosely held together and have a distinctive, musky/fishy odour, often described as smelling like newly mown hay or jasmine tea. With age, spraints fade to grey but retain a sweet, musky scent. They are often found in conspicuous places in the otter's home range, such as ledges, boulders, under bridges and tree saddles. By contrast, mink scats, which may be confused with otter spraints, tend to be more compact and twisted, possibly contain fur and smell distinctly unpleasant. Sprainting is subject to seasonal variations, due to food availability, presence of young and other factors. It is not possible to determine accurately the numbers of otters present, but it may be possible to determine the frequency of otter use by repeat surveys.

Prints

2.16 Otter footprints can be used as an indicator of activity if the conditions are right for leaving prints. They are usually best identified when seen in mud or compacted sand. The otter has 5 webbed toes, each with claws, although these may not be clearly defined. In soft ground, otter footprints can show all five toes, but more commonly only four will be visible. The prints of adult otters are asymmetrical and each print is around 50 – 60 mm wide.

Holts and couches

2.17 Holts and couches are used to rest during nocturnal foraging and for lying up during the day. They are also important for breeding. Female otters prefer to use areas that are secluded, to avoid disturbance by humans and other species, and both holts and couches are equally important for this purpose. These areas also tend to be away from main rivers, up to a 1km away on a small tributary, and can also be located up to 500m away over land.

2.18 Otters are secretive animals and so holts are often well hidden and difficult to identify. Holts are rarely constructed by the otter. Instead the animal utilises suitable structures within its range such as a hole in the river bank, hollow trees, the crowns of pollarded willows, cavities in rock piles or tree roots, peat tunnels, or some man-made structures. If a female has young, she will reduce her sprainting activity around the holt, so as not to attract the attention of other otters or predators.

2.19 Many otters will seek shelter above ground, using couches. These are usually formed from vegetation used as bedding and are located in areas of scrub, reed beds or long grass. Large stands of riparian gorse and other scrub or tussock sedge and extensive reedbeds are particularly important habitats.

Slides and runs

2.20 Otters also use areas where they groom and roll on the ground, creating beds of flattened vegetation. They use paths that run along and away from the riverbank, which may end in slides when the path enters the water.

Feeding remains

2.21 Although otters will eat a range of foods, a number of studies have demonstrated that fish are by far the most important component of their diet. Eels are also considered to be an important food species in freshwater habitats (Mason & MacDonald, 1986). Otter feeding remains can occasionally be identified on the banks of watercourses.

3 Results

Habitat Description

3.1 A section of Wade Brook was surveyed that ran parallel with the proposed development site, as shown on Figure 7.M. The survey was undertaken on the northern bank from the point of a bridge crossing eastwards. The channel could not be accessed during the survey due to its depth and flow rate.

3.2 The channel measured approximately 3m wide and had steep earth cliffs on each side measuring 30cm to 70cm high. The water was approximately 1m at its deepest. The flow rate was moderate and the direction of flow was from east to west.

3.3 High banks measuring approximately 20m long were present on each side. They were typically steep but the northern bank was stepped and the southern bank had a wide, level plateau before rising steeply, where dense common reed occurred.

3.4 The steeper banks typically comprised a mosaic of tall ruderals, such as willowherd *Epilobium sp.* and stinging nettle *Urtica dioica,* and scrub including bramble *Rubus fruticosus* and willow *Salix sp*. Scattered willow and alder trees were present and a clump of willow, alder and ash formed a small area of woodland on the northern bank. The vegetation was typically sparse underneath and extended up to the river bank in places.

3.5 At the top of the banks, bracken occurred and formed dense stands.

Water Vole Survey Results

3.6 Wade Brook provided suitable habitat for water vole. The bankside vegetation provided an adequate food source and a good level of shelter and protection. However, no signs of water vole were identified.

Otter Survey Results

3.7 The Wade Brook provided suitable habitat for otter. The brook was of a size that is was likely to support fish for otters to prey upon. The steep sided banks meant that the brook was very secluded and although close to industrial buildings, was unlikely to be disturbed. The presence of scrub and trees provided potential locations for otters to find holts and couches. However, no signs of otter were identified.

Conclusion

3.8 Wade Brook was found to provide suitable habitat for water vole and otter. However, a survey of the watercourse found no signs to indicate that either species was present.

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Appendix 8.A: Drainage Strategy

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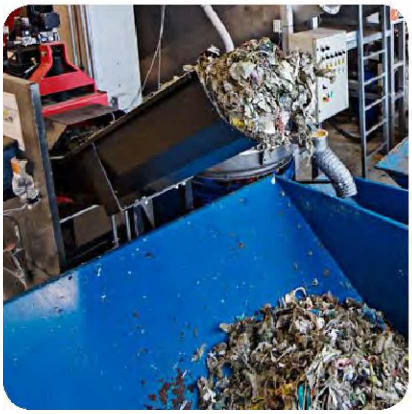
REnescience Northwich





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Quality Management

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0	03/08/15	Draft	-	-
1	19/08/15	Draft	Initial internal review	TAD
2	29/09/15	Final	Foul drainage change	TAD

DISCLAIMER

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1 Introduction

General

1.1 This report has been produced to describe, in detail, the design principles and strategy required for the management of surface water runoff and foul water discharge from the proposed REnescience Northwich development.

1.2 The contents of this document are to be read in conjunction with all other supporting drawings or documents referenced herein or otherwise appended to this report, and/or submitted for the purposes of planning consent.

1.3 The project description in Chapter 2 of the ES gives full details of the proposed development, which comprises buildings for waste treatment, external bioreactors for enzyme treatment, tanks and associated pumps and pipework for anaerobic digestion, covered external storage areas for recyclable materials, refuse-derived fuel (RDF) and de-watered digestate (compost-like output, CLO), and associated hardstanding, vehicle movement, parking and landscape planting areas.

Site Description

1.4 The site is brownfield land that was previously used for chlorine manufacturing until 2001. At the time of previous re-development planning applications for the site in 2009 / 2010, buildings were still present, but they have since been demolished in 2013. At present, the site is cleared, with only residual foundation slabs, hardstandings, roadways and a disused security hut outside the site entrance gates remaining from the former industrial development. The site is fully enclosed by a palisade fence.

1.5 The site is generally flat with a large central plateau level of around 25.50m AOD. Site levels around the northern, western and southern boundaries are approximately 2m to 3m lower than the main plateau. This correlates with the levels of the existing railway line and associated sidings present to the north and south of the site. The wider site topography in terms of overland drainage flow paths generally trends in a southerly direction towards Wade Brook, which runs within a steeply sloping channel in an east-west direction just beyond the southern site boundary. The water level in Wade Brook is approximately 17.50m to 18.00m AOD (7.5m to 8.0m below existing general site levels).

1.6 The site area is sparsely vegetated, with only isolated trees and shrubs present around the site owing to the fact that the site is largely hard surfaced. The steep banks of Wade Brook to the south of the site are heavily wooded with trees and scrub to heights of approximately 10m.

1.7 Ground conditions identified by site investigation show a variable thickness of Made Ground is present from ground surface across the site. The thickness of Made Ground was generally greater in the northern half of the site. Made Ground is underlain by Glacial Till, which in turn overlies the Northwich Halite Formation.

1.8 More specifically, the geological strata encountered can be described as follows.

Made Ground

1.9 A variable thickness of Made Ground was encountered from the ground surface across the site. Made Ground was encountered to depths ranging from 0.10m, located in the southwest of the site, to 5.00m below ground level (bgl), located in the west of the site. The Made Ground was variable in nature, but generally comprised dark grey or brown, clayey, sand, gravel and cobbles, ranging to sandy, gravelly clay. Gravel and cobbles comprised brick, ash, clinker, sandstone, mudstone and wood.

Glacial Till

1.10 Glacial Till was encountered beneath the Made Ground at depths ranging from 0.10m to 5.00m bgl. The thickness of the stratum ranged from 2.20m to 13.20m (where proven) and was generally encountered to greatest depth in the south and west of the site. The base of the stratum was not encountered at depths of up to 15.50m bgl in the far west of the site. The stratum was variable in nature, but generally comprised red, occasionally grey, mottled, silty, sandy, occasionally gravelly clay. Gravel comprised fine to medium angular gravel of mudstone and sandstone. Rare clayey sand layers, up to 0.70m in thickness, were recorded in some locations.

Northwich Halite Formation

1.11 The surface of the Northwich Halite Formation was encountered at depths ranging from 5.70m to 13.30m bgl. The stratum was encountered as weak, red, brown, grey and green, sandy, highly to completely weathered mudstone.

1.12 Perched groundwater was encountered at depths ranging from 0.50m to 3.40m bgl, within the Made Ground, typically trapped within the depth or at the base of the Made Ground strata, which is in part granular in nature.

2 Existing Site Drainage

2.1 United Utilities sewer record plans indicate that there are no public sewers present within the vicinity of the proposed development site.

2.2 The site is currently served by privately owned and maintained surface water drains associated with the former chlorine production plant on the site. In addition, there are also a number of separate trade effluent drains present, which collected acid/ alkali and other miscellaneous effluents arising from the various former industrial processes undertaken on the site.

2.3 Surface water runoff from the site has historically been discharged to Wade Brook via a network of underground surface water drains. A small section of the site along the northern boundary, which is lower than the main plateau area and which is covered with stone ballast associated with the railway sidings serving the site, drains via infiltration and/or overland flows within the larger area of railway land beyond the northern boundary of the site.

2.4 Historic site plans dating back to the early to mid-1970s, when the site was most recently developed out as a chlorine production plant, indicate that surface water flows from the site at that time discharged via a 450mm diameter pipe outfall to Wade Brook, present just beyond the southern boundary of the site. No flow restrictions have been applied to the drainage outflow from this pipe.

2.5 The existing site impermeable area has been calculated as being approximately 2.19Ha, and which is identified on Figure 8.A. This drawing also identifies the extent of the existing main surface water drainage system layout present on site. The estimated maximum outflow to the surface water drainage outfall to Wade Brook has been assessed using MicroDrainage as Table 2.1, below. Design calculations for the existing network are included in Annex 8.A.1.

Table 2.1: Summary of existing surface water drainage system

Return Period	Critical Storm / Duration	Maximum Outflow	Drainage System Characteristics
1 in 1 year	15min, winter profile	238.1 L/s	No surcharging
1 in 30 year	15min, winter profile	428.7 L/s	Pipe surcharging, no flooding
1 in 100 year	15min, winter profile	502.9 L/s	Flooding, total 28.68m^3

2.6 In the course of a previous planning application for a waste treatment plant on this site by Viridor in 2009/2010, the Environment Agency was consulted as part of the planning process. This consultation concluded that all surface water discharge from any new site development should not exceed the existing outfall capacity for all discharges up to and including the 1 in 100 year flood event.

2.7 Based on the condition that the surface water discharge from the new development must not exceed the existing maximum 1 in 100 year storm event, it can be concluded that a maximum upper discharge limit of 502.9L/s will apply to the new development surface water drainage system.

3 Construction Stage Drainage

3.1 The site will initially be subject to a demolition operation to remove all remaining impermeable floor slabs, bases and hard paving surfaces. Recovered materials will be processed on site for re-use as engineered fill material. As part of this exercise, all redundant existing below ground drainage pipes (if not suitable for re-use) will either be grubbed up and removed, or filled and capped off using a cement based grout.

3.2 Existing surface water pipework connected to Wade Brook outfall will be retained upstream of the outfall for re-use as both a temporary and permanent means of surface water drainage disposal.

3.3 During construction, the site will be subject to a bulk earthworks cut and fill operation to re-profile the site to allow construction of new building structures, external plant and hardstanding areas. Measures will be put in place by the contractor to ensure temporary rainwater runoff from the site is collected and discharged in a controlled manner, including being treated by an appropriate means to remove silt and sedimentation from the runoff.

3.4 The project requires the construction of a large below ground waste storage bunker which will be 6m deep. The construction of this element is anticipated to be by means of an open cut excavation, and which will be formed as part of the overall bulk earthworks operation. The nature of this excavation, which will be within impermeable Glacial Till strata, will create a sump for rainwater runoff across the site during construction, either by direct overland flows or via infiltration flows through the overlying permeable horizons of made ground fill strata. As a result, a temporary land drainage system will be provided to the perimeter of the base of the bunker excavation to maintain a dry working environment at all times during construction. Disposal of collected rainwater will be via sump pumping to Wade Brook outfall via a silt interception / removal device.

3.5 Installation and ongoing management of surface water runoff for the duration of the construction works will be the responsibility of the contractor. All temporary drainage systems will be sized accordingly to ensure that adequate discharge flow capacity is available at all times. Temporary drainage systems will be regularly monitored and maintained by the contractor to ensure that all runoff is adequately contained within the site boundary at all times, and only discharged to Wade Brook at a rate less than the maximum existing surface water outfall capacity.

3.6 The contractor will develop a formal site management plan, which will address pollution management and control in relation to site vehicles, raw materials and waste generation, to ensure that all surface water runoff generated during the construction works is free of contamination.

3.7 These construction-stage requirements are set out in the Construction Environmental Management Plan at Appendix 2.C in Volume 3 of the Environmental Statement (ES).

4 Proposed Surface Water Drainage

4.1 The proposed site surface water drainage system will be a single gravity network, discharging via the existing 450 mm diameter outfall into Wade Brook. The surface water drainage run-off flow rate will be restricted to a maximum flow rate of 502.9L/s, in line with the calculated existing outfall capacity. The proposed new system is designed to positively drain all new building roofs and external hard-surfaced catchments.

4.2 The drainage system is designed to contain all surface water runoff in below-ground pipework and chambers during storms up to and including the 1 in 100 year return period (including climate change). Below-ground drainage pipework and chambers provide sufficient runoff attenuation to ensure that surface water during such flood events can be controlled and discharged from the existing Wade Brook outfall without surface flooding. The WinDes outputs for the proposed drainage design are provided in Annex 8.A.2 and summarised in Table 4.1, which confirm these criteria have been met.

4.3 Surface water within bunded areas (around AD tanks and bioreactors) will be retained within the respective bunds, to be discharged at a controlled rate to Wade Brook following inspection as required. This is detailed below.

4.4 The surface water drainage network has been designed to accommodate the long term effects of climate change. All rainfall intensities used in the design have been subject to increase allowing sufficient future proofing against climate change for the expected life of the development (25 years), and in accordance with current Environment Agency (EA) and planning guidelines. For the design life of the proposed development, a climate change effect factor of 20% will apply, and so design rainfall rates calculated for the new development have been increased accordingly.

4.5 The use of soakaways for disposal of surface water on site has been discounted on the grounds that the soil strata underlying the site, being Glacial Till and Northwich Halite Formation as described in section 1, have low permeability characteristics and so would not support direct infiltration of surface water runoff. In addition, Network Rail has indicated during consultation that soakaways to railway land should be avoided.

4.6 The proposed surface water drainage design is shown in Figure 8.C.

Building Roof Drainage

4.7 Large building roof areas will be drained by a specialist designed siphonic roof drainage system, with primary and secondary roof gutter outlets, designed in accordance with BS 8490 and BS EN 12056-3 to provide Category 3 protection for an envelope design life of 25 years. Small buildings and roof areas will be drained by traditional gravity means, designed in accordance with BS EN 12056-3.

4.8 Surface water runoff from all roof areas is classed as clean runoff, and as such requires no formal treatment prior to discharge to Wade Brook.

External Vehicular Hardstanding Drainage

4.9 External HGV circulation areas and vehicle parking areas will be drained via linear drainage channels, Beany-type linear kerb drains, and/or localised road gullies. All surface water drainage from vehicular parking or circulation areas will be trapped at point of source to remove silt or debris, then passed through a Class 1 bypass oil separator (with integral high level alarms) to ensure compliance with BS EN 858-1:2002, in accordance with Pollution Prevention Guideline document PPG3 ‘Use and design of Oil Separators in Surface Water Drainage Systems’.

4.10 The external vehicle fuelling station area will be isolated by way of a perimeter surface water drainage channel around the fuelling point to intercept potentially contaminated surface water runoff arising from re-fuelling activities. Runoff from this area will be passed through a Class 1 Forecourt oil separator (with integral high level alarms) to ensure compliance with BS EN 858-1:2002, in accordance with Pollution Prevention Guideline document PPG3 ‘Use and design of Oil Separators in Surface Water Drainage Systems’.

4.11 The proposed total site impermeable area has been calculated as being approximately 2.36 Ha, shown in Figure 8.B. This drawing also identifies the extent of the proposed main surface water drainage system on site, which is then shown in detail in Figure 8.C. Of this total area, 1.40 Ha is drained by free gravity discharge to Wade Brook, with the balance of 0.96 Ha retained within bunded storage areas for controlled discharge to Wade Brook. Discharge of rainwater from bunded areas of the site is discussed in the following sections of this report. The estimated maximum outflow to the surface water drainage outfall to Wade Brook has been assessed using MicroDrainage and results are summarised in Table 4.1, below. Design calculations for the proposed drainage network are included in Annex 8.A.2.

Table 4.1: Summary of proposed surface water drainage system

Return Period	Critical Storm / Duration	Maximum Outflow	Drainage System Characteristics
1 in 1 year	15min, winter profile	149.8 L/s	No surcharging
1 in 30 year	15min, winter profile	345.0 L/s	Pipe surcharging, storage in chambers
1 in 100 year	15min, winter profile	462.9 L/s	Pipe surcharging, storage in chambers

4.12 As can be seen from Table 4.1, the maximum free discharge from the proposed site surface water drainage system is 462.9L/s, under a 1 in 100 year storm event (with climate change effects). This is below the maximum existing site drainage system outfall flow rate of 502.9L/s for the same 1 in 100 year storm event and so it can therefore be demonstrated that the proposed site surface water drainage system from the new development has no detrimental effect to Wade Brook in an extreme rainfall event.

Anaerobic Digestion (AD) Tank Area Drainage

4.13 Surface water drainage to the proposed AD tank area will be contained within a fully watertight bunded area designed to BS EN 1992-3. General surface water runoff from this area will be collected within a perimeter drainage channel inside the perimeter bund wall. All general surface water runoff will be retained by default within the bunded tank area to avoid potentially contaminated surface water being discharged to Wade Brook. Release of runoff collected within the AD tank area will be controlled via a manually operated penstock valve. The penstock valve will default to the closed position, and only be opened to release collected runoff after formal inspection of the contents by a suitably qualified site operative.

4.14 A rainwater management regime will be implemented on site to ensure that standing water levels within the bunded area are controlled to acceptable levels, and to ensure that all runoff released to the surface water drainage system is fully inspected for cleanliness prior to discharge. The maximum permissible water volume will be equal to the 1 in 100 year storm event (plus climate change), which is 1,012 m^3. The maximum permissible rainwater level within the AD tank bund will be clearly identified by a maximum water level marker located adjacent to the penstock release valve.

4.15 The AD tank area will be afforded watertight bund protection to contain 25% of the combined working volume of all liquid containing AD tanks, which has been determined as 6,773 m^3. This volume is greater than 110% of the largest tank (a digester tank with a maximum capacity of 6,000 m^3). In addition, the bund will be sized to contain the volume of water attributable to the 1 in 100 year storm event, which is 1,012 m^3. A minimum freeboard of 100mm will be provided above the maximum predicted liquid level within the bunded area. The total containment volume within the AD tank bund will therefore be 7,785 m^3, with a bund wall height ranging from 0.83 m to 2.38 m (to account for the 1 in 80 longitudinal fall across the bund base level for drainage purposes) Calculations for the bund wall height are included in Annex 8.A.3.

Bio-reactor Tank Area Drainage

4.16 Surface water drainage within the proposed external bioreactor area will also be contained within a fully watertight bunded area designed to BS EN 1992-3. General surface water runoff from this area will be by collected within a perimeter drainage channel inside the perimeter bund wall. All general surface water runoff will be detained by default within the bunded area, to avoid potentially contaminated surface water being discharged to Wade Brook. Release of runoff collected within the bioreactor bunded area will be controlled via a manually operated penstock valve. The penstock valve will default to the closed position, and only be opened to release collected runoff after formal inspection of the contents by a suitably qualified site operative.

4.17 A rainwater management regime will be implemented on site to ensure that standing water levels within the bunded area are controlled to acceptable levels, and to ensure that all runoff released to the surface water drainage system is fully inspected for cleanliness prior to discharge. The maximum permissible water volume will be equal to the 1 in 100 year storm event (plus climate change), which is 81 m^3. The maximum permissible rainwater level within the bioreactor area bund will be clearly identified by a maximum water level marker located adjacent to the penstock release valve.

4.18 The bioreactor area will be afforded watertight bund protection to contain 110% volume of one of the two bioreactors, which has a maximum bio-liquid capacity of 270 m^3. This equates to a storage volume requirement of 297 m^3. In addition, the bund will be designed to contain the volume of water attributable to the 1 in 100 year storm event, which is 81 m^3. The total bioreactor bund containment is therefore 378m^3. A minimum freeboard of 100mm will be provided above the maximum predicted liquid level within the bunded area.

CLO / RDF Storage Areas Drainage

4.19 Both the CLO and RDF/recycled material storage areas will be covered by formal canopy structures such that rainwater will not be permitted to mix with any stored waste materials. Roof drainage to these canopy roof areas will be consistent with the strategy detailed above for other building roofs.

4.20 Any leakage or spillages of contaminated waste liquid within each of these storage areas will be drained to a centrally located drainage channel, which will drain to a below ground holding tank. Similarly any washdown of the floors in the CLO / RDF storage areas will be contained and drained to the holding tank for re-use in the waste process operation, or off-site disposal if and when required. The proposed drainage and tank arrangements are shown in Figure 8.C.

Fire Water Runoff Containment

4.21 Fire suppression systems shall be installed within the waste bunker and waste reception hall areas only. In the event of activation of the fire sprinkler systems provided within the building, fire water runoff will be directed by perimeter upstands / falls within the reception hall floor to the waste bunker, where it will be collected.

4.22 Fire water runoff from general firefighting water used by the Fire Service will be managed firstly with a manually operated penstock closure valve on the outfall of the surface water drainage system to Wade Brook. Proposed levels for the new development will be set such that all firefighting water runoff will be fully contained within the hard surfaced areas of the site, thus removing the risk of uncontrolled contaminated runoff leaving the site in the event of fire. This will in turn ensure compliance with Environment Agency Pollution Prevention Guideline document PPG18 'Managing Fire Water and Major Spillages'. Fire water run-off contained in such an event would be classed as contaminated run off and hence require off-site disposal by tanker.

5 Proposed Surface Water Design Parameters

5.1 The new surface water drainage system for the site has been designed using current Windes analysis software (by MicroDrainage), to prevent any flooding of the site and surrounding areas. The surface water drainage system has been designed in accordance with BS EN 752: 2008, *Drain and sewer systems outside buildings',* BS EN 12056-3 '*Gravity Drainage Inside Buildings – Roof Drainage, layout and calculation*' and Building Regulations Approved Document H *'Drainage and Waste Disposal'.*

Global Variables

- **Design return period:** 1, 30 and 100 years.
- **Climate change:** Rainfall intensity+20%
- **M5-60:** 19.2mm/hr
- **Ratio, 'r':** 0.408
- **Volumetric runoff coefficient:** 0.75 (summer) and 0.84 (winter)
- **Global time of entry:** 4 minutes
- **PIMP (%):** 100% impermeable area
- **Infiltration:** Ignore for peak flow design
- **Backdrops:** Permitted, maximum depth of 1.5m
- **Pipe velocity:** 0.75 m/s for self cleansing (private drainage system)
- **Surcharging:** No surcharging permitted during 1 in 2 year return period event.

5.2 The site surface water drainage system has been designed and checked against following storm intensities and durations:

- 2 year return period – 15 minute to 24 hour storm duration
- 30 year return period – 15 minute to 24 hour storm duration
- 100 year return period** – 15 minute to 24 hour storm duration

**plus climate change allowance

6 Proposed Foul Water Drainage

6.1 Foul water drainage from the new development will primarily be generated from staff welfare facilities within office areas, together with non-waste process related wash down areas, plant rooms etc.

6.2 Disposal of foul sewage arising from the new development site will be via an on-site cesspool, as there are no foul sewers or private foul drains available in the vicinity to facilitate an off-site connection.

6.3 In accordance with EA PPG4, the cesspool will be sited in a well ventilated area, away from any buildings, whilst also providing easy means of access for emptying. A high level warning alarm will also be provided to ensure the tank is emptied out at appropriate intervals.

6.4 The cesspool will be sized on a maximum site occupancy of 40 staff. Based on British Water Code of Practice – 'Flows and Loads', an industrial/factory development with no canteen would require an allowance of 50 Litres/ person/ day for foul effluent generation. This would equate to a maximum flow of 200Litres/ day for the site. In order to minimise frequency of tank emptying, allowance for up to 30 days' storage will be provided, therefore a 6,000L capacity effluent tank will be provided, shown in Figure 8.C.

Proposed Foul Water Design Parameters

6.5 The new foul water drainage system for the site has been designed using current Windes analysis software (by MicroDrainage), to prevent any flooding of the site and surrounding areas.

6.6 The foul water drainage system has been designed in accordance with BS EN 752: 2008, '*Drain and sewer systems outside buildings'*, BS EN 12056-2 '*Gravity Drainage Inside Buildings – Sanitary pipework, layout and calculation*' and Building Regulations Approved Document H *'Drainage and Waste Disposal'.*

Global Variables

- **Infiltration:** Ignore for peak flow design
- **Backdrops:** Permitted, maximum depth of 1.5m
- **Pipe velocity:** 0.75 m/s for self cleansing (private drainage system)

7 Maintenance

7.1 The following table indicates the anticipated drainage maintenance regime that will need to be followed.

Element	Access method including specific access equipment	Method/type of maintenance	Frequency required
Roof gutters / outlets	Scaffolding / Cherry pickers to be used where required	General cleaning and removal of debris from gutters /outlets. Jet cleaning where required	Bi-annual inspection. Periodic inspection of gutter coatings to prevent corrosion
Oil separators	In accordance with Health and Safety regulations. Confined spaces regulations apply	Refer to manufacturer's guidance. Removal of waste oils and sludge from units	Bi-annual inspection
Channel / kerb drains	In accordance with Health and Safety regulations	Regular performance monitoring to prevent blockages. Jet cleaning	Bi-annual inspection
Silt-traps / gullies	In accordance with Health and Safety regulations	Monitor to ensure no blockages develop. Sludge removal	Bi-annual inspection
Pump chambers	In accordance with Health and Safety regulations. Confined spaces regulations apply	Maintain in accordance with manufacturers recommendations.	Bi-annual inspection or as pump manufacturer's recommendations, whichever occurs first
Headwalls	In accordance with Health and Safety regulations	Monitor to ensure no blockages develop. Clearance of debris from trash screens	Bi-annual inspection
Penstock valves	In accordance with Health and Safety regulations. Confined spaces regulations apply	Refer to Manufacturer's guidance for details.	Bi-annual inspection
Hydrobrake units	In accordance with Health and Safety regulations. Confined spaces regulations apply	Monitor to ensure no blockages develop. in accordance with the manufacturers recommendations	Bi-annual inspection

Annex 8.A.1:Existing Network Analysis

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	1	Add Flow / Climate Change (%)	0
M5-60 (mm)	19.200	Minimum Backdrop Height (m)	1.500
Ratio R	0.408	Maximum Backdrop Height (m)	2.500
Maximum Rainfall (mm/hr)	75	Min Design Depth for Optimisation (m)	1.200
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	1.00
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	500
Volumetric Runoff Coeff.	0.750		

Designed with Level Inverts

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	1.140	4-8	1.049

Total Area Contributing (ha) = 2.189

Total Pipe Volume (m³) = 52.268

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.000	24.000	0.200	120.0	0.068	4.00	0.0	0.600	o	150	
1.001	32.000	0.345	92.8	0.092	0.00	0.0	0.600	o	225	
2.000	34.000	0.283	120.1	0.091	4.00	0.0	0.600	o	150	
2.001	11.000	0.092	119.6	0.016	0.00	0.0	0.600	o	225	
1.002	38.000	0.317	119.9	0.060	0.00	0.0	0.600	o	225	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	55.88	4.44	23.720	0.068	0.0	0.0	0.0	0.92	16.2	10.3
1.001	53.91	4.83	23.520	0.160	0.0	0.0	0.0	1.36	54.0	23.4
2.000	54.95	4.62	23.550	0.091	0.0	0.0	0.0	0.92	16.2	13.5
2.001	54.18	4.77	23.267	0.107	0.0	0.0	0.0	1.19	47.5	15.7
1.002	51.48	5.36	23.175	0.327	0.0	0.0	0.0	1.19	47.4	45.6

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
3.000	13.000	0.108	120.4	0.060	4.00	0.0	0.600	o	150	
3.001	28.000	0.694	40.3	0.057	0.00	0.0	0.600	o	150	
1.003	25.000	0.400	62.5	0.098	0.00	0.0	0.600	o	300	
1.004	20.000	0.242	82.6	0.053	0.00	0.0	0.600	o	300	
4.000	30.000	0.250	120.0	0.081	4.00	0.0	0.600	o	225	
4.001	35.000	0.292	119.9	0.110	0.00	0.0	0.600	o	225	
4.002	31.000	0.962	32.2	0.140	0.00	0.0	0.600	o	225	
1.005	33.000	0.275	120.0	0.085	0.00	0.0	0.600	o	375	
1.006	48.000	0.400	120.0	0.090	0.00	0.0	0.600	o	375	
1.007	22.000	0.220	100.0	0.081	0.00	0.0	0.600	o	375	
1.008	36.000	0.397	90.7	0.102	0.00	0.0	0.600	o	375	
5.000	38.000	0.317	119.9	0.108	4.00	0.0	0.600	o	150	
5.001	42.000	0.350	120.0	0.075	0.00	0.0	0.600	o	225	
5.002	20.000	0.167	119.8	0.039	0.00	0.0	0.600	o	225	
5.003	25.000	0.283	88.3	0.047	0.00	0.0	0.600	o	225	
6.000	40.000	0.333	120.1	0.129	4.00	0.0	0.600	o	225	
6.001	36.000	0.784	45.9	0.089	0.00	0.0	0.600	o	225	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
3.000	56.95	4.24	23.660	0.060	0.0	0.0	0.0	0.91	16.2	9.3
3.001	55.40	4.53	23.552	0.117	0.0	0.0	0.0	1.59	28.1	17.6
1.003	50.59	5.57	22.858	0.542	0.0	0.0	0.0	1.99	140.8	74.3
1.004	49.80	5.76	22.458	0.595	0.0	0.0	0.0	1.73	122.3	80.2
4.000	55.97	4.42	23.720	0.081	0.0	0.0	0.0	1.19	47.4	12.3
4.001	53.53	4.91	23.470	0.191	0.0	0.0	0.0	1.19	47.4	27.7
4.002	52.49	5.13	23.178	0.331	0.0	0.0	0.0	2.31	92.0	47.1
1.005	48.50	6.09	22.216	1.011	0.0	0.0	0.0	1.65	182.6	132.8
1.006	46.74	6.58	21.941	1.101	0.0	0.0	0.0	1.65	182.6	139.4
1.007	46.05	6.78	21.541	1.182	0.0	0.0	0.0	1.81	200.1	147.4
1.008	45.01	7.10	21.321	1.284	0.0	0.0	0.0	1.90	210.2	156.5
5.000	54.59	4.69	23.720	0.108	0.0	0.0	0.0	0.92	16.2	16.0
5.001	51.84	5.28	23.403	0.183	0.0	0.0	0.0	1.19	47.4	25.7
5.002	50.64	5.56	23.053	0.222	0.0	0.0	0.0	1.19	47.5	30.4
5.003	49.42	5.86	22.886	0.269	0.0	0.0	0.0	1.39	55.3	36.0
6.000	55.25	4.56	23.720	0.129	0.0	0.0	0.0	1.19	47.4	19.3
6.001	53.72	4.87	23.387	0.218	0.0	0.0	0.0	1.94	77.0	31.7

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
5.004	33.000	0.275	120.0	0.086	0.00	0.0	0.600	o	300	
5.005	68.000	1.404	48.4	0.104	0.00	0.0	0.600	o	300	
1.009	35.000	0.292	119.9	0.108	0.00	0.0	0.600	o	450	
1.010	32.000	2.777	11.5	0.120	0.00	0.0	0.600	o	450	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
5.004	47.95	6.24	22.603	0.573	0.0	0.0	0.0	1.43	101.4	74.4
5.005	46.18	6.74	22.328	0.677	0.0	0.0	0.0	2.26	160.1	84.7
1.009	44.03	7.41	20.924	2.069	0.0	0.0	0.0	1.86	295.2	246.7
1.010	43.76	7.50	20.632	2.189	0.0	0.0	0.0	6.01	956.6	259.4

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.010	headwall	19.680	17.855	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	0	Number of Storage Structures	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	1	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.200	Storm Duration (mins)	30
Ratio R	0.408		

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	0	Number of Storage Structures	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.408
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	19.200	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	OFF
Analysis Timestep	Fine	Inertia Status	OFF
DTS Status	ON		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 0

PN	Storm	Return Period	Climate Change	First X Surcharge	First Y Flood	First Z Overflow	O/F Act.	Lvl Exc.
1.000	15 Winter	100	0%	30/15 Summer	100/15 Summer			4
1.001	15 Winter	100	0%	30/15 Summer	100/15 Summer			4
2.000	15 Winter	100	0%	30/15 Summer	100/15 Summer			4
2.001	15 Winter	100	0%	30/15 Summer	100/15 Summer			4
1.002	15 Winter	100	0%	30/15 Summer				
3.000	15 Winter	100	0%	30/15 Summer	100/15 Summer			4
3.001	15 Winter	100	0%	30/15 Summer	100/15 Summer			2
1.003	15 Winter	100	0%	30/15 Summer				
1.004	15 Winter	100	0%	30/15 Summer				
4.000	15 Winter	100	0%	30/15 Summer	100/15 Summer			2
4.001	15 Winter	100	0%	30/15 Summer	100/15 Summer			2
4.002	15 Winter	100	0%	30/15 Summer	100/15 Winter			1
1.005	15 Winter	100	0%	30/15 Summer				
1.006	15 Winter	100	0%	30/15 Summer				
1.007	15 Winter	100	0%	30/15 Summer				
1.008	15 Winter	100	0%	30/15 Summer				
5.000	15 Winter	100	0%	30/15 Summer	100/15 Summer			4
5.001	15 Winter	100	0%	30/15 Summer				
5.002	15 Winter	100	0%	30/15 Summer				
5.003	15 Winter	100	0%	30/15 Summer				
6.000	15 Winter	100	0%	30/15 Summer				
6.001	15 Winter	100	0%	30/15 Summer				
5.004	15 Winter	100	0%	30/15 Summer				
5.005	15 Winter	100	0%	30/15 Summer				
1.009	15 Winter	100	0%	30/15 Summer				
1.010	15 Winter	100	0%					

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Water Level (m)	Surch'ed Depth (m)	Flooded Volume (m³)	Flow / Cap.	O'flow (l/s)	Pipe Flow (l/s)	Status
1.000	1	25.134	1.264	4.108	1.71	0.0	26.3	FLOOD
1.001	2	25.131	1.386	1.286	0.71	0.0	36.1	FLOOD
2.000	3	25.076	1.376	5.605	1.72	0.0	26.8	FLOOD
2.001	4	25.052	1.560	1.688	0.76	0.0	30.4	FLOOD
1.002	5	25.084	1.684	0.000	1.45	0.0	64.9	FLOOD RISK
3.000	6	24.775	0.965	5.037	1.82	0.0	26.8	FLOOD
3.001	7	24.860	1.158	0.418	1.11	0.0	29.7	FLOOD
1.003	8	24.870	1.712	0.000	0.85	0.0	106.5	FLOOD RISK
1.004	9	24.705	1.947	0.000	1.11	0.0	118.0	SURCHARGED
4.000	10	25.174	1.229	4.278	0.94	0.0	41.8	FLOOD
4.001	11	25.181	1.486	1.542	1.26	0.0	56.3	FLOOD
4.002	12	25.170	1.767	0.022	0.87	0.0	74.4	FLOOD
1.005	13	24.491	1.900	0.000	1.21	0.0	197.8	SURCHARGED
1.006	14	24.073	1.757	0.000	1.33	0.0	224.2	SURCHARGED
1.007	15	23.350	1.434	0.000	1.45	0.0	247.1	SURCHARGED
1.008	16	22.886	1.190	0.000	1.46	0.0	275.8	SURCHARGED
5.000	17	25.135	1.265	4.692	1.92	0.0	30.1	FLOOD
5.001	18	25.032	1.404	0.000	0.87	0.0	39.4	FLOOD RISK
5.002	19	24.856	1.578	0.000	1.18	0.0	50.9	SURCHARGED
5.003	20	24.677	1.566	0.000	1.14	0.0	58.0	SURCHARGED
6.000	21	25.031	1.086	0.000	0.97	0.0	43.7	FLOOD RISK
6.001	22	24.830	1.218	0.000	0.81	0.0	59.0	SURCHARGED
5.004	23	24.318	1.415	0.000	1.50	0.0	138.9	SURCHARGED
5.005	24	23.706	1.078	0.000	1.08	0.0	165.4	SURCHARGED
1.009	25	22.035	0.661	0.000	1.81	0.0	468.6	SURCHARGED
1.010	26	20.887	-0.195	0.000	0.61	0.0	502.9	OK

Annex 8.A.2:Proposed Network Analysis

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	1	Add Flow / Climate Change (%)	0
M5-60 (mm)	19.200	Minimum Backdrop Height (m)	0.200
Ratio R	0.408	Maximum Backdrop Height (m)	1.500
Maximum Rainfall (mm/hr)	75	Min Design Depth for Optimisation (m)	1.200
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	1.00
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	500
Volumetric Runoff Coeff.	0.750		

Designed with Level Inverts

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.656	4-8	0.650	8-12	0.059	12-16	0.007

Total Area Contributing (ha) = 1.371

Total Pipe Volume (m³) = 43.509

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.000	11.000	0.110	100.0	0.025	10.00	0.0	0.600	o	150	
2.000	8.830	0.088	100.0	0.000	4.00	0.0	0.600	o	150	
2.001	9.560	0.096	100.0	0.000	0.00	0.0	0.600	o	150	
1.001	37.290	0.373	100.0	0.066	0.00	0.0	0.600	o	150	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	37.18	10.18	23.825	0.025	0.0	0.0	0.0	1.00	17.8	2.5
2.000	57.45	4.15	23.825	0.000	0.0	0.0	0.0	1.00	17.8	0.0
2.001	56.58	4.31	23.737	0.000	0.0	0.0	0.0	1.00	17.8	0.0
1.001	36.02	10.80	23.641	0.091	0.0	0.0	0.0	1.00	17.8	8.9

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
3.000	21.740	0.217	100.2	0.015	4.00	0.0	0.600	o	150	🔒
4.000	6.150	0.037	166.2	0.135	4.00	0.0	0.600	o	225	🔒
1.002	39.450	0.240	164.4	0.000	0.00	0.0	0.600	o	225	🔒
5.000	8.200	0.050	164.0	0.070	10.00	0.0	0.600	o	225	🔒
5.001	42.880	0.260	164.9	0.030	0.00	0.0	0.600	o	225	🔒
6.000	27.340	0.166	164.7	0.036	4.00	0.0	0.600	o	225	🔒
7.000	7.500	0.045	166.7	0.135	4.00	0.0	0.600	o	225	🔒
1.003	28.100	0.088	319.3	0.000	0.00	0.0	0.600	o	375	🔒
8.000	3.000	0.030	100.0	0.030	4.00	0.0	0.600	o	150	🔒
1.004	30.300	0.095	318.9	0.000	0.00	0.0	0.600	o	375	🔒
9.000	15.320	0.093	164.7	0.052	10.00	0.0	0.600	o	225	🔒
9.001	34.190	0.207	165.2	0.013	0.00	0.0	0.600	o	225	🔒
9.002	23.040	0.140	164.6	0.040	0.00	0.0	0.600	o	225	🔒

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
3.000	56.28	4.36	24.025	0.015	0.0	0.0	0.0	1.00	17.7	2.3
4.000	57.70	4.10	23.305	0.135	0.0	0.0	0.0	1.01	40.2	21.1
1.002	34.89	11.45	23.193	0.241	0.0	0.0	0.0	1.02	40.4	22.8
5.000	37.27	10.13	23.700	0.070	0.0	0.0	0.0	1.02	40.5	7.1
5.001	35.95	10.84	23.650	0.100	0.0	0.0	0.0	1.02	40.4	9.7
6.000	55.82	4.45	23.950	0.036	0.0	0.0	0.0	1.02	40.4	5.4
7.000	57.58	4.12	23.790	0.135	0.0	0.0	0.0	1.01	40.2	21.1
1.003	34.13	11.91	22.803	0.512	0.0	0.0	0.0	1.01	111.4	47.3
8.000	58.00	4.05	23.900	0.030	0.0	0.0	0.0	1.00	17.8	4.7
1.004	33.35	12.41	22.715	0.542	0.0	0.0	0.0	1.01	111.4	48.9
9.000	37.05	10.25	23.650	0.052	0.0	0.0	0.0	1.02	40.4	5.2
9.001	35.99	10.81	23.557	0.065	0.0	0.0	0.0	1.01	40.3	6.3
9.002	35.33	11.19	22.850	0.105	0.0	0.0	0.0	1.02	40.4	10.0

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
1.005	27.410	0.137	200.1	0.035	0.00	0.0	0.600	o	375	🔒
10.000	10.900	0.066	165.2	0.106	4.00	0.0	0.600	o	225	🔒
1.006	12.730	0.064	198.9	0.000	0.00	0.0	0.600	o	375	🔒
11.000	4.610	0.028	164.6	0.040	4.00	0.0	0.600	o	225	🔒
11.001	18.000	0.110	163.6	0.000	0.00	0.0	0.600	o	225	🔒
1.007	8.000	0.040	200.0	0.000	0.00	0.0	0.600	o	375	🔒
1.008	9.500	0.048	197.9	0.000	0.00	0.0	0.600	o	375	🔒
12.000	24.950	0.151	165.2	0.036	4.00	0.0	0.600	o	225	🔒
13.000	19.013	0.115	165.3	0.110	4.00	0.0	0.600	o	225	🔒
12.001	10.700	0.045	237.8	0.050	0.00	0.0	0.600	o	300	🔒
12.002	9.500	0.040	237.5	0.015	0.00	0.0	0.600	o	300	🔒
12.003	22.800	0.095	240.0	0.015	0.00	0.0	0.600	o	300	🔒
12.004	30.650	0.128	239.5	0.045	0.00	0.0	0.600	o	300	🔒
12.005	28.000	0.117	239.3	0.050	0.00	0.0	0.600	o	300	🔒

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.005	32.82	12.77	21.489	0.682	0.0	0.0	0.0	1.28	141.1	60.6
10.000	57.27	4.18	21.418	0.106	0.0	0.0	0.0	1.01	40.3	16.4
1.006	32.58	12.94	21.352	0.788	0.0	0.0	0.0	1.28	141.5	69.5
11.000	57.85	4.08	24.050	0.040	0.0	0.0	0.0	1.02	40.4	6.3
11.001	56.23	4.37	22.398	0.040	0.0	0.0	0.0	1.02	40.5	6.3
1.007	32.43	13.04	21.288	0.828	0.0	0.0	0.0	1.28	141.1	72.7
1.008	32.25	13.16	21.148	0.828	0.0	0.0	0.0	1.28	141.8	72.7
12.000	56.02	4.41	23.935	0.036	0.0	0.0	0.0	1.01	40.3	5.5
13.000	56.54	4.31	23.899	0.110	0.0	0.0	0.0	1.01	40.3	16.8
12.001	55.11	4.59	23.709	0.196	0.0	0.0	0.0	1.02	71.8	29.3
12.002	54.34	4.74	23.664	0.211	0.0	0.0	0.0	1.02	71.8	31.0
12.003	52.56	5.12	23.624	0.226	0.0	0.0	0.0	1.01	71.4	32.2
12.004	50.37	5.62	23.529	0.271	0.0	0.0	0.0	1.01	71.5	37.0
12.005	48.54	6.08	23.401	0.321	0.0	0.0	0.0	1.01	71.5	42.2

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Auto Design
14.000	21.000	0.127	165.4	0.027	4.00	0.0	0.600	o	225	
14.001	34.400	0.143	240.6	0.076	0.00	0.0	0.600	o	225	
14.002	25.960	0.157	165.4	0.018	0.00	0.0	0.600	o	225	
14.003	10.100	0.061	165.6	0.000	0.00	0.0	0.600	o	225	
12.006	42.100	0.211	199.5	0.050	0.00	0.0	0.600	o	300	
15.000	12.633	0.077	164.1	0.051	4.00	0.0	0.600	o	225	
12.007	21.100	0.106	199.1	0.000	0.00	0.0	0.600	o	300	
1.009	13.150	1.100	12.0	0.000	0.00	0.0	0.600	o	450	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
14.000	56.37	4.35	23.925	0.027	0.0	0.0	0.0	1.01	40.3	4.1
14.001	52.96	5.03	23.798	0.103	0.0	0.0	0.0	0.84	33.3	14.8
14.002	51.07	5.46	23.655	0.121	0.0	0.0	0.0	1.01	40.3	16.7
14.003	50.37	5.62	23.498	0.121	0.0	0.0	0.0	1.01	40.3	16.7
12.006	46.27	6.72	22.417	0.492	0.0	0.0	0.0	1.11	78.4	61.6
15.000	57.12	4.21	22.283	0.051	0.0	0.0	0.0	1.02	40.5	7.9
12.007	45.22	7.03	21.206	0.543	0.0	0.0	0.0	1.11	78.5	66.5
1.009	32.20	13.20	19.100	1.371	0.0	0.0	0.0	5.90	939.1	119.6

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
CP1	25.175	1.350	Open Manhole	1200	1.000	23.825	150				
CP2	25.175	1.350	Open Manhole	1200	2.000	23.825	150				
RET1	25.175	1.438	Open Manhole	1200	2.001	23.737	150	2.000	23.737	150	
S1	25.215	1.574	Open Manhole	1200	1.001	23.641	150	1.000	23.715	150	74
								2.001	23.641	150	
CP3	25.375	1.350	Open Manhole	1200	3.000	24.025	150				
CP4	25.090	1.785	Open Manhole	1200	4.000	23.305	225				
S2	25.250	2.057	Open Manhole	1200	1.002	23.193	225	1.001	23.268	150	
								3.000	23.808	150	540
								4.000	23.268	225	75
CP5	25.000	1.300	Open Manhole	1200	5.000	23.700	225				
S3	25.275	1.625	Open Manhole	1200	5.001	23.650	225	5.000	23.650	225	
CP6	25.250	1.300	Open Manhole	1200	6.000	23.950	225				
CP7	25.090	1.300	Open Manhole	1200	7.000	23.790	225				
S4	25.275	2.472	Open Manhole	1350	1.003	22.803	375	1.002	22.953	225	
								5.001	23.390	225	437
								6.000	23.784	225	831
								7.000	23.745	225	792
CP8	25.200	1.300	Open Manhole	1200	8.000	23.900	150				

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
S5	25.240	2.525	Open Manhole	1350	1.004	22.715	375	1.003	22.715	375	
								8.000	23.870	150	930
CP11	25.250	1.600	Open Manhole	1200	9.000	23.650	225				
S6	25.375	1.818	Open Manhole	1200	9.001	23.557	225	9.000	23.557	225	
S7	25.390	2.540	Open Manhole	1200	9.002	22.850	225	9.001	23.350	225	500
S8	25.460	3.971	Open Manhole	1350	1.005	21.489	375	1.004	22.620	375	1131
								9.002	22.710	225	1071
CP12	25.025	3.607	Open Manhole	1200	10.000	21.418	225				
S9	25.180	3.828	Open Manhole	1350	1.006	21.352	375	1.005	21.352	375	
								10.000	21.352	225	
CP15	25.350	1.300	Open Manhole	1200	11.000	24.050	225				
S10	25.400	3.002	Open Manhole	1200	11.001	22.398	225	11.000	24.022	225	1624
S11	25.180	3.892	Open Manhole	1350	1.007	21.288	375	1.006	21.288	375	
								11.001	22.288	225	850
BYP1	25.180	4.032	Open Manhole	1350	1.008	21.148	375	1.007	21.248	375	100
S12	25.360	1.425	Open Manhole	1200	12.000	23.935	225				
S13	25.435	1.536	Open Manhole	1200	13.000	23.899	225				
S14	25.375	1.666	Open Manhole	1200	12.001	23.709	300	12.000	23.784	225	
								13.000	23.784	225	

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
S15	25.350	1.686	Open Manhole	1200	12.002	23.664	300	12.001	23.664	300	
S16	25.350	1.726	Open Manhole	1200	12.003	23.624	300	12.002	23.624	300	
S17	25.375	1.846	Open Manhole	1200	12.004	23.529	300	12.003	23.529	300	
S18	25.325	1.924	Open Manhole	1200	12.005	23.401	300	12.004	23.401	300	
S20	25.350	1.425	Open Manhole	1200	14.000	23.925	225				
S21	25.350	1.552	Open Manhole	1200	14.001	23.798	225	14.000	23.798	225	
S22	25.260	1.605	Open Manhole	1200	14.002	23.655	225	14.001	23.655	225	
S23	25.100	1.602	Open Manhole	1200	14.003	23.498	225	14.002	23.498	225	
S19	25.325	2.908	Open Manhole	1200	12.006	22.417	300	12.005	23.284	300	867
								14.003	23.437	225	945
S24	25.120	2.837	Open Manhole	1200	15.000	22.283	225				
S25	25.300	4.094	Open Manhole	1200	12.007	21.206	300	12.006	22.206	300	1000
								15.000	22.206	225	925
S26	23.000	3.900	Open Manhole	1350	1.009	19.100	450	1.008	21.100	375	1925
								12.007	21.100	300	1850
Ex Headwall	19.680	1.680	Open Manhole	0		OUTFALL		1.009	18.000	450	

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	150	CP1	25.175	23.825	1.200	Open Manhole	1200
2.000	o	150	CP2	25.175	23.825	1.200	Open Manhole	1200
2.001	o	150	RET1	25.175	23.737	1.288	Open Manhole	1200
1.001	o	150	S1	25.215	23.641	1.424	Open Manhole	1200
3.000	o	150	CP3	25.375	24.025	1.200	Open Manhole	1200
4.000	o	225	CP4	25.090	23.305	1.560	Open Manhole	1200
1.002	o	225	S2	25.250	23.193	1.832	Open Manhole	1200
5.000	o	225	CP5	25.000	23.700	1.075	Open Manhole	1200
5.001	o	225	S3	25.275	23.650	1.400	Open Manhole	1200
6.000	o	225	CP6	25.250	23.950	1.075	Open Manhole	1200
7.000	o	225	CP7	25.090	23.790	1.075	Open Manhole	1200
1.003	o	375	S4	25.275	22.803	2.097	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	11.000	100.0	S1	25.215	23.715	1.350	Open Manhole	1200
2.000	8.830	100.0	RET1	25.175	23.737	1.288	Open Manhole	1200
2.001	9.560	100.0	S1	25.215	23.641	1.424	Open Manhole	1200
1.001	37.290	100.0	S2	25.250	23.268	1.832	Open Manhole	1200
3.000	21.740	100.2	S2	25.250	23.808	1.292	Open Manhole	1200
4.000	6.150	166.2	S2	25.250	23.268	1.757	Open Manhole	1200
1.002	39.450	164.4	S4	25.275	22.953	2.097	Open Manhole	1350
5.000	8.200	164.0	S3	25.275	23.650	1.400	Open Manhole	1200
5.001	42.880	164.9	S4	25.275	23.390	1.660	Open Manhole	1350
6.000	27.340	164.7	S4	25.275	23.784	1.266	Open Manhole	1350
7.000	7.500	166.7	S4	25.275	23.745	1.305	Open Manhole	1350
1.003	28.100	319.3	S5	25.240	22.715	2.150	Open Manhole	1350

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
8.000	o	150	CP8	25.200	23.900	1.150	Open Manhole	1200
1.004	o	375	S5	25.240	22.715	2.150	Open Manhole	1350
9.000	o	225	CP11	25.250	23.650	1.375	Open Manhole	1200
9.001	o	225	S6	25.375	23.557	1.593	Open Manhole	1200
9.002	o	225	S7	25.390	22.850	2.315	Open Manhole	1200
1.005	o	375	S8	25.460	21.489	3.596	Open Manhole	1350
10.000	o	225	CP12	25.025	21.418	3.382	Open Manhole	1200
1.006	o	375	S9	25.180	21.352	3.453	Open Manhole	1350
11.000	o	225	CP15	25.350	24.050	1.075	Open Manhole	1200
11.001	o	225	S10	25.400	22.398	2.777	Open Manhole	1200
1.007	o	375	S11	25.180	21.288	3.517	Open Manhole	1350
1.008	o	375	BYP1	25.180	21.148	3.657	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
8.000	3.000	100.0	S5	25.240	23.870	1.220	Open Manhole	1350
1.004	30.300	318.9	S8	25.460	22.620	2.465	Open Manhole	1350
9.000	15.320	164.7	S6	25.375	23.557	1.593	Open Manhole	1200
9.001	34.190	165.2	S7	25.390	23.350	1.815	Open Manhole	1200
9.002	23.040	164.6	S8	25.460	22.710	2.525	Open Manhole	1350
1.005	27.410	200.1	S9	25.180	21.352	3.453	Open Manhole	1350
10.000	10.900	165.2	S9	25.180	21.352	3.603	Open Manhole	1350
1.006	12.730	198.9	S11	25.180	21.288	3.517	Open Manhole	1350
11.000	4.610	164.6	S10	25.400	24.022	1.153	Open Manhole	1200
11.001	18.000	163.6	S11	25.180	22.288	2.667	Open Manhole	1350
1.007	8.000	200.0	BYP1	25.180	21.248	3.557	Open Manhole	1350
1.008	9.500	197.9	S26	23.000	21.100	1.525	Open Manhole	1350

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
12.000	o	225	S12	25.360	23.935	1.200	Open Manhole	1200
13.000	o	225	S13	25.435	23.899	1.311	Open Manhole	1200
12.001	o	300	S14	25.375	23.709	1.366	Open Manhole	1200
12.002	o	300	S15	25.350	23.664	1.386	Open Manhole	1200
12.003	o	300	S16	25.350	23.624	1.426	Open Manhole	1200
12.004	o	300	S17	25.375	23.529	1.546	Open Manhole	1200
12.005	o	300	S18	25.325	23.401	1.624	Open Manhole	1200
14.000	o	225	S20	25.350	23.925	1.200	Open Manhole	1200
14.001	o	225	S21	25.350	23.798	1.327	Open Manhole	1200
14.002	o	225	S22	25.260	23.655	1.380	Open Manhole	1200
14.003	o	225	S23	25.100	23.498	1.377	Open Manhole	1200
12.006	o	300	S19	25.325	22.417	2.608	Open Manhole	1200
15.000	o	225	S24	25.120	22.283	2.612	Open Manhole	1200
12.007	o	300	S25	25.300	21.206	3.794	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
12.000	24.950	165.2	S14	25.375	23.784	1.366	Open Manhole	1200
13.000	19.013	165.3	S14	25.375	23.784	1.366	Open Manhole	1200
12.001	10.700	237.8	S15	25.350	23.664	1.386	Open Manhole	1200
12.002	9.500	237.5	S16	25.350	23.624	1.426	Open Manhole	1200
12.003	22.800	240.0	S17	25.375	23.529	1.546	Open Manhole	1200
12.004	30.650	239.5	S18	25.325	23.401	1.624	Open Manhole	1200
12.005	28.000	239.3	S19	25.325	23.284	1.741	Open Manhole	1200
14.000	21.000	165.4	S21	25.350	23.798	1.327	Open Manhole	1200
14.001	34.400	240.6	S22	25.260	23.655	1.380	Open Manhole	1200
14.002	25.960	165.4	S23	25.100	23.498	1.377	Open Manhole	1200
14.003	10.100	165.6	S19	25.325	23.437	1.663	Open Manhole	1200
12.006	42.100	199.5	S25	25.300	22.206	2.794	Open Manhole	1200
15.000	12.633	164.1	S25	25.300	22.206	2.869	Open Manhole	1200
12.007	21.100	199.1	S26	23.000	21.100	1.600	Open Manhole	1350

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.009	o	450	S26	23.000	19.100	3.450	Open Manhole	1350

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.009	13.150	12.0	Ex Headwall	19.680	18.000	1.230	Open Manhole	0

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.009	Ex Headwall	19.680	18.000	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	0	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	1	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.200	Storm Duration (mins)	30
Ratio R	0.408		

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	0	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.408
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	19.200	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	ON
Analysis Timestep	Fine	Inertia Status	ON
DTS Status	ON		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 360, 600, 720, 1440
Return Period(s) (years)	1
Climate Change (%)	0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	CP1	15 Winter	1	+0%					23.863
2.000	CP2	60 Winter	1	+0%					23.825
2.001	RET1	60 Winter	1	+0%					23.737
1.001	S1	15 Winter	1	+0%					23.722
3.000	CP3	15 Winter	1	+0%					24.061
4.000	CP4	15 Summer	1	+0%					23.438
1.002	S2	15 Winter	1	+0%					23.346
5.000	CP5	15 Winter	1	+0%					23.769
5.001	S3	15 Winter	1	+0%					23.726
6.000	CP6	15 Winter	1	+0%					24.005
7.000	CP7	15 Summer	1	+0%					23.923
1.003	S4	15 Winter	1	+0%					23.022
8.000	CP8	15 Summer	1	+0%					23.966
1.004	S5	15 Winter	1	+0%					22.938
9.000	CP11	15 Winter	1	+0%					23.705
9.001	S6	15 Winter	1	+0%					23.617
9.002	S7	15 Winter	1	+0%					22.931
1.005	S8	15 Winter	1	+0%					21.706
10.000	CP12	15 Winter	1	+0%					21.629
1.006	S9	15 Winter	1	+0%					21.612
11.000	CP15	15 Summer	1	+0%					24.118
11.001	S10	15 Summer	1	+0%					22.458

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	CP1	-0.112	0.000	0.14		2.3	OK	
2.000	CP2	-0.150	0.000	0.00		0.0	OK	
2.001	RET1	-0.150	0.000	0.00		0.0	OK	
1.001	S1	-0.069	0.000	0.55		9.5	OK	
3.000	CP3	-0.114	0.000	0.13		2.2	OK	
4.000	CP4	-0.092	0.000	0.65		19.5	OK	
1.002	S2	-0.072	0.000	0.78		29.9	OK	
5.000	CP5	-0.156	0.000	0.20		6.4	OK	
5.001	S3	-0.149	0.000	0.25		9.6	OK	
6.000	CP6	-0.170	0.000	0.14		5.2	OK	
7.000	CP7	-0.092	0.000	0.65		19.5	OK	
1.003	S4	-0.156	0.000	0.63		61.6	OK	
8.000	CP8	-0.084	0.000	0.40		4.3	OK	
1.004	S5	-0.152	0.000	0.66		65.0	OK	
9.000	CP11	-0.170	0.000	0.13		4.8	OK	
9.001	S6	-0.165	0.000	0.16		6.1	OK	
9.002	S7	-0.144	0.000	0.28		10.2	OK	
1.005	S8	-0.158	0.000	0.63		77.6	OK	
10.000	CP12	-0.014	0.000	0.42		14.2	OK	
1.006	S9	-0.115	0.000	0.80		86.2	OK	
11.000	CP15	-0.157	0.000	0.20		5.8	OK	
11.001	S10	-0.165	0.000	0.16		5.8	OK	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.007	S11	15 Winter	1	+0%					21.570
1.008	BYP1	15 Winter	1	+0%					21.420
12.000	S12	15 Winter	1	+0%					23.991
13.000	S13	15 Winter	1	+0%					24.003
12.001	S14	15 Winter	1	+0%					23.854
12.002	S15	15 Winter	1	+0%					23.816
12.003	S16	15 Winter	1	+0%					23.768
12.004	S17	15 Winter	1	+0%					23.684
12.005	S18	15 Winter	1	+0%					23.569
14.000	S20	15 Winter	1	+0%					23.974
14.001	S21	15 Winter	1	+0%					23.897
14.002	S22	15 Winter	1	+0%					23.751
14.003	S23	15 Winter	1	+0%					23.599
12.006	S19	15 Winter	1	+0%					22.618
15.000	S24	15 Summer	1	+0%					22.353
12.007	S25	15 Winter	1	+0%					21.423
1.009	S26	15 Winter	1	+0%					19.253

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.007	S11	-0.093	0.000	0.92		90.4	OK	
1.008	BYP1	-0.103	0.000	0.88		90.5	OK	
12.000	S12	-0.169	0.000	0.14		5.1	OK	
13.000	S13	-0.121	0.000	0.43		15.8	OK	
12.001	S14	-0.155	0.000	0.46		26.2	OK	
12.002	S15	-0.148	0.000	0.51		28.2	OK	
12.003	S16	-0.156	0.000	0.47		29.4	OK	
12.004	S17	-0.145	0.000	0.52		33.8	OK	
12.005	S18	-0.132	0.000	0.60		38.5	OK	
14.000	S20	-0.176	0.000	0.11		3.9	OK	
14.001	S21	-0.126	0.000	0.39		12.2	OK	
14.002	S22	-0.129	0.000	0.38		14.0	OK	
14.003	S23	-0.124	0.000	0.42		14.1	OK	
12.006	S19	-0.099	0.000	0.78		56.7	OK	
15.000	S24	-0.155	0.000	0.21		7.3	OK	
12.007	S25	-0.083	0.000	0.87		59.9	OK	
1.009	S26	-0.297	0.000	0.25		149.8	OK	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Storage Structures 0
Number of Online Controls 0 Number of Time/Area Diagrams 0
Number of Offline Controls 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.408
Region England and Wales Cv (Summer) 0.750
M5-60 (mm) 19.200 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status ON
Analysis Timestep Fine Inertia Status ON
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 360, 600, 720, 1440
Return Period(s) (years) 30
Climate Change (%) 0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	CP1	15 Winter	30	+0%	30/15 Summer				24.237
2.000	CP2	15 Winter	30	+0%	30/15 Summer				24.212
2.001	RET1	15 Winter	30	+0%	30/15 Summer				24.215
1.001	S1	15 Winter	30	+0%	30/15 Summer				24.219
3.000	CP3	15 Winter	30	+0%					24.083
4.000	CP4	15 Winter	30	+0%	30/15 Summer				23.979
1.002	S2	15 Winter	30	+0%	30/15 Summer				23.898
5.000	CP5	15 Winter	30	+0%					23.813
5.001	S3	15 Winter	30	+0%					23.783
6.000	CP6	15 Winter	30	+0%					24.040
7.000	CP7	15 Summer	30	+0%	30/15 Summer				24.078
1.003	S4	15 Winter	30	+0%	30/15 Summer				23.343
8.000	CP8	15 Summer	30	+0%					24.018
1.004	S5	15 Winter	30	+0%	30/15 Summer				23.180
9.000	CP11	15 Winter	30	+0%					23.739
9.001	S6	15 Winter	30	+0%					23.657
9.002	S7	15 Winter	30	+0%					22.999
1.005	S8	15 Winter	30	+0%	30/15 Summer				22.546
10.000	CP12	15 Winter	30	+0%	30/15 Summer				22.343
1.006	S9	15 Winter	30	+0%	30/15 Summer				22.272
11.000	CP15	15 Summer	30	+0%					24.161
11.001	S10	15 Summer	30	+0%					22.495

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	CP1	0.262	0.000	0.51		8.1	SURCHARGED	
2.000	CP2	0.237	0.000	0.12		1.9	SURCHARGED	
2.001	RET1	0.328	0.000	0.30		4.7	SURCHARGED	
1.001	S1	0.428	0.000	1.19		20.4	SURCHARGED	
3.000	CP3	-0.092	0.000	0.32		5.3	OK	
4.000	CP4	0.449	0.000	1.33		39.8	SURCHARGED	
1.002	S2	0.480	0.000	1.50		57.4	SURCHARGED	
5.000	CP5	-0.112	0.000	0.50		15.8	OK	
5.001	S3	-0.092	0.000	0.65		24.8	OK	
6.000	CP6	-0.135	0.000	0.34		12.7	OK	
7.000	CP7	0.063	0.000	1.61		48.1	SURCHARGED	
1.003	S4	0.165	0.000	1.36		133.0	SURCHARGED	
8.000	CP8	-0.032	0.000	0.98		10.6	OK	
1.004	S5	0.090	0.000	1.46		143.6	SURCHARGED	
9.000	CP11	-0.136	0.000	0.33		11.7	OK	
9.001	S6	-0.125	0.000	0.40		15.2	OK	
9.002	S7	-0.076	0.000	0.75		27.8	OK	
1.005	S8	0.682	0.000	1.41		173.7	SURCHARGED	
10.000	CP12	0.700	0.000	0.93		31.8	SURCHARGED	
1.006	S9	0.545	0.000	1.82		194.6	SURCHARGED	
11.000	CP15	-0.114	0.000	0.49		14.1	OK	
11.001	S10	-0.128	0.000	0.39		14.1	OK	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.007	S11	15 Winter	30	+0%	30/15 Summer				22.015
1.008	BYP1	15 Winter	30	+0%	30/15 Summer				21.736
12.000	S12	15 Winter	30	+0%	30/15 Summer				24.186
13.000	S13	15 Winter	30	+0%	30/15 Summer				24.251
12.001	S14	15 Winter	30	+0%	30/15 Summer				24.164
12.002	S15	15 Winter	30	+0%	30/15 Summer				24.088
12.003	S16	15 Winter	30	+0%	30/15 Summer				24.013
12.004	S17	15 Winter	30	+0%	30/15 Summer				23.923
12.005	S18	15 Winter	30	+0%	30/15 Summer				23.766
14.000	S20	15 Winter	30	+0%					24.059
14.001	S21	15 Winter	30	+0%	30/15 Summer				24.040
14.002	S22	15 Winter	30	+0%					23.862
14.003	S23	15 Winter	30	+0%					23.723
12.006	S19	15 Winter	30	+0%	30/15 Summer				23.151
15.000	S24	15 Winter	30	+0%					22.398
12.007	S25	15 Winter	30	+0%	30/15 Summer				21.818
1.009	S26	15 Winter	30	+0%					19.348

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.007	S11	0.352	0.000	2.08		204.8	SURCHARGED	
1.008	BYP1	0.213	0.000	2.00		206.0	SURCHARGED	
12.000	S12	0.026	0.000	0.31		11.5	SURCHARGED	
13.000	S13	0.127	0.000	0.97		35.4	SURCHARGED	
12.001	S14	0.155	0.000	0.94		53.5	SURCHARGED	
12.002	S15	0.124	0.000	1.02		56.5	SURCHARGED	
12.003	S16	0.089	0.000	0.96		60.4	SURCHARGED	
12.004	S17	0.094	0.000	1.09		71.1	SURCHARGED	
12.005	S18	0.065	0.000	1.28		82.8	SURCHARGED	
14.000	S20	-0.091	0.000	0.24		8.8	OK	
14.001	S21	0.017	0.000	1.05		33.0	SURCHARGED	
14.002	S22	-0.018	0.000	0.97		36.0	OK	
14.003	S23	0.000	0.000	1.03		34.7	OK	
12.006	S19	0.434	0.000	1.75		128.0	SURCHARGED	
15.000	S24	-0.110	0.000	0.52		18.0	OK	
12.007	S25	0.312	0.000	2.01		138.3	SURCHARGED	
1.009	S26	-0.202	0.000	0.58		345.0	OK	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs	0	Number of Storage Structures	0
Number of Online Controls	0	Number of Time/Area Diagrams	0
Number of Offline Controls	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.408
Region	England and Wales	Cv (Summer)	0.750
M5-60 (mm)	19.200	Cv (Winter)	0.840

Margin for Flood Risk Warning (mm)	300.0	DVD Status	ON
Analysis Timestep	Fine	Inertia Status	ON
DTS Status	ON		

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 360, 600, 720, 1440
Return Period(s) (years)	100
Climate Change (%)	20

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.000	CP1	15 Winter	100	+20%	100/15 Summer				25.136
2.000	CP2	15 Winter	100	+20%	100/15 Summer				25.097
2.001	RET1	15 Winter	100	+20%	100/15 Summer				25.102
1.001	S1	15 Winter	100	+20%	100/15 Summer				25.109
3.000	CP3	15 Winter	100	+20%	100/15 Summer				24.690
4.000	CP4	15 Winter	100	+20%	100/15 Summer				24.816
1.002	S2	15 Winter	100	+20%	100/15 Summer				24.670
5.000	CP5	15 Winter	100	+20%	100/15 Summer				24.116
5.001	S3	15 Winter	100	+20%	100/15 Summer				24.049
6.000	CP6	15 Winter	100	+20%					24.066
7.000	CP7	15 Summer	100	+20%	100/15 Summer				24.239
1.003	S4	15 Winter	100	+20%	100/15 Summer				23.880
8.000	CP8	15 Summer	100	+20%	100/15 Summer				24.084
1.004	S5	15 Winter	100	+20%	100/15 Summer				23.644
9.000	CP11	15 Winter	100	+20%					23.764
9.001	S6	15 Winter	100	+20%					23.687
9.002	S7	15 Winter	100	+20%	100/15 Summer				23.460
1.005	S8	15 Winter	100	+20%	100/15 Summer				23.336
10.000	CP12	15 Winter	100	+20%	100/15 Summer				22.963
1.006	S9	15 Winter	100	+20%	100/15 Summer				22.877
11.000	CP15	15 Summer	100	+20%					24.198
11.001	S10	15 Summer	100	+20%					22.525

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	CP1	1.161	0.000	0.70		11.3	FLOOD RISK	
2.000	CP2	1.122	0.000	0.27		4.2	FLOOD RISK	
2.001	RET1	1.215	0.000	0.54		8.4	FLOOD RISK	
1.001	S1	1.318	0.000	1.61		27.6	FLOOD RISK	
3.000	CP3	0.515	0.000	0.45		7.6	SURCHARGED	
4.000	CP4	1.286	0.000	1.97		59.0	FLOOD RISK	
1.002	S2	1.252	0.000	1.84		70.5	SURCHARGED	
5.000	CP5	0.191	0.000	0.93		29.3	SURCHARGED	
5.001	S3	0.174	0.000	0.96		36.8	SURCHARGED	
6.000	CP6	-0.109	0.000	0.53		19.8	OK	
7.000	CP7	0.224	0.000	2.48		74.1	SURCHARGED	
1.003	S4	0.702	0.000	1.82		178.2	SURCHARGED	
8.000	CP8	0.034	0.000	1.53		16.6	SURCHARGED	
1.004	S5	0.554	0.000	1.90		187.0	SURCHARGED	
9.000	CP11	-0.111	0.000	0.51		18.3	OK	
9.001	S6	-0.095	0.000	0.62		23.6	OK	
9.002	S7	0.385	0.000	1.11		41.3	SURCHARGED	
1.005	S8	1.472	0.000	1.82		224.9	SURCHARGED	
10.000	CP12	1.320	0.000	1.44		48.9	SURCHARGED	
1.006	S9	1.150	0.000	2.41		258.0	SURCHARGED	
11.000	CP15	-0.077	0.000	0.76		22.0	OK	
11.001	S10	-0.098	0.000	0.61		22.0	OK	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
1.007	S11	15 Winter	100	+20%	100/15 Summer				22.435
1.008	BYP1	15 Winter	100	+20%	100/15 Summer				21.947
12.000	S12	15 Winter	100	+20%	100/15 Summer				24.831
13.000	S13	15 Winter	100	+20%	100/15 Summer				24.990
12.001	S14	15 Winter	100	+20%	100/15 Summer				24.800
12.002	S15	15 Winter	100	+20%	100/15 Summer				24.722
12.003	S16	15 Winter	100	+20%	100/15 Summer				24.634
12.004	S17	15 Winter	100	+20%	100/15 Summer				24.474
12.005	S18	15 Winter	100	+20%	100/15 Summer				24.172
14.000	S20	15 Winter	100	+20%	100/15 Summer				24.459
14.001	S21	15 Winter	100	+20%	100/15 Summer				24.434
14.002	S22	15 Winter	100	+20%	100/15 Summer				24.171
14.003	S23	15 Winter	100	+20%	100/15 Summer				23.915
12.006	S19	15 Winter	100	+20%	100/15 Summer				23.787
15.000	S24	15 Winter	100	+20%					22.436
12.007	S25	15 Winter	100	+20%	100/15 Summer				22.214
1.009	S26	15 Winter	100	+20%					19.401

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.007	S11	0.772	0.000	2.76		272.0	SURCHARGED	
1.008	BYP1	0.424	0.000	2.64		272.9	SURCHARGED	
12.000	S12	0.671	0.000	0.36		13.3	SURCHARGED	
13.000	S13	0.866	0.000	1.31		47.5	SURCHARGED	
12.001	S14	0.791	0.000	1.42		80.8	SURCHARGED	
12.002	S15	0.758	0.000	1.53		84.9	SURCHARGED	
12.003	S16	0.710	0.000	1.39		87.9	SURCHARGED	
12.004	S17	0.645	0.000	1.58		102.7	SURCHARGED	
12.005	S18	0.471	0.000	1.83		118.3	SURCHARGED	
14.000	S20	0.309	0.000	0.32		11.8	SURCHARGED	
14.001	S21	0.411	0.000	1.46		45.9	SURCHARGED	
14.002	S22	0.291	0.000	1.38		51.5	SURCHARGED	
14.003	S23	0.192	0.000	1.46		49.0	SURCHARGED	
12.006	S19	1.070	0.000	2.46		180.1	SURCHARGED	
15.000	S24	-0.072	0.000	0.80		28.0	OK	
12.007	S25	0.708	0.000	2.78		191.6	SURCHARGED	
1.009	S26	-0.149	0.000	0.78		462.9	OK	

Annex 8.A.3: AD Bund Wall Height Calculations

RPS

Calculation Sheet

Page 1	of 4

Job No: MK018157	Project Ref: RENESCIENCE, NORTHWICH	Drawing Ref:
Subject: AD PLANT BUND CAPACITY		
By: GB	Date: SEPT 15	Checked by: DW	Date: 29/09/15

Ref	Calculations			Output
	TANK SCHEDULE :-		No. OFF	TOTAL VOLUME
•	DIGESTER TANK	$6,000 m^3$	4	$24,000 m^3$
	(LIQUID ONLY)	$5,100 m^3$	4	$(20,400 m^3)$
•	POST DIGESTER TANK	$2,500 m^3$	2	$5,000 m^3$
	MAX. 85% (LIQUID ONLY)	$2,125 m^3$	2	$(4,225 m^3)$
•	FEED TANK	$1,200 m^3$	2	$2,400 m^3$
	MAX 85% (LIQUID ONLY)	$1,020 m^3$	2	$(2,040 m^3)$
•	BIOLIQUID RESIDUAL TANK	$500 m^3$	1	$500 m^3$
	MAX 85% (LIQUID ONLY)	$425 m^3$	1	$(425 m^3)$
	TOTAL TANK VOLUME (MAXIMUM) =			$31,900 m^3$
	TOTAL TANK VOLUME (LIQUID FRACTION ONLY) =			$(27,090 m^3)$
	BUND CONTAINMENT :			
	110% OF LARGEST TANK @ $5,100 m^3$ =			$5,610 m^3$
OR	25% OF TOTAL GROUP @ $27,090 m^3$ =			$6,773 m^3$ ←

RPS

Calculation Sheet

Job No: NK018157	Project Ref:	Drawing Ref:
Subject: AD PLANT BUND CAPACITY		
By: GB	Date: SEPT 15	Checked by:	Date:

Ref	Calculations	Output

OPTION 1 - 110% OF LARGEST TANK. (DIGESTER TANK)

MAX. CONTAINMENT = $5610 m^3$ REQUIRED.

TOTAL PLAN AREA OF A.D TANKS IN BUND:-

D.T = $804 m^2 \times 4 = 3216 m^2$
A.D.T = $491 m^2 \times 2 = 982 m^2$
F.T = $133 m^2 \times 2 = 266 m^2$
C.T = $64 m^2 \times 1 = 64 m^2$
$4528 m^2$

TOTAL PLAN AREA OF OTHER STRUCTURES IN AD BUND = $267 m^2$

TOTAL PLAN AREA OF A.D BUND = $8,851 m^2$

MAXIMUM AREA OF FREE STORAGE =

$8,851 m^2$ LESS ALL AD TANKS, ($-4528 m^2$), LESS OTHER STRUCTURES ($-267 m^2$) AND AREA OF TANK SUBJECT TO FAILURE* ($+804 m^2$) = $4,860 m^2$.

* WATER/LIQUID STORAGE HEIGHT IS 6.34m IN TANK UNDER FAIL CONDITIONS, THEREFORE THIS AREA CONTRIBUTES TOWARDS TOTAL BUND AREA FOR STORAGE.

MIN BUND WALL HT = $\frac{5610}{4860} = 1.15 m$

ALLOW FOR 100 mm MIN FREEBOARD ∴ BUND WALL HEIGHT REQUIRED = 1.250m

RPS

Calculation Sheet

Job No: MK 018157	Project Ref:	Drawing Ref:
Subject: AD PLANT BUND CAPACITY		
By: GB	Date: SEPT 15	Checked by:	Date:

Ref	Calculations	Output
	OPTION 2 - 25% OF TOTAL TANK VOL.	
	MAX. CONTAINMENT = $6{,}773\ m^3$ REQUIRED	
	AS, OPTION 1 TOTAL PLAN AREA OF AD TANKS IN BUND = $4528\ m^2$	
	TOTAL PLAN AREA OF OTHER STRUCTURES = $267\ m^2$	
	TOTAL PLAN AREA OF AD BUND = $8851\ m^2$.	
	MAXIMUM AREA OF FREE STORAGE =	
	$8{,}851\ m^2 - 4{,}528\ m^2 - 267\ m^2$ + *TANK AREA SUBJECT TO FAILURE.	
	* AS ONLY COMPLETE TANKS CAN FAIL (UP TO 25%)	
	CONSIDER 1 x DT = $804\ m^2$, 2 x FT = $266\ m^2$ PLUS 1 x CT = $64\ m^2$ = $1134\ m^2$ (25.0%).	
	MAX. WATER LEVEL IN EACH ARE 6.34 m, 7.88 m, 6.68 m RESPECTIVELY ∴ CAN CONTRIBUTE USEABLE AREA.	
	∴ MAX. FREE STORAGE = 8851 - 4528 - 267 + 1134 = $5190\ m^2$	
	MIN BUND WALL HT = $\frac{6773}{5190}$ = 1.305 m	
	ALLOW FOR 100 mm MIN FREEBOARD ∴	
	BUND WALL HEIGHT REQUIRED = 1.450 m	

RPS

Calculation Sheet

Job No: NK018157	Project Ref:	Drawing Ref:
Subject: AD PLANT BUND CAPACITY		
By: GB	Date: SEPT 15	Checked by:	Date:

Ref	Calculations	Output

AD TANK BUND TO ALLOW FOR ADDITIONAL VOLUME OF RAINWATER RUNOFF CONTAINMENT IN ADDITION TO ACCIDENTAL SPILLAGE.

USING MICRODRAINAGE SOURCE CONTROL, MAXIMUM ATTENUATION VOLUME FOR RAINFALL IS $1012 m^3$ DERIVED FROM 1 IN 100 YEAR STORM EVENT (10080 MINS DURATION) PLUS CLIMATE CHANGE @ 20%.

FROM PREVIOUS CALCULATIONS, OPTION 2 SCENARIO IS MOST SIGNIFICANT. THEREFORE OVERALL EMERGENCY AND FLOOD ATTENUATION STORAGE IN AD BUND IS:-

$$\frac{6773 m^3 + 1012 m^3}{5190 m^2} = \underline{1.500m}$$

ALLOWING 100mm FREEBOARD, MAX. BUND WALL HEIGHT

$$= 1.500 + 0.100 = \underline{\underline{1.600m}}$$

Summary of Results for 100 year Return Period (+20%)

Outflow is too low. Design is unsatisfactory.

Storm Event	Max Level (m)	Max Depth (m)	Max Volume (m³)	Status
15 min Summer	23.521	0.021	189.2	O K
30 min Summer	23.528	0.028	247.8	O K
60 min Summer	23.535	0.035	309.3	O K
120 min Summer	23.542	0.042	373.4	O K
180 min Summer	23.547	0.047	411.7	O K
240 min Summer	23.550	0.050	438.8	O K
360 min Summer	23.554	0.054	476.9	O K
480 min Summer	23.557	0.057	506.3	O K
600 min Summer	23.560	0.060	530.0	O K
720 min Summer	23.562	0.062	549.9	O K
960 min Summer	23.566	0.066	582.4	O K
1440 min Summer	23.571	0.071	630.6	O K
2160 min Summer	23.577	0.077	681.7	O K
2880 min Summer	23.581	0.081	719.8	O K
4320 min Summer	23.588	0.088	776.1	O K
5760 min Summer	23.592	0.092	817.9	O K
7200 min Summer	23.596	0.096	851.5	O K
8640 min Summer	23.599	0.099	879.6	O K
10080 min Summer	23.602	0.102	903.9	O K
15 min Winter	23.524	0.024	211.9	O K
30 min Winter	23.531	0.031	277.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	114.021	0.0	27
30 min Summer	74.667	0.0	42
60 min Summer	46.601	0.0	72
120 min Summer	28.131	0.0	132
180 min Summer	20.676	0.0	192
240 min Summer	16.528	0.0	252
360 min Summer	11.975	0.0	372
480 min Summer	9.535	0.0	492
600 min Summer	7.984	0.0	612
720 min Summer	6.904	0.0	732
960 min Summer	5.484	0.0	972
1440 min Summer	3.959	0.0	1452
2160 min Summer	2.853	0.0	2172
2880 min Summer	2.259	0.0	2892
4320 min Summer	1.624	0.0	4332
5760 min Summer	1.284	0.0	5776
7200 min Summer	1.069	0.0	7216
8640 min Summer	0.920	0.0	8656
10080 min Summer	0.811	0.0	10096
15 min Winter	114.021	0.0	27
30 min Winter	74.667	0.0	42

Summary of Results for 100 year Return Period (+20%)

Storm Event	Max Level (m)	Max Depth (m)	Max Volume (m³)	Status
60 min Winter	23.539	0.039	346.4	O K
120 min Winter	23.547	0.047	418.2	O K
180 min Winter	23.552	0.052	461.1	O K
240 min Winter	23.556	0.056	491.5	O K
360 min Winter	23.560	0.060	534.2	O K
480 min Winter	23.564	0.064	567.1	O K
600 min Winter	23.567	0.067	593.6	O K
720 min Winter	23.570	0.070	615.9	O K
960 min Winter	23.574	0.074	652.3	O K
1440 min Winter	23.580	0.080	706.3	O K
2160 min Winter	23.586	0.086	763.5	O K
2880 min Winter	23.591	0.091	806.2	O K
4320 min Winter	23.598	0.098	869.2	O K
5760 min Winter	23.604	0.104	916.1	O K
7200 min Winter	23.608	0.108	953.7	O K
8640 min Winter	23.611	0.111	985.2	O K
10080 min Winter	23.614	0.114	1012.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
60 min Winter	46.601	0.0	72
120 min Winter	28.131	0.0	132
180 min Winter	20.676	0.0	192
240 min Winter	16.528	0.0	252
360 min Winter	11.975	0.0	372
480 min Winter	9.535	0.0	492
600 min Winter	7.984	0.0	612
720 min Winter	6.904	0.0	732
960 min Winter	5.484	0.0	972
1440 min Winter	3.959	0.0	1452
2160 min Winter	2.853	0.0	2172
2880 min Winter	2.259	0.0	2892
4320 min Winter	1.624	0.0	4332
5760 min Winter	1.284	0.0	5776
7200 min Winter	1.069	0.0	7216
8640 min Winter	0.920	0.0	8656
10080 min Winter	0.811	0.0	10096

Annex 8.A.4: Bioreactor Bund Wall Height Calculations

RPS

Calculation Sheet

Job No: NK018157	Project Ref: RENESCIENCE, NORTHWICH	Drawing Ref:
Subject: BIOREACTOR BUND CAPACITY		
By: GB	Date: SEPT 15	Checked by: OW	Date: 29/09/15

Ref	Calculations	Output
	BIOREACTOR UNIT HAS SINGLE CAPACITY OF $270m^3$ (LIQUID CAPACITY)	
	CONTAINMENT BUND HAS 2No. BIOREACTOR UNITS.	
	TANK VOLUME (MAXIMUM) = $270m^3 \times 2$	$= 540m^3$
	BUND CONTAINMENT:	
	110% OF LARGEST SINGLE TANK @ $270m^3$	$= \underline{297m^3}$ ⇐
OR	25% OF TOTAL GROUP @ $540m^3$	$= 135m^3$
	∴ CONSIDER FAILURE OF SINGLE BIOREACTOR TANK.	
	TOTAL PLAN AREA OF BUND = $17.5m \times 39m$	$= 683m^2$
	PLAN AREA OF TANK SUPPORT PLINTHS = $5m \times 1.5m$	$\times$ 16No.
	$= 120m^2$	
	MAXIMUM AREA OF FREE STORAGE = $683 - 120$	$= 563m^2$
	BUND TO ALLOW FOR ADDITIONAL VOLUME OF RAINFALL CONTAINMENT IN ADDITION TO ACCIDENTAL SPILLAGES.	
	MICRODRAINAGE SOURCE CONTROL CALCULATION FOR	

RPS

Calculation Sheet

Page 2	of 2

Job No: NK018757	Project Ref:	Drawing Ref:
Subject: BIOREACTOR BUND CAPACITY		
By: GB	Date: SEPT 15	Checked by:	Date:

Ref	Calculations	Output

1 in 100 YEAR STORM EVENT (+ 20% CLIMATE EFFECTS)

UNDER 10080 MINS DURATION (7 DAYS) = $81.2 m^3$

TOTAL STORAGE VOLUME = $297 + 81.2 m^3 = 378.2 m^3$

$\therefore$ BUND WALL HEIGHT REQUIRED = $\frac{378.2}{563} = 0.672 m.$

ALLOWING 100mm FREEBOARD MINIMUM,

MAX BUND WALL HEIGHT = $0.672 + 0.100 \simeq \underline{\underline{0.800 m}}$

Summary of Results for 100 year Return Period (+20%)

Outflow is too low. Design is unsatisfactory.

Storm Event	Max Level (m)	Max Depth (m)	Max Volume (m³)	Status
15 min Summer	24.522	0.022	15.2	O K
30 min Summer	24.528	0.028	19.9	O K
60 min Summer	24.535	0.035	24.8	O K
120 min Summer	24.543	0.043	30.0	O K
180 min Summer	24.547	0.047	33.0	O K
240 min Summer	24.550	0.050	35.2	O K
360 min Summer	24.555	0.055	38.3	O K
480 min Summer	24.558	0.058	40.6	O K
600 min Summer	24.561	0.061	42.5	O K
720 min Summer	24.563	0.063	44.1	O K
960 min Summer	24.567	0.067	46.7	O K
1440 min Summer	24.572	0.072	50.6	O K
2160 min Summer	24.578	0.078	54.7	O K
2880 min Summer	24.582	0.082	57.7	O K
4320 min Summer	24.589	0.089	62.3	O K
5760 min Summer	24.594	0.094	65.6	O K
7200 min Summer	24.598	0.098	68.3	O K
8640 min Summer	24.601	0.101	70.6	O K
10080 min Summer	24.604	0.104	72.5	O K
15 min Winter	24.524	0.024	17.0	O K
30 min Winter	24.532	0.032	22.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
15 min Summer	114.021	0.0	27
30 min Summer	74.667	0.0	42
60 min Summer	46.601	0.0	72
120 min Summer	28.131	0.0	132
180 min Summer	20.676	0.0	192
240 min Summer	16.528	0.0	252
360 min Summer	11.975	0.0	372
480 min Summer	9.535	0.0	492
600 min Summer	7.984	0.0	612
720 min Summer	6.904	0.0	732
960 min Summer	5.484	0.0	972
1440 min Summer	3.959	0.0	1452
2160 min Summer	2.853	0.0	2172
2880 min Summer	2.259	0.0	2892
4320 min Summer	1.624	0.0	4332
5760 min Summer	1.284	0.0	5776
7200 min Summer	1.069	0.0	7216
8640 min Summer	0.920	0.0	8656
10080 min Summer	0.811	0.0	10096
15 min Winter	114.021	0.0	27
30 min Winter	74.667	0.0	42

Summary of Results for 100 year Return Period (+20%)

Storm Event	Max Level (m)	Max Depth (m)	Max Volume (m³)	Status
60 min Winter	24.540	0.040	27.8	O K
120 min Winter	24.548	0.048	33.6	O K
180 min Winter	24.553	0.053	37.0	O K
240 min Winter	24.556	0.056	39.4	O K
360 min Winter	24.561	0.061	42.9	O K
480 min Winter	24.565	0.065	45.5	O K
600 min Winter	24.568	0.068	47.6	O K
720 min Winter	24.571	0.071	49.4	O K
960 min Winter	24.575	0.075	52.3	O K
1440 min Winter	24.581	0.081	56.7	O K
2160 min Winter	24.588	0.088	61.3	O K
2880 min Winter	24.592	0.092	64.7	O K
4320 min Winter	24.600	0.100	69.7	O K
5760 min Winter	24.605	0.105	73.5	O K
7200 min Winter	24.609	0.109	76.5	O K
8640 min Winter	24.613	0.113	79.0	O K
10080 min Winter	24.616	0.116	81.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)
60 min Winter	46.601	0.0	72
120 min Winter	28.131	0.0	132
180 min Winter	20.676	0.0	192
240 min Winter	16.528	0.0	252
360 min Winter	11.975	0.0	372
480 min Winter	9.535	0.0	492
600 min Winter	7.984	0.0	612
720 min Winter	6.904	0.0	732
960 min Winter	5.484	0.0	972
1440 min Winter	3.959	0.0	1452
2160 min Winter	2.853	0.0	2172
2880 min Winter	2.259	0.0	2892
4320 min Winter	1.624	0.0	4332
5760 min Winter	1.284	0.0	5776
7200 min Winter	1.069	0.0	7216
8640 min Winter	0.920	0.0	8656
10080 min Winter	0.811	0.0	10096

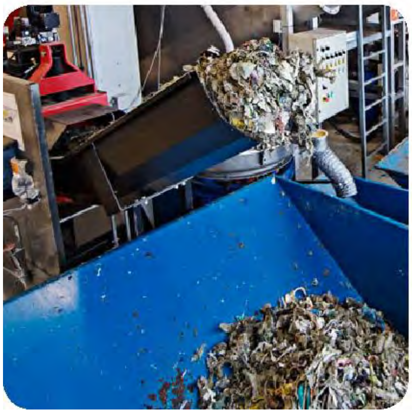
Appendix 8.B: Flood Risk Assessment

Appendix 8.B: Flood Risk Assessment

REnescience Northwich







Quality Management

Prepared by:	Angus Kerry	Consultant		02/10/15
Reviewed & checked by:	Jonathan Morley	Senior Consultant		02/10/15
Authorised by:	Wayne Davies	Technical Director		02/10/15
Date of issue:	2 October 2015		**Revision number:**	1
Project number	JER6571			
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Revision History				
Rev	**Date**	**Status**	**Reason for revision**	**Additional comments**
0	29/9/15	Draft	Document review	JM
1	2/10/15	Final	QA	WGD

Executive Summary

RPS has undertaken a Flood Risk Assessment (FRA) in accordance with the requirements of the National Planning Policy Framework (NPPF) and Planning Practice Guidance (PPG) for the proposed REnescience Northwich development.

The entire development site is presently located within the Environment Agency (EA) Strategic Flood Risk Assessment (SFRA) Flood Zone 1, classified with a ‘low’ probability of flooding from fluvial sources.

There is no historical evidence of flooding at the site.

The site is at negligible to low susceptibility to surface water flooding.

The susceptibility to groundwater flooding is low.

The risk of flooding from infrastructure failure is considered to be low.

The risk of flooding from reservoir failure has been assessed as low.

The proposed development is defined as ‘less vulnerable’ in the NPPF and PPG, and is deemed appropriate for the present flood zone, including consideration of climate change.

As the development is in a sequentially appropriate area, there is no requirement for either a Sequential or Exceptions Test.

Surface water for events up to an including the 1 in 100 rainfall event year plus climate change would be retained within the site’s drainage network, passing through an appropriate interceptor before discharging into Wade Brook via an existing outfall. No additional attenuation measures are proposed.

This FRA and supporting documentation shows that the proposed development at this location meets the requirements of the NPPF and associated PPG.

Contents

Tables and Figures

Tables

Figures

1 Scope of Work

Background

1.1 RPS has carried out a site-specific Flood Risk Assessment (FRA) for the proposed REnescience Northwich development site, located on a rectangular parcel of land on Lostock Works off Griffiths Road, Northwich, Cheshire, in accordance with the National Planning Policy Framework (NPPF) and Planning Practice Guidance.

1.2 Developments that are designed without regard to flood risk may endanger lives, damage property, cause disruption to the wider community, damage the environment, be difficult to insure and require additional expense on remedial works. Current guidance on development and flood risk identifies several key aims for a development to ensure that it is sustainable in flood risk terms. These aims are as follows:

- The development should not be at a significant risk of flooding and should not be susceptible to damage due to flooding;
- The development should not be exposed to flood risk such that the health, safety and welfare of the users of the development, or the population elsewhere, is threatened;
- Normal operation of the development should not be susceptible to disruption as a result of flooding;
- Safe access to and from the development should be possible during flood events;
- The development should not increase flood risk elsewhere;
- The development should not prevent safe maintenance of watercourses or maintenance and operation of flood defences;
- The development should not be associated with an onerous or difficult operation and maintenance regime to manage flood risk. The responsibility for any operation and maintenance required should be clearly defined;
- Future users of the development should be made aware of any flood risk issues relating to the development;
- The development design should be such that future users will not have difficulty obtaining insurance or mortgage finance, or in selling all or part of the development, as a result of flood risk issues;
- The development should not lead to degradation of the environment; and
- The development should meet all of the above criteria for its entire lifetime, including consideration of the potential effects of climate change.

1.3 The FRA has been undertaken with due consideration of these sustainability aims. The key objectives of the FRA are:

- To assess the flood risk to the proposed development and to demonstrate the feasibility of appropriately designing the development such that any residual flood risk to the development and users would be acceptable;
- To assess the potential impact of the proposed development on flood risk elsewhere and to demonstrate the feasibility of appropriately designing the development such that the development would not increase flood risk elsewhere; and
- To satisfy the requirements of NPPF and Planning Practice Guidance which require FRAs to be submitted in support of planning applications for developments over 1 ha in area.

Project Scope

1.4 This FRA has the following structure:

- Section 2 identifies the sources of information that have been consulted in preparation of the report.
- Section 3 provides a hydrological review off the site and undertakes a flood risk assessment of the proposed development scheme.
- Section 4 describes the sites vulnerability status in line with the NPPF and Planning Practice Guidance.
- Section 5 describes the flood risk management measures that will be applied to the site, where required.
- Section 6 provides a summary and conclusion to the report.

2 Source of Information

Introduction

2.1 Table 2.1 below lists the information sources consulted during preparation of this report.

Table 2.1: Information sources consulted during preparation of the report

Data	Source	Notes
Site setting and hydrology.	OS Mapping 1: 50 000 Sheet 118: Stoke-on-Trent and Macclesfield. Environment Agency.	Area information, rivers and other watercourses, general site environs, built environment, catchment Information.
Geology.	BGS (Online): Geology of Britain viewer.	Site and area geology.
Environment Agency.	EA data holdings, customer service and engagement team.	Current flood risk, local flood defences, flood levels, supplementary geology and groundwater information.
Local Planning Authority (LPA).	Cheshire West and Chester Council	Flood Zoning Local Development Framework.
Water Utility Company.	United Utilities Water	Water and sewerage assets in the vicinity of the Site.
Flood Risk Assessment and Planning Guidance.	National Planning Policy Framework (NPPF). Planning Practice Guidance.	Flood zoning for the site as used by the EA in England.
Reports.	West Cheshire SFRA, Level 1.	West Cheshire Strategic Flood Risk Assessment, June 2008.
	Northwich SFRA	Northwich Area Flood Risk Assessment, February 2009.
	Cheshire West & Chester Council, Local Plan (Part One) Strategic Policies	Cheshire West & Chester Council, Local Plan (Part One) Strategic Policies (January 2015).
	Environment Agency, Weaver Gowy Catchment Flood Management Plan.	Environment Agency, Weaver Gowy Catchment Flood Management Plan, Summary Report December 2009.

Legislation and Guidance

National Planning Policy Framework, March 2013.

2.2 The National Planning Policy Framework (NPPF) sets out government planning policies for England and how these are expected to be applied. The framework acts as guidance for local planning authorities and decision-takers, both in drawing up plans and making decisions about planning applications.

2.3 Paragraphs 99-104 set out the need for an appropriate assessment of flood risk. Guidance on the minimum requirements for such as assessment is contained in PPG ID7.

2.4 The NPPF requires the application of a sequential risk-based approach to determining the suitability of land for development in flood risk areas, and that flood risk assessment should be carried out to the appropriate degree, at all levels of the planning process.

Planning Practice Guidance, online.

2.5 PPG ID7 Flood Risk and Coastal Change provides guidance to ensure the effective implementation of the NPPF planning policy for development in areas at risk of flooding.

2.6 PPG ID7 states that a site specific FRA is required for all proposals for new development in Flood Zones 2 and 3 and for any proposal of 1 hectare or greater in Flood Zone 1. An FRA should consider vulnerability to flooding from other sources as well as from river and sea flooding, and also the potential for any increased risk of flooding elsewhere resulting from a proposed development.

Cheshire West & Chester Council, Local Plan (Part One) Strategic Policies

2.7 The Local Plan states that it will seek to reduce flood risk, promote water efficiency measures, and protect and enhance water quality through the following mechanisms. The Local Plan reiterates the flood risk and water management policy (ENV1) of the saved Vale Royal Plan, summarised below.

2.8 In addition, the Local Plan includes Strategic Policy SO14, which notes that developments should:

- Mitigate and adapt to the effects of climate change by addressing flood risk and water management and support the development of new buildings and infrastructure that are resilient, resistant and adapted to the effects of climate change.

Vale Royal Borough Local Plan, policies saved after 29 Jan 2015

2.9 The document contains detailed planning policies and proposals for the former Vale Royal Borough Council including policies setting out the criteria to be taken into account in determining proposals for development and the use of land and buildings. The policies relevant to hydrology and flood risk are outlined below.

Policy ENV1 – Flood risk and water management

2.10 The Local Plan will seek to reduce flood risk, promote water efficiency measures, and protect and enhance water quality through the following mechanisms.

- All development must follow the sequential approach to determining the suitability of land for development, directing new development to areas at the lowest risk of flooding and where necessary apply the exception test, as outlined in national planning policy.
- Developers will be required to demonstrate, where necessary, through an appropriate Flood Risk Assessment (FRA) at the planning application stage, that development proposals will not increase flood risk on site or elsewhere, and should seek to reduce the risk of flooding. New development will be required to include or contribute to flood mitigation, compensation and/or protection measures, where necessary, to manage flood risk associated with or caused by the development.
- Development proposals should comply with the Water Framework Directive by contributing to the North West River Basin Management Plan and Dee River Basin Management Plan objectives, unless it can be demonstrated that this would not be technically feasible.
- The drainage of new development shall be designed to reduce surface water run-off rates to include the implementation of Sustainable Drainage Systems (SUDS) unless it can be demonstrated that it is not technically feasible or viable.

2.11 Proposals within areas of infrastructure capacity and/or water supply constraint should demonstrate that there is adequate wastewater infrastructure and water supply capacity to serve the development or adequate provision can be made available.

2.12 In addition, development will be required to incorporate Sustainable Drainage Systems (SuDS) to manage surface water drainage.

Climate Change

2.13 The effects of future climate change over the next few decades are predicted to result in milder wetter winters and hotter drier summers in the UK (UKCP09). An increased frequency of heavy, intense precipitation leading to increased peak river flows in combination with rising sea levels will have a major impact on the potential for future flooding. The UK Climate Projections (UKCP09) project provides advice on indicative sensitivity ranges for the predicted impacts of climate change. Based on high emissions scenario for the North West region of England winter mean precipitation intensity could be up to 26% higher than current levels in 2080.

2.14 The Planning Practice Guidance to the NPPF notes that both rainfall intensity and peak river flows could be 20% higher than current levels up to 2085.

2.15 Based on the development life the Planning Practice Guidance 20% allowance for climate change has been adopted for use in the run-off and attenuation calculations.

3 Site Setting

Existing Development

3.1 The site consists of an irregular, roughly rectangular shaped parcel of land covering c. 3.37 ha of vacant brownfield land, which had previously been used as a chlorine manufacturing. The buildings have been demolished, leaving residual foundation slabs and hardstanding in place. The existing site has the following footprints:

- Total existing impermeable area = 21,900 m2; and
- Soft landscaping/permeable surfacing = 15,100 m2.

3.2 The ground is generally flat with a large central plateau level of around 25.5 mAOD. The site levels around the northern, western and southern boundaries are approximately 2 to 3 metres lower than the central plateau.

3.3 The existing site location, topography, and impermeable area are shown in Figures 2.B, 2.S and 8.A, respectively, in Volume 4 of the ES.

Proposed Development

3.4 The proposed development areas (shown in Figure 8.B in Volume 4 of the ES) are:

- Total proposed development impermeable area (23,642 m2), comprising;
- Net drained impermeable area = 14,078 m2
- Proposed anaerobic digester plant bund containment area = 8,851 m2
- Proposed bioreactor bund containment area = 713 m2
- Soft landscaping/permeable surfacing = 13,358 m2

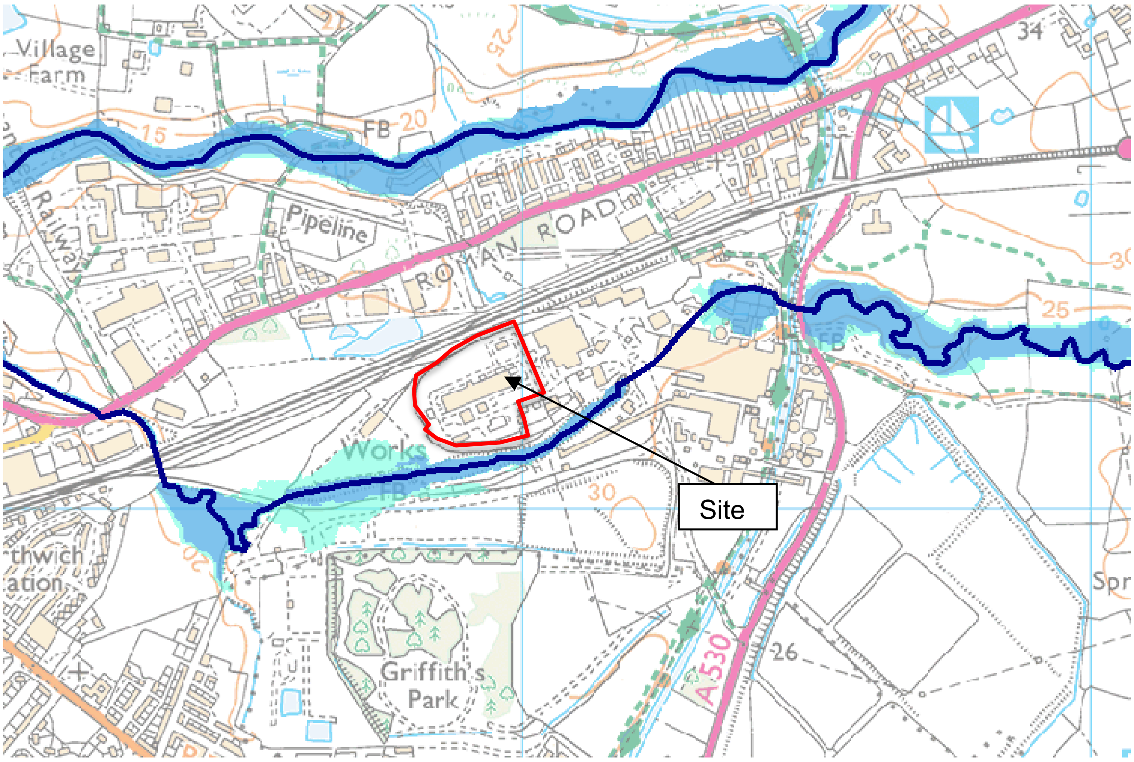
Fluvial and Tidal Flooding

3.5 The closest watercourse is Wade Brook, which flows westerly in an open channel immediately south of the site.

3.6 Wincham Brook flows in a westerly direction c.350 m to the north of the application site, converging with Wade Brook at Worthington's Flash c.900 m west of the site.

3.7 The Environment Agency's (EA's) flood map (Figure 3.1) indicates that the entire application site lies within Flood Zone 1 and therefore has a 'low probability' (less than 1 in 1,000 years) annual probability of flooding. Therefore, the baseline fluvial flood risk to the site has been assessed as low.

Figure 3.1: EA Flood Zone map (September 2015)



Flood defences

3.8 EA mapping indicates that there are no formal flood defences in close proximity to the application site.

Flooding from rising / high groundwater

3.9 British Geological Survey (BGS) online mapping (accessed September 2015) indicates that the site is underlain by superficial deposits comprising Diamicton Till and Devensian deposits with alluvium (clay, silts, sands and gravel) within the extent of Wade Brook.

3.10 BGS online bedrock mapping shows that the superficial deposits below the site are underlain by the Northwich Halite member, which comprises of Halite with partings of mudstone.

3.11 The Halite members are classified by the EA under the Water Framework Directive as a Secondary B Aquifer, defined as "…predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers."

3.12 There is no evidence of groundwater issuing at the surface in the area around the site. However, the watercourse that runs adjacent to the site is likely to be in hydraulic continuity with groundwater in the bedrock.

3.13 Based on the information outlined above, the potential for groundwater flooding is considered to be low.

Source Protection Zones

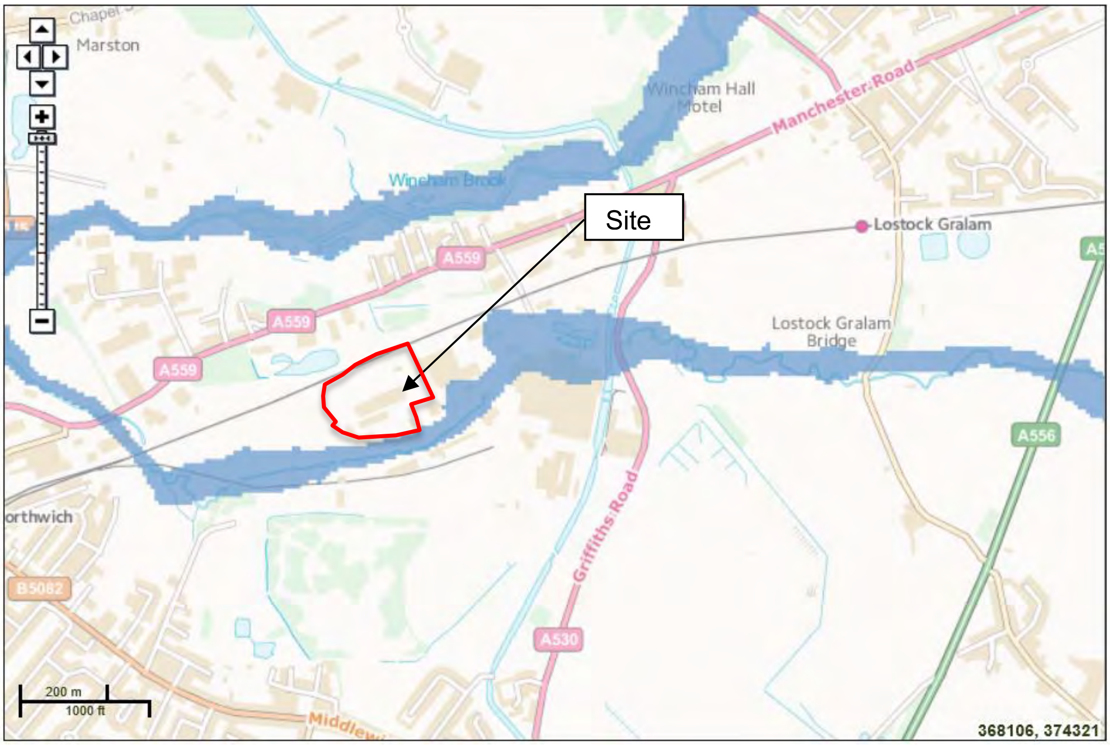
3.14 EA mapping shows the site is not located within a Source Protection Zone (SPZ).

Reservoir Failure Assessment

3.15 EA mapping (Figure 3.2) shows that a localised section along the southern boundary of the application site is located within the extremity of possible flood extents associated with a complete failure in reservoir infrastructure at Shakerley Mere, NGR 373179, 371318. The EA acknowledges that the reservoir flooding maps indicate the worst case extents, which is very unlikely to happen as this would require a large loss of water from the affected reservoir. The EA has estimated the potential flood depth and speed from a potential flood due to the reservoir. The flooding speed is estimated to be below 0.5 metres per second and a flood depth of between 2 and 3 metres.

3.16 The maintenance/safety of the reservoir is the responsibility of the owners (Cheshire West and Chester Council) who will maintain an adequate degree of protection. Regular inspections, risk assessments and through protection reservoir flood plans allow for constant assessment of the potential risk of reservoir failure. The risk of flooding to the application site from a reservoir failure is considered to be low.

Figure 3.2: EA reservoir flood map (September 2015)



Sewer/Water Main Failure Assessment

3.17 United Utilities sewer record plans indicate that there are no public sewers present within the vicinity of the proposed development site.

3.18 The application site is currently served by privately owned and maintained surface and foul water drains.

3.19 During the construction phase, all redundant existing below ground drainage pipes will either be grubbed up and removed, or filled and capped off using a cement based grout.

3.20 The proposed site surface water drainage system will be a gravity network, discharging via the existing 450 mm diameter outfall into Wade Brook. Details are provided in the Drainage Strategy at Appendix 8.A to the ES.

3.21 Under the DG 5 register requirements, all water companies are obliged to keep a record of properties that have been affected by sewer flooding. The Northwich SFRA mapping, which includes DG5 register information, indicates that the site has not been affected by flooding from artificial sources.

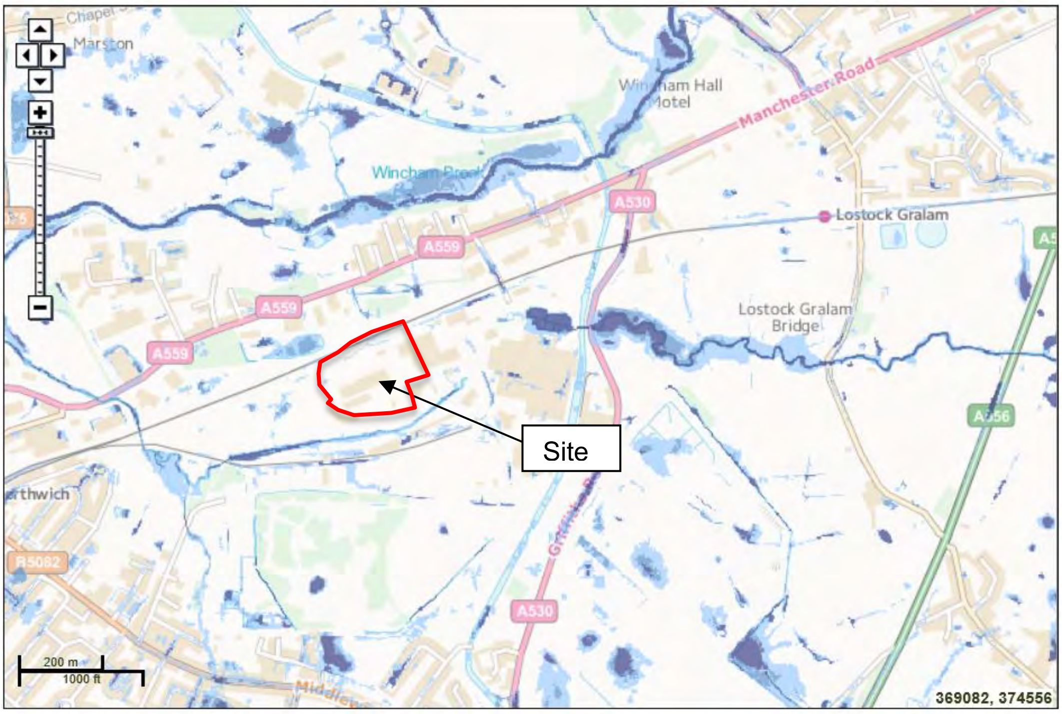
3.22 Taking into account the above and absence of any historical sewer flooding, the overall risk of flooding via artificial drainage system to the site has been assessed to be low.

Surface water flooding

3.23 EA surface water flood mapping (Figure 3.3) indicates that the majority of the site is at ‘very low’ risk of surface water flooding (defined as less than 1 in 1000 (0.1%) chance of flooding).

3.24 Overall, the site is assessed as having a very low susceptibility to surface water flooding.

Figure 3.3: EA surface water map



Historical flood events

3.25 No site-specific historical flood data was available in the Northwich SFRA.

4 Flood Risk Vulnerability Classification

4.1 In accordance with the Flood Risk Vulnerability Classification in Table 2 of the Planning and Practice Guidance Flood Risk and Coastal Change, a waste treatment facility is classified as a 'Less Vulnerable' development in flood risk terms.

4.2 Table 3 of Planning Practice Guidance (Table 4.1of this report) indicates that 'Less Vulnerable' uses are appropriate for locations in Flood Zone 1.

Table 4.1: Flood Risk Vulnerability and Flood Zone 'Compatibility'

Flood Risk Vulnerability classification (see Table 3 of Planning Practice Guidance)	Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Zone 1	Yes	Yes	Yes	Yes	Yes
Zone 2	Yes	Yes	Exception test required	Yes	Yes
Zone 3a	Exception test required	Yes	No	Exception test required	Yes
Zone 3b Functional Floodplain	Exception test required	Yes	No	No	No

Key: Yes: Development is appropriate, No: Development should not be permitted.

Current Flood Risk

4.3 The application site is at low risk of both fluvial and surface water flooding.

5 Drainage

Surface Water and Drainage

5.1 The sustainable management of surface water is an essential element of reducing future flood risk to the site and its surroundings.

5.2 Undeveloped sites generally rely on natural drainage to convey or absorb rainfall, the water soaking into the ground or flowing across the surface into watercourses. However, in the case of the proposed development site, it is brownfield land with extensive existing impermeable ground cover.

5.3 The effect of development on greenfield land is generally to reduce the permeability of at least part of the site, which markedly changes the site's response to rainfall. Without specific measures to manage surface water the volume of water and peak flow rate are likely to increase. Inadequate surface water drainage arrangements can threaten the development itself and increase the risk of flooding to others.

5.4 Surface water arising from a developed site should as far as is practicable be managed in a sustainable manner to mimic the surface water flows arising from the site prior to the proposed development, while reducing the risk of flooding at the site and elsewhere, taking climate change into account.

Legislative background

5.5 Following the implementation of the Flood and Water Management Act 2010, local flood risk has become the responsibility of the Local Planning Authority. The Act places new duties on upper tier Councils, by designating them as Lead Local Flood Authorities (LLFAs) for the coordination of local flood risk management in their respective administrative areas.

5.6 The Act establishes a SuDS Approving Body (the SAB) at county or unitary local authority levels. The SAB has responsibility for the approval of proposed drainage systems in new developments and redevelopments. Approval must be given before any developer can commence construction. In order to be approved, the proposed drainage system would have to meet national standards for sustainable drainage.

5.7 The SAB is also responsible for adopting and maintaining SuDS which serve more than one property, which they have approved.

5.8 The National Standards set out the criteria by which the form of drainage appropriate to any particular site or development can be determined, as well as requirements for the design, construction, operation and maintenance of SuDS.

5.9 Additional guidance for the use of SuDS is provided via CIRIA and BRE in the following:

- C522 Sustainable Drainage Systems- Design Manual for England and Wales;

- C523 Sustainable Drainage Systems- Best practice;
- C156 Infiltration Drainage – Manual of Good practice; and
- BRE365 Soakaway design.

Existing Drainage System

5.10 The site is currently served by privately owned surface drains associated with the former chlorine production plant. In addition, there are also a number of separate trade effluent drains present, which collected acid/ alkali and other miscellaneous effluents arising from the various former industrial processes undertaken on the site.

5.11 Surface water runoff from the site has historically been discharged to Wade Brook via a network of underground surface water drains. A small section of the site along the northern boundary, which is lower than the main plateau area and which is covered with stone ballast associated with the railway sidings serving the site, drains via infiltration and/or overland flows within the larger area of railway land beyond the northern boundary.

5.12 Surface water flows from the site presently discharge via a 450mm diameter pipe outfall to Wade Brook, present just beyond the southern boundary of the site. No flow restrictions have been applied to the drainage outflow from this pipe.

5.13 The estimated maximum outflow via the surface water drainage outfall to Wade Brook has been assessed using MicroDrainage (detailed in the Drainage Strategy at Appendix 8.A to the ES), and summarised in Table 5.1 below.

Table 5.1: Summary of existing surface water drainage system

Return Period	Critical Storm / Duration	Maximum Outflow	Drainage System Characteristics
1 in 1 year	15min, winter profile	238.1 L/s	No surcharging
1 in 30 year	15min, winter profile	428.7 L/s	Pipe surcharging, no flooding
1 in 100 year	15min, winter profile	502.9 L/s	Flooding, total 28.68m^3

5.14 Based on the condition that the surface water discharge from the new development must not exceed the existing maximum 1 in 100 year storm event, it can be concluded that a maximum upper discharge limit of 502.9L/s will apply to the new development surface water drainage system.

Proposed Runoff Rate

5.15 Section B7 of the National Standards for sustainable drainage systems (2011) indicates that for previously developed sites the flow rate discharged from the site must not exceed that prior to the proposed development for the:

- 1 in 1 year event;

- 1 in 30 year event; and
- 1 in 100 year event.

Runoff Calculations

5.16 The rates of runoff were determined using the current industry best practice guidelines as outlined in the Interim Code of Practice for SuDS. The Defra/EA recommended methodology for sites up to 50 hectares in area is the Institute of Hydrology Report 124 method (IoH 124). The runoff rates were calculated using the Micro Drainage WinDes software suite and summarised below.

5.17 The post-development runoff rates (Table 5.2) have been calculated for the free draining area totalling c.1.4 ha, which constitutes a c.0.79 ha reduction in free draining surfacing compared to the site pre-development. The remaining c.0.96 ha of low permeable surfacing is located within watertight bunds manually managed via penstock vales. The proposed surface water drainage systems and the design parameters can be found in the Drainage Strategy at Appendix 8.A, also summarised in Section 5.6 below.

Table 5.2: Summary of proposed surface water drainage system

Return Period	Critical Storm / Duration	Maximum Outflow
1 in 1 year	15min, winter profile	149.8 L/s
1 in 30 year	15min, winter profile	345.0 L/s
1 in 100 year	15min, winter profile	462.9 L/s

Sustainable Drainage Options

5.18 The NPPF and associated Planning Practice Guidance, CIRIA C697 SUDS Manual (2007) and also the Local Plan promote sustainable water management through the use of SuDS. A hierarchy of techniques is identified:

1) Prevention – the use of good site design and housekeeping measures on individual sites to prevent runoff and pollution (e.g. minimise areas of hard standing).

2) Source Control – control of runoff at or very near its source (such as the use of rainwater harvesting).

3) Site Control – management of water from several sub-catchments (including routing water from roofs and car parks to one/several large soakaways for the whole site).

4) Regional Control – management of runoff from several sites, typically in a detention pond or wetland.

5.19 The implementation of SuDS as opposed to conventional drainage systems, provides several benefits by:

- Reducing peak flows to watercourses or sewers and potentially reducing the risk of flooding downstream;
- Reducing the volumes and frequency of water flowing directly to watercourses or sewers from developed sites;
- Improving water quality over conventional surface water sewers by removing pollutants from diffuse pollutant sources;
- Reducing potable water demand through rainwater harvesting;
- Improving amenity through the provision of public open spaces and wildlife habitat; and
- Replicating natural drainage patterns, including the recharge of groundwater so that base flows are maintained.

Proposed Site Drainage

5.20 The proposed surface water drainage system is detailed in the Drainage Strategy at Appendix 8.A. It will comprise a single gravity network, discharging via the existing 450 mm diameter outfall into Wade Brook. The surface water run-off rate (see Table 5.2) will be restricted to below the maximum pre-development flow rate of 502.9 L/s, in line with the calculated existing outfall capacity.

5.21 The surface water drainage system is designed to contain all water below ground during storms up to and including the 1 in 100 year return period including a 20% allowance for climate change up to 2085.

5.22 Large building roof areas will be drained by a specialist designed siphonic roof drainage system, with primary and secondary roof gutter outlets, designed in accordance with BS 8490 and BS EN 12056-3 to provide Category 3 protection for an envelope design life of 25 years. Small buildings and roof areas will be drained by traditional gravity means, designed in accordance with BS EN 12056-3.

5.23 Surface water runoff from all roof areas is classed as clean runoff, and as such requires no formal treatment prior to discharge to Wade Brook.

5.24 Surface water drainage within the proposed AD tank and bioreactor areas will be contained within fully watertight bunds designed to BS EN 1992-3. General surface water runoff from these areas will be by collected within a perimeter drainage channels inside the perimeter bund walls. All general surface water runoff will be detained by default within the bunded tank areas, to avoid potential contaminated surface water being discharged to Wade Brook. Release of runoff collected from the bunded areas shall be controlled via a manually operated penstock valve. The penstock valve will default to the closed position, and only be opened to release collected runoff after formal inspection of the contents by a suitably qualified site operative.

5.25 In addition, a rainwater management regime will be implemented on site to ensure that standing water levels within the bunded areas are controlled to acceptable levels, and to ensure that all runoff released to the surface water drainage system is fully inspected for cleanliness prior to discharge. The maximum permissible rainwater levels within the bunded areas will be clearly identified by a maximum water level marker located adjacent to the penstock release valve.

5.26 The design of the surface water drainage network means that no additional surface water attenuation is required for the proposed development.

6 Conclusions

6.1 A site-specific Flood Risk Assessment (FRA) in accordance with the NPPF and Planning Practice Guidance has been undertaken for the proposed c.3.37 ha REnescience Northwich industrial use development at Lostock Works, off Griffiths Road, Northwich, within Cheshire West and Chester Council's administrative area.

6.2 EA and Northwich SFRA mapping shows that the site is entirely located in Flood Zone 1 and is consequently at 'low' risk of flooding.

6.3 There is no historical evidence of flooding at the site.

6.4 The site is at very low susceptibility to surface water flooding.

6.5 The susceptibility to groundwater flooding is low.

6.6 The risk of flooding from infrastructure failure is considered to be low.

6.7 The site is located with the outer extremities of an area that would be flooded if a reservoir was to fully fail. However, as the EA has characterised the risk of reservoir failure as low, the overall risk is assessed to be low.

6.8 The proposed development is appropriate for the present flood zone and the zone including climate change.

6.9 There is no requirement for either a Sequential or Exceptions Test.

6.10 The calculated runoff rate for the site post-development would be below the maximum existing discharge rate of 502.9 L/s, based on the existing pre-development site outfall capacity and runoff from the existing site impermeable areas. This is detailed in the Drainage Strategy at Appendix 8.A.

6.11 Surface water run-off for events up to and including the 1 in 100 year plus climate change will be retained within the new drainage system. Clean surface run-off from roofs and general site hardstanding will pass through an appropriate interceptor systems before discharging into Wade Brook via the existing outfall. Potentially-contaminated runoff from process areas around the AD tanks and bioreactors will be contained within watertight bunds prior to inspection for any contamination and subsequent controlled release.

6.12 This FRA and supporting documentation demonstrates that the proposed development is at low risk of flooding and appropriate to the location, meeting the requirements of the NPPF and Planning Practice Guidance.

References

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Ordnance Survey 1:10,000 Scale Electronic Data Mapping for assessment area.

UK Climate Projections science report: Climate change projections, Version 3, updated December 2010.

Appendix 9.A: Phase 1 Geo-Environmental Risk Assessment

RPS

DONG energy

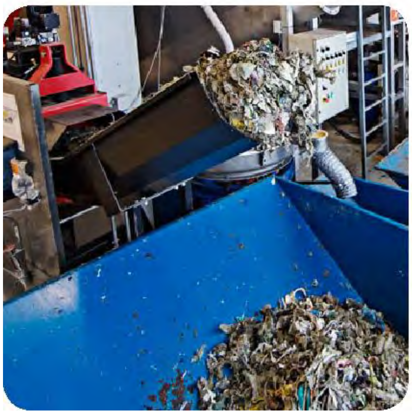
Appendix 9.A: Phase 1 Geo-Environmental Risk Assessment

REnescience Northwich

REnescience







Quality Management

Prepared by:	Emily Morgan	Environmental Consultant	E.E. Morgan	02/10/15
Reviewed & checked by:	Aaron Cousins	Principal Consultant		02/10/15
Authorised by:	Neil Bagley	Technical Director		02/10/15
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Revision History				
Rev	**Date**	**Status**	**Reason for revision**	**Additional comments**
0	08/15	Draft	-	-
1	28/08/15	Draft	Initial internal review	TAD
2	22/09/2015	Draft	Draft for client review	-
3	02/10/15	Final	Finalise	-

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Contents

Figures and Appendices

Figures

Annexes

1 Introduction

1.1 RPS Health, Safety & Environment (RPS) was commissioned by *DONG Energy* to undertake a Phase I Geo-Environmental Risk Assessment of the site of the proposed REnescience Northwich development, on land at Lostock Works, Northwich, CW9 7ZR. This report forms an appendix to Chapter 9: Geology and Ground Conditions of the Environmental Statement (ES) for the proposed development.

1.2 The proposed development is described in Chapter 2 of the ES. A site location plan is shown in Figure 2.A of the ES and the proposed development layout plan is shown in Figure 2.D.

1.3 The principal aim of the risk assessment was to determine whether there was the potential for contamination to be present, which could impact future site use/occupiers and the wider environment, significantly constrain the proposed use of the site or affect the development process. The site's suitability for its proposed use has been determined in accordance with the guidance outlined in the National Planning Policy Framework.

1.4 The environmental review comprised:

i) a site inspection;

ii) a review of the historical land uses to assess the potential for ground contamination;

iii) a review of the environmental setting to assess the sensitivity of the surrounding area to contamination/pollution;

iv) consultation with the regulatory authorities to establish whether any significant environmental issues have been recorded, which may impact on the site;

v) qualitative environmental risk assessment of the site's current and proposed use; and

vi) a review of existing relevant reports.

1.5 The environmental risk assessment presented within this report has been prepared having regard to the contaminant-pathway-receptor model introduced under Part 2A of the Environmental Protection Act 1990, and associated guidance on contaminated land published by the Department of Environment, Food and Rural Affairs (and its predecessors). The methodology is essentially a qualitative assessment, based on the identification and evaluation of potential 'contaminant-pathway-receptor contaminant linkages'. On the basis of this risk assessment, consideration has been given to the potential for the site to be designated as 'contaminated land' (under the local authority contaminated land inspection strategy) as defined in Part 2A of the Environmental Protection Act 1990. See Annex 9.A.4 for further details of the Environmental Protection Act 1990 and the risk assessment process.

1.6 The scope of the report is in general accordance with:

- British Standard requirements for the *'Investigation of potentially contaminated sites - Code of practice' (ref. BS10175:2011);*
- *'Model Procedures for the Management of Land Contamination' - Contaminated Land Report (CLR) 11;*
- *National Planning Policy Framework (2012); and*
- *DEFRA Environmental Protection Act 1990: Part 2A - Contaminated Land Statutory Guidance (2012).*

1.7 Where appropriate, consideration has also been given to the following:

- the potential for environmental liabilities to occur under other associated regimes, for example the Water Resources Act 1991 and the Environmental Damage Regulations 2009; and
- key constraints on site redevelopment (if proposed), including the impact of other environmental issues (e.g. asbestos, flooding, ecology);

1.8 Details of the limitations of this type of assessment are described in Annex 9.A.1.

2 Land Use

Site Inspection

2.1 This section of the report is based upon observations made during a site visit on the 19th May 2015. The site location is shown in Figure 2.A in the ES. Selected site photographs are presented as Annex 9.A.2.

The Site

Section	Description
Background information:	The proposed development site is located within the wider Lostock Works off the A530 Griffiths Road, near Northwich and Lostock Gralam, Cheshire. The national grid reference is 367920, 374201. The main site (excluding the shared access road within Lostock Works) is approximately 3.37 ha in size. The site is accessed from the south via an existing private road serving the cluster of chemical industry facilities on the Lostock Works site, from a junction with the A530 which is approximately 500 m to the south of the proposed development site boundary.
Site description:	The site is brownfield land that was previously used for chlorine manufacturing until 2001. At present, the site is cleared, with only some foundation slabs, hardstanding/roadways and a disused one-storey security hut outside the entrance gate remaining. The site is enclosed by a palisade fence. An electrical substation is located adjacent to the south east of the site.

The Surrounding Area

2.2 The proposed development site is set in a predominantly industrial area of existing and former chemical industry works operated currently by Tata Chemicals, INEOS and Solvay, and previously by ICI and Brunner Mond among other firms.

2.3 At the time of the site inspection, neighbouring land consisted of the following:

Direction	Description
North:	A railway line is close to the north of the site (separated from it by a private road and railway sidings) and a car retailer is approximately 50 m beyond. Residential housing is located approximately 225m to the north of the site.
East:	Solvay chemical works, Tata Chemicals chemical works, INEOS brine purification plant are located adjacent to the east.
South:	An extension of the Solvay Specialty Chemical factory is located approximately 45m to the south of the site with a railway siding approximately 10m beyond.
West:	Derelict land is located adjacent to the west of the site.

2.4 Wade Brook is located approximately 15m to the south of the site and flows in a westerly direction.

2.5 The closest residences are on the north side of the A559 Manchester Road, which is approximately 180 m to the north of the site, separated from it by rail sidings, a tree belt and area of open space, warehouses and commercial developments, and the A559. There are further residences and commercial land uses along Manchester Road and around the A559 and A530 junction to the east, between the site and Lostock Gralam.

2.6 To the south of the site is Griffiths Park, a former lime bed and landfill that has been redeveloped into a park/recreation area. This is separated from the site by a rail siding, conveyor structure and chemical recycling works, adjacent to the park's northern boundary.

Site History

Historical Map Review

2.7 The following review is based on past editions of readily available Ordnance Survey (OS) maps. These include scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,650 dated 1880 to 2015. Selected historical maps are presented as Figures 9.B to 9.J in Volume 4 of the ES.

On-Site Land Uses and Features	Position	Dates	
		From	To
Former Roman road running in a NW-SE direction in the eastern part of the site	E	1880	1910
Pond (possibly later infilled)	S	1880	1882
Lostock Bleach Works	Central/NE	1898	1938
Tank farm	Central/N	1898	1938
Pumping station	W	1898	1938
Earthworks	W and S	1898	1938
Mineral railway running from the SW to the central/northern areas of the site.	W and N	1898	1938
Site cleared (former Lostock Bleach Works not present)	Site	1954	1964
Circular earthworks (former chemical waste tip)*	W	1954	1977
Railway lines across site	All	1954	1976
Unspecified works**	Centre	1976	2013
Tanks	W and S	1993	2013
Electrical substation	NE	1993	2013

* Information reviewed by RPS (Figure 10 of Soil and Groundwater Contamination Assessment Stage 1 – Historical Review. ICI Group February 1996) indicates this is a former tip.
** It is understood that this was a chlorine plant with asbestos handling station until circa 2001 and that all buildings on the site have been cleared to slab level in 2013.

Surrounding Land Uses (250m radius)	Orientation	Distance	Dates	
			From	To
Cheshire Lines Railway	N	Adjacent	1882	Present
Mineral railway	W & S	Adjacent	1898	1910
Lostock Bleach Works (extension of onsite works)	E	Adjacent	1898	1938
Chemical works	E	Adjacent	1977	Present

Surrounding Land Uses (250m radius)	Orientation	Distance	Dates	
			From	To
Earthworks	S	Adjacent	1977	Present
Electrical substation	SE	Adjacent	1993	Present
Pumping station	W	75m	1910	1938
Refuse tip	N	80m	1963	1963
Brick & tile works	NW	100m	1898	1911
Mineral railway and sidings	S & E	100m	1910	Present
Gasometer	E	120m	1898	1910
Shafts	W	150m	1910	1938
Salt works and salt pans	SW	150m	1899	1938
Waste lime reservoirs (become infilled as spoil tips)	SE	200m	1910	2006
Earthworks	S	200m	1910	1938
Brick works	NW	200m	1882	1910
Brick works	N	200m	1882	1899
Chemical works	E	200m	1954	Present
Pipe lines	N	200m	1977	Present
Unspecified works	SE	225m	1977	1993
Lostock works	SE	250m	1899	1938

2.8 The site is located in a larger area that has been used for industry and chemical manufacture for nearly 200 years. The Trent and Mersey Canal was constructed in 1777, maps of the area from the early 19th century indicate likely marl or salt pits among rural land-uses, and the Manchester to Northwich railway was completed in 1863. Soda ash and bleaching powder production commenced in the Lostock Works area in the late 18th century and much of the surrounding land, particularly to the south west and east, has been used for lime waste disposal associated with soda ash manufacture. During the First World War it is understood that ammonium nitrate production for use in explosives was undertaken at the soda works. Later, during the Second World War, a range of products were made on the Lostock Works site at the request of the Ministry of Supply, including chlorine, mono chloro-benzene and carbon tetrachloride.

2.9 Within the boundary of the proposed development site itself, historic records show use for arable and pasture fields in 1845 as part of the Overstreet Farm estate, but by 1897 or earlier the site had become part of the Bowman Thompson & Co Ltd works, with buildings, drains, brine pipes and an acid main marked on a works plan from 1897 and OS map from 1898. The 1998 OS map records this as Lostock Bleach Works. In 1900 the Bowman Thompson & Co Ltd works were taken over by Brunner Mond, and by 1910 the development site lay within a heavily industrialised area. OS maps from the time of the second world war show no features on the Lostock Works site (presumably for security reasons), but by 1945 the proposed development site itself had been cleared of buildings.

2.10 There is potential for the presence of soil and groundwater contamination across the area associated with the industrial historical land uses. Historical use of the site, primarily as a bleach works and a chlorine works, has the potential to have contributed to soil and groundwater contamination. There is also the potential for contamination and the generation of ground gas associated with land raising and infilled ground on site and across the wider area. The former tip located in the western area of the site is of particular note with regard to the likelihood of made ground. There is potential for soil/groundwater contamination in relation to former substations that were present on site.

2.11 There is the potential for a wide range of contaminants associated with historical use of the site and surrounding area which may include, but are not limited to, metals, asbestos, inorganic ions including ammonium, sodium, chlorides, chlorates, nitrate sulphate, fluorides, acids and alkalis (sodium hypochlorite – bleach). Potential organic contaminants include PAHs, PCBs, phenols, petroleum hydrocarbons, chlorinated organic compounds, halogenated organics, solvents (non-chlorinated), dioxins and furans.

3 Environmental Setting, Consultations & Additional Information

Geology & Hydrogeology

3.1 Based on British Geological Survey mapping (1:50,000-scale) and the Environment Agency's (EA's) Groundwater Vulnerability mapping (1:100,000-scale), the stratigraphic sequence and aquifer classifications beneath the site are as follows:

Strata	Description & Approximate Thickness	Aquifer Classification	Environmental Sensitivity
Alluvium (along southern boundary)	Granular layers of silt, sand, peat and basal gravel. Unknown thickness in vicinity of the site.	Secondary A Aquifer	**Low/Moderate**
Till - Diamicton	Interbedded clay with sand and gravel-rich lenses. Up to 41m in thickness in the vicinity of the site.	Unproductive Strata	**Low**
Sidmouth Mudstone (sub-crops along eastern boundary only)	Mudstone with siltstone beds. Approximately 362m in the vicinity of the site.	Secondary B Aquifer	**Low/Moderate**
Northwich Halite Formation (formerly Lower Keuper Saliferous beds)	Interbedded Halite and Mudstone. Up to approximately 286m in the vicinity of the site	Unproductive Strata	**Low**
Bollin Mudstone (formerly Middle Keuper Marls)	Interbedded Mudstone and Siltstone. Up to approximately 360m in thickness in the vicinity of the site.	Secondary B Aquifer	**Low/Moderate**

3.2 Made Ground is likely to be present across the site as a result of historical land uses and associated earthworks including the presence of artificial embankments/ land raising, the former tip and past construction/demolition activities.

3.3 Van Elle (Appendix 9.B) encountered Made Ground to a maximum depth of 5m.bgl in the west of the site in the area indicated to have been a former tip.

3.4 BGS borehole log ref. SJ67SE68 located approximately 270m to the west of the site encountered a thickness of approximately 41m of superficial deposits described as Boulder Clay with sand lenses (Till – Diamicton). These were indicated to be further underlain by the Lower Keuper Saliferous beds (now the Northwich Halite Formation) encountered to 72m.bgl the maximum depth of the borehole.

3.5 BGS Mapping Sheet Chester 109 Solid Edition indicates the King Street Fault transects the east of the site in a north/south orientation. Sidmouth Mudstone sub-crops beneath the superficial deposits to the east of the fault, which are indicated to be dipping in an easterly direction at an orientation of 5°. The Northwich Halite Formation sub-crops beneath the remainder of the site to the western side of the fault and is indicated to be dipping in an easterly direction at an orientation of 4°. The Bollin Mudstone is indicated to be present at depth beneath the Northwich Halite Formation; it is not shown to sub-crop on the site.

3.6 The Alluvium deposits (present on the southern boundary) are classified as a Secondary A Aquifer. These formations are formed of permeable layers capable of supporting water supplies at a local scale, in some cases forming an important source of base flow to rivers. The Till – Diamicton and Northwich Halite Formation are classified as Unproductive Strata. These formations have a low permeability and have negligible significance for water supply or base flow. The Sidmouth Mudstone and Bollin Mudstone are Secondary B Aquifers. These formations are generally formed of lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering.

3.7 There is potential for shallow perched groundwater to be present in the Alluvium Deposits which may be in hydraulic continuity with Wade Brook. There is therefore the potential for lateral migration of contamination (if present) within the Alluvium to Wade Brook located 15m to the south of the site. The presence of low permeability Till – Diamicton across the majority of the site is likely to limit the vertical and lateral migration of shallow groundwater and associated contaminants thereby providing protection to the bedrock. Groundwater is expected to depth within the bedrock.

3.8 According to EA data, the site is not located in a groundwater Source Protection Zone.

3.9 According to the Groundwater Quality River Basin Management Plan published by the EA under the European Water Framework Directive (2000) the groundwater beneath the site has not been characterised.

Water

Surface Water

3.10 There are three watercourses within 1km of the site which are classified within a River Basin Management Plan published by the EA under the European Water Framework Directive (2000). A list of all nearby watercourses and water bodies is as follows:

Watercourse / body	Quality Classification	Approx. Distance and Direction from Site	Environmental Sensitivity
Wade Brook	Current Ecological Quality: 'Bad' Predicted Ecological Quality: 'Bad' Current Chemical Quality : N/A Predicted Chemical Quality: N/A	15m S	**Low to Moderate**
Wincham Brook	Current Ecological Quality: 'Good' Predicted Ecological Quality: 'Moderate' Current Chemical Quality : 'Fail' Predicted Chemical Quality: 'Fail'	334m N	**Moderate**
Trent & Mersey	Current Ecological Quality: 'Good'	401m E	

Watercourse / body	Quality Classification	Approx. Distance and Direction from Site	Environmental Sensitivity
Canal	Predicted Ecological Quality: 'Good' Current Chemical Quality : 'Fail' Predicted Chemical Quality: 'Fail'		**Moderate**

3.11 A surface water pond is indicated to be located approximately 70m to the northwest of the site, several drainage ditches are indicated to be located approximately 90m to the north of the site.

Fluvial / Tidal Flood Risk

3.12 According to the EA flood map, the site is not located within an indicative fluvial floodplain.

3.13 RPS has produced a separate flood risk, hydrology and drainage assessment for the site to support the planning application, in Chapter 8 of the ES and its appendices.

Surface Water Flood Risk

3.14 According to the EA surface water flood map, the site is within an area at low risk area of surface water flooding.

Water Abstractions

3.15 Information provided by the EA indicates that there is a record of one licensed groundwater abstraction and seven licensed surface water abstractions within 2km of the site. The details of these are as follows:

Licence Holder	Source	Use	Approx. Distance and Direction from Site
Brunner Mond (UK) Ltd	Surface	Cooling	351m E
ICI Limited Mond Division	Surface	Cooling and Manufacturing	357m E
Ineos Enterprises Limited	Surface	Chemicals: Process Water	382m NW
British Waterways Board	Canal	Not supplied	387m NE
Canal and River Trust	Surface	Other Industrial/Commercial/Public Services: General Use	394m NE
Daniel R Spibey	Groundwater	Amenity	1245m SW
Mr C R Garton	Surface	Other Industrial/Commercial/Public Services: Make-up or top up water	1578m SW
H. Platt & Sons Ltd	Surface	Agricultural Spray Irrigation	1745m SW

3.16 There are no records of potable water abstractions within 2km of the site. None of the surface water abstractions are situated directly downstream of the site.

Sensitive Sites / Designated Protected Areas

3.17 The site itself is not covered by any statutory nature conservation designations; however, the Plumley Lime Beds SSSI and the Witton Lime Beds SSSI are both located around 2.5 km from the site, to the east and northwest respectively.

Landfills and Waste Sites

3.18 Information provided by a number of sources (detailed below) shows that there are seven recorded licensed or known historical landfill sites and one waste treatment / transfer sites recorded within 500m of the site.

Source of Record	**Licence Details**	**Waste Type and Details**	**Approx. Distance and Direction from Site**
Landfill Sites			
Local Authority	Location: ICI Lostock, Near Rudheath	Not Supplied	80m S
British Geological Society	Name: No. 1 Tip. Location: Griffiths Park, Northwich	Not Supplied	84m S
Local Authority	Location: Manchester Road	Not Supplied	90m S
Environment Agency	Lapsed/cancelled	Alloprene, Asbestos, Calcium Oxide, Calcium Oxide, Calcium Sulphate, contaminated bags, Untreated waste, Ind. Non-Haz Inert Non Flam, Ind. Non-Haz Potentially Combustable, Sodium/Potassium Carbonates, Sulphides, Thiocyanate, Winnofil	182m S
Historical Landfill	Last input date: 22nd April 1944	Sludge	349m S
Local Authority	Location: Edward Street, Northwich	Non-Notifiable, Industrial/Commercial/Domestic Refuse	400m SW
Scrap Yards & Waste Transfer / Treatment Sites			
Environment Agency	Record superseded	Allopene, Hydrochloric Acid, Contaminated Water	346m S

3.19 The landfill sites within 400m of the site are understood to have largely been for the disposal of industrial waste and therefore the potential for the presence of large volumes of degradable materials and associated ground gas is limited.

Regulatory Consultation

3.20 An email received from Kim Everson of the EA dated 1st July 2015 indicated the presence of three Local Authority landfills within 250m of the site. Details provided are as follows:

HLD reference	License Holder	Eastings /Northings	Waste Deposited:	Approx. Distance and Direction from Site
EAHLD17106	ICI Chemicals and Polymers Limited	367900 373800	Not shown	80m S
EAHLD15612	ICI Chemicals and Polymers Limited	367800 373700	Lime and Ash Wastes, Winnofil, Alloprene, Brine Plant Scale, Distiller Scale, Fly Ash, Oil Filed Boiler Dust, Inert Non-Hazardous Non Flammable Solid industrial waste, Uncontaminated Soil.	160m S
EAHLD17109	ICI Chemicals and Polymers Limited	367700 373600	Lime and ash wastes, alloprene, brine plant scale, distiller scale, fly ash, oil fired boiler dust, inert non-hazardous non-flammable solid industrial waste, Sodium bicarbonate contaminated with 1-2% free ammonia and canteen waste	240m S

3.21 A further five landfills were indicated to be present between 500m to 1km from the site.

3.22 The EA did not hold any records with respect to 'contaminated land' under the provisions of Part IIA of the Environmental Protection Act 1990.

Pollution Incidents

3.23 EA data indicates that there are records of twenty five records of pollution incidents to controlled waters within 500m of the site. These are outlined in the following table:

Location/Address	Date	Severity of Incident and Type	Approx. Distance and Direction from Site
Brunner Mond, Lostock Works	04/08/1999	Minor Inorganic Chemicals: Sodium Chloride	85m N
Not Supplied	15/09/1994	Minor Oils	121m SW
Wade Brook, Brunner Mond	10/03/1991	Minor Oils	142m E
ICI Lostock	22/01/1998	Minor Chemicals	162m E
Not supplied	14/04/1996	Minor Alkali Chemicals	164m E
ICI Chemical & Polymers	01/09/1997	Minor Oils	183m SW
Lostock Gralam	15/08/1997	Minor	207m N

Location/Address	Date	Severity of Incident and Type	Approx. Distance and Direction from Site
		Chemicals	
Not supplied	27/02/1991	Significant Oils	211m NE
Not Supplied	04/08/1994	Significant Oils	227m W
Cheshire	01/10/1996	Minor Chemicals	255m E
Cheshire	03/07/1996	Minor Alkali Chemicals	296m NE
Brunner Mond, Lostock	11/02/1997	Minor Oils	300m NE
Cheshire	10/02/1996	Chemicals Minor	336m N
Not Supplied	23/08/1994	Chemicals Minor	341m E
Brunner Mond, Lostock Site	23/08/1998	Chemicals Minor	356m E
Lostock Works, Wade Brook	04/08/1999	Inorganic Chemicals Minor	357m SW
Lostock, Northwich	11/10/1999	Inorganic Chemicals Minor	390m NE
ICI Lostock, Griffiths Road	03/11/1998	Chemicals Minor	402m SE
Trent & Mersey Canal, Griffiths Road	10/07/1998	Miscellaneous Minor	449m E
ICI Lostock	18/12/1997	Chemicals Minor	450m E
Not Supplied	23/04/1991	Industrial Effluent Minor	466m SW
Marbury lane, Northwich	24/06/1999	Inert: Other Minor	469m SW
ICI Lostock - Brine Purification Plant	25/03/1998	Chemicals Minor	477m E
Griffiths Road, Lostock	11/02/1997	Chemicals Minor	479m E
River Lostock, Northwich	31/03/1998	Surcharged Sewage Minor	491m NE

3.24 None of the pollution incidents recorded are indicated to be within the site boundary. No records of prosecutions relating to controlled waters are recorded within 2km of the site.

Authorised Processes

Environmental Permits

3.25 EA and Local Authority data indicates that there are three processes regulated by an Environmental Permit (under the Environmental Permitting Regulations 2010 as amended) within 500m of the site.

Licence Holder	Permitted Activity	Approx. Distance and Direction from Site
Brunner Mond*	Inorganic chemical processes within the chemical industry	127m E
Brunner Mond	Cement/lime manufacture and associated processes within the mineral industry	133m E
Solvay Speciality Chemicals	Inorganic chemical processes within the chemical industry	235m E

* Envirocheck Report dated May 2015 (presented as Annex C) indicates this permit was held by Brunner Mond for the record dated 2000. It is likely that the permit for this site has now been transferred to Tata Chemicals who currently occupy the site.

3.26 None of the permits are indicated to relate to the site; they are all indicated to be related to the Solvay Speciality Chemicals site currently located adjacent to the east of the site.

COMAH Sites

3.27 There are two records of operations under the Control of Major Accident Hazards (COMAH) within 500m of the site. These are listed below:

- Imperial Chemical Industries Ltd, Northwich, Cheshire, CW8 4DJ; 292m east of site. Type: Lower Tier. Status: Record ceased to be supplied under COMAH regulations.
- INEOS Enterprises Ltd, Ethylene Plant Lostock, Lostock Site, Griffith Road, Northwich, Cheshire, CW9 7NY; 292m E of site. Type: Lower Tier. Status: Active (Envirocheck 2015 report indicates this is active, however it is understood by RPS this may now have lapsed as the plant may have been demolished).

3.28 It is understood by RPS that the Chlorine Work present on the site was a registered COMAH site which was removed upon its demolition in 2013.

Explosive Sites

3.29 There are no records of registered explosive sites within 500m of the site.

Radon

3.30 British Geological Survey data indicates that the site is situated in a lower probability radon area, as less than <1% of properties are above the action level.

Coal Authority

3.31 According to the Coal Authority Interactive mapping system, the site is not located in a Development High Risk Area or a Coal Mining Reporting Area. The Coal Mining Reporting Area is the known extent of coal mining activity and is used to determine whether a coal mining report is required for property transactions and the conveyance process. Therefore the potential for subsidence associated with coal mining is considered to be low.

3.32 A Coal Authority Ground Stability Report dated April 2009 indicates that the site is located within the Brine Compensation Area but is not within any consultation area prescribed by the Cheshire Brine Pumping Act 1950. It states that a notice of damage has not been filed in respect of the property and there has been no commutation of claims in connection herewith.

3.33 According to BGS data the nearest brine cavity is located approximately 650m west of the site. There are a further five brine cavities within 1km of the site.

3.34 Whilst the site is not indicated to be located above an area of past or current Halite mining, much of the previous extraction was undertaken prior to accurate records being kept. In addition a number of brine shafts and wells are located in the surrounding area. As a result there is potential for unrecorded mine workings to be encountered at the site. As the site has been developed previously without any obvious effects of mining or brining related subsidence it is considered that the risk is reduced.

Other Published Land Stability Data

3.35 British Geological Survey Ground Stability Hazard ratings for the site are summarised as follows:

Hazard	**Hazard Potential**
Collapsible ground	Very low
Compressible ground	Moderate
Ground dissolution	High
Landslide	Very low
Running sand	Low
Shrinking or swelling clay	Moderate

Existing Reports / Correspondence

3.36 RPS has been provided with the reports detailed below. RPS cannot vouch for the accuracy of the information provided within the reports.

Soil and Groundwater Contamination Assessment Stage 1 – Historical Review. ICI Group (February 1996).

N.B. The report covers the proposed development site and land that is adjacent to the east and south east which is currently the operational Solvay Speciality Chemicals site. In addition, the report makes specific reference to areas of land that were occupied by the Brine Purification Plant, Pearns Pumphouse, and Ethylene Conditioning Area. The plan showing the location of these areas has not been provided but from the text descriptions it is understood that these features were not located on or immediately adjacent to the development site.

Report Summary:

3.37 The purpose of the report was to produce a historical review of the Lostock Site and identify areas of contamination in order to satisfy the requirements of the ICI Group SHE policies.

3.38 Salient information relevant to the Geo-Environmental assessment are summarised in the following sections.

<u>Site Features</u>

3.39 Please note that Figure 2 of this historical review, which shows the layout of the plant at the time of reporting, has not been provided. It is therefore difficult to pinpoint the exact location of site features.

3.40 The report indicates that Lostock Works was developed during the 1890s with a Bleach Works situated on the site of the (former) Chlorine Plant. The Bleach Works was demolished in 1935 and the Chlorine Plant was commissioned in 1978.

3.41 The layout of the Chlorine Plant was summarised as follows:

- Central area: Main process area including the Chlorine Cellroom, workshops, office and control room.
- South: Chlorine and brine treatment. Liquid chlorine storage
- Southeast (off site): Electrical apparatus (assumed location of existing substation)
- West: Cooling towers
- East: Caustic soda and sodium hypochlorite storage.
- Northeast: Pilot Plant, Hydrogen Cooling and Blowing Plant and small substation.

3.42 The report states that 'the remainder of the site was covered by access road, hardstanding and gravelled areas with railway line to the north, west and south boundaries.'

<u>Drainage</u>

3.43 The report states that 'Surface water from buildings, roads and hardstanding are collected and discharged directly to Wade Brook'. 'Foul sewage is discharged into a separate system which flows via a septic tank into the Intermediate Collection Sump where it is pumped to the public sewer near James St.' 'Process effluents discharge into the miscellaneous effluents drainage system which drains to a sump and pumping tank adjacent to Wade Brook where it is mixed with asbestos slurry from the Cellroom Workshop and, during emergencies, Winnofoil Plant Effluent. The mixed effluent is then pumped to No 9 Limebed at Griffiths Road.' (Situated approximately 180m south of the site) Other process effluent is indicated to drain to a pumping pit situated adjacent to Brine Treatment (southern area of the site) before disposal to the Limebeds a Griffiths Road.

Geology

3.44 Borehole data was reviewed as part of the report and gave insight into ground conditions. The report states that 'Made Ground was recorded to a maximum depth of 0.5m for the Brine Plant and a maximum of 3.4m at the chlorine plant. The Made Ground comprised of ashes, cinders, limestone, sand, clay and coke (the latter was found under the chlorine plant).' Boulder Clay was recorded beneath the site to a maximum depth of 12.5m.bgl. The report stated that 'perched groundwater was encountered within the boulder clay between 2.6m.bgl to 3.9m.bgl.'

3.45 Bedrock was not encountered within the boreholes but was understood in the report to be marls and siltstones/mudstones. The base of the mudstone was not recorded on any of the boreholes but it was understood to be approximately 500m in thickness in the vicinity of the site. The Sherwood Sandstone Formation is indicated to be at depth beneath the Mudstone.

3.46 The report states that 'there are piled foundation to a number of structures including Chlorine Absorption, Cellroom, Rectifier Bay and Liquid Chlorine Rail Loading.' And goes on to state that 'In general all piles are some 5 to 10m long and found on Boulder Clay.'

Chlorine Plant Process Operations

3.47 The report states that the *'Lostock Chlorine Plant was commissioned in 1977 with a peak output of 90,000te/year of chlorine from 100 diaphragm cells'*. The plant was also reported to produce sodium hypochlorite (bleach) and caustic soda (sodium hydroxide). '*Purified brine was filtered to remove insoluble calcium and magnesium and acidified with hydrochloric acid.' In the Cellroom brine is electrolysed into chlorine, hydrogen and caustic soda.' Chlorine treatment takes the form of cooling, filtration, drying with sulphuric acid before passing through a UV reactor to decompose any nitrogen trichloride. The chlorine is then compressed and liquefied before being pumped to liquid chlorine stock tanks.' 'Any chlorine that is not liquefied together with chlorine containing vents is absorbed in caustic soda to produce sodium hypochlorite.' Asbestos slurry is intermittently discharged into the miscellaneous effluent stream which is directed to bunded collection tanks adjacent to Wade Brook.'*

3.48 The report provides a table of raw materials that were used in the chlorine plant:

Raw Material	Source/Stocking Facility	Usage (Max)
Purified brine (25.5% sodium chloride with excess sodium carbonate and sodium hydroxide to pH 10)	By pipeline from Lostock Brine Purification plant. Bunded storage in 2 head tanks with capacity 142 te.	2500m^3 day
Hydrochloric acid 36%	By road tanker to bunded stock tanks of 30te capacity	5 te/day
Sulphuric acid (ROV-96%)	By road tank to bunded stock tanks of 64 te capacity	4 te/day
Asbestos	Dry asbestos delivered in bags 2 te storage	12 te/year
Nickel sulphate	From offsite supplier in drums 5 te storage	13 te/year
Ferric chloride	From offsite supplier in drums 1 te storage	4 te/year
KLEA 134a Refrigerant	Within liquefier tubes	4 te/year
Arbocel (insoluble cellulose based filter aid)	Bagged powder from offsite supplier 1 te of stock	7 te/year
Nalco Azlite 7536 (Corrosion inhibitor used in cooling water treatment)	Solution contained in 500 litre IBC in bunded area	1.5 te/year
Nalco 8301 Plus Dispersant used in cooling water	Solution contained in 500 litre IBC in bunded area	600kg/year
Chlorine (liquid)	3 stock tanks each with 400 te storage capacity. Stocking area bunded. Road loading facility.	90,000 te/year
Caustic soda (25% NaOH)	2 stock tanks. Total capacity 120 te. Export by road tanker. Not bunded.	150 te/day
Diaphragm cell liquor (DCL – solution of 10% NaOH and 15% NaCl)	Pumped directly by pipeline to Brine Purification Plant. Intermediate storage is in a segregated pit area.	30 te/day
Sodium hypochlorite (31% NaOCl)	3 stock tanks capacity 180 te. Exported by road tanker. Not bunded.	30 te/day
Sulphuric acid (BOV-77%)	2 bunded stock tanks. Capacity 64 te. Exported by road tanker.	4.5 te/day

3.49 The waste disposed at the chlorine plant listed in the report is:

Waste	Disposal Route	Quantity (Max)
Hydrogen	Via vent stack to atmosphere direct from cellroom.	2 te/day
KLEA 134a	Recycled or incinerated offsite	4 te/year
Acid/alkali effluent (Depleted brine from membrane cells, cooling tower treatment chemicals, dilute	Pumped direct by pipeline to Brunner Mond limebeds for neutralisation, settling and discharge via licensed outfall.	160 m^3/hr

hydrochloric acid drainings)	(Offsite)	
Miscellaneous effluent (Non acidic plant draining including asbestos slurry, hypo destruction catalysts, filter aid and ion exchange waste)	Drained to collection tanks then pumped to Brunner Mond limebeds for neutralisation, settling and discharge via licensed outfall. (Offsite)	$75m^3/hr$

Historical Information

3.50 The report states that development of the site which housed the chlorine plant was first indicated on the ordnance survey plan of 1898 when a bleach works is indicated. A brine pumping station and salt evaporation plant is shown to the east and south east of the bleach complex. The 1949 plan no longer shows this development which is confirmed by a 1951 aerial photograph of the site. (It is believed that production ceased in the mid-1930s.) This indicated only a mound of waste material presumably created from the earlier operations. A survey of the site prior to the construction of the existing chlorine plant charts the remains of the waste mound and a coke stocking area which was removed before construction commenced. Chemicals involved during the Bleach Plant operations considering the technology at the time were probably as follows:

- salt cake (sodium sulphate);
- brine;
- sulphuric acid;
- hydrochloric acid;
- bleaching power (calcium hypochlorite);
- calcium hydroxide;
- magnesium dioxide; and
- coke and coal.

3.51 Some or all of these materials can be considered to form part of the waste mound and hence may be present in the former tip (as indicated by historic maps) upon which the former chlorine plant was sited.

Potential Contamination Sources:

3.52 The report states 'Because of the need to segregate sodium hypochlorite and acid containing streams to avoid free chlorine formation, the plant has a well contained effluent arrangement system.' It goes on to state 'the following sources are compiled in respect of the potential for the system to be bypassed or degraded:

a) *Overflows from the sodium hypochlorite stock tank vents which bypass the normal overflow drainage system into the miscellaneous effluent stream.*

b) *Overflows from the caustic soda liquor stock tanks. These are not bunded but there is no knowledge of contamination being caused in this way.*

c) *Defects in the acid/alkali and miscellaneous effluent collection systems.*

3.53 The report states 'there are no known regulatory concerns about persistent contamination from ICI activities on the site'.

3.54 The risk assessment section of the report identifies the following additional potential contamination sources in relation to the development area:

- *Defects in the drainage system particular in Cellroom D row trench allowed alkaline material to enter the ground during 1993. Limit monitoring indicates a localised impact.*
- *Acid alkali effluent drainage in pilot Cellroom area (Land subsidence was apparent in this area which was backfilled and has not reoccurred). The source was not identified but was likely due to the poor drainage system in the area).*
- *Oil drum storage outside workshop area. Evidence of local contamination affecting surface water drain.*
- *Waste material form historical operations associated with former Bleach Plant. Was in site for long time (assumed tipping). No direct evidence of problems.*

Site Inspection

3.55 An account of a site inspection undertaken during 1996 is summarised as follows:

Location	Observation
Chlorine Cellroom:	*All operations well contained. Drainage to channels and sumps which discharge via pipes to chambers outside cellroom. Cracks present in isolated areas of the concrete floor. Records of drainage problems, such as leaks and overflows from sumps outside cell room.*
Chlorine Treatment/Brine Treatment Areas:	*Open areas, but bunded with rainfall and spillages directed to sumps. Some areas of concrete in poor condition (cracked and corroded). Records of caustic contamination in the ground in isolated areas.*
Hypo and caustic storage tanks (to the east of the Cellroom):	*Storage tanks not bunded, only pumps and overflows are in bunds. Recent leak from tank resulted in hypo discharge to the ground.*
Transformers:	*Rectifiers/Transformers (to the east of the Cellroom) – equipment is bunded, but gravel bases are not sealed. Do not have to remove rainwater.* *Manweb Transformers (to south east of plant) – all are well bunded but no further information was available.*
Chlorine Storage tanks /Chlorine tanker loading /Chlorine rail loading	*Very high level of containment, including bunding, due to high hazard.*
Workshop:	*Generally neat and tidy. External oil drum storage shows evidence of overflow from drip trays into the surface water drain.*
Cooling towers:	*New water treatment chemicals stored in bunded areas. Old storage still in place, but no longer used – bund base cracked and corroded. Sone*

Location	Observation
	evidence of water overflow or spray contamination from the towers.
Waste/Equipment storage area (to north of Cellroom):	*Generally untidy. Waste rectifier oil stored in drums adjacent to road and surface water gully.*
Hydrogen Treatment Area/ Pilot Plant:	*Corrosion to concrete slabs and bunded in a number of areas. Voids created in ground in two locations as a result of caustic leaks.*
Miscellaneous effluent tanks and pumps:	*Located at low level adjacent to Wade Brook. Tanks and pumps located in bunded area. Bund walls high enough to prevent leakage and overflow from tanks and also to prevent inward flooding from the Brook (during flood conditions). Some pump leakage collected in channel. At time of inspection a temporary pump was pumping leakage from channel into effluent tank. No evidence of leakage outside bund walls.*

Conclusions and General Recommendations:

3.56 With regard to the Chlorine Plant, the report concludes that 'Generally operations are well contained with minor soil and ground contamination from spills and leaks of hypochlorite, caustic soda and acids leading to probably local effects.' It states 'Waste from historical operations are covered at present by buildings and slabs and hence personnel are protected.'

Phase II Factual Report Lostock Works Cheshire. Van Elle (2009) Ref: G900000 (Appendix 9.B)

3.57 Van Elle was commissioned by Viridor Ltd to undertake a Phase II Factual Site Investigation at the site. The objective of the Phase II investigation was to provide information regarding ground conditions in order to facilitate the production of an interpretative geotechnical and environmental assessment to assist in the redevelopment of the site for an alternative land use. The site investigation was undertaken between 30th March and 24th April 2009. RPS has undertaken an assessment of the geotechnical data gained as part of this assessment.

3.58 The following environmental soil testing was undertaken at the site:

- 21 soil samples were analysed for metals, pH, FOC and speciated PAH;
- 22 soil samples were analysed for metals, asbestos screen, TPH-CWG, SVOC suite and TICs (Tentatively Identified Compounds), pH, VOC suite and TICs, FOC, and speciated PAH;
- 2 leachate samples analysed for metals, pH, speciated PAH;
- 14 leachate samples analysed for metals, TPH-CWG, pH, SVOC suite and TICs, VOC suite and TICs, and speciated PAH.

3.59 It has not been possible to obtain a copy of the Interpretative Report.

Soil Chemical Data:

3.60 RPS has compared the available laboratory results of the soil against the LQM/CIEH S4ULs (Suitable for Use) for Human Health Risk Assessment with a commercial end use and the leachate results against the Environmental Quality Standards (EQS) for freshwater. Several exceedances have been noted for both the soil samples and the leachate samples, which are summarised below.

3.61 Arsenic was identified at elevated concentrations in soil samples collected in the northern half of the site and concentrations up to 8700 mg/kg.

3.62 A range of polyaromatic hydrocarbons were identified at several localised locations across the site, notably in samples collected from BH19 (0.5m.bgl) in the eastern area of the site and BH5 (2.1m.bgl) in the central area of the site.

3.63 Trichloromethane was identified at a concentration of 240 µg/kg in the sample collected from TP4 at 0.4m.bgl. This sample also contained detectable concentrations of a range of toluene and benzene related compounds.

3.64 Notable exceedances are summarised in the following table.

Determinand	**Screening Value (mg/kg)**	**Concentration (mg/kg)**	**Location**
Arsenic	640	8700 7800 4500 2300 870	WS1 1.2m TP4 0.4m TP1 0.4m BH3 0.3m WS6 0.8m
Trichloromethane	99	240	TP4 0.4m
Benzo(a)anthracene	170	790	BH19 0.5m
Benzo(a)pyrene	35	660	BH19 0.5m
Benzo(b)fluoranthene	44	750 46	BH19 0.5m BH5 2.1m
Chrysene	350	940	BH19 0.5m
Dibenzo(ah)anthracene	3.5	170 5.6 5.5	BH19 0.5m WS8 0.6m BH5 2.1m
Naphthalene	190	270	BH19 0.5m

3.65 A number of organic compounds for which S4ULs have not been derived were identified at concentrations above the laboratory limit of detection at isolated locations on the site including carbazole, dibenzofuran, 124 trimethylbenzene and trichloromethane.

<u>Leachate Chemical Data</u>

3.66 The leachate chemical data provides an indication of the concentration of contamination that may potentially be leached from soils and therefore may impact groundwater. The data is summarised below.

- The leachable concentration of arsenic was above the EQS for freshwater in samples collected from TP1_0.4m.bgl, TP3_0.5m.bgl, TP4_0.4m.bgl, TP12_1.6m.bgl, BH5_2.1m.bgl, WS2_0.7m.bgl, and WS9_0.3m.bgl.

- BH19_0.5m.bgl contained elevated leachable concentrations of PAHs including Fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-c,d)pyrene and Dibenzo(g,h,i)anthracene.
- Leachable concentrations of Naphthalene and Fluoranthene exceeded the relevant EQS value in TP4_0.4m.bgl.
- The Leachable concentrations of PAHs including Fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-c,d)pyrene and Dibenzo(g,h,i)anthracene exceeded the relevant EQS values in TP3_0.5m.bgl.

Groundwater Chemical Data

3.67 Samples were collected from groundwater monitoring wells on three occasions and from two locations along Wade Brook between May 2009 and August 2009. The samples were analysed for a wide range of inorganic and organic determinands including metals, inorganic ions, petroleum hydrocarbons, polyaromatic hydrocarbons, volatile organic compounds and semi volatile organic compounds.

3.68 RPS has compared the available analytical data to Environmental Quality Standards protective of freshwater courses. Inorganic determinands that were widely elevated in groundwater include sulphate, arsenic, cadmium, mercury, nickel. Copper, lead and zinc were elevated in several instances during the monitoring programme.

3.69 Petroleum hydrocarbon analysis (TPHCWG) identified detectable concentrations in groundwater samples collected from BH6 on one occasion and BH19 on two occasions. The total petroleum hydrocarbon concentration identified in BH6 was 1600 µg/l (May 2009) which was all in the aliphatic range of C21-C35. The total petroleum hydrocarbon concentrations identified in BH19 were 67 µg/l (May 2009) and 320 µg/l (August 2009). The hydrocarbons were aromatic in the range of C8 to C35. The sample collected from BH19 during August 2009 also contained a detectable concentration polyaromatic hydrocarbons with a concentration of 97.7 µg/l which was primarily Naphthalene at a concentration of 59 µg/l. No other notable concentrations of TPH or PAH were identified in groundwater.

3.70 VOC analysis identified sporadic trace concentrations of several compounds in groundwater samples but no consistently high or widespread contamination was identified by this analysis. Notable occurrences include chloroethane (up to 7.7 µg/l), 1,1-Dichloroethane (up to 270 µg/l) and 1,1,1-Trichloroethane (up to 460 µg/l) which were consistently identified in groundwater samples collected from BH10 and BH11a.

3.71 SVOC analysis identified detectable concentrations of carbazole and dibenzofuran in several samples.

Surface Water Chemical Data

3.72 RPS has not been able to confirm exactly where the two sampling points on Wade Brook were located.

3.73 Inorganic determinands that were elevated in samples of surface water include arsenic, cadmium, chromium, copper, lead, mercury, nickel. The concentrations were highly variable.

3.74 TPHCWG analysis and PAH analysis did not identify elevated concentrations in surface water samples.

3.75 Trichloromethane was consistently identified in surface water samples at concentrations up to 24 µg/l. Bromodichloromethane was consistently identified in surface water samples up to a concentration of 9.6 µg/l.

Gas Monitoring Data

3.76 Gas monitoring was undertaken on eleven occasions from May 2009 until August 2009 in boreholes BH1 to BH20.

3.77 The only wells with detectable concentrations of methane were BH15 and BH19. The concentrations identified in these wells were typically less than 0.3 %. The maximum recorded concentration of methane was reported to be 0.4%.

3.78 Carbon dioxide was identified at a maximum concentration of 20.1% (BH15 on one occasion), however concentrations in this well were typically less than 10%. Concentrations in other wells were typically less than 5%.

3.79 No positive flow rates were reported.

3.80 Based on the available data, gas protection measures in the form of passively vented sub floor voids beneath concrete floor slabs with integrated gas proof membranes are likely to be required for future structures to prevent the ingress of ground gas.

Site Drawings. Wardell Armstrong (2009) Ref: LE10104/SI/002A and LE10104/SI/003A

(It has not been possible to obtain a copy of the Wardell Armstrong (2009) interpretive report).

3.81 A review of site drawing LE10104/SI/002A created by Wardell Armstrong indicates the presence of a former asbestos handling works to the west of the centre of the site; drawing LE10104/SI/003A indicates that the groundwater flow at the site is in a south easterly direction towards Wade brook.

Non-Residential Coal Authority Mining Report. The Coal Authority (2015) Ref: 61000630784001

3.82 The report was based on and limited to the records held by the Coal Authority, and the Cheshire Brine Subsidence Compensation Board's records.

3.83 According to the report the site is not located within an area that may potential be affected by past, present or future mine workings. There are no records of mine entries on or within 20m of the site and the Coal Authority have received no subsidence claims for the site.

3.84 The site is located within the Cheshire Brine Subsidence Compensation District but is not within any consultation area prescribed by the board under section 38(1) of the Cheshire Brine Pumping (Compensation for Subsidence) Act 1952. A notice of damage has not been filed in respect of the property and there have been no communication of claims in connection therewith.

4 Environmental Risk Assessment

Background

4.1 This Risk Assessment consists of an appraisal of the *contaminant-pathway-receptor* ‘contaminant linkages' which is central to the approach used to determine the existence of ‘contaminated land' according to the definition set out under Part 2A of the Environmental Protection Act 1990. For a risk to exist (under Part 2A), all three of the following components must be present to facilitate a potential 'pollutant linkage'.

- ***Contaminant*** *referring to the source of contamination (hazard).*
- ***Pathway*** *for the contaminant to move/migrate to receptor(s).*
- ***Receptor*** *(target) that could be affected by the contaminant(s).*

4.2 Receptors include human beings, other living organisms, crops, controlled waters and buildings / structures. The assessment includes a qualitative review for the ‘significant possibility of significant harm’ (SPOSH). The mere presence of a contaminant source / hazard at a site does not mean that there will necessarily be attendant risks or that the site will be designated as 'contaminated land'. For further details see Annex 9.A.4.

4.3 In addition, the assessment includes consideration of potential geo-environmental risks which may pose constraints to the site’s redevelopment into the proposed REnescience Northwich facility. The risk assessment also considers information on the site condition prior to redevelopment which will provide accurate baseline conditions on the site to aid in the environmental permit application.

4.4 (N.B It should be noted that prior to the facility becoming operational additional information including a Phase II Site Investigation will be gathered to inform the baseline report.)

4.5 The risk ratings are defined as follows:

- ***Low risk –*** *it is considered unlikely that issues within the category will give rise to significant harm or a liability/cost for the owner of the site.*
- ***Moderate risk –*** *it is possible, but not certain, that issues within the category will give rise to significant harm or a liability/cost for the owner of the site.*
- ***High risk –*** *there is a high potential that issues within the category will give rise to significant harm or a liability/cost for the owner of the site.*

Conceptual Model

Potential Sources	Considered Pathways	Potential Receptors
On Site Bleach works and associated infrastructure. (c.1898 – c.1938) Chlorine works and associated infrastructure. (c.1977 – c.2014) Sub stations Made Ground – artificial embankments/ former tip (landfill) Off Site Salt works (from c.1899) Chemical works (c.1977 – present) Associated infrastructure including substations and railways (pre-1882 – present) Landfills including waste lime reservoirs (80m – 240m south of the site – on opposite side of Wade Brook); Brick & tile works (100m NE) Gasometer (120m E) *Potential contaminants include a wide range of inorganic an organic elements/compounds including:* Inorganic ions, acids and alkalis (sodium hypochlorite – bleach), PAHs, PCBs, phenols, petroleum hydrocarbons, chlorinated organic compounds, halogenated organics, solvents (non-chlorinated), dioxins and furans.	**Human Health** Dermal contact Inhalation of soil dust Ingestion of soil dust Inhalation soil vapours Inhalation of ground gas	Future site users (future employees and visitors) Construction/maintenance personnel (during redevelopment and post completion) Off-site receptors (residential houses located 225m north of the site. Employees and visitors to adjacent sites)
	Controlled Waters Leaching of mobile contaminants from Made Ground. Vertical and lateral migration of mobile contaminants in permeable strata. Migration along subsurface structures including former drainage system.	Shallow groundwater (Made Ground) Superficial Aquifer (Alluvium) Bedrock Aquifer - Sidmouth Mudstone (Unproductive Strata) and Northwich Halite Formation (Secondary B Aquifer) Wade Brook 15m to the south
	Infrastructure Direct contact with fill or contaminated soils Migration of ground gas Permeation of plastic water pipes	Future building structures Underground utility services Off-site structures

Environmental Risk Assessment

Potential Sources
The site is currently derelict and all buildings having been demolished to slab level; there are no primary point sources of contamination associated with the site currently. There is, however, the potential for secondary soil-based contamination sources associated with historical use of the site. There is potential for the sites previous use as bleach works (c.1898 – c. 1938) to have caused soil/groundwater contamination. Potential contaminants associated with a bleach works may include: organometallics, PAHs, cresols, phenols, chlorinated organic compounds, halogenated organics, solvents (non-chlorinated), dioxins, surfactants, metals and metalloids, other inorganic ions including chlorides, chlorates, fluorides and ammonium bisulphate, and acids including hydrochloric, nitric, phosphoric and sulphuric and alkalis including sodium hydroxide. Other potential contaminants include asbestos, PCBs and fuels (e.g. coke). There is potential for the sites previous use as a chlorine works (c. 1977 – c. 2001) to have caused soil/groundwater contamination. Contaminants generally associated with this use and contaminants identified as being used at the site in the ICI report (1996) are as follows: chlorides, sulphates, sulphides, metals, alkalis (including calcium oxide, sodium hydroxide and sodium carbonate), hydrochloric and sulphuric acid, hydrocarbons, PAHs, chlorinated solvents, inorganics, PCBs and asbestos. There is potential for the generation of soil/groundwater contamination and ground gas associated with the former tip indicated in the ICI (1996) report and any other Made Ground deposits at the site associated with earthworks. Made Ground could contain a wide range of inorganic and organic contaminants and may have the potential to generate ground gas. There is potential for the generation of soil/groundwater contamination associated with the adjacent chemical works (c. 1977 – present), salt works (c.1899 – c.1938), and localised contamination associated with the railway lines shown to have been adjacent to the site in several directions. Contaminants associated with the chemical works are similar to those associated with the chlorine works. Contaminants associated with the salt works and railway land include: PAHs, hydrocarbons, metals, and asbestos. Three landfills are indicated to have been present 80 – 90m to the south of the site. There is potential for the generation of ground gas associated with these landfills. The site investigation undertaken by Van Elle (2009) identified elevated concentrations of metals in soils across the site. It also identified localised contamination in the form of PAHs, VOCs (trichloromethane and trimethylbenzene). Groundwater samples contained elevated concentrations of a range of metals (including arsenic, cadmium, copper, lead, nickel, mercury and zinc) and localised elevated concentrations of hydrocarbons, PAHs and VOCs (chloroethane, dichloroethane and trichloroethane). Carbazole and dibenzofuran was identified at sporadic locations in soil and groundwater. Surface water samples collected from Wade Brook were found to contain elevated concentrations of metals and VOCs (trichloromethane and bromochloromethane). Ground gas monitoring identified methane and carbon dioxide in several boreholes across the site.

Potential Pathways
There is the potential for the leaching of mobile contaminants present in made ground and shallow soils to shallow groundwater associated with the made ground and Alluvium. There is the potential for the lateral migration of such contamination in shallow groundwater to bodies of surface water in the vicinity of the site including Wade Brook. The low permeability Glacial Till which underlies the entire site is typically of low permeability and is likely to limit the migration of shallow groundwater and associated contamination to underlying strata. Due to the presence of the low permeability Glacial Till lateral migration is likely to be limited to shallow made ground and the Alluvium. On completion of the proposed redevelopment extensive areas of the site will be covered by hardstanding and building cover which will limit the potential for exposure of contaminated soils to site users via dermal contact, dust inhalation and ingestion. It will also limit the potential for off-site migration of dust. The presence of hardstanding and buildings will also limit rainfall infiltration thereby limiting the potential for the leaching of contaminants from made ground. There is the potential for the migration contaminants along relict underground structures including the drainage systems. There is also the potential for relict drainage features such as drains and sumps to act as sources of contamination if contaminants are held within the system. There is the potential for asbestos fibres to have contaminated the drainage system associated with the former Chlorine Plant. The extensive building cover/hardstanding is likely to limit surface water infiltration and subsequently reduce leaching of any such ground contamination into the groundwater.

Potential Receptors
The site is part of a wider industrial area with the nearest residential houses located 225m to the north of the site. Residential properties are therefore not considered likely to be impacted by the site. Shallow groundwater associated with the made ground and Alluvium does not represent a particularly sensitive receptor in its own right as no potable abstractions have been identified in these bodies but may enable the migration of contamination to Wade Brook. The presence of low permeability Glacial Till is likely to provide a degree of protection to the underlying Northwich Halite Formation. The Secondary B Aquifer does not represent a highly sensitive receptor as there are no licensed potable groundwater abstractions recorded within 2km of the site and the site is not located within a groundwater Source Protection Zone. The nearest surface watercourse to the site is Wade Brook located 15m to the south of the site. This represents a low to moderately sensitive receptor as the quality of the watercourse is likely to have been compromised by surrounding land uses both current and historical. The EA Ecological rating for Wade Brook is 'Bad'.

Risk Assessment Rating: **Moderate**
Inorganic contamination has been identified in soil and groundwater across the site and localised areas of organic contamination have also been identified. The presence of volatile contamination appears to be limited to localised areas and the concentrations of volatile contamination identified to date are not considered to be particularly high. The primary exposure pathways to human health receptors are therefore dermal contact, ingestion and dust inhalation. At present the site is vacant and access to the site is strictly controlled. Soils are not subject to disturbance and therefore the risk to human health receptors at present is considered to be low. Upon completion of the proposed redevelopment, extensive areas of the site will be covered in hardstanding/building cover which will limit the exposure of contaminants to human health receptors and also limit the infiltration of rainfall therefore limiting the leaching of soil contaminants. During redevelopment of the site it will be necessary to control the risk to receptors associated with contamination. The controls would be presented in the form of a CEMP (Construction Environmental Management Plan) which would provide measures to mitigate the risk to human health and controlled waters receptors. There is potential for the generation of ground gas associated with the former on-site refuse tip and off-site refuse tip. There is potentially sulphate contamination, which can be aggressive to concrete, associated with the historical use as a bleach works. There is potential for organic contamination that could impact plastic water pipes. Based on the available information, the potential risk to human health, controlled waters and infrastructure is considered to be moderate and additional site investigation should be undertaken to further assess the risk.

Other Environmental Issues:

Environmental Issues:
Evidence of *Japanese Knotweed* was identified in the northwest of the site during the site walkover and during the Phase 1 ecology survey (reported in Chapter 7 and Appendix 7.C of the ES). This appeared to have undergone treatment and was found to be dead, with no new growth evident. Whilst the site is not indicated to be located above an area of past or current Halite mining, much of the previous extraction was undertaken prior to accurate records being kept. In addition, a number of brine shafts and wells are located in the surrounding area. As a result there is potential for unrecorded mine workings to be encountered at the site. As the site has been developed previously without any obvious effects of mining or brining related subsidence it is considered that the risk is reduced. RPS has produced a Geotechnical Ground Investigation Report reference HLEI36410/001R dated July 2015 which considers geotechnical matters and potential foundation design solutions.

5 Conclusions & Recommendations

Conclusions

5.1 A previous Phase II Site Investigation undertaken by Van Elle in 2009 (Appendix 9.B) identified metal contamination of soil and groundwater and localised organic contamination of soil and groundwater which is likely to be the result of historical use of the site as a bleach works and chlorine plant with asbestos handling area and associated infrastructure. The 2009 site investigation undertaken by Van Elle encountered Made Ground to a maximum depth of 5m.bgl in the area indicated to have been a former tip. There is potential for soil/groundwater contamination and ground gas generation associated with these features.

5.2 Based on the information available, the risk to human health receptors, controlled waters receptors and infrastructure post development is considered to be moderate and further site investigation should be undertaken prior to redevelopment to further assess soil/groundwater contamination and assess the ground gas regime.

Risk Management Recommendations

Ground Contamination

5.3 Prior to redevelopment, a Phase II Intrusive Investigation should be undertaken to confirm the extent soil/groundwater contamination and the ground gas regime. Specific regard should be paid to the potential presence of asbestos in soils and the drainage system associated with the former chlorine plant. The previous investigation does not appear to have included asbestos analysis.

5.4 It would be beneficial to undertake a survey of the drainage system associated with the former chlorine plant in advance of the site investigation so features such as sumps can be targeted. There is the potential for the presence of asbestos contamination within the drainage system and precautions should be taken during the survey and subsequent removal of the system.

Other Environmental Considerations

5.5 The following actions are recommended to reduce or clarify other potential environmental risks at the site:

- prior to redevelopment, a Construction Environmental Management Plan (CEMP) should be produced to control and mitigate the risk to human health receptors and controlled water receptor during redevelopment; and
- this should incorporate measures for materials management and incorporating a waste management to control the handling of materials and waste during the redevelopment.

Glossary

ES – Environmental Statement

EQS – Environmental Quality Standards

FOC – Fraction of Organic Carbon

OS – Ordnance Survey

PAH – Polycyclic Aromatic Hydrocarbons

PCB – Polychlorinated Biphenyls

S4UL – Suitable for all use

SVOC – Semi Volatile Organic Carbon

TPH-CWG: Total Petroleum Hydrocarbons Criteria Working Group

VOC – Volatile Organic Carbon

Annex 9.A.1: General Notes

RPS HEALTH, SAFETY & ENVIRONMENT

Phase 1 - Environmental Risk Assessment / Desk Study Environmental Review

General Notes

1. A "desk study" means that no site visits have been carried out as any part thereof, unless otherwise specified.
2. This report provides available factual data for the site obtained only from the sources described in the text and related to the site on the basis of the location information provided by the Client.
3. The desk study information is not necessarily exhaustive and further information relevant to the site may be available from other sources.
4. The accuracy of maps cannot be guaranteed and it should be recognised that different conditions on site may have existed between and subsequent to the various map surveys.
5. No sampling or analysis has been undertaken in relation to this desk study.
6. Any borehole data from British Geological Survey sources is included on the basis that: "The British Geological Survey accept no responsibility for omissions or misinterpretation of the data from their Data Bank as this may be old or obtained from non-BGS sources and may not represent current interpretation".
7. Where any data supplied by the Client or from other sources, including that from previous site investigations, have been used it has been assumed that the information is correct. No responsibility can be accepted by RPS for inaccuracies in the data supplied by any other party.
8. This report is prepared and written in the context of an agreed scope of work and should not be used in a different context. Furthermore, new information, improved practices and changes in legislation may necessitate a re-interpretation of the report in whole or in part after its original submission.
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11. These terms apply in addition to the RPS HSED "Standard Terms & Conditions" (or in addition to another written contract which may be in place instead thereof) unless specifically agreed in writing. (In the event of a conflict between these terms and the said Standard Terms & Conditions the said Standard Terms & Conditions shall prevail.) In the absence of such a written contract the Standard Terms & Conditions will apply.

Annex 9.A.2: Site Photographs

Area of former works

Building material

General site overview

Internal Road

Former site area

Yard area

RPS

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Client: DONG Energy

Project: REnescience Northwich

Title: Site Photographs

Date: August 2015 Scale: NTS

Annex: 9.A.2 Rev: 00

Job Ref: RCEI36418

Annex 9.A.3: Database Information

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
68056106_1_1

Customer Reference:
RCEI36418

National Grid Reference:
367940, 374200

Slice:
A

Site Area (Ha):
3.52

Search Buffer (m):
1000

Site Details:

Lostock Site
NORTHWICH
Cheshire
CW9 5GG

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Contents

Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination.
For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency/Natural Resources Wales and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client.

In the attached datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

Report Version v49.0

RPS

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 1		16	20	27
Enforcement and Prohibition Notices	pg 16			1	
Integrated Pollution Controls	pg 16		5	20	
Integrated Pollution Prevention And Control	pg 21			8	6
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls	pg 26				11
Local Authority Pollution Prevention and Control Enforcements	pg 28				2
Nearest Surface Water Feature	pg 28		Yes		
Pollution Incidents to Controlled Waters	pg 28		9	23	14
Prosecutions Relating to Authorised Processes					
Prosecutions Relating to Controlled Waters					
Registered Radioactive Substances	pg 36		2	13	
River Quality	pg 38		2	2	
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points	pg 40			1	
Substantiated Pollution Incident Register					
Water Abstractions	pg 40			9	(*5)
Water Industry Act Referrals					
Groundwater Vulnerability	pg 44	Yes	n/a	n/a	n/a
Bedrock Aquifer Designations	pg 44	Yes	n/a	n/a	n/a
Superficial Aquifer Designations	pg 44	Yes	n/a	n/a	n/a
Source Protection Zones					
Extreme Flooding from Rivers or Sea without Defences	pg 44		Yes	n/a	n/a
Flooding from Rivers or Sea without Defences	pg 44		Yes	n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
Detailed River Network Lines	pg 44		Yes	Yes	n/a
Detailed River Network Offline Drainage	pg 49		Yes	Yes	n/a

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Waste					
BGS Recorded Landfill Sites	pg 50		1		11
Historical Landfill Sites	pg 51		2	1	8
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)	pg 54			1	5
Local Authority Recorded Landfill Sites	pg 55		2	1	5
Registered Landfill Sites	pg 57		1	2	3
Registered Waste Transfer Sites	pg 62				2
Registered Waste Treatment or Disposal Sites	pg 62			1	8
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)	pg 66			2	4
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)	pg 66	1		1	
Planning Hazardous Substance Consents	pg 66			5	6
Planning Hazardous Substance Enforcements					
Geological					
BGS 1:625,000 Solid Geology	pg 69	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 69	Yes	Yes	Yes	Yes
BGS Recorded Mineral Sites	pg 82		6	2	1
BGS Urban Soil Chemistry					
BGS Urban Soil Chemistry Averages					
Brine Compensation Area	pg 84	Yes	n/a	n/a	n/a
Coal Mining Affected Areas			n/a	n/a	n/a
Mining Instability	pg 84	Yes	n/a	n/a	n/a
Man-Made Mining Cavities	pg 84				6
Natural Cavities					
Non Coal Mining Areas of Great Britain				n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 85	Yes	Yes	n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 85	Yes		n/a	n/a
Potential for Ground Dissolution Stability Hazards	pg 85	Yes		n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 86	Yes		n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 86	Yes	Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 86	Yes		n/a	n/a
Radon Potential - Radon Affected Areas			n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Industrial Land Use					
Contemporary Trade Directory Entries	pg 87		7	24	72
Fuel Station Entries	pg 96				2
Sensitive Land Use					
Areas of Adopted Green Belt	pg 97				1
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones	pg 97	1			
Ramsar Sites					
Sites of Special Scientific Interest					
Special Areas of Conservation					
Special Protection Areas					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Discharge Consents** Operator: Astrazenenca Uk Limited Property Type: Basic Industry, Chemicals Inorganic Location: Winnofil Plant Outfall 2 Lostock Works, Works Lane, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016890180 Permit Version: 1 Effective Date: 8th February 1980 Issued Date: 8th February 1980 Revocation Date: 3rd March 1995 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status: Consent revoked or revised: New Consent issued (Section 37(1))** Positional Accuracy: Located by supplier to within 100m	A13SE (E)	104	2	368160 374190
2	**Discharge Consents** Operator: Brunner Mond & Co Ltd Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016890181 Permit Version: 13 Effective Date: 1st October 1998 Issued Date: 1st October 1998 Revocation Date: 20th June 1997 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 100m	A13NE (E)	171	2	368230 374220
2	**Discharge Consents** Operator: Brunner Mond & Co Ltd Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016890181 Permit Version: 1 Effective Date: 1st June 1980 Issued Date: Not Supplied Revocation Date: 30th April 1994 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A13NE (E)	171	2	368230 374220
2	**Discharge Consents** Operator: Brunner Mond & Co Ltd Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016890181 Permit Version: 2 Effective Date: 1st May 1994 Issued Date: Not Supplied Revocation Date: 30th September 1994 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A13NE (E)	171	2	368230 374220

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
2	**Discharge Consents** Operator: Brunner Mond & Co Ltd Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016890181 Permit Version: 3 Effective Date: 1st October 1994 Issued Date: Not Supplied Revocation Date: 19th December 1994 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status:** **Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A13NE (E)	171	2	368230 374220
2	**Discharge Consents** Operator: Brunner Mond & Co Ltd Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016890181 Permit Version: 4 Effective Date: 20th December 1994 Issued Date: Not Supplied Revocation Date: 12th October 1995 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status:** **Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A13NE (E)	171	2	368230 374220
2	**Discharge Consents** Operator: Brunner Mond & Co Ltd Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016890181 Permit Version: 5 Effective Date: 13th October 1995 Issued Date: Not Supplied Revocation Date: 29th January 1996 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status:** **Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A13NE (E)	171	2	368230 374220
2	**Discharge Consents** Operator: Brunner Mond & Co Ltd Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016890181 Permit Version: 6 Effective Date: 30th January 1996 Issued Date: Not Supplied Revocation Date: 30th April 1996 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status:** **Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A13NE (E)	171	2	368230 374220

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
2	**Discharge Consents** Operator: Brunner Mond & Co Ltd Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016890181 Permit Version: 7 Effective Date: 1st May 1996 Issued Date: Not Supplied Revocation Date: 30th September 1996 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A13NE (E)	171	2	368230 374220
2	**Discharge Consents** Operator: Brunner Mond & Co Ltd Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016890181 Permit Version: 8 Effective Date: 1st October 1996 Issued Date: Not Supplied Revocation Date: 30th April 1997 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A13NE (E)	171	2	368230 374220
2	**Discharge Consents** Operator: Brunner Mond & Co Ltd Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016890181 Permit Version: 9 Effective Date: 1st May 1997 Issued Date: Not Supplied Revocation Date: 20th June 1997 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A13NE (E)	171	2	368230 374220
2	**Discharge Consents** Operator: Brunner Mond & Co Ltd Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016890181 Permit Version: 10 Effective Date: 20th June 1997 Issued Date: Not Supplied Revocation Date: 30th September 1997 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A13NE (E)	171	2	368230 374220

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
2	**Discharge Consents** Operator: Brunner Mond & Co Ltd Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016890181 Permit Version: 11 Effective Date: 1st October 1997 Issued Date: Not Supplied Revocation Date: 30th April 1998 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status:** **Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A13NE (E)	171	2	368230 374220
2	**Discharge Consents** Operator: Brunner Mond & Co Ltd Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016890181 Permit Version: 12 Effective Date: 1st May 1998 Issued Date: Not Supplied Revocation Date: 30th September 1998 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status:** **Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A13NE (E)	171	2	368230 374220
3	**Discharge Consents** Operator: Brunner Mond & Co Ltd Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016890213 Permit Version: 1 Effective Date: 9th December 1980 Issued Date: Not Supplied Revocation Date: 19th December 1993 Discharge Type: Discharge Of Other Matter-Ground Water Discharge Environment: Freshwater Stream/River Receiving Water: River Weaver **Status:** **Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 100m	A14NW (E)	244	2	368290 374290
3	**Discharge Consents** Operator: Brunner Mond & Co Ltd Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016890213 Permit Version: 2 Effective Date: 20th December 1993 Issued Date: Not Supplied Revocation Date: 12th October 1995 Discharge Type: Discharge Of Other Matter-Ground Water Discharge Environment: Freshwater Stream/River Receiving Water: River Weaver **Status:** **Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A14NW (E)	244	2	368290 374290

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
4	**Discharge Consents** Operator: Griffiths Park Land Limited Property Type: Basic Industry, Chemicals Inorganic Location: Lostock Works, Works Lane, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016890251 Permit Version: 4 Effective Date: 5th September 2003 Issued Date: 5th September 2003 Revocation Date: Not Supplied Discharge Type: Discharge Of Other Matter-Surface Water Discharge Environment: Freshwater Stream/River Receiving Water: Tributary Wade Brook **Status:** **Varied by Application - (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A12SE (SW)	270	2	367590 374010
4	**Discharge Consents** Operator: Ici C&P Ltd. Property Type: Basic Industry, Chemicals Inorganic Location: Lostock Works, Works Lane, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016890251 Permit Version: 3 Effective Date: 1st January 2002 Issued Date: Not Supplied Revocation Date: 4th September 2003 Discharge Type: Waste Site - Leachate Well Discharge Environment: Freshwater Stream/River Receiving Water: Tributary Wade Brook **Status:** **Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 10m	A12SE (SW)	270	2	367590 374010
5	**Discharge Consents** Operator: Ici Chemicals & Polymers Ltd Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016890182 Permit Version: 1 Effective Date: 1st June 1980 Issued Date: Not Supplied Revocation Date: 26th June 1989 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status:** **Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 100m	A14NW (E)	298	2	368340 374310
5	**Discharge Consents** Operator: Brunner Mond & Co Ltd Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Lower Mersey Reference: 016890183 Permit Version: 1 Effective Date: 1st June 1980 Issued Date: Not Supplied Revocation Date: 30th September 1981 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status:** **Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 100m	A14NW (E)	333	2	368370 374330

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
5	**Discharge Consents** Operator: Brunner Mond & Co Ltd Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016890183 Permit Version: 2 Effective Date: 1st October 1981 Issued Date: Not Supplied Revocation Date: 19th December 1993 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A14NW (E)	333	2	368370 374330
5	**Discharge Consents** Operator: Brunner Mond & Co Ltd Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016890183 Permit Version: 3 Effective Date: 20th December 1993 Issued Date: Not Supplied Revocation Date: 8th June 1995 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A14NW (E)	333	2	368370 374330
5	**Discharge Consents** Operator: Ineos Enterprises Limited Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016890186 Permit Version: 3 Effective Date: 31st August 2012 Issued Date: 31st August 2012 Revocation Date: Not Supplied Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status: Varied under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A14NW (E)	346	2	368380 374340
5	**Discharge Consents** Operator: Ineos Enterprises Limited Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016890186 Permit Version: 2 Effective Date: 1st June 1980 Issued Date: 1st June 1980 Revocation Date: 30th August 2012 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 10m	A14NW (E)	346	2	368380 374340

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
5	**Discharge Consents** Operator: Ineos Enterprises Limited Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016890186 Permit Version: 2 Effective Date: 1st June 1980 Issued Date: 1st June 1980 Revocation Date: Not Supplied Discharge Type: Discharge Of Other Matter-Ground Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status:** **Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 10m	A14NW (E)	346	2	368380 374340
5	**Discharge Consents** Operator: I.C.I. Chemicals & Polymers Ltd Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016890186 Permit Version: 1 Effective Date: 1st January 1900 Issued Date: Not Supplied Revocation Date: 31st May 1980 Discharge Type: Discharge Of Other Matter-Ground Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status:** **Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A14NW (E)	346	2	368380 374340
5	**Discharge Consents** Operator: Ineos Chlor Enterprises Limited Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016890186 Permit Version: 3 Effective Date: 1st January 2004 Issued Date: Not Supplied Revocation Date: Not Supplied Discharge Type: Discharge Of Other Matter-Ground Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status:** **Varied by Application - (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A14NW (E)	346	2	368380 374340
5	**Discharge Consents** Operator: Ineos Chlor Enterprises Limited Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016890186 Permit Version: 3 Effective Date: 1st January 2004 Issued Date: Not Supplied Revocation Date: Not Supplied Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status:** **Varied by Application - (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A14NW (E)	346	2	368380 374340

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
5	**Discharge Consents** Operator: I.C.I. Chemicals & Polymers Ltd Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016890186 Permit Version: 1 Effective Date: Not Supplied Issued Date: Not Supplied Revocation Date: 31st May 1980 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A14NW (E)	346	2	368380 374340
6	**Discharge Consents** Operator: Tata Chemicals Europe Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016890185 Permit Version: 2 Effective Date: 30th January 1997 Issued Date: 30th January 1997 Revocation Date: Not Supplied Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status: Post National Rivers Authority Legislation where issue date > 31/08/1989** Positional Accuracy: Located by supplier to within 10m	A14NW (E)	344	2	368370 374360
6	**Discharge Consents** Operator: Brunner Mond Plc Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016890185 Permit Version: 1 Effective Date: 1st June 1980 Issued Date: Not Supplied Revocation Date: 29th January 1997 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A14NW (E)	344	2	368370 374360
6	**Discharge Consents** Operator: Ici Chemicals & Polymers Ltd Property Type: Basic Industry, Chemicals Inorganic Location: Ineos Chlor Enterprises Limited, Lostock Works, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016890184 Permit Version: 1 Effective Date: 1st June 1980 Issued Date: Not Supplied Revocation Date: 7th June 1991 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 100m	A14NW (E)	364	2	368400 374340

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Discharge Consents					
7	Operator:	Dane County Leasing Ltd	A12SE (W)	437	2	367378 374169
	Property Type:	Sewage Disposal Works - Other				
	Location:	Dane County Manchester, Northwich, Cheshire				
	Authority:	Environment Agency, North West Region				
	Catchment Area:	Lower Mersey				
	Reference:	016891663				
	Permit Version:	1				
	Effective Date:	28th May 1993				
	Issued Date:	Not Supplied				
	Revocation Date:	28th August 1993				
	Discharge Type:	Discharge Of Other Matter-Surface Water				
	Discharge Environment:	Freshwater Stream/River				
	Receiving Water:	Wade Brook				
	Status:	**Lapsed (under Environment Act 1995, Schedule 23)**				
	Positional Accuracy:	Located by supplier to within 10m				
	Discharge Consents					
8	Operator:	F & R Construction Ltd	A12NE (W)	487	2	367340 374300
	Property Type:	General Construction Work				
	Location:	Development Site Swo Parks Steelworks Site, Manchester Road, Northwich, Cheshire				
	Authority:	Environment Agency, North West Region				
	Catchment Area:	Not Given				
	Reference:	016890909				
	Permit Version:	1				
	Effective Date:	1st July 1991				
	Issued Date:	Not Supplied				
	Revocation Date:	1st July 1991				
	Discharge Type:	Discharge Of Other Matter-Surface Water				
	Discharge Environment:	Freshwater Stream/River				
	Receiving Water:	Wade Brook				
	Status:	**Authorisation revokedRevoked**				
	Positional Accuracy:	Located by supplier to within 100m				
	Discharge Consents					
9	Operator:	Astrazenenca Uk Limited	A7NE (SW)	490	2	367530 373740
	Property Type:	Basic Industry, Chemicals Inorganic				
	Location:	Lostock Works, Works Lane, Northwich, Cheshire				
	Authority:	Environment Agency, North West Region				
	Catchment Area:	Not Given				
	Reference:	016890251				
	Permit Version:	2				
	Effective Date:	27th July 1988				
	Issued Date:	Not Supplied				
	Revocation Date:	31st December 2001				
	Discharge Type:	Trade Discharge - Process Water				
	Discharge Environment:	Freshwater Stream/River				
	Receiving Water:	Tributary Wade Brook				
	Status:	**Pre National Rivers Authority Legislation where issue date < 01/09/1989**				
	Positional Accuracy:	Located by supplier to within 100m				
	Discharge Consents					
9	Operator:	Astrazenenca Uk Limited	A7NE (SW)	490	2	367530 373740
	Property Type:	Basic Industry, Chemicals Inorganic				
	Location:	Lostock Works, Works Lane, Northwich, Cheshire				
	Authority:	Environment Agency, North West Region				
	Catchment Area:	Not Supplied				
	Reference:	016890251				
	Permit Version:	1				
	Effective Date:	6th December 1979				
	Issued Date:	Not Supplied				
	Revocation Date:	26th July 1988				
	Discharge Type:	Trade Discharge - Process Water				
	Discharge Environment:	Freshwater Stream/River				
	Receiving Water:	Tributary Wade Brook				
	Status:	**Authorisation revokedRevoked**				
	Positional Accuracy:	Located by supplier to within 10m				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
10	**Discharge Consents** Operator: The Associated Octel Company Limited Property Type: Basic Industry, Chemicals Inorganic Location: Associated Octel Co Ltd, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016890275 Permit Version: 1 Effective Date: 18th July 1979 Issued Date: Not Supplied Revocation Date: 28th April 1981 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Tributary Wade Brook **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 100m	A14SW (E)	512	2	368510 373970
10	**Discharge Consents** Operator: The Associated Octel Company Limited Property Type: Basic Industry, Chemicals Inorganic Location: Associated Octel Co Ltd, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016890313 Permit Version: 1 Effective Date: 18th July 1979 Issued Date: Not Supplied Revocation Date: 25th May 1988 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Tributary Wade Brook **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A14SW (E)	512	2	368510 373970
10	**Discharge Consents** Operator: The Associated Octel Company Limited Property Type: Basic Industry, Chemicals Inorganic Location: Associated Octel Co Ltd, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016890275 Permit Version: 2 Effective Date: 29th April 1981 Issued Date: Not Supplied Revocation Date: 19th August 1993 Discharge Type: Trade Discharge - Process Water Discharge Environment: Freshwater Stream/River Receiving Water: Tributary Wade Brook **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A14SW (E)	512	2	368510 373970
11	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewage Disposal Works - Water Company Location: Manchester Road, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 01VRY0100 Permit Version: 2 Effective Date: 1st January 1995 Issued Date: Not Supplied Revocation Date: 1st January 1995 Discharge Type: Sewage Discharges - Unspecified - Water Company Discharge Environment: Unknown Receiving Water: Not Supplied **Status: Consent revoked or revised: New Consent issued (Section 37(1))** Positional Accuracy: Located by supplier to within 100m	A12SW (W)	565	2	367250 374170

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
11	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewage Disposal Works - Water Company Location: Manchester Road, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 01vry0100 Permit Version: 1 Effective Date: 1st April 1991 Issued Date: Not Supplied Revocation Date: 31st December 1994 Discharge Type: Sewage Discharges - Unspecified - Water Company Discharge Environment: Not Supplied Receiving Water: Not Supplied **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A12SW (W)	565	2	367250 374170
11	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewerage Network - Pumping Station - Water Company Location: Manchester Road Sps, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016881506 Permit Version: 1 Effective Date: Not Supplied Issued Date: Not Supplied Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A12SW (W)	568	2	367250 374120
11	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewerage Network - Pumping Station - Water Company Location: Manchester Road Sps, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016881505 Permit Version: 1 Effective Date: Not Supplied Issued Date: Not Supplied Revocation Date: 11th September 1989 Discharge Type: Storm /emergency overflow Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A12SW (W)	568	2	367250 374120
11	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewerage Network - Pumping Station - Water Company Location: Manchester Road, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016810279 Permit Version: 1 Effective Date: 18th January 1982 Issued Date: Not Supplied Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status: Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A12SW (W)	585	2	367230 374150

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Discharge Consents					
12	Operator:	United Utilities Water Plc	A12SW (W)	568	2	367250 374115
	Property Type:	Sewerage Network - Pumping Station - Water Company				
	Location:	Manchester Road Sps, Northwich, Cheshire				
	Authority:	Environment Agency, North West Region				
	Catchment Area:	Not Given				
	Reference:	016881505				
	Permit Version:	2				
	Effective Date:	12th September 1989				
	Issued Date:	Not Supplied				
	Revocation Date:	Not Supplied				
	Discharge Type:	Sewage Discharges - Pumping Station - Water Company				
	Discharge Environment:	Freshwater Stream/River				
	Receiving Water:	Wade Brook				
	Status:	**Post National Rivers Authority Legislation where issue date > 31/08/1989**				
	Positional Accuracy:	Located by supplier to within 100m				
	Discharge Consents					
13	Operator:	United Utilities Water Plc	A17SE (NW)	569	2	367400 374600
	Property Type:	Domestic Property (Multiple)				
	Location:	Denton Drive, Northwich, Cheshire				
	Authority:	Environment Agency, North West Region				
	Catchment Area:	Not Given				
	Reference:	016810415				
	Permit Version:	1				
	Effective Date:	29th January 1985				
	Issued Date:	Not Supplied				
	Revocation Date:	Not Supplied				
	Discharge Type:	Discharge Of Other Matter-Surface Water				
	Discharge Environment:	Freshwater Stream/River				
	Receiving Water:	Wincham Brook				
	Status:	**Pre National Rivers Authority Legislation where issue date < 01/09/1989**				
	Positional Accuracy:	Located by supplier to within 100m				
	Discharge Consents					
14	Operator:	Kingsley Estates Ltd	A17SE (NW)	573	2	367500 374700
	Property Type:	Domestic Property (Multiple)				
	Location:	Residential Development Swo, Near Chapel Street, Wincham, Cheshire				
	Authority:	Environment Agency, North West Region				
	Catchment Area:	Not Given				
	Reference:	016890889				
	Permit Version:	1				
	Effective Date:	1st July 1991				
	Issued Date:	Not Supplied				
	Revocation Date:	1st July 1991				
	Discharge Type:	Discharge Of Other Matter-Surface Water				
	Discharge Environment:	Freshwater Stream/River				
	Receiving Water:	Wincham Brook				
	Status:	**Authorisation revokedRevoked**				
	Positional Accuracy:	Located by supplier to within 100m				
	Discharge Consents					
15	Operator:	United Utilities Water Plc	A7NE (SW)	600	2	367535 373600
	Property Type:	Sewerage Network - Sewers - Water Company				
	Location:	O/S 102 Middlewich Rd, Rudheath, Northwich, Cheshire				
	Authority:	Environment Agency, North West Region				
	Catchment Area:	Peover Eye				
	Reference:	01VRY0091				
	Permit Version:	2				
	Effective Date:	1st January 1995				
	Issued Date:	1st January 1995				
	Revocation Date:	26th February 2006				
	Discharge Type:	Public Sewage: Storm Sewage Overflow				
	Discharge Environment:	Freshwater Stream/River				
	Receiving Water:	Un-Named Trib Of Wade Brook				
	Status:	**Consent revoked or revised: New Consent issued (Section 37(1))**				
	Positional Accuracy:	Located by supplier to within 100m				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
15	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewerage Network - Sewers - Water Company Location: O/S 49 Edward St, Rudheath, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 01vry0093 Permit Version: 2 Effective Date: 11th November 2004 Issued Date: 11th November 2004 Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status:** **Consent revoked or revised: New Consent issued (Section 37(1))** Positional Accuracy: Located by supplier to within 10m	A7NE (SW)	603	2	367530 373600
15	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewerage Network - Sewers - Water Company Location: O/S 102 Middlewich Rd, Rudheath, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 01vry0091 Permit Version: 1 Effective Date: 1st April 1991 Issued Date: Not Supplied Revocation Date: 31st December 1994 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Unknown Receiving Water: Not Supplied **Status:** **Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	603	2	367530 373600
15	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewerage Network - Sewers - Water Company Location: O/S 173 Middlewich Rd, Rudheath, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 01vry0092 Permit Version: 1 Effective Date: 1st April 1991 Issued Date: Not Supplied Revocation Date: 31st December 1994 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Unknown Receiving Water: Not Supplied **Status:** **Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A7NE (SW)	603	2	367530 373600
15	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewerage Network - Sewers - Water Company Location: O/S 49 Edward St, Rudheath, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 01VRY0093 Permit Version: 1 Effective Date: 1st January 1995 Issued Date: Not Supplied Revocation Date: 10th November 2004 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status:** **Revoked: New Consent issued (Water Act 1989, Section 113)** Positional Accuracy: Located by supplier to within 10m	A7NE (SW)	603	2	367530 373600

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
15	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewerage Network - Sewers - Water Company Location: O/S 173 Middlewich Rd, Rudheath, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 01VRY0092 Permit Version: 2 Effective Date: 1st January 1995 Issued Date: Not Supplied Revocation Date: 2nd November 2004 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Unknown Receiving Water: Unknown **Status: Consent revoked or revised: New Consent issued (Section 37(1))** Positional Accuracy: Located by supplier to within 10m	A7NE (SW)	603	2	367530 373600
15	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewerage Network - Sewers - Water Company Location: O/S 173 Middlewich Rd, Rudheath, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 01vry0092 Permit Version: 3 Effective Date: 3rd November 2004 Issued Date: Not Supplied Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Wade Brook **Status: Modified (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A7NE (SW)	603	2	367530 373600
16	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewage Disposal Works - Water Company Location: Northwich Stw Winnington Avenue, Winnington, Northwhich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016880962 Permit Version: 1 Effective Date: 12th September 1989 Issued Date: Not Supplied Revocation Date: 18th April 1993 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Wincham Brook **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 100m	A18NE (N)	618	2	368200 374900
16	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewage Disposal Works - Water Company Location: Northwich Stw Winnington Avenue, Winnington, Northwhich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016880962 Permit Version: 2 Effective Date: 19th April 1993 Issued Date: Not Supplied Revocation Date: 15th September 1993 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Wincham Brook **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 100m	A18NE (N)	618	2	368200 374900

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
16	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewage Disposal Works - Water Company Location: Northwich Stw Winnington Avenue, Winnington, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 016880962 Permit Version: 3 Effective Date: 16th September 1993 Issued Date: Not Supplied Revocation Date: 7th April 1994 Discharge Type: Sewage Discharges - Final/Treated Effluent - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Wincham Brook **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 100m	A18NE (N)	618	2	368200 374900
17	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewerage Network - Sewers - Water Company Location: O/S 102 Middlewich Rd, Rudheath, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Peover Eye Reference: 016892222 Permit Version: 1 Effective Date: 27th February 2006 Issued Date: 27th February 2006 Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Un-Named Trib Of Wade Brook **Status: Modified (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 10m	A7SE (SW)	703	2	367560 373470
18	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewerage Network - Sewers - Water Company Location: 11 Manchester Road, Manhole, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 01VRY0116 Permit Version: 2 Effective Date: 1st January 1995 Issued Date: Not Supplied Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Not Supplied **Status: Post National Rivers Authority Legislation where issue date > 31/08/1989** Positional Accuracy: Located by supplier to within 100m	A19SW (NE)	720	2	368550 374780
18	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewerage Network - Sewers - Water Company Location: 11 Manchester Road, Manhole, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 01vry0116 Permit Version: 1 Effective Date: 1st July 1991 Issued Date: Not Supplied Revocation Date: 31st December 1994 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Not Supplied Receiving Water: Not Supplied **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 10m	A19SW (NE)	720	2	368550 374780

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
19	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewerage Network - Sewers - Water Company Location: New Warrington Road Marston, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 016881516 Permit Version: 1 Effective Date: Not Supplied Issued Date: Not Supplied Revocation Date: Not Supplied Discharge Type: Storm /emergency overflow Discharge Environment: Freshwater Stream/River Receiving Water: Wincham Brook **Status:** **Pre National Rivers Authority Legislation where issue date < 01/09/1989** Positional Accuracy: Located by supplier to within 100m	A17SW (NW)	838	2	367060 374565
19	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewerage Network - Sewers - Water Company Location: New Warrington Road Marston, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Supplied Reference: 01vry0041 Permit Version: 2 Effective Date: 3rd September 2010 Issued Date: 3rd September 2010 Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge Environment: Freshwater Stream/River Receiving Water: Wincham Brook **Status:** **Varied under EPR 2010** Positional Accuracy: Located by supplier to within 10m	A17SW (NW)	840	2	367060 374570
19	**Discharge Consents** Operator: United Utilities Water Plc Property Type: Sewerage Network - Sewers - Water Company Location: New Warrington Road Marston, Northwich, Cheshire Authority: Environment Agency, North West Region Catchment Area: Not Given Reference: 01VRY0041 Permit Version: 1 Effective Date: 1st January 1995 Issued Date: Not Supplied Revocation Date: 2nd September 2010 Discharge Type: Storm /emergency overflow Discharge Environment: Freshwater Stream/River Receiving Water: Wincham Brook **Status:** **Consent revoked or revised: New Consent issued (Section 37(1))** Positional Accuracy: Located by supplier to within 100m	A17SW (NW)	840	2	367060 374570
20	**Enforcement and Prohibition Notices** Location: Lostock Site, Lostock Gralam, NORTHWICH, Cheshire, CW9 7ZR Permit Reference: AH9545 Enforcement Date: 1st August 1994 Details: Press Release HM036, Discharge of heavy fuel oil to Wade Brook & failure to notify HMIP; under EPA90. Positional Accuracy: Unknown	A14SW (E)	299	2	368354 374162
21	**Integrated Pollution Controls** Name: Brunner Mond (Uk) Ltd Location: Lostock Power Station, Lostock Gralam, NORTHWICH, Cheshire, CW8 4DT Authority: Environment Agency, North West Region Permit Reference: Bi4543 Dated: 14th June 2000 Process Type: IPC minor (non-substantial) variation to previous variation Description: 4.5 A (M) Inorganic Chemical processes within the Chemical Industry **Status:** **Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the address or location	A13NE (E)	127	2	368176 374261

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Integrated Pollution Controls					
21	Name:	Brunner Mond (Uk) Ltd	A13NE (E)	133	2	368175 374280
	Location:	Lostock Site, Lostock Gralam, Northwich, Cheshire, Cw9 7th				
	Authority:	Environment Agency, North West Region				
	Permit Reference:	Bv0180				
	Dated:	10th July 2003				
	Process Type:	IPC minor (non-substantial) variation to previous variation				
	Description:	4.5 A (M) Inorganic Chemical processes within the Chemical Industry				
	Status:	**Authorisation superseded by a substantial or non substantial variationSuperseded**				
	Positional Accuracy:	Manually positioned to the address or location				
	Integrated Pollution Controls					
21	Name:	Brunner Mond (Uk) Ltd	A13NE (E)	133	2	368175 374280
	Location:	Lostock Site, Lostock Gralam, Northwich, Cheshire, Cw9 7th				
	Authority:	Environment Agency, North West Region				
	Permit Reference:	Bv0171				
	Dated:	10th July 2003				
	Process Type:	IPC minor (non-substantial) variation to previous variation				
	Description:	3.1 A (D) Cement/Lime manufacture and associated processes within the Mineral Industry				
	Status:	**Authorisation superseded by a substantial or non substantial variationSuperseded**				
	Positional Accuracy:	Manually positioned to the address or location				
	Integrated Pollution Controls					
22	Name:	Solvay Speciality Chemicals Ltd	A13NE (E)	235	2	368270 374319
	Location:	Lostock Works, Northwich, Cheshire, Cw9 7zr				
	Authority:	Environment Agency, North West Region				
	Permit Reference:	Bt8970				
	Dated:	11th February 2003				
	Process Type:	IPC minor (non-substantial) variation to previous variation				
	Description:	4.5 A (M) Inorganic Chemical processes within the Chemical Industry				
	Status:	**Authorisation superseded by a substantial or non substantial variationSuperseded**				
	Positional Accuracy:	Manually positioned to the address or location				
	Integrated Pollution Controls					
22	Name:	Solvay Speciality Chemicals Ltd	A13NE (E)	236	2	368271 374318
	Location:	Lostock Works, Works Lane, Northwich, Cheshire, Cw9 7zr				
	Authority:	Environment Agency, North West Region				
	Permit Reference:	Bu4767				
	Dated:	15th April 2003				
	Process Type:	IPC minor (non-substantial) variation to previous variation				
	Description:	4.5 A (M) Inorganic Chemical processes within the Chemical Industry				
	Status:	**Authorisation superseded by a substantial or non substantial variationSuperseded**				
	Positional Accuracy:	Manually positioned to the address or location				
	Integrated Pollution Controls					
23	Name:	Solvay Speciality Chemicals Ltd	A14NW (E)	292	2	368346 374262
	Location:	Zeneca Resins, Lostock Works, NORTHWICH, Cheshire, CW9 7ZR				
	Authority:	Environment Agency, North West Region				
	Permit Reference:	BF2994				
	Dated:	11th February 1999				
	Process Type:	IPC minor (non-substantial) variation to previous variation				
	Description:	4.5 A (M) Inorganic Chemical processes within the Chemical Industry				
	Status:	**Authorisation superseded by a substantial or non substantial variationSuperseded**				
	Positional Accuracy:	Manually positioned to the address or location				
	Integrated Pollution Controls					
23	Name:	Solvay Speciality Chemicals Ltd	A14NW (E)	292	2	368346 374267
	Location:	Lostock Works, Works Lane, NORTHWICH, Cheshire, CW9 7ZR				
	Authority:	Environment Agency, North West Region				
	Permit Reference:	AV8372				
	Dated:	14th June 1996				
	Process Type:	IPC minor (non-substantial) variation to previous variation				
	Description:	4.5 A (M) Inorganic Chemical processes within the Chemical Industry				
	Status:	**Authorisation superseded by a substantial or non substantial variationSuperseded**				
	Positional Accuracy:	Automatically positioned to the address				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
23	**Integrated Pollution Controls** Name: Solvay Speciality Chemicals Ltd Location: Solvay House (North West), Lostock Works, Works Lane, NORTHWICH, Cheshire, CW9 7ZR Authority: Environment Agency, North West Region Permit Reference: Bz0050 Dated: 14th June 2005 Process Type: IPC minor (non-substantial) variation to previous variation Description: 4.5 A (M) Inorganic Chemical processes within the Chemical Industry **Status:** **Revoked - Now IPPC** Positional Accuracy: Automatically positioned to the address	A14NW (E)	293	2	368346 374268
23	**Integrated Pollution Controls** Name: Solvay Speciality Chemicals Ltd Location: Lostock Works, Works Lane, Northwich, Cheshire, CW9 7ZR Authority: Environment Agency, North West Region Permit Reference: Bt5423 Dated: 28th November 2002 Process Type: IPC minor (non-substantial) variation to previous variation Description: 4.5 A (M) Inorganic Chemical processes within the Chemical Industry **Status:** **Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A14NW (E)	293	2	368346 374268
23	**Integrated Pollution Controls** Name: Solvay Speciality Chemicals Ltd Location: Lostock Works, Works Lane, NORTHWICH, Cheshire, CW9 7ZR Authority: Environment Agency, North West Region Permit Reference: Bi5833 Dated: 6th June 2000 Process Type: IPC minor (non-substantial) variation to previous variation Description: 4.5 A (M) Inorganic Chemical processes within the Chemical Industry **Status:** **Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A14NW (E)	293	2	368346 374268
23	**Integrated Pollution Controls** Name: Solvay Speciality Chemicals Ltd Location: Zeneca Resins Lostock Works, NORTHWICH, Cheshire, CW9 7ZR Authority: Environment Agency, North West Region Permit Reference: BD9556 Dated: 24th November 1998 Process Type: IPC minor (non-substantial) variation to previous variation Description: 4.5 A (M) Inorganic Chemical processes within the Chemical Industry **Status:** **Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the address or location	A14NW (E)	293	2	368346 374268
23	**Integrated Pollution Controls** Name: Solvay Speciality Chemicals Ltd Location: Lostock Works, Works Lane, NORTHWICH, Cheshire, CW9 7ZR Authority: Environment Agency, North West Region Permit Reference: AY7615 Dated: 26th June 1997 Process Type: IPC minor (non-substantial) variation to previous variation Description: 4.5 A (M) Inorganic Chemical processes within the Chemical Industry **Status:** **Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A14NW (E)	294	2	368346 374273
23	**Integrated Pollution Controls** Name: Solvay Speciality Chemicals Ltd Location: Lostock Works, Works Lane, NORTHWICH, Cheshire, CW9 7ZR Authority: Environment Agency, North West Region Permit Reference: AN9930 Dated: 3rd March 1995 Process Type: IPC new application Description: 4.5 A (M) Inorganic Chemical processes within the Chemical Industry **Status:** **Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A14NW (E)	297	2	368351 374263
23	**Integrated Pollution Controls** Name: Solvay Speciality Chemicals Ltd Location: Lostock Works, Works Lane, NORTHWICH, Cheshire, CW9 7ZR Authority: Environment Agency, North West Region Permit Reference: AT9980 Dated: 15th December 1995 Process Type: IPC minor (non-substantial) variation to previous variation Description: 4.5 A (M) Inorganic Chemical processes within the Chemical Industry **Status:** **Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A14NW (E)	298	2	368351 374268

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
24	**Integrated Pollution Controls** Name: Ineos Enterprises Ltd Location: ELECTRODE COATING PLANT,, WINNINGTON, NORTHWICH, CHESHIRE, CW8 4DU Authority: Environment Agency, North West Region Permit Reference: BE3863 Dated: 24th November 1998 Process Type: IPC minor (non-substantial) variation to previous variation Description: 4.5 A (F) Inorganic Chemical processes within the Chemical Industry **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the address or location	A14SW (E)	388	2	368424 374081
24	**Integrated Pollution Controls** Name: Ineos Enterprises Ltd Location: ELECTRODE COATING PLANT,, WINNINGTON, NORTHWICH, CHESHIRE, CW8 4DU Authority: Environment Agency, North West Region Permit Reference: BA8804 Dated: 27th July 1998 Process Type: IPC minor (non-substantial) variation to previous variation Description: 4.5 A (F) Inorganic Chemical processes within the Chemical Industry **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the address or location	A14SW (E)	388	2	368424 374081
25	**Integrated Pollution Controls** Name: Ineos Chlor Ltd Location: Po Box 7,Northwich Sites,Lostock, NORTHWICH, Cheshire, CW9 7NU Authority: Environment Agency, North West Region Permit Reference: Bj9649 Dated: 29th November 2000 Process Type: IPC minor (non-substantial) variation to previous variation Description: 4.4 A (A) processes involving Halogens within the Chemical Industry **Status: Authorisation revokedRevoked** Positional Accuracy: Manually positioned to the road within the address or location	A14NW (E)	463	2	368518 374270
25	**Integrated Pollution Controls** Name: Ineos Chlor Ltd Location: Po Box 7,Northwich Sites,Lostock, NORTHWICH, Cheshire, CW9 7NU Authority: Environment Agency, North West Region Permit Reference: BH5102 Dated: 15th December 1999 Process Type: IPC minor (non-substantial) variation to previous variation Description: 4.4 A (A) processes involving Halogens within the Chemical Industry **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the road within the address or location	A14NW (E)	463	2	368518 374270
25	**Integrated Pollution Controls** Name: Ineos Chlor Ltd Location: Po Box 7,Northwich Sites,Lostock, NORTHWICH, Cheshire, CW9 7NU Authority: Environment Agency, North West Region Permit Reference: BH3843 Dated: 10th November 1999 Process Type: IPC minor (non-substantial) variation to previous variation Description: 4.4 A (A) processes involving Halogens within the Chemical Industry **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the road within the address or location	A14NW (E)	463	2	368518 374270
25	**Integrated Pollution Controls** Name: Ineos Chlor Ltd Location: Po Box 7,Northwich Sites,Lostock, NORTHWICH, Cheshire, CW9 7NU Authority: Environment Agency, North West Region Permit Reference: BD1385 Dated: 24th November 1998 Process Type: IPC minor (non-substantial) variation to previous variation Description: 4.4 A (A) processes involving Halogens within the Chemical Industry **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the road within the address or location	A14NW (E)	463	2	368518 374270

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Integrated Pollution Controls					
25	Name:	Brunner Mond (uk) Ltd	A14NW (E)	463	2	368518 374270
	Location:	Northwich Sites.Off Griffiths Road, Lostock, NORTHWICH, Cheshire, CW9 7NU				
	Authority:	Environment Agency, North West Region				
	Permit Reference:	BC5741				
	Dated:	24th November 1998				
	Process Type:	IPC minor (non-substantial) variation to previous variation				
	Description:	1.3 A (A) Combustion processes within the Fuel & Power Industry				
	Status:	**Authorisation revokedRevoked**				
	Positional Accuracy:	Manually positioned to the road within the address or location				
	Integrated Pollution Controls					
25	Name:	Ineos Chlor Ltd	A14NW (E)	463	2	368518 374270
	Location:	Po Box 7,Northwich Sites,Lostock, NORTHWICH, Cheshire, CW9 7NU				
	Authority:	Environment Agency, North West Region				
	Permit Reference:	AR1434				
	Dated:	26th April 1995				
	Process Type:	IPC minor (non-substantial) variation to previous variation				
	Description:	4.4 A (A) processes involving Halogens within the Chemical Industry				
	Status:	**Authorisation superseded by a substantial or non substantial variationSuperseded**				
	Positional Accuracy:	Manually positioned to the road within the address or location				
	Integrated Pollution Controls					
25	Name:	Ineos Chlor Ltd	A14NW (E)	463	2	368518 374270
	Location:	Po Box 7,Northwich Sites,Lostock, NORTHWICH, Cheshire, CW9 7NU				
	Authority:	Environment Agency, North West Region				
	Permit Reference:	AL7260				
	Dated:	7th October 1994				
	Process Type:	IPC application for process that was regulated by HMIP for air releases under previous legislation				
	Description:	4.4 A (A) processes involving Halogens within the Chemical Industry				
	Status:	**Authorisation superseded by a substantial or non substantial variationSuperseded**				
	Positional Accuracy:	Manually positioned to the road within the address or location				
	Integrated Pollution Controls					
25	Name:	Brunner Mond (uk) Ltd	A14NW (E)	463	2	368518 374270
	Location:	Northwich Sites.Off Griffiths Road, Lostock, NORTHWICH, Cheshire, CW9 7NU				
	Authority:	Environment Agency, North West Region				
	Permit Reference:	AH9545				
	Dated:	26th August 1993				
	Process Type:	IPC minor (non-substantial) variation to previous variation				
	Description:	1.3 A (A) Combustion processes within the Fuel & Power Industry				
	Status:	**Authorisation superseded by a substantial or non substantial variationSuperseded**				
	Positional Accuracy:	Manually positioned to the road within the address or location				
	Integrated Pollution Controls					
25	Name:	Brunner Mond (uk) Ltd	A14NW (E)	463	2	368518 374270
	Location:	Northwich Sites.Off Griffiths Road, Lostock, NORTHWICH, Cheshire, CW9 7NU				
	Authority:	Environment Agency, North West Region				
	Permit Reference:	AA3158				
	Dated:	28th April 1992				
	Process Type:	IPC application for process that was regulated by HMIP for air releases under previous legislation				
	Description:	1.3 A (A) Combustion processes within the Fuel & Power Industry				
	Status:	**Authorisation superseded by a substantial or non substantial variationSuperseded**				
	Positional Accuracy:	Manually positioned to the road within the address or location				

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Integrated Pollution Prevention And Control					
26	Name:	Eco-Option (Uk) Limited	A13SW (SW)	259	2	367700 373900
	Location:	Land At Brunner-Mond Works, Land At Brunner-Mond Works, Griffiths Road,,Lostock Gralam, NORTHWICH, Cheshire, CW9 7NU				
	Authority:	Environment Agency, North West Region				
	Permit Reference:	MP3836WJ				
	Original Permit Ref:	Rp3931xd				
	Effective Date:	16th December 2014				
	Status:	**Effective**				
	Application Type:	Variation				
	App. Sub Type:	Minor				
	Positional Accuracy:	Located by supplier to within 100m				
	Activity Code:	0.0 Associated Process				
	Activity Description:	Associated Process				
	Primary Activity:	N				
	Activity Code:	5.3 A(1) a) (vi)				
	Activity Description:	DISPOSAL OR RECOVERY OF HAZARDOUS WASTE WITH A CAPACITY EXCEEDING 10 TONNES PER DAY INVOLVING RECYCLING OR RECLAMATION OF INORGANIC MATERIALS OTHER THAN METALS OR METAL COMPOUNDS				
	Primary Activity:	N				
	Activity Code:	5.3 A(1) a) (iv)				
	Activity Description:	DISPOSAL OR RECOVERY OF HAZ WASTE WITH CAPACITY EXCEEDING 10 TONNES PER DAY INVOLVING REPACKAGING PRIOR TO SUBMISSION TO ANY OF THE OTHER ACTIVITIES LISTED IN THIS SECTION OR IN SECTION 5.1				
	Primary Activity:	N				
	Activity Code:	5.3 A(1) a) (iii)				
	Activity Description:	DISPOSAL OR RECOVERY OF HAZ WASTE WITH CAPACITY EXCEEDING 10 TONNES PER DAY INVOLVING BLENDING OR MIXING PRIOR TO SUBMISSION TO ANY OF THE OTHER ACTIVITIES LISTED IN THIS SECTION OR IN SECTION 5.1				
	Primary Activity:	N				
	Activity Code:	4.2 A(1) (A) (IV)				
	Activity Description:	Inorganic Chemicals; Salts Eg Ammonium Chloride				
	Primary Activity:	Y				
	Activity Code:	2.2 B (A)				
	Activity Description:	Non-Ferrous Metals; Melting With Capacity Less Than 4T/D Lead/Cadmium Or Less Than 20T/D Others (Unless Greater Than 50 Percent Tin)				
	Primary Activity:	N				
	Activity Code:	2.2 A(1) (A)				
	Activity Description:	Non-Ferrous Metals; Producing From Raw Materials By Metallurgical Activities Etc				
	Primary Activity:	N				
	Activity Code:	5.6 A(1) a)				
	Activity Description:	TEMPORARY STORAGE OF HAZ WASTE NOT UNDER S 5.2 PENDING ACTIVITIES LISTED IN S 5.1, 5.2, 5.3 AND PARAGRAPH (B) OF THIS SECTION WITH A TOTAL CAPACITY > 50 TONNES, EXCL TEMP STORAGE WHERE GENERATED				
	Primary Activity:	N				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
26	**Integrated Pollution Prevention And Control** Name: Edelchemie Uk Ltd Location: Land At Brunner-Mond Works, Land At Brunner-Mond Works, Griffiths Road,,Lostock Gralam, NORTHWICH, Cheshire, CW9 7NU Authority: Environment Agency, North West Region Permit Reference: VP3031EF Original Permit Ref: Rp3931xd Effective Date: 20th January 2014 **Status: Superseded By Variation** Application Type: Variation App. Sub Type: Minor Positional Accuracy: Located by supplier to within 100m Activity Code: 4.2 A(1) (A) (IV) Activity Description: Inorganic Chemicals; Salts Eg Ammonium Chloride Primary Activity: Y Activity Code: 5.3 A(1) a) (iii) Activity Description: DISPOSAL OR RECOVERY OF HAZ WASTE WITH CAPACITY EXCEEDING 10 TONNES PER DAY INVOLVING BLENDING OR MIXING PRIOR TO SUBMISSION TO ANY OF THE OTHER ACTIVITIES LISTED IN THIS SECTION OR IN SECTION 5.1 Primary Activity: N Activity Code: 5.3 A(1) a) (iv) Activity Description: DISPOSAL OR RECOVERY OF HAZ WASTE WITH CAPACITY EXCEEDING 10 TONNES PER DAY INVOLVING REPACKAGING PRIOR TO SUBMISSION TO ANY OF THE OTHER ACTIVITIES LISTED IN THIS SECTION OR IN SECTION 5.1 Primary Activity: N Activity Code: 5.3 A(1) a) (vi) Activity Description: DISPOSAL OR RECOVERY OF HAZARDOUS WASTE WITH A CAPACITY EXCEEDING 10 TONNES PER DAY INVOLVING RECYCLING OR RECLAMATION OF INORGANIC MATERIALS OTHER THAN METALS OR METAL COMPOUNDS Primary Activity: N Activity Code: 5.6 A(1) a) Activity Description: TEMPORARY STORAGE OF HAZ WASTE NOT UNDER S 5.2 PENDING ACTIVITIES LISTED IN S 5.1, 5.2, 5.3 AND PARAGRAPH (B) OF THIS SECTION WITH A TOTAL CAPACITY > 50 TONNES, EXCL TEMP STORAGE WHERE GENERATED Primary Activity: N Activity Code: 0.0 Associated Process Activity Description: Associated Process Primary Activity: N Activity Code: 2.2 A(1) (A) Activity Description: Non-Ferrous Metals; Producing From Raw Materials By Metallurgical Activities Etc Primary Activity: N Activity Code: 2.2 B (A) Activity Description: Non-Ferrous Metals; Melting With Capacity Less Than 4T/D Lead/Cadmium Or Less Than 20T/D Others (Unless Greater Than 50 Percent Tin) Primary Activity: N	A13SW (SW)	259	2	367700 373900
27	**Integrated Pollution Prevention And Control** Name: Brunner Mond (Uk) Ltd Location: Lostock Sodium Carbonate Manufacturing Site, Brunner Mond (Uk) Ltd, Lostock Gralam,, Northwich, Cheshire, CW9 7TH Authority: Environment Agency, North West Region Permit Reference: Sp3430bf Original Permit Ref: Sp3430bf Effective Date: 4th October 2007 **Status: Superseded By Variation** Application Type: Application App. Sub Type: New Positional Accuracy: Manually positioned to the address or location Activity Code: 5.3 A(1) (C) (II) Activity Description: Other Waste Disposal; Non-Hazardous Waste >50T/D By Physico-Chemical Treatment Primary Activity: N Activity Code: 4.2 A(1) (A) (VI) Activity Description: Inorganic Chemicals; Halogens Etc Or Halogen/Oxygen Compounds Etc Primary Activity: Y Activity Code: 3.1 A(1) (B) (II) Activity Description: Cement And Lime; Producing Lime With Input Greater Than 5,000T/ 12 Months Primary Activity: N	A14NW (E)	259	2	368307 374286

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
27	**Integrated Pollution Prevention And Control** Name: Solvay Speciality Chemicals Ltd Location: Solvay House, Lostock Works, Works Lane, Northwich, Cheshire, CW9 7ZR Authority: Environment Agency, North West Region Permit Reference: PP3038UF Original Permit Ref: Bs5576il Effective Date: 18th April 2007 **Status: Effective** Application Type: Variation App. Sub Type: Minor Positional Accuracy: Automatically positioned to the address Activity Code: 4.7 A(1) (B) Activity Description: Carbon Disulphide Or Ammonia; Ammonia Release To Air (Any Chemical Manufacture Not Refridgerant Use) Primary Activity: N Activity Code: 4.2 A(1) (A) (IV) Activity Description: Inorganic Chemicals; Salts Eg Ammonium Chloride Primary Activity: Y	A14NW (E)	293	2	368346 374268
27	**Integrated Pollution Prevention And Control** Name: Solvay Speciality Chemicals Ltd Location: Lostock Sodium Carbonate Manufacturing Site, Lostock Works, NORTHWICH, Cheshire, CW9 7ZR Authority: Environment Agency, North West Region Permit Reference: Bs5576il Original Permit Ref: Bs5576il Effective Date: 20th October 2006 **Status: Superseded By Variation** Application Type: Application App. Sub Type: New Positional Accuracy: Automatically positioned to the address Activity Code: 4.7 A(1) (B) Activity Description: Carbon Disulphide Or Ammonia; Ammonia Release To Air (Any Chemical Manufacture Not Refridgerant Use) Primary Activity: N Activity Code: 4.2 A(1) (A) (IV) Activity Description: Inorganic Chemicals; Salts Eg Ammonium Chloride Primary Activity: Y	A14NW (E)	293	2	368346 374268
27	**Integrated Pollution Prevention And Control** Name: Tata Chemicals Europe Limited Location: Lostock Sodium Carbonate Manufacturing Site, Brunner Mond (Uk) Ltd, Lostock Gralam,, Northwich, Cheshire, CW9 7TH Authority: Environment Agency, North West Region Permit Reference: XP3636GZ Original Permit Ref: Sp3430bf Effective Date: 6th March 2009 **Status: Superseded By Variation** Application Type: Variation App. Sub Type: Minor Positional Accuracy: Manually positioned within the geographical locality Activity Code: 3.1 A(1) (B) (II) Activity Description: Cement And Lime; Producing Lime With Input Greater Than 5,000T/ 12 Months Primary Activity: N Activity Code: 4.2 A(1) (A) (VI) Activity Description: Inorganic Chemicals; Halogens Etc Or Halogen/Oxygen Compounds Etc Primary Activity: Y Activity Code: 5.3 A(1) (C) (II) Activity Description: Other Waste Disposal; Non-Hazardous Waste >50T/D By Physico-Chemical Treatment Primary Activity: N	A14NW (E)	309	2	368365 374251
28	**Integrated Pollution Prevention And Control** Name: Eew Energy From Waste Uk Limited Location: Lostock Sustainable Energy Plant, Lostock Substainable Energy Plant, Lostock Graham, NORTHWICH, Cheshire, CW9 7NU Authority: Environment Agency, North West Region Permit Reference: QP3136CV Original Permit Ref: Qp3136cv Effective Date: 16th December 2013 **Status: Effective** Application Type: Application App. Sub Type: New Positional Accuracy: Located by supplier to within 10m Activity Code: 5.1 A(1) (C) Activity Description: Incineration Of Non Hazardous Waste Greater Than 1 T/Hr Primary Activity: Y Activity Code: 0.0 Associated Process Activity Description: Associated Process Primary Activity: N	A14SW (SE)	354	2	368310 373930

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Integrated Pollution Prevention And Control				
29	Name: Edelchemie Uk Ltd Location: Land At Brunner-Mond Works, Griffiths Road, Land At Brunner-Mond Works, Griffiths Road,,Lostock Gralam, NORTHWICH, Cheshire, CW9 7NU Authority: Environment Agency, North West Region Permit Reference: RP3931XD Original Permit Ref: Rp3931xd Effective Date: 24th November 2009 **Status: Superseded By Variation** Application Type: Application App. Sub Type: New Positional Accuracy: Manually positioned to the road within the address or location Activity Code: 2.2 A(1) (A) Activity Description: Non-Ferrous Metals; Producing From Raw Materials By Metallurgical Activities Etc Primary Activity: N Activity Code: 0.0 Associated Process Activity Description: Associated Process Primary Activity: N Activity Code: 5.4 A(1) (C) (III) Activity Description: Recovery Of Waste; Hazardous Waste Greater Than 10T/D By Recycling Inorganics (Not Metals) Primary Activity: N Activity Code: 2.2 B (A) Activity Description: Non-Ferrous Metals; Melting With Capacity Less Than 4T/D Lead/Cadmium Or Less Than 20T/D Others (Unless Greater Than 50 Percent Tin) Primary Activity: N Activity Code: 4.2 A(1) (A) (IV) Activity Description: Inorganic Chemicals; Salts Eg Ammonium Chloride Primary Activity: Y	A14NW (E)	455	2	368505 374302
	Integrated Pollution Prevention And Control				
30	Name: Thor Specialities Uk Ltd Location: Thor Specialities (Uk) Limited, Wincham Avenue, Wincham,,, NORTHWICH, Cheshire, CW9 6GB Authority: Environment Agency, North West Region Permit Reference: Hp3437sg Original Permit Ref: Bl6403iq Effective Date: 30th October 2005 **Status: Superseded By Variation** Application Type: Variation App. Sub Type: Standard Positional Accuracy: Manually positioned to the address or location Activity Code: 4.2 A(1) (A) (IV) Activity Description: Inorganic Chemicals; Salts Eg Ammonium Chloride Primary Activity: Y	A18NE (N)	627	2	368015 374942
	Integrated Pollution Prevention And Control				
30	Name: Thor Specialities Uk Ltd Location: Thor Specialities (Uk) Limited, Wincham Avenue, Wincham,,, NORTHWICH, Cheshire, CW9 6GB Authority: Environment Agency, North West Region Permit Reference: VP3933WL Original Permit Ref: Bl6403iq Effective Date: 12th November 2014 **Status: Effective** Application Type: Variation App. Sub Type: Standard Positional Accuracy: Automatically positioned to the address Activity Code: 4.1 A(1) (A) (V) Activity Description: Organic Chemicals; Phosphorus Containing Compounds Eg Substituted Phosphines Primary Activity: N Activity Code: 5.4 A(1) (A) Activity Description: Recovery Of Waste; By Distillation Of Oil/Organic Solvent Primary Activity: N Activity Code: 4.2 A(1) (A) (IV) Activity Description: Inorganic Chemicals; Salts Eg Ammonium Chloride Primary Activity: N Activity Code: 4.1 A(1) (A) (III) Activity Description: Organic Chemicals; Sulphur Containing Compounds Eg Sulphides Primary Activity: N Activity Code: 4.1 A(1) (A) (II) Activity Description: Organic Chemicals; Oxygen Containing Compounds Eg Alcohols Primary Activity: N Activity Code: 4.1 A(1) (A) (IV) Activity Description: Organic Chemicals; Nitrogen Containing Compounds Eg Amines Primary Activity: N Activity Code: 4.1 A(1) (A) (VI) Activity Description: Organic Chemicals; Halogen Containg Compounds Eg Halocarbons Primary Activity: N Activity Code: 4.2 A(1) (A) (IV) Activity Description: Inorganic Chemicals; Salts Eg Ammonium Chloride Primary Activity: Y	A18NE (N)	628	2	368015 374943

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
30	**Integrated Pollution Prevention And Control** Name: Thor Specialities Uk Ltd Location: Thor Specialities (Uk) Limited, Wincham Avenue, Wincham,,, NORTHWICH, Cheshire, CW9 6GB Authority: Environment Agency, North West Region Permit Reference: ZP3030ZH Original Permit Ref: BI6403iq Effective Date: 20th December 2012 **Status: Superseded By Variation** Application Type: Variation App. Sub Type: Standard Positional Accuracy: Automatically positioned to the address Activity Code: 4.1 A(1) (A) (III) Activity Description: Organic Chemicals; Sulphur Containing Compounds Eg Sulphides Primary Activity: N Activity Code: 4.1 A(1) (A) (II) Activity Description: Organic Chemicals; Oxygen Containing Compounds Eg Alcohols Primary Activity: N Activity Code: 4.1 A(1) (A) (V) Activity Description: Organic Chemicals; Phosphorus Containing Compounds Eg Substituted Phosphines Primary Activity: N Activity Code: 4.1 A(1) (A) (VI) Activity Description: Organic Chemicals; Halogen Containg Compounds Eg Halocarbons Primary Activity: N Activity Code: 4.2 A(1) (A) (IV) Activity Description: Inorganic Chemicals; Salts Eg Ammonium Chloride Primary Activity: N Activity Code: 4.2 A(1) (A) (IV) Activity Description: Inorganic Chemicals; Salts Eg Ammonium Chloride Primary Activity: Y Activity Code: 5.4 A(1) (A) Activity Description: Recovery Of Waste; By Distillation Of Oil/Organic Solvent Primary Activity: N Activity Code: 4.1 A(1) (A) (IV) Activity Description: Organic Chemicals; Nitrogen Containing Compounds Eg Amines Primary Activity: N	A18NE (N)	628	2	368015 374943
30	**Integrated Pollution Prevention And Control** Name: Thor Specialities Uk Ltd Location: Thor Specialities (Uk) Limited, Wincham Avenue, Wincham,,, NORTHWICH, Cheshire, CW9 6GB Authority: Environment Agency, North West Region Permit Reference: PP3431FN Original Permit Ref: BI6403iq Effective Date: 9th November 2011 **Status: Superseded By Variation** Application Type: Variation App. Sub Type: Simple Standard Variation Positional Accuracy: Automatically positioned to the address Activity Code: 4.2 A(1) (A) (IV) Activity Description: Inorganic Chemicals; Salts Eg Ammonium Chloride Primary Activity: Y Activity Code: 4.1 A(1) (A) (VI) Activity Description: Organic Chemicals; Halogen Containg Compounds Eg Halocarbons Primary Activity: N Activity Code: 4.1 A(1) (A) (IV) Activity Description: Organic Chemicals; Nitrogen Containing Compounds Eg Amines Primary Activity: N Activity Code: 4.1 A(1) (A) (II) Activity Description: Organic Chemicals; Oxygen Containing Compounds Eg Alcohols Primary Activity: N Activity Code: 4.1 A(1) (A) (V) Activity Description: Organic Chemicals; Phosphorus Containing Compounds Eg Substituted Phosphines Primary Activity: N Activity Code: 4.2 A(1) (A) (IV) Activity Description: Inorganic Chemicals; Salts Eg Ammonium Chloride Primary Activity: N Activity Code: 4.1 A(1) (A) (III) Activity Description: Organic Chemicals; Sulphur Containing Compounds Eg Sulphides Primary Activity: N Activity Code: 5.4 A(1) (A) Activity Description: Recovery Of Waste; By Distillation Of Oil/Organic Solvent Primary Activity: N	A18NE (N)	628	2	368015 374943

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
30	**Integrated Pollution Prevention And Control** Name: Thor Specialities Uk Ltd Location: Wincham Avenue, Wincham, Northwich, Cheshire, CW9 6GB Authority: Environment Agency, North West Region Permit Reference: JP3938XS Original Permit Ref: BI6403iq Effective Date: 21st April 2008 **Status: Superseded By Variation** Application Type: Variation App. Sub Type: Simple Standard Variation Positional Accuracy: Automatically positioned to the address Activity Code: 4.1 A(1) (A) (III) Activity Description: Organic Chemicals; Sulphur Containing Compounds Eg Sulphides Primary Activity: N Activity Code: 4.2 A(1) (A) (IV) Activity Description: Inorganic Chemicals; Salts Eg Ammonium Chloride Primary Activity: N Activity Code: 4.1 A(1) (A) (V) Activity Description: Organic Chemicals; Phosphorus Containing Compounds Eg Substituted Phosphines Primary Activity: N Activity Code: 4.1 A(1) (A) (IV) Activity Description: Organic Chemicals; Nitrogen Containing Compounds Eg Amines Primary Activity: N Activity Code: 4.1 A(1) (A) (VI) Activity Description: Organic Chemicals; Halogen Containg Compounds Eg Halocarbons Primary Activity: N Activity Code: 4.1 A(1) (A) (II) Activity Description: Organic Chemicals; Oxygen Containing Compounds Eg Alcohols Primary Activity: N Activity Code: 4.2 A(1) (A) (IV) Activity Description: Inorganic Chemicals; Salts Eg Ammonium Chloride Primary Activity: Y Activity Code: 5.4 A(1) (A) Activity Description: Recovery Of Waste; By Distillation Of Oil/Organic Solvent Primary Activity: N	A18NE (N)	628	2	368015 374943
30	**Integrated Pollution Prevention And Control** Name: Thor Specialities Uk Ltd Location: Thor Specialities (phase 1) Wincham, Wincham Avenue, Wincham, Northwich, Cheshire, CW9 6GB Authority: Environment Agency, North West Region Permit Reference: BI6403iq Original Permit Ref: BI6403iq Effective Date: 14th November 2003 **Status: Superseded By Variation** Application Type: Application App. Sub Type: New Positional Accuracy: Automatically positioned to the address Activity Code: 4.2 A(1) (A) (IV) Activity Description: Inorganic Chemicals; Salts Eg Ammonium Chloride Primary Activity: Y	A18NE (N)	628	2	368015 374943
31	**Local Authority Pollution Prevention and Controls** Name: Euroroof Ltd Location: Denton Drive, NORTHWICH, Cheshire, CW9 7LU Authority: Cheshire West and Chester Council, Environmental Health Department Permit Reference: Not Given Dated: 25th September 1993 Process Type: Local Authority Air Pollution Control Description: PG6/29 Di-isocyanate processes **Status: Authorisation revokedRevoked** Positional Accuracy: Manually positioned to the road within the address or location	A12NE (NW)	540	3	367342 374464
32	**Local Authority Pollution Prevention and Controls** Name: Motorbody Care (Northwich) Ltd Location: Denton Drive, NORTHWICH, Cheshire, CW9 7LU Authority: Cheshire West and Chester Council, Environmental Health Department Permit Reference: Ppc/Vr/Motorbody Dated: 9th September 1992 Process Type: Local Authority Pollution Prevention and Control Description: PG6/34 Respraying of road vehicles **Status: Permitted** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	571	3	367365 374559

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Local Authority Pollution Prevention and Controls					
33	Name:	Middlewich Road Service Station	A7SE (SW)	668	3	367566 373506
	Location:	201-203 Middlewich Road, NORTHWICH, Cheshire, CW9 7DN				
	Authority:	Cheshire West and Chester Council, Environmental Health Department				
	Permit Reference:	Not Given				
	Dated:	1st November 1999				
	Process Type:	Local Authority Pollution Prevention and Control				
	Description:	PG1/14 Petrol filling station				
	Status:	**Authorisation revokedRevoked**				
	Positional Accuracy:	Automatically positioned to the address				
	Local Authority Pollution Prevention and Controls					
34	Name:	Rudheath Mot Centre	A7NW (SW)	670	3	367252 373794
	Location:	Hargreaves Road, RUDHEATH, CW9 7BL				
	Authority:	Cheshire West and Chester Council, Environmental Health Department				
	Permit Reference:	Ppc/Wob0.4/Rudheathm				
	Dated:	Not Supplied				
	Process Type:	Local Authority Pollution Prevention and Control				
	Description:	PG1/1Waste oil burners, less than 0.4MW net rated thermal input				
	Status:	**Permitted**				
	Positional Accuracy:	Manually positioned to the address or location				
	Local Authority Pollution Prevention and Controls					
35	Name:	Northwest Truck Engineering	A19SE (NE)	689	3	368629 374616
	Location:	Griffiths Road, Lostock Gralam, Northwich, Cheshire, CW9 7NU				
	Authority:	Cheshire West and Chester Council, Environmental Health Department				
	Permit Reference:	Not Given				
	Dated:	28th July 1995				
	Process Type:	Local Authority Air Pollution Control				
	Description:	PG6/10 Coating manufacturing				
	Status:	**Authorisation revokedRevoked**				
	Positional Accuracy:	Manually positioned to the address or location				
	Local Authority Pollution Prevention and Controls					
35	Name:	North West Truck Engineering Co Ltd	A19SE (NE)	689	3	368629 374616
	Location:	Griffiths Road, Lostock Gralam, NOTHWICH, Cheshire, CW9 7NU				
	Authority:	Cheshire West and Chester Council, Environmental Health Department				
	Permit Reference:	PPC/WOB0.4/NWTRUCKS				
	Dated:	Not Supplied				
	Process Type:	Local Authority Pollution Prevention and Control				
	Description:	PG1/1Waste oil burners, less than 0.4MW net rated thermal input				
	Status:	**Authorisation revokedRevoked**				
	Positional Accuracy:	Automatically positioned to the address				
	Local Authority Pollution Prevention and Controls					
36	Name:	New Platt Motors	A18NW (NW)	694	3	367600 374900
	Location:	Chapel Street, Wincham Park, NORTHWICH, Cheshire, CW9 6DA				
	Authority:	Cheshire West and Chester Council, Environmental Health Department				
	Permit Reference:	PPC/VR/NEWPLATT/1				
	Dated:	27th March 1995				
	Process Type:	Local Authority Pollution Prevention and Control				
	Description:	PG6/34 Respraying of road vehicles				
	Status:	**Authorisation revokedRevoked**				
	Positional Accuracy:	Located by supplier to within 100m				
	Local Authority Pollution Prevention and Controls					
37	Name:	Tesco Stores Ltd	A12SW (W)	704	3	367121 374060
	Location:	Manchester Road, NORTHWICH, Cheshire, CW9 5LY				
	Authority:	Cheshire West and Chester Council, Environmental Health Department				
	Permit Reference:	PFS/PFS/TESCOS				
	Dated:	1st November 1999				
	Process Type:	Local Authority Pollution Prevention and Control				
	Description:	PG1/14 Petrol filling station				
	Status:	**Permitted**				
	Positional Accuracy:	Automatically positioned to the address				
	Local Authority Pollution Prevention and Controls					
38	Name:	A & B Autos	A7NW (SW)	718	3	367217 373758
	Location:	Unit 2 Hargreaves Road, RUDHEATH, CW9 7BL				
	Authority:	Cheshire West and Chester Council, Environmental Health Department				
	Permit Reference:	PPC/WOB0.4/A&B				
	Dated:	Not Supplied				
	Process Type:	Local Authority Air Pollution Control				
	Description:	PG1/1Waste oil burners, less than 0.4MW net rated thermal input				
	Status:	**Authorised**				
	Positional Accuracy:	Located by supplier to within 100m				

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Local Authority Pollution Prevention and Controls					
39	Name:	Express Asphalt	A18NW (N)	867	3	367935 375180
	Location:	Wincham Avenue, off Wincham lane, NORTHWICH, Cheshire, CW9 6GB				
	Authority:	Cheshire West and Chester Council, Environmental Health Department				
	Permit Reference:	PPC/ROADCOAT/AGGIND				
	Dated:	14th December 1995				
	Process Type:	Local Authority Air Pollution Control				
	Description:	PG3/15 Mineral drying and roadstone coating processes				
	Status:	**Authorised**				
	Positional Accuracy:	Manually positioned to the address or location				
	Local Authority Pollution Prevention and Controls					
39	Name:	Tarmac Topmix Ltd	A18NW (N)	891	3	367900 375200
	Location:	Wincham Lane, Winham, NORTHWICH, Cheshire, CW9 6DE				
	Authority:	Cheshire West and Chester Council, Environmental Health Department				
	Permit Reference:	PPC/CONC/TOPMIX				
	Dated:	20th March 1992				
	Process Type:	Local Authority Pollution Prevention and Control				
	Description:	PG3/1Blending, packing, loading and use of bulk cement				
	Status:	**Permitted**				
	Positional Accuracy:	Located by supplier to within 100m				
	Local Authority Pollution Prevention and Control Enforcements					
40	Location:	Wincham Lane, Northwich, Cheshire, Cw9 6de	A18NW (N)	867	3	367935 375180
	Type:	Air Pollution Control Enforcement Notice				
	Reference:	PPC/CONC/TOPBLOCK				
	Date Issued:	24th February 2002				
	Enforcement Date:	28th September 2001				
	Details:	Practices Contravening Conditions 2^ 3^ 4^ 5^ 6^ 8^ 9 And 20				
	Positional Accuracy:	Located by supplier to within 100m				
	Local Authority Pollution Prevention and Control Enforcements					
41	Location:	Wincham Lane, NORTHWICH, Cheshire, CW9 6DE	A18NW (N)	885	3	367868 375190
	Type:	Air Pollution Control Enforcement Notice				
	Reference:	NOT GIVEN				
	Date Issued:	24th February 2002				
	Enforcement Date:	Not Supplied				
	Details:	Practices Contravening Conditions 2^ 3^ 4^ 5^ 6^ 8^ 9 And 20				
	Positional Accuracy:	Automatically positioned to the address				
	Nearest Surface Water Feature		A13SE (S)	13	-	367961 374089
	Pollution Incidents to Controlled Waters					
42	Property Type:	Manufacturing: Chemical Manufacture	A13NE (N)	85	2	368000 374400
	Location:	Brunner Mond, Lostock Works, LOSTOCK, Cheshire				
	Authority:	Environment Agency, North West Region				
	Pollutant:	Inorganic Chemicals : Sodium Chloride				
	Note:	Not Supplied				
	Incident Date:	4th August 1999				
	Incident Reference:	33399				
	Catchment Area:	Tributary Upstream Of Wincham Brook				
	Receiving Water:	Freshwater Stream/River				
	Cause of Incident:	Accident				
	Incident Severity:	Category 3 - Minor Incident				
	Positional Accuracy:	Located by supplier to within 100m				
	Pollution Incidents to Controlled Waters					
43	Property Type:	Not Given	A13SW (SW)	121	2	367800 374000
	Location:	Location Description Not Available				
	Authority:	Environment Agency, North West Region				
	Pollutant:	Oils - Other Oil				
	Note:	Wade Bk				
	Incident Date:	15th September 1994				
	Incident Reference:	94522104				
	Catchment Area:	Wincham Brook				
	Receiving Water:	Not Given				
	Cause of Incident:	Miscellaneous/Other Pollution Type				
	Incident Severity:	Category 3 - Minor Incident				
	Positional Accuracy:	Located by supplier to within 100m				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Pollution Incidents to Controlled Waters				
44	Property Type: Chemical industry Location: Wade Brook, Brunner Mond, River Lostock Authority: Environment Agency, North West Region Pollutant: Oils - Other Oil Note: Not Supplied Incident Date: 10th March 1998 Incident Reference: SO980461 Catchment Area: Wincham Brook Receiving Water: Freshwater Stream/River Cause of Incident: Other Cause Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13SE (E)	142	2	368200 374200
	Pollution Incidents to Controlled Waters				
45	Property Type: Chemical industry Location: Ici Lostock, LOSTOCK Authority: Environment Agency, North West Region Pollutant: Chemicals - Other Inorganic Note: Not Supplied Incident Date: 22nd January 1998 Incident Reference: SO980214 Catchment Area: Wincham Brook Receiving Water: Freshwater Stream/River Cause of Incident: Other Cause Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13NE (E)	162	2	368200 374295
	Pollution Incidents to Controlled Waters				
45	Property Type: Not Given Location: Cheshire Authority: Environment Agency, North West Region Pollutant: Chemicals - Alkali Note: Wade Brook; Lime Beds Discharge Incident Date: 14th April 1996 Incident Reference: 96520755 Catchment Area: Wincham Brook Receiving Water: Not Given Cause of Incident: High Flow Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13NE (E)	164	2	368200 374300
	Pollution Incidents to Controlled Waters				
46	Property Type: Chemical industry Location: Wade Brook Adjacent , I C I Chemical & Polymers Authority: Environment Agency, North West Region Pollutant: Oils - Other Oil Note: Chlorine Plant; Wade Brook; Rectifier Oil Incident Date: 1st September 1997 Incident Reference: 97521592 Catchment Area: Wincham Brook Receiving Water: Freshwater Stream/River Cause of Incident: Leaking Tank Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13SW (SW)	183	2	367700 374000
	Pollution Incidents to Controlled Waters				
47	Property Type: Pipelines (Long Distance Only) Location: Lostock Gralam , NORTHWICH Authority: Environment Agency, North West Region Pollutant: Chemicals - Other Inorganic Note: Wincham Brook; Brine Incident Date: 15th August 1997 Incident Reference: 97521594 Catchment Area: Wincham Brook Receiving Water: Freshwater Stream/River Cause of Incident: Other Cause Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13NW (N)	207	2	367900 374500
	Pollution Incidents to Controlled Waters				
48	Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Oils - Unknown Note: Wade Brook Incident Date: 27th February 1991 Incident Reference: 91520277 Catchment Area: Weaver Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A13NE (NE)	211	2	368200 374400

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Pollution Incidents to Controlled Waters					
49	Property Type:	Not Given	A13SW (W)	227	2	367600 374100
	Location:	Location Description Not Available				
	Authority:	Environment Agency, North West Region				
	Pollutant:	Oils - Other Fuel Oil				
	Note:	Wade Brook				
	Incident Date:	4th August 1994				
	Incident Reference:	94521789				
	Catchment Area:	Wincham Brook				
	Receiving Water:	Not Given				
	Cause of Incident:	Miscellaneous/Other Pollution Type				
	Incident Severity:	Category 2 - Significant Incident				
	Positional Accuracy:	Located by supplier to within 100m				
	Pollution Incidents to Controlled Waters					
50	Property Type:	Spillage; Accident - Static Site	A14NW (E)	255	2	368300 374295
	Location:	Cheshire				
	Authority:	Environment Agency, North West Region				
	Pollutant:	Chemicals - Other Inorganic				
	Note:	Wade Brook; Brine				
	Incident Date:	1st October 1996				
	Incident Reference:	96522112				
	Catchment Area:	Wincham Brook				
	Receiving Water:	Not Given				
	Cause of Incident:	Not Given				
	Incident Severity:	Category 3 - Minor Incident				
	Positional Accuracy:	Located by supplier to within 100m				
	Pollution Incidents to Controlled Waters					
50	Property Type:	Spillage; Accident - Static Site	A14NW (E)	257	2	368300 374300
	Location:	Location Description Not Available				
	Authority:	Environment Agency, North West Region				
	Pollutant:	Chemicals - Other Inorganic				
	Note:	Wade Brook; Brine				
	Incident Date:	19th August 1995				
	Incident Reference:	95522124				
	Catchment Area:	Weaver				
	Receiving Water:	Not Given				
	Cause of Incident:	Accidental Spillage/Leakage				
	Incident Severity:	Category 3 - Minor Incident				
	Positional Accuracy:	Located by supplier to within 100m				
	Pollution Incidents to Controlled Waters					
51	Property Type:	Spillage; Accident - Static Site	A13NW (NW)	294	2	367700 374500
	Location:	Location Description Not Available				
	Authority:	Environment Agency, North West Region				
	Pollutant:	Chemicals - Other Inorganic				
	Note:	Wincham Bk; Brine				
	Incident Date:	10th March 1995				
	Incident Reference:	95520492				
	Catchment Area:	Wincham Brook				
	Receiving Water:	Not Given				
	Cause of Incident:	Leaking Underground Pipe				
	Incident Severity:	Category 3 - Minor Incident				
	Positional Accuracy:	Located by supplier to within 100m				
	Pollution Incidents to Controlled Waters					
52	Property Type:	Spillage; Accident - Static Site	A14NW (NE)	296	2	368300 374395
	Location:	Cheshire				
	Authority:	Environment Agency, North West Region				
	Pollutant:	Chemicals - Alkali				
	Note:	Wade Brook; Caustic Soda				
	Incident Date:	3rd July 1996				
	Incident Reference:	96521499				
	Catchment Area:	Wincham Brook				
	Receiving Water:	Not Given				
	Cause of Incident:	Not Given				
	Incident Severity:	Category 3 - Minor Incident				
	Positional Accuracy:	Located by supplier to within 100m				
	Pollution Incidents to Controlled Waters					
52	Property Type:	Not Given	A14NW (NE)	298	2	368300 374400
	Location:	Cheshire				
	Authority:	Environment Agency, North West Region				
	Pollutant:	Chemicals - Other Inorganic				
	Note:	Wade Brook; Brine Soda Ash				
	Incident Date:	14th November 1996				
	Incident Reference:	96522251				
	Catchment Area:	Wincham Brook				
	Receiving Water:	Not Given				
	Cause of Incident:	Electrical Failure				
	Incident Severity:	Category 3 - Minor Incident				
	Positional Accuracy:	Located by supplier to within 100m				

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Pollution Incidents to Controlled Waters					
52	Property Type: Location: Authority: Pollutant: Note: Incident Date: Incident Reference: Catchment Area: Receiving Water: Cause of Incident: Incident Severity: Positional Accuracy:	Industrial: Other Brunner Mond, LOSTOCK Environment Agency, North West Region Oils - Other Oil Wade Brook; Turbine Oil 11th February 1997 97520246 Wincham Brook Freshwater Stream/River Accidental Spillage/Leakage Category 3 - Minor Incident Located by supplier to within 100m	A14NW (NE)	300	2	368305 374395
	Pollution Incidents to Controlled Waters					
53	Property Type: Location: Authority: Pollutant: Note: Incident Date: Incident Reference: Catchment Area: Receiving Water: Cause of Incident: Incident Severity: Positional Accuracy:	Spillage; Accident In Transit Cheshire Environment Agency, North West Region Chemicals - Other Inorganic Wincham Brook; Brine 10th February 1996 96520252 Wincham Brook Not Given Not Given Category 3 - Minor Incident Located by supplier to within 100m	A18SW (N)	336	2	367800 374600
	Pollution Incidents to Controlled Waters					
54	Property Type: Location: Authority: Pollutant: Note: Incident Date: Incident Reference: Catchment Area: Receiving Water: Cause of Incident: Incident Severity: Positional Accuracy:	Not Given Location Description Not Available Environment Agency, North West Region Chemicals - Other Inorganic Wade Brook 23rd August 1994 94521932 Wincham Brook Not Given Ineffective Pumping Category 3 - Minor Incident Located by supplier to within 100m	A14SW (E)	341	2	368400 374200
	Pollution Incidents to Controlled Waters					
55	Property Type: Location: Authority: Pollutant: Note: Incident Date: Incident Reference: Catchment Area: Receiving Water: Cause of Incident: Incident Severity: Positional Accuracy:	Not Given Location Description Not Available Environment Agency, North West Region Miscellaneous - Unknown Not Supplied 12th December 1995 95522985 Weaver Not Given Miscellaneous/Other Pollution Type Category 3 - Minor Incident Located by supplier to within 100m	A14NW (E)	352	2	368400 374300
	Pollution Incidents to Controlled Waters					
55	Property Type: Location: Authority: Pollutant: Note: Incident Date: Incident Reference: Catchment Area: Receiving Water: Cause of Incident: Incident Severity: Positional Accuracy:	Spillage; Accident - Static Site Cheshire Environment Agency, North West Region Chemicals - Other Inorganic Wade Brook; Brine 23rd August 1996 96522026 Wincham Brook Not Given Not Given Category 3 - Minor Incident Located by supplier to within 100m	A14NW (E)	356	2	368405 374295
	Pollution Incidents to Controlled Waters					
56	Property Type: Location: Authority: Pollutant: Note: Incident Date: Incident Reference: Catchment Area: Receiving Water: Cause of Incident: Incident Severity: Positional Accuracy:	Chemical industry Brunner Mond, Lostock Site, NORTHWICH Environment Agency, North West Region Oils - Gas Oil Wade Brook; Gas Oil 1st October 1997 97521729 Wincham Brook Freshwater Stream/River Mechanical Failure Category 3 - Minor Incident Located by supplier to within 100m	A12SE (SW)	355	2	367500 374000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Pollution Incidents to Controlled Waters				
56	Property Type: Manufacturing: Chemical Manufacture Location: Lostock Works, Wade Brook, Cheshire Authority: Environment Agency, North West Region Pollutant: Inorganic Chemicals : Sodium Chloride Note: Not Supplied Incident Date: 4th August 1999 Incident Reference: 31527 Catchment Area: Not Given Receiving Water: Freshwater Stream/River Cause of Incident: Accident Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 10m	A12SE (SW)	357	2	367500 373995
	Pollution Incidents to Controlled Waters				
57	Property Type: Manufacturing: Chemical Manufacture Location: Lostock, Northwich, NORTHWICH, Cheshire Authority: Environment Agency, North West Region Pollutant: Inorganic Chemicals : Ammonium Note: Not Supplied Incident Date: 11th October 1999 Incident Reference: 33350 Catchment Area: Tributary Upstream Of Wincham Brook Receiving Water: Freshwater Stream/River Cause of Incident: Structural Failure : Steel Structure Failure Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 10m	A14NW (NE)	390	2	368400 374405
	Pollution Incidents to Controlled Waters				
57	Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Industrial Effluent Note: Wade Brook; Caustic Incident Date: 11th August 1991 Incident Reference: 91521446 Catchment Area: Weaver Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A14NW (NE)	390	2	368405 374395
	Pollution Incidents to Controlled Waters				
57	Property Type: Spillage; Accident - Static Site Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Chemicals - Alkali Note: Wade Brook Incident Date: 26th November 1995 Incident Reference: 95522853 Catchment Area: Weaver Receiving Water: Not Given Cause of Incident: Accidental Spillage/Leakage Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A14NW (NE)	392	2	368405 374400
	Pollution Incidents to Controlled Waters				
58	Property Type: Chemical industry Location: Ici , Griffiths Road , NORTHWICH Authority: Environment Agency, North West Region Pollutant: Chemicals - Other Inorganic Note: Spillage Of Liquid; Alkaline Incident Date: 3rd November 1998 Incident Reference: SO981941 Catchment Area: Wincham Brook Receiving Water: Freshwater Stream/River Cause of Incident: Mechanical Failure Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A14SW (SE)	402	2	368400 374000
	Pollution Incidents to Controlled Waters				
59	Property Type: Chemical industry Location: Liquid In Trent & Mersey Canal, Griffiths Road , LOSTOCK Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Other Note: Not Supplied Incident Date: 10th July 1998 Incident Reference: SO981358 Catchment Area: Trent & Mersey Canal Receiving Water: Canal Cause of Incident: Other Cause Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A14NW (E)	449	2	368500 374295

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Pollution Incidents to Controlled Waters					
59	Property Type: Location: Authority: Pollutant: Note: Incident Date: Incident Reference: Catchment Area: Receiving Water: Cause of Incident: Incident Severity: Positional Accuracy:	Chemical industry I C I Lostock, LOSTOCK Environment Agency, North West Region Chemicals - Other Inorganic Wade Brook; Brine 18th December 1997 97522066 Wincham Brook Freshwater Stream/River Inadequate Design/Capacity Category 3 - Minor Incident Located by supplier to within 100m	A14NW (E)	450	2	368500 374300
	Pollution Incidents to Controlled Waters					
60	Property Type: Location: Authority: Pollutant: Note: Incident Date: Incident Reference: Catchment Area: Receiving Water: Cause of Incident: Incident Severity: Positional Accuracy:	Not Given Location Description Not Available Environment Agency, North West Region Industrial Effluent Tributary Wade Brook 23rd April 1991 91520568 Weaver Not Given Unknown Category 3 - Minor Incident Located by supplier to within 100m	A7NE (SW)	466	2	367500 373800
	Pollution Incidents to Controlled Waters					
60	Property Type: Location: Authority: Pollutant: Note: Incident Date: Incident Reference: Catchment Area: Receiving Water: Cause of Incident: Incident Severity: Positional Accuracy:	Construction: Other Marbury Lane, NORTHWICH, Cheshire Environment Agency, North West Region Inert : Other Not Supplied 24th June 1999 28954 Tributary Upstream Of Wincham Brook River Stretch (Freshwater) Other Cause Category 3 - Minor Incident Located by supplier to within 10m	A7NE (SW)	469	2	367500 373795
	Pollution Incidents to Controlled Waters					
61	Property Type: Location: Authority: Pollutant: Note: Incident Date: Incident Reference: Catchment Area: Receiving Water: Cause of Incident: Incident Severity: Positional Accuracy:	Chemical industry Ici Lostock - Brine Purification Plant, LOSTOCK Environment Agency, North West Region Chemicals - Other Inorganic Not Supplied 25th March 1998 SO980567 Wincham Brook Freshwater Stream/River Other Cause Category 3 - Minor Incident Located by supplier to within 100m	A14NW (E)	477	2	368500 374395
	Pollution Incidents to Controlled Waters					
61	Property Type: Location: Authority: Pollutant: Note: Incident Date: Incident Reference: Catchment Area: Receiving Water: Cause of Incident: Incident Severity: Positional Accuracy:	Not Given Griffiths Road, LOSTOCK Environment Agency, North West Region Chemicals - Unknown Wade Brook; Probably Lime 11th February 1997 97520245 Wincham Brook Freshwater Stream/River Unknown Category 3 - Minor Incident Located by supplier to within 100m	A14NW (E)	479	2	368500 374400
	Pollution Incidents to Controlled Waters					
62	Property Type: Location: Authority: Pollutant: Note: Incident Date: Incident Reference: Catchment Area: Receiving Water: Cause of Incident: Incident Severity: Positional Accuracy:	Water Company Sewage: Foul Sewer River Lostock, NORTHWICH Environment Agency, North West Region Surcharged Sewage Sewage To Wincham Brook 31st March 1998 SO980568 Wincham Brook Freshwater Stream/River Leaking Underground Pipe Category 3 - Minor Incident Located by supplier to within 100m	A19SW (NE)	491	2	368400 374600

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Pollution Incidents to Controlled Waters				
63	Property Type: Oil Industry (Not Garages) Location: Denton Drive Industrial Estate, NORTHWICH Authority: Environment Agency, North West Region Pollutant: Oils - Other Oil Note: Wincham Brook; Lubricating Oil Incident Date: 8th May 1997 Incident Reference: 97520811 Catchment Area: Wincham Brook Receiving Water: Freshwater Stream/River Cause of Incident: Fire Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12NE (NW)	505	2	367400 374495
	Pollution Incidents to Controlled Waters				
63	Property Type: Oil Industry (Not Garages) Location: Revolution Oil / Trans European Authority: Environment Agency, North West Region Pollutant: Oils - Other Oil Note: Wincham Brook; Lubricating Oil Incident Date: 23rd January 1997 Incident Reference: 97520128 Catchment Area: Wincham Brook Receiving Water: Freshwater Stream/River Cause of Incident: Fire Incident Severity: Category 1 - Major Incident Positional Accuracy: Located by supplier to within 100m	A12NE (NW)	508	2	367400 374500
	Pollution Incidents to Controlled Waters				
64	Property Type: Not Given Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Chemicals - Other Inorganic Note: Wade Brook Incident Date: 2nd May 1995 Incident Reference: 95520994 Catchment Area: Weaver Receiving Water: Not Given Cause of Incident: Miscellaneous/Other Pollution Type Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12SE (W)	515	2	367300 374195
	Pollution Incidents to Controlled Waters				
65	Property Type: Pollution Found Source Not Determined Location: Cheshire Authority: Environment Agency, North West Region Pollutant: Miscellaneous - Colour Note: Wade Brook; None Pollution Found Incident Date: 24th August 1996 Incident Reference: 96521899 Catchment Area: Weaver Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A14NW (NE)	519	2	368500 374495
	Pollution Incidents to Controlled Waters				
65	Property Type: Private Sewage: Sewage Works And Septic Tanks Location: Location Description Not Available Authority: Environment Agency, North West Region Pollutant: Crude Sewage Note: Trent And Mersey Incident Date: 19th February 1992 Incident Reference: 92520287 Catchment Area: Trent & Mersey Canal Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A14NW (NE)	521	2	368500 374500
	Pollution Incidents to Controlled Waters				
66	Property Type: Other Location: Wincham Wharf , NORTHWICH Authority: Environment Agency, North West Region Pollutant: Chemicals - Solvents Note: Degreasant Solvent; Trent And Mersey Canal; Degreasant Solvent Incident Date: 23rd January 1997 Incident Reference: 97520161 Catchment Area: Trent & Mersey Canal Receiving Water: Canal Cause of Incident: Accidental Spillage/Leakage Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A19SW (NE)	628	2	368500 374695

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Pollution Incidents to Controlled Waters					
66	Property Type: Location: Authority: Pollutant: Note: Incident Date: Incident Reference: Catchment Area: Receiving Water: Cause of Incident: Incident Severity: Positional Accuracy:	Spillage; Accident In Transit Location Description Not Available Environment Agency, North West Region Oils - Petrol Not Supplied 29th September 1995 95522418 Wincham Brook Not Given Collision Category 3 - Minor Incident Located by supplier to within 100m	A19SW (NE)	631	2	368500 374700
	Pollution Incidents to Controlled Waters					
67	Property Type: Location: Authority: Pollutant: Note: Incident Date: Incident Reference: Catchment Area: Receiving Water: Cause of Incident: Incident Severity: Positional Accuracy:	Not Given Cheshire Environment Agency, North West Region Unknown Wade Brook; No Pollution Found 9th December 1995 95522954 Wincham Brook Not Given Other Incident/Unknown Category 3 - Minor Incident Located by supplier to within 100m	A12NW (W)	841	2	367000 374400
	Pollution Incidents to Controlled Waters					
68	Property Type: Location: Authority: Pollutant: Note: Incident Date: Incident Reference: Catchment Area: Receiving Water: Cause of Incident: Incident Severity: Positional Accuracy:	Spillage; Accident In Transit Location Description Not Available Environment Agency, North West Region Miscellaneous - Unknown Tributary River Dane 12th March 1991 91520339 Dane Not Given Unknown Category 3 - Minor Incident Located by supplier to within 100m	A7SE (SW)	841	2	367400 373400
	Pollution Incidents to Controlled Waters					
68	Property Type: Location: Authority: Pollutant: Note: Incident Date: Incident Reference: Catchment Area: Receiving Water: Cause of Incident: Incident Severity: Positional Accuracy:	Not Given Location Description Not Available Environment Agency, North West Region Oils - Petrol Weaver Catchment 21st December 1995 95523040 Weaver Not Given Accidental Spillage/Leakage Category 3 - Minor Incident Located by supplier to within 100m	A7SE (SW)	845	2	367400 373395
	Pollution Incidents to Controlled Waters					
69	Property Type: Location: Authority: Pollutant: Note: Incident Date: Incident Reference: Catchment Area: Receiving Water: Cause of Incident: Incident Severity: Positional Accuracy:	Spillage; Accident - Static Site Location Description Not Available Environment Agency, North West Region Chemicals - Other Inorganic Tributary River Weaver; Brine 24th May 1995 95521221 Weaver Not Given Accidental Spillage/Leakage Category 3 - Minor Incident Located by supplier to within 100m	A17SW (NW)	869	2	367100 374700
	Pollution Incidents to Controlled Waters					
70	Property Type: Location: Authority: Pollutant: Note: Incident Date: Incident Reference: Catchment Area: Receiving Water: Cause of Incident: Incident Severity: Positional Accuracy:	Spillage; Accident - Static Site Location Description Not Available Environment Agency, North West Region Chemicals - Other Inorganic Wade Brook; Brine 21st September 1995 95522390 Weaver Not Given Leaking Underground Pipe Category 3 - Minor Incident Located by supplier to within 100m	A14NE (E)	889	2	368900 374500

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
71	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Cheshire Authority: Environment Agency, North West Region Pollutant: Unknown Note: Trent And Mersey Canal; None Pollution Found Incident Date: 24th May 1995 Incident Reference: 95521220 Catchment Area: Trent & Mersey Canal Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A9SW (SE)	904	2	368400 373300
72	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Cheshire Authority: Environment Agency, North West Region Pollutant: Unknown Note: Trent and Mersey Canal; None Pollution Found Incident Date: 10th April 1995 Incident Reference: 95520771 Catchment Area: Trent & Mersey Canal Receiving Water: Not Given Cause of Incident: Other Incident/Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A9SW (S)	959	2	368300 373200
73	**Registered Radioactive Substances** Name: Brunner Mond (UK) Ltd Location: Lostock Works, NORTHWICH, Cheshire, CW8 4DT Authority: Environment Agency, North West Region Permit Reference: AY4632 Dated: 6th June 1997 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Minor variation to a registration under the Act of an open source which is also the subject of an authorisation **Status: Authorisation either revoked or cancelledCancelled** Positional Accuracy: Manually positioned to the address or location	A13NE (E)	200	2	368254 374256
73	**Registered Radioactive Substances** Name: Brunner Mond (uk) Ltd Location: Lostock Works, NORTHWICH, Cheshire, CW8 4DT Authority: Environment Agency, North West Region Permit Reference: AI9702 Dated: 31st March 1991 Process Type: Not Supplied Description: Registration under the Act of an open source which is also the subject of an authorisation **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the address or location	A13NE (E)	200	2	368254 374256
74	**Registered Radioactive Substances** Name: Brunner Mond (Uk) Ltd Location: Northwich East,Lostock Works, NORTHWICH, Cheshire, CW8 4DT Authority: Environment Agency, North West Region Permit Reference: Bw5926 Dated: 1st December 2003 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA **Status: Authorisation either revoked or cancelledCancelled** Positional Accuracy: Manually positioned to the address or location	A14NW (E)	292	2	368346 374267
74	**Registered Radioactive Substances** Name: Brunner Mond (UK) Ltd Location: Northwich East,Lostock Works, NORTHWICH, Cheshire, CW8 4DT Authority: Environment Agency, North West Region Permit Reference: AY4616 Dated: 6th June 1997 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the address or location	A14NW (E)	292	2	368346 374267

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
74	**Registered Radioactive Substances** Name: Brunner Mond (uk) Ltd Location: Northwich East,Lostock Works, NORTHWICH, Cheshire, CW8 4DT Authority: Environment Agency, North West Region Permit Reference: AH6775 Dated: 4th October 1993 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the address or location	A14NW (E)	292	2	368346 374267
74	**Registered Radioactive Substances** Name: Brunner Mond (uk) Ltd Location: Northwich East,Lostock Works, NORTHWICH, Cheshire, CW8 4DT Authority: Environment Agency, North West Region Permit Reference: AI9737 Dated: 31st March 1991 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the address or location	A14NW (E)	292	2	368346 374267
74	**Registered Radioactive Substances** Name: Brunner Mond (Uk) Ltd Location: Northwich East,Lostock Works, NORTHWICH, Cheshire, CW8 4DT Authority: Environment Agency, North West Region Permit Reference: CD1525 Dated: 28th October 2008 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Registration under the Act of an open source which is also the subject of an authorisation **Status: Application has been authorised and any conditions apply to the operatorAuthorised** Positional Accuracy: Manually positioned within the geographical locality	A14NW (E)	293	2	368346 374268
74	**Registered Radioactive Substances** Name: Ineos Chlor Ltd Location: Po Box 7, Northwich Sites, Lostock, NORTHWICH, Cheshire, CW9 7NU Authority: Environment Agency, North West Region Permit Reference: Bs6122 Dated: 22nd July 2002 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Minor variation to a registration under the Act of an open source which is also the subject of an authorisation **Status: Authorisation either revoked or cancelledCancelled** Positional Accuracy: Manually positioned to the address or location	A14NW (E)	293	2	368346 374268
74	**Registered Radioactive Substances** Name: Ineos Chlor Ltd Location: Chlorine Plant, Northwich Sites Off Griffiths Road, Lostock, NORTHWICH, Cheshire, CW9 7NU Authority: Environment Agency, North West Region Permit Reference: Bs6157 Dated: 22nd July 2002 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to an authorisation under S13 or S14 RSA in respect of a registration under S7 when Technetium 99M is used being =< 10 gigabecquerels **Status: Authorisation either revoked or cancelledCancelled** Positional Accuracy: Manually positioned to the address or location	A14NW (E)	293	2	368346 374268
74	**Registered Radioactive Substances** Name: Ineos Chlor Ltd Location: Po Box 7, Northwich Sites, Lostock, NORTHWICH, Cheshire, CW9 7NU Authority: Environment Agency, North West Region Permit Reference: Bk4707 Dated: 28th March 2001 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Discretionary registration under the Act of an open source which is also the subject of an authorisation **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the address or location	A14NW (E)	293	2	368346 374268

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Registered Radioactive Substances					
74	Name:	Ineos Chlor Ltd	A14NW (E)	293	2	368346 374268
	Location:	Chlorine Plant, Northwich Sites Off Griffiths Road, Lostock, NORTHWICH, Cheshire, CW9 7NU				
	Authority:	Environment Agency, North West Region				
	Permit Reference:	Bk4553				
	Dated:	28th March 2001				
	Process Type:	Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7)				
	Description:	Authorisation under RSA				
	Status:	**Authorisation superseded by a substantial or non substantial variationSuperseded**				
	Positional Accuracy:	Manually positioned to the address or location				
	Registered Radioactive Substances					
74	Name:	Ineos Chlor Ltd	A14NW (E)	293	2	368346 374268
	Location:	Po Box 7, Northwich Sites, Lostock, NORTHWICH, Cheshire, CW9 7NU				
	Authority:	Environment Agency, North West Region				
	Permit Reference:	AI7432				
	Dated:	4th October 1993				
	Process Type:	Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1)				
	Description:	Registration under the Act of multiple open sources which are also the subject of authorisations				
	Status:	**Authorisation superseded by a new applicationSuperseded**				
	Positional Accuracy:	Manually positioned to the address or location				
	Registered Radioactive Substances					
74	Name:	Ineos Chlor Ltd	A14NW (E)	293	2	368346 374268
	Location:	Chlorine Plant, Northwich Sites Off Griffiths Road, Lostock, NORTHWICH, Cheshire, CW9 7NU				
	Authority:	Environment Agency, North West Region				
	Permit Reference:	AG3967				
	Dated:	4th October 1993				
	Process Type:	Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7)				
	Description:	Authorisation under RSA				
	Status:	**Authorisation superseded by a new applicationSuperseded**				
	Positional Accuracy:	Manually positioned to the address or location				
	Registered Radioactive Substances					
74	Name:	Brunner Mond (UK) Ltd	A14NW (E)	293	2	368346 374268
	Location:	Chlorine Plant, Northwich Sites Off Griffiths Road, Lostock, NORTHWICH, Cheshire, CW9 7NU				
	Authority:	Environment Agency, North West Region				
	Permit Reference:	AI9745				
	Dated:	31st March 1991				
	Process Type:	Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7)				
	Description:	Authorisation under RSA				
	Status:	**Authorisation either revoked or cancelledCancelled**				
	Positional Accuracy:	Manually positioned to the address or location				
	Registered Radioactive Substances					
75	Name:	Brunner Mond (Uk) Ltd	A14NW (E)	461	2	368516 374267
	Location:	Northwich East Site,Griffiths Road, NORTHWICH, Cheshire, CW9 7NY				
	Authority:	Environment Agency, North West Region				
	Permit Reference:	CD0588				
	Dated:	28th October 2008				
	Process Type:	Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7)				
	Description:	Authorisation under RSA				
	Status:	**Application has been authorised and any conditions apply to the operatorAuthorised**				
	Positional Accuracy:	Manually positioned within the geographical locality				
	River Quality					
	Name:	Wade Bk	A13SW (S)	58	2	367915 374033
	GQA Grade:	River Quality F				
	Reach:	A530 Lostock To Wincham Bk				
	Estimated Distance (km):	1.9				
	Flow Rate:	Flow less than 0.31 cumecs				
	Flow Type:	River				
	Year:	2000				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	River Quality Name: Wincham Bk GQA Grade: River Quality C Reach: Smoker Bk To Wade Bk Estimated Distance (km): 4 Flow Rate: Flow less than 5 cumecs Flow Type: River Year: 2000	A18SW (N)	244	2	367920 374555
	River Quality Name: Wade Bk GQA Grade: River Quality C Reach: Near Millgate Farm To A530 Lostock Estimated Distance (km): 4 Flow Rate: Flow less than 0.31 cumecs Flow Type: River Year: 2000	A14NW (E)	383	2	368441 374229
	River Quality Name: Trent & Mersey Canal GQA Grade: River Quality D Reach: Middlewich To Preston Bk Estimated Distance (km): 29.1 Flow Rate: Flow greater than 80 cumecs Flow Type: Canal Year: 2000	A14SW (SE)	395	2	368403 374003

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	River Quality Chemistry Sampling Points					
76	Name:	Wincham Brook	A18SW (NW)	442	2	367604 374614
	Reach:	Smoker Brook To Wade Brook				
	Estimated Distance:	4.00				
	Objective:	Not Supplied				
	Positional Accuracy:	Located by supplier to within 10m				
	Year:	1990				
	GQA Grade:	River Quality Chemistry GQA Grade C - Fairly Good				
	Compliance:	Not Supplied				
	Year:	1993				
	GQA Grade:	River Quality Chemistry GQA Grade B - Good				
	Compliance:	Not Supplied				
	Year:	1994				
	GQA Grade:	River Quality Chemistry GQA Grade B - Good				
	Compliance:	Not Supplied				
	Year:	1995				
	GQA Grade:	River Quality Chemistry GQA Grade B - Good				
	Compliance:	Not Supplied				
	Year:	1996				
	GQA Grade:	River Quality Chemistry GQA Grade B - Good				
	Compliance:	Not Supplied				
	Year:	1997				
	GQA Grade:	River Quality Chemistry GQA Grade B - Good				
	Compliance:	Not Supplied				
	Year:	1998				
	GQA Grade:	River Quality Chemistry GQA Grade B - Good				
	Compliance:	Not Supplied				
	Year:	1999				
	GQA Grade:	River Quality Chemistry GQA Grade B - Good				
	Compliance:	Not Supplied				
	Year:	2000				
	GQA Grade:	River Quality Chemistry GQA Grade B - Good				
	Compliance:	Not Supplied				
	Year:	2001				
	GQA Grade:	River Quality Chemistry GQA Grade B - Good				
	Compliance:	Not Supplied				
	Year:	2002				
	GQA Grade:	River Quality Chemistry GQA Grade B - Good				
	Compliance:	Not Supplied				
	Year:	2003				
	GQA Grade:	River Quality Chemistry GQA Grade B - Good				
	Compliance:	Not Supplied				
	Year:	2004				
	GQA Grade:	River Quality Chemistry GQA Grade B - Good				
	Compliance:	Not Supplied				
	Year:	2005				
	GQA Grade:	River Quality Chemistry GQA Grade B - Good				
	Compliance:	Not Supplied				
	Year:	2006				
	GQA Grade:	River Quality Chemistry GQA Grade B - Good				
	Compliance:	Not Supplied				
	Year:	2007				
	GQA Grade:	River Quality Chemistry GQA Grade B - Good				
	Compliance:	Not Supplied				
	Year:	2008				
	GQA Grade:	River Quality Chemistry GQA Grade B - Good				
	Compliance:	Not Supplied				
	Year:	2009				
	GQA Grade:	River Quality Chemistry GQA Grade B - Good				
	Compliance:	Not Supplied				
	Water Abstractions					
77	Operator:	Brunner Mond (Uk) Ltd	A14NW (E)	351	2	368400 374295
	Licence Number:	2568003131				
	Permit Version:	Not Supplied				
	Location:	Wade Brook At , Lostock, NORTHWICH				
	Authority:	Environment Agency, North West Region				
	Abstraction:	Cooling				
	Abstraction Type:	Not Supplied				
	Source:	Surface				
	Daily Rate (m3):	5000				
	Yearly Rate (m3):	1825000				
	Details:	Wade Brook				
	Authorised Start:	Not Supplied				
	Authorised End:	Not Supplied				
	Permit Start Date:	Not Supplied				
	Permit End Date:	Not Supplied				
	Positional Accuracy:	Located by supplier to within 100m				

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions					
77	Operator:	I C I Limited Mond Division	A14NW (E)	357	2	368405 374300
	Licence Number:	2568003086				
	Permit Version:	Not Supplied				
	Location:	Wade Brook Frontage, Lostock, NORTHWICH				
	Authority:	Environment Agency, North West Region				
	Abstraction:	Cooling & Manufacturing				
	Abstraction Type:	Not Supplied				
	Source:	Surface				
	Daily Rate (m3):	50006				
	Yearly Rate (m3):	5464292				
	Details:	Additional Purpose: Manufacturing; Licence Status: Revoked				
	Authorised Start:	Not Supplied				
	Authorised End:	Not Supplied				
	Permit Start Date:	Not Supplied				
	Permit End Date:	Not Supplied				
	Positional Accuracy:	Located by supplier to within 100m				
	Water Abstractions					
78	Operator:	Ineos Enterprises Limited	A18SW (NW)	382	2	367700 374600
	Licence Number:	2568003085				
	Permit Version:	104				
	Location:	Wincham Brook Near Lostock Works Northwich				
	Authority:	Environment Agency, North West Region				
	Abstraction:	Chemicals: Process Water				
	Abstraction Type:	Water may be abstracted from a single point				
	Source:	Surface				
	Daily Rate (m3):	Not Supplied				
	Yearly Rate (m3):	Not Supplied				
	Details:	Not Supplied				
	Authorised Start:	01 January				
	Authorised End:	31 December				
	Permit Start Date:	2nd May 2014				
	Permit End Date:	Not Supplied				
	Positional Accuracy:	Located by supplier to within 100m				
	Water Abstractions					
78	Operator:	Ineos Enterprises Limited	A18SW (NW)	382	2	367700 374600
	Licence Number:	2568003085				
	Permit Version:	103				
	Location:	Wincham Brook Near Lostock Works Northwich				
	Authority:	Environment Agency, North West Region				
	Abstraction:	Chemicals: Process Water				
	Abstraction Type:	Water may be abstracted from a single point				
	Source:	Surface				
	Daily Rate (m3):	Not Supplied				
	Yearly Rate (m3):	Not Supplied				
	Details:	Premises In The Northwich Area				
	Authorised Start:	01 January				
	Authorised End:	31 December				
	Permit Start Date:	23rd August 2005				
	Permit End Date:	Not Supplied				
	Positional Accuracy:	Located by supplier to within 100m				
	Water Abstractions					
78	Operator:	Ineos Chlor Enterprises Ltd	A18SW (NW)	382	2	367700 374600
	Licence Number:	2568003085				
	Permit Version:	102				
	Location:	Wincham Brk, Near Lostock Works, Northwich				
	Authority:	Environment Agency, North West Region				
	Abstraction:	Chemicals: Process Water				
	Abstraction Type:	Water may be abstracted from a single point				
	Source:	Surface				
	Daily Rate (m3):	Not Supplied				
	Yearly Rate (m3):	Not Supplied				
	Details:	Premises In The Northwich Area				
	Authorised Start:	01 January				
	Authorised End:	31 December				
	Permit Start Date:	1st January 2004				
	Permit End Date:	Not Supplied				
	Positional Accuracy:	Located by supplier to within 100m				

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions					
78	Operator:	Ineos Chlor Ltd	A18SW (NW)	382	2	367700 374600
	Licence Number:	2568003085				
	Permit Version:	101				
	Location:	Wincham Brk, Near Lostock Works, Northwich				
	Authority:	Environment Agency, North West Region				
	Abstraction:	Chemicals: Process Water				
	Abstraction Type:	Water may be abstracted from a single point				
	Source:	Surface				
	Daily Rate (m3):	Not Supplied				
	Yearly Rate (m3):	Not Supplied				
	Details:	Premises In The Northwich Area				
	Authorised Start:	01 January				
	Authorised End:	31 December				
	Permit Start Date:	9th January 2001				
	Permit End Date:	Not Supplied				
	Positional Accuracy:	Located by supplier to within 100m				
	Water Abstractions					
78	Operator:	I C I Chemicals & Polymers Ltd	A18SW (NW)	382	2	367700 374600
	Licence Number:	2568003085				
	Permit Version:	100				
	Location:	Wincham Brk, Near Lostock Works, Northwich				
	Authority:	Environment Agency, North West Region				
	Abstraction:	Chemicals: Process Water				
	Abstraction Type:	Water may be abstracted from a single point				
	Source:	Surface				
	Daily Rate (m3):	50006				
	Yearly Rate (m3):	14638120				
	Details:	Premises In The Northwich Area				
	Authorised Start:	01 January				
	Authorised End:	31 December				
	Permit Start Date:	1st April 1993				
	Permit End Date:	Not Supplied				
	Positional Accuracy:	Located by supplier to within 100m				
	Water Abstractions					
79	Operator:	British Waterways Board	A14NW (NE)	387	2	368400 374400
	Licence Number:	2568002151				
	Permit Version:	Not Supplied				
	Location:	Location Description Not Available				
	Authority:	Environment Agency, North West Region				
	Abstraction:	Not Supplied				
	Abstraction Type:	Not Supplied				
	Source:	Canal				
	Daily Rate (m3):	0				
	Yearly Rate (m3):	0				
	Details:	Trent & Mersey Canal				
	Authorised Start:	Not Supplied				
	Authorised End:	Not Supplied				
	Permit Start Date:	Not Supplied				
	Permit End Date:	Not Supplied				
	Positional Accuracy:	Located by supplier to within 100m				
	Water Abstractions					
79	Operator:	Canal And River Trust	A14NW (NE)	394	2	368405 374405
	Licence Number:	2568002995				
	Permit Version:	100				
	Location:	Trent And Mersey Canal Lostock Northwich				
	Authority:	Environment Agency, North West Region				
	Abstraction:	Other Industrial/Commercial/Public Services: General Use (Medium Loss)				
	Abstraction Type:	Water may be abstracted from a single point				
	Source:	Surface				
	Daily Rate (m3):	0				
	Yearly Rate (m3):	3400408				
	Details:	Ici Ltd, Lostock Works				
	Authorised Start:	01 January				
	Authorised End:	31 December				
	Permit Start Date:	1st April 1969				
	Permit End Date:	Not Supplied				
	Positional Accuracy:	Located by supplier to within 100m				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Daniel R Spibey Licence Number: 2568002219 Permit Version: Not Supplied Location: River Dane At Shurlack, RUDHEATH Authority: Environment Agency, North West Region Abstraction: Amenity Abstraction Type: Not Supplied Source: Groundwater Daily Rate (m3): 1310 Yearly Rate (m3): 20000 Details: Licence Status: Cancelled Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A7SW (SW)	1245	2	367000 373200
	Water Abstractions Operator: Mr C R Garton Licence Number: 2568002219 Permit Version: 102 Location: River Dane At Shurlack, Rudheath Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: Make-Up Or Top Up Water Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Land At Shurlack, Rudheath Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 4th January 2007 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A2SW (SW)	1578	2	367050 372750
	Water Abstractions Operator: J Glithero Licence Number: 2568002219 Permit Version: 101 Location: River Dane At Shurlack, Rudheath Authority: Environment Agency, North West Region Abstraction: Other Industrial/Commercial/Public Services: Make-Up Or Top Up Water Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): 1310 Yearly Rate (m3): 20000 Details: Land At Shurlack, Rudheath Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st March 2000 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A2SW (SW)	1578	2	367050 372750
	Water Abstractions Operator: H.Platt & Sons (Leftwich) Ltd. Licence Number: 2568002195 Permit Version: Not Supplied Location: Nortwich, NORTWICH, Cheshire Authority: Environment Agency, North West Region Abstraction: Agricultural Spray Irrigation (Summer) Abstraction Type: Not Supplied Source: Surface Daily Rate (m3): 455 Yearly Rate (m3): 8228 Details: River Dane Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A1NW (SW)	1745	2	366500 373000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: H Platt & Sons Leftwich Ltd Licence Number: 2568002195 Permit Version: 100 Location: R Dane At Northwich Authority: Environment Agency, North West Region Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a river or stream reach, or a row of wellpoints Source: Surface Daily Rate (m3): 455 Yearly Rate (m3): 8228 Details: Land At Northwich Authorised Start: 01 April Authorised End: 30 September Permit Start Date: 29th February 1988 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A1NW (SW)	1748	2	366500 372995
	Groundwater Vulnerability Soil Classification: Soils of High Leaching Potential (H1) - Soils which readily transmit liquid discharges because they are either shallow, or susceptible to rapid by-pass flow directly to rock, gravel or groundwater Map Sheet: Sheet 16 West Cheshire Scale: 1:100,000	A13SE (S)	0	2	367941 374157
	Groundwater Vulnerability Soil Classification: Not classified Map Sheet: Sheet 16 West Cheshire Scale: 1:100,000	A13SE (E)	0	2	367938 374199
	Drift Deposits None				
	Bedrock Aquifer Designations Aquifer Designation: Unproductive Strata	A13SE (E)	0	4	367938 374199
	Bedrock Aquifer Designations Aquifer Designation: Secondary Aquifer - B	A13NE (E)	0	4	368011 374218
	Superficial Aquifer Designations Aquifer Designation: Unproductive Strata	A13SE (E)	0	4	367938 374199
	Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - A	A13SE (S)	0	4	367960 374138
	Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SE (S)	4	2	367959 374098
	Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied	A13SE (S)	5	2	367959 374097
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				
80	**Detailed River Network Lines** River Type: Primary River River Name: Wade Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Flood Risk Management Indicative/Statutory Main River Water Course Name: WADE/CROW/REDLION BR Water Course Reference: WCRL	A13SE (S)	15	2	367961 374087

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
81	**Detailed River Network Lines** River Type: Primary River River Name: Wade Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Flood Risk Management Indicative/Statutory Main River Water Course Name: WADE/CROW/REDLION BR Water Course Reference: WCRL	A13SW (SW)	67	2	367808 374058
82	**Detailed River Network Lines** River Type: Tertiary River River Name: Wade Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Other Rivers Water Course Name: Not Supplied Water Course Reference: Not Supplied	A13SW (SW)	67	2	367808 374058
83	**Detailed River Network Lines** River Type: Extended Culvert (greater than 50m) River Name: Wade Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Below Surface Drain Feature: Not a Drain Flood Risk Management Status: Flood Risk Management Indicative/Statutory Main River Water Course Name: WADE/CROW/REDLION BR Water Course Reference: WCRL	A13NE (E)	125	2	368183 374222
84	**Detailed River Network Lines** River Type: Tertiary River River Name: Drain Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Drain (ditch, Reen, Rhyne, Drain) Flood Risk Management Status: Other Rivers Water Course Name: Not Supplied Water Course Reference: Not Supplied	A13NW (NW)	305	2	367753 374542
85	**Detailed River Network Lines** River Type: Primary River River Name: Wade Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Flood Risk Management Indicative/Statutory Main River Water Course Name: WADE/CROW/REDLION BR Water Course Reference: WCRL	A14NW (E)	319	2	368346 374355
86	**Detailed River Network Lines** River Type: Primary River River Name: Wincham Brook Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Flood Risk Management Indicative/Statutory Main River Water Course Name: WINCHAM BROOK Water Course Reference: WNCH	A18SE (N)	334	2	367976 374648

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
87	**Detailed River Network Lines** River Type: Primary River River Name: Wincham Brook Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Flood Risk Management Indicative/Statutory Main River Water Course Name: WINCHAM BROOK Water Course Reference: WNCH	A18SW (N)	339	2	367784 374596
88	**Detailed River Network Lines** River Type: Lake/Reservoir River Name: Not Supplied Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Flood Risk Management Indicative/Statutory Main River Water Course Name: WADE/CROW/REDLION BR Water Course Reference: WCRL	A14NW (E)	344	2	368377 374344
89	**Detailed River Network Lines** River Type: Secondary River River Name: Drain Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Drain (ditch, Reen, Rhyne, Drain) Flood Risk Management Status: Other Rivers Water Course Name: Not Supplied Water Course Reference: Not Supplied	A18SW (N)	360	2	367895 374660
90	**Detailed River Network Lines** River Type: Primary River River Name: Wade Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Flood Risk Management Indicative/Statutory Main River Water Course Name: WADE/CROW/REDLION BR Water Course Reference: WCRL	A12SE (W)	382	2	367462 374023
91	**Detailed River Network Lines** River Type: Tertiary River River Name: Not Supplied Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Other Rivers Water Course Name: Not Supplied Water Course Reference: Not Supplied	A12SE (SW)	386	2	367486 373956
92	**Detailed River Network Lines** River Type: Canal River Name: Trent and Mersey Canal Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Above Surface Drain Feature: Not a Drain Flood Risk Management Status: Other Rivers Water Course Name: Not Supplied Water Course Reference: Not Supplied	A14SW (E)	401	2	368447 374112

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
93	**Detailed River Network Lines** River Type: Primary River River Name: Not Supplied Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Flood Risk Management Indicative/Statutory Main River Water Course Name: WADE/CROW/REDLION BR Water Course Reference: WCRL	A14NW (E)	407	2	368444 374342
94	**Detailed River Network Lines** River Type: Primary River River Name: Not Supplied Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Flood Risk Management Indicative/Statutory Main River Water Course Name: WINCHAM BROOK Water Course Reference: WNCH	A18SW (NW)	408	2	367668 374612
95	**Detailed River Network Lines** River Type: Tertiary River River Name: Drain Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Drain (ditch, Reen, Rhyne, Drain) Flood Risk Management Status: Other Rivers Water Course Name: Not Supplied Water Course Reference: Not Supplied	A12SE (SW)	413	2	367475 373922
96	**Detailed River Network Lines** River Type: Tertiary River River Name: Wade Hydrographic Area: D011 River Flow Type: Secondary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Other Rivers Water Course Name: Not Supplied Water Course Reference: Not Supplied	A12SE (SW)	413	2	367475 373922
97	**Detailed River Network Lines** River Type: Secondary River River Name: Not Supplied Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Other Rivers Water Course Name: Not Supplied Water Course Reference: Not Supplied	A18SW (NW)	423	2	367696 374644
98	**Detailed River Network Lines** River Type: Secondary River River Name: Not Supplied Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Other Rivers Water Course Name: Not Supplied Water Course Reference: Not Supplied	A18SW (NW)	429	2	367698 374653

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Detailed River Network Lines				
99	River Type: Secondary River River Name: Drain Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Drain (ditch, Reen, Rhyne, Drain) Flood Risk Management Status: Other Rivers Water Course Name: Not Supplied Water Course Reference: Not Supplied	A18SW (NW)	432	2	367688 374651
	Detailed River Network Lines				
100	River Type: Primary River River Name: Wade Brook Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Flood Risk Management Indicative/Statutory Main River Water Course Name: WADE/CROW/REDLION BR Water Course Reference: WCRL	A12SE (W)	438	2	367406 374014
	Detailed River Network Lines				
101	River Type: Secondary River River Name: Not Supplied Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Other Rivers Water Course Name: Not Supplied Water Course Reference: Not Supplied	A7NE (SW)	441	2	367522 373812
	Detailed River Network Lines				
102	River Type: Tertiary River River Name: Not Supplied Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Other Rivers Water Course Name: Not Supplied Water Course Reference: Not Supplied	A18SW (N)	486	2	367850 374777
	Detailed River Network Lines				
103	River Type: Primary River River Name: Wincham Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Flood Risk Management Indicative/Statutory Main River Water Course Name: WINCHAM BROOK Water Course Reference: WNCH	A17SE (NW)	491	2	367568 374648
	Detailed River Network Lines				
104	River Type: Tertiary River River Name: Not Supplied Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Other Rivers Water Course Name: Not Supplied Water Course Reference: Not Supplied	A17SE (NW)	491	2	367580 374656

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
105	**Detailed River Network Lines** River Type: Secondary River River Name: Not Supplied Hydrographic Area: D011 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk Management Status: Other Rivers Water Course Name: Not Supplied Water Course Reference: Not Supplied	A18SW (N)	496	2	367848 374788
106	**Detailed River Network Offline Drainage** River Type: Tertiary River Hydrographic Area: D011	A13NW (N)	75	2	367935 374372
107	**Detailed River Network Offline Drainage** River Type: Tertiary River Hydrographic Area: D011	A13NW (N)	122	2	367921 374433
108	**Detailed River Network Offline Drainage** River Type: Tertiary River Hydrographic Area: D011	A13NW (N)	142	2	367904 374432
109	**Detailed River Network Offline Drainage** River Type: Tertiary River Hydrographic Area: D011	A13NW (N)	143	2	367900 374432
110	**Detailed River Network Offline Drainage** River Type: Tertiary River Hydrographic Area: D011	A13SW (S)	163	2	367883 373932
111	**Detailed River Network Offline Drainage** River Type: Secondary River Hydrographic Area: D011	A13SW (SW)	296	2	367652 373891
112	**Detailed River Network Offline Drainage** River Type: Tertiary River Hydrographic Area: D011	A18SE (N)	368	2	367991 374683
113	**Detailed River Network Offline Drainage** River Type: Tertiary River Hydrographic Area: D011	A8NE (SE)	370	2	368229 373819
114	**Detailed River Network Offline Drainage** River Type: Tertiary River Hydrographic Area: D011	A8NE (SE)	384	2	368243 373813
115	**Detailed River Network Offline Drainage** River Type: Tertiary River Hydrographic Area: D011	A8NE (SE)	384	2	368238 373809
116	**Detailed River Network Offline Drainage** River Type: Tertiary River Hydrographic Area: D011	A7NE (SW)	454	2	367482 373838
117	**Detailed River Network Offline Drainage** River Type: Tertiary River Hydrographic Area: D011	A14SW (SE)	491	2	368444 373885
118	**Detailed River Network Offline Drainage** River Type: Tertiary River Hydrographic Area: D011	A9NW (SE)	492	2	368424 373852

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Recorded Landfill Sites					
119	Site Name:	No 1 Tip	A13SE (S)	84	-	368003 374024
	Location:	Griffiths Pk, NORTHWICH, Cheshire				
	Authority:	British Geological Survey, National Geoscience Information Service				
	Ground Water:	Information not available				
	Surface Water:	Information not available				
	Geology:	N/A				
	Positional Accuracy:	Positioned by the supplier				
	Boundary Accuracy:	Moderate				
	BGS Recorded Landfill Sites					
120	Site Name:	Tip no. 2/6A	A9NW (SE)	537	-	368456 373818
	Location:	Lostock Graham, NORTHWICH, Cheshire				
	Authority:	British Geological Survey, National Geoscience Information Service				
	Ground Water:	Information not available				
	Surface Water:	Information not available				
	Geology:	N/A				
	Positional Accuracy:	Positioned by the supplier				
	Boundary Accuracy:	Moderate				
	BGS Recorded Landfill Sites					
121	Site Name:	Tip no. 2/1	A9NW (SE)	542	-	368489 373865
	Location:	Lostock Graham, NORTHWICH, Cheshire				
	Authority:	British Geological Survey, National Geoscience Information Service				
	Ground Water:	Information not available				
	Surface Water:	Information not available				
	Geology:	Site overlying gravels and K. Marl				
	Positional Accuracy:	Positioned by the supplier				
	Boundary Accuracy:	Moderate				
	BGS Recorded Landfill Sites					
122	Site Name:	Works Tip no2/4	A14SW (E)	557	-	368594 374058
	Location:	Lostock Graham, NORTHWICH, Cheshire				
	Authority:	British Geological Survey, National Geoscience Information Service				
	Ground Water:	Information not available				
	Surface Water:	Information not available				
	Geology:	N/A				
	Positional Accuracy:	Positioned by the supplier				
	Boundary Accuracy:	Moderate				
	BGS Recorded Landfill Sites					
123	Site Name:	Tip no. 2/6B	A9NW (SE)	580	-	368411 373698
	Location:	Lostock Graham, NORTHWICH, Cheshire				
	Authority:	British Geological Survey, National Geoscience Information Service				
	Ground Water:	Information not available				
	Surface Water:	Information not available				
	Geology:	N/A				
	Positional Accuracy:	Positioned by the supplier				
	Boundary Accuracy:	Moderate				
	BGS Recorded Landfill Sites					
124	Site Name:	Tip no. 2/2	A9NW (SE)	633	-	368556 373797
	Location:	Lostock Graham, NORTHWICH, Cheshire				
	Authority:	British Geological Survey, National Geoscience Information Service				
	Ground Water:	Information not available				
	Surface Water:	Information not available				
	Geology:	N/A				
	Positional Accuracy:	Positioned by the supplier				
	Boundary Accuracy:	Moderate				
	BGS Recorded Landfill Sites					
125	Site Name:	Tip no. 2/8	A9NW (SE)	669	-	368372 373555
	Location:	Lostock Graham, NORTHWICH, Cheshire				
	Authority:	British Geological Survey, National Geoscience Information Service				
	Ground Water:	Information not available				
	Surface Water:	Information not available				
	Geology:	N/A				
	Positional Accuracy:	Positioned by the supplier				
	Boundary Accuracy:	Moderate				
	BGS Recorded Landfill Sites					
126	Site Name:	Wark Tip no 2/5	A14SE (E)	737	-	368732 373911
	Location:	Lostock Graham, NORTHWICH, Cheshire				
	Authority:	British Geological Survey, National Geoscience Information Service				
	Ground Water:	Information not available				
	Surface Water:	Information not available				
	Geology:	N/A				
	Positional Accuracy:	Positioned by the supplier				
	Boundary Accuracy:	Moderate				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
127	**BGS Recorded Landfill Sites** Site Name: Tip no. 2/7 Location: Lostock Graham, NORTHWICH, Cheshire Authority: British Geological Survey, National Geoscience Information Service Ground Water: Information not available Surface Water: Information not available Geology: N/A Positional Accuracy: Positioned by the supplier Boundary Accuracy: Moderate	A9NW (SE)	773	-	368557 373570
128	**BGS Recorded Landfill Sites** Site Name: Tip no. 2/3 Location: Lostock Graham, NORTHWICH, Cheshire Authority: British Geological Survey, National Geoscience Information Service Ground Water: Information not available Surface Water: Information not available Geology: N/A Positional Accuracy: Positioned by the supplier Boundary Accuracy: Moderate	A9NE (SE)	819	-	368694 373668
129	**BGS Recorded Landfill Sites** Site Name: Ashtons and Newmans Flashes Location: Maiston, NORTHWICH, Cheshire Authority: British Geological Survey, National Geoscience Information Service Ground Water: Information not available Surface Water: Information not available Geology: N/A Positional Accuracy: Positioned by the supplier Boundary Accuracy: Derived	A17SW (W)	908	-	366990 374579
130	**BGS Recorded Landfill Sites** Site Name: Tip no. 2/9 Location: Lostock Graham, NORTHWICH, Cheshire Authority: British Geological Survey, National Geoscience Information Service Ground Water: Information not available Surface Water: Information not available Geology: N/A Positional Accuracy: Positioned by the supplier Boundary Accuracy: Moderate	A9SE (SE)	1000	-	368814 373522
131	**Historical Landfill Sites** Licence Holder: ICI Chemicals and Polymers Limited Location: Lostock, Cheshire Name: Griffiths Park Operator Location: Lostock Gralam, Northwich, Cheshire Boundary Accuracy: As Supplied Provider Reference: EAHLD17106 First Input Date: 31st December 1947 Last Input Date: 31st December 1980 Specified Waste Type: Deposited Waste included Inert, Industrial and Special Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 0600/0122 BGS Ref: 2073 Other Ref: 60539	A13SE (S)	84	2	368000 374022
132	**Historical Landfill Sites** Licence Holder: ICI Chemicals and Polymers Limited Location: Griffiths Park, Northwich, Cheshire Name: ICI Lostock Works Landfill Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD15612 First Input Date: 31st December 1903 Last Input Date: 22nd April 1944 Specified Waste Type: Deposited Waste included Inert and Industrial Waste EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 0600/0140 BGS Ref: Not Supplied Other Ref: 60538A	A13SW (S)	166	2	367936 373929

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Historical Landfill Sites					
133	Licence Holder:	ICI Chemicals and Polymers Limited	A8NW (S)	349	2	367883 373747
	Location:	Northwich, Cheshire				
	Name:	Griffiths Park				
	Operator Location:	Not Supplied				
	Boundary Accuracy:	As Supplied				
	Provider Reference:	EAHLD17109				
	First Input Date:	31st December 1903				
	Last Input Date:	22nd April 1944				
	Specified Waste Type:	Deposited Waste included Inert, Industrial and Household Waste, and Liquid Sludge				
	EA Waste Ref:	0				
	Regis Ref:	Not Supplied				
	WRC Ref:	0600/0140				
	BGS Ref:	Not Supplied				
	Other Ref:	60538A				
	Historical Landfill Sites					
134	Licence Holder:	Northwich Resources Management Limited	A9NW (SE)	531	2	368450 373820
	Location:	Off Griffiths Road, Northwich, Cheshire				
	Name:	Griffiths Road Limebeds				
	Operator Location:	Lostock, Gralam, Northwich, Cheshire				
	Boundary Accuracy:	As Supplied				
	Provider Reference:	EAHLD17938				
	First Input Date:	31st December 1952				
	Last Input Date:	1st April 1994				
	Specified Waste Type:	Deposited Waste included Inert, Industrial and Special Waste, and Liquid Sludge				
	EA Waste Ref:	53802				
	Regis Ref:	NR1/L/NRM002				
	WRC Ref:	0600/0217				
	BGS Ref:	2074				
	Other Ref:	60540M, ALT/BGS/2075/2076/2077/2078/2079/2081				
	Historical Landfill Sites					
135	Licence Holder:	Not Supplied	A9NW (SE)	542	2	368489 373865
	Location:	Lostock Graham, Northwich, Cheshire				
	Name:	Works Tip No 2/1				
	Operator Location:	Lostock, Gralam, Northwich, Cheshire				
	Boundary Accuracy:	As Supplied				
	Provider Reference:	EAHLD31956				
	First Input Date:	Not Supplied				
	Last Input Date:	Not Supplied				
	Specified Waste Type:	Deposited Waste included Industrial Waste and Liquid Sludge				
	EA Waste Ref:	0				
	Regis Ref:	Not Supplied				
	WRC Ref:	Not Supplied				
	BGS Ref:	2080				
	Other Ref:	Not Supplied				
	Historical Landfill Sites					
136	Licence Holder:	Imperial Chemical Industries Limited	A14SW (E)	548	2	368579 374038
	Location:	Griffiths Road, Northwich, Cheshire				
	Name:	No.4 Settling Pond				
	Operator Location:	Not Supplied				
	Boundary Accuracy:	As Supplied				
	Provider Reference:	EAHLD17102				
	First Input Date:	Not Supplied				
	Last Input Date:	Not Supplied				
	Specified Waste Type:	Deposited Waste included Liquid Sludge				
	EA Waste Ref:	0				
	Regis Ref:	Not Supplied				
	WRC Ref:	Not Supplied				
	BGS Ref:	Not Supplied				
	Other Ref:	Not Supplied				
	Historical Landfill Sites					
137	Licence Holder:	Not Supplied	A14SW (E)	557	2	368594 374058
	Location:	Lostock Graham, Northwich, Cheshire				
	Name:	Works Tip No. 2/4				
	Operator Location:	Lostock Gralam, Northwich, Cheshire				
	Boundary Accuracy:	As Supplied				
	Provider Reference:	EAHLD31954				
	First Input Date:	Not Supplied				
	Last Input Date:	Not Supplied				
	Specified Waste Type:	Deposited Waste included Inert and Industrial Waste, and Liquid Sludge				
	EA Waste Ref:	0				
	Regis Ref:	Not Supplied				
	WRC Ref:	Not Supplied				
	BGS Ref:	2072				
	Other Ref:	Not Supplied				

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Historical Landfill Sites					
138	Licence Holder:	Cheshire County Council	A18SE (N)	567	2	368104 374873
	Location:	Wincham Lane, Cheshire				
	Name:	Wincham Lane Land Reclamation				
	Operator Location:	Not Supplied				
	Boundary Accuracy:	As Supplied				
	Provider Reference:	EAHLD17085				
	First Input Date:	31st December 1991				
	Last Input Date:	31st December 1992				
	Specified Waste Type:	Deposited Waste included Inert Waste				
	EA Waste Ref:	0				
	Regis Ref:	Not Supplied				
	WRC Ref:	0600/0149				
	BGS Ref:	Not Supplied				
	Other Ref:	61577				
	Historical Landfill Sites					
139	Licence Holder:	Not Supplied	A12NW (W)	648	2	367167 374206
	Location:	Northwich				
	Name:	Warrington New Road				
	Operator Location:	Not Supplied				
	Boundary Accuracy:	As Supplied				
	Provider Reference:	EAHLD35034				
	First Input Date:	Not Supplied				
	Last Input Date:	Not Supplied				
	Specified Waste Type:	Deposited Waste included Household Waste				
	EA Waste Ref:	0				
	Regis Ref:	Not Supplied				
	WRC Ref:	Not Supplied				
	BGS Ref:	Not Supplied				
	Other Ref:	Not Supplied				
	Historical Landfill Sites					
140	Licence Holder:	Not Supplied	A14SE (E)	737	2	368732 373911
	Location:	Lostock Graham, Northwich, Cheshire				
	Name:	Work Tip No. 2/5				
	Operator Location:	Lostock Gralam, Northwich, Cheshire				
	Boundary Accuracy:	As Supplied				
	Provider Reference:	EAHLD31953				
	First Input Date:	Not Supplied				
	Last Input Date:	Not Supplied				
	Specified Waste Type:	Not Supplied				
	EA Waste Ref:	0				
	Regis Ref:	Not Supplied				
	WRC Ref:	Not Supplied				
	BGS Ref:	2071				
	Other Ref:	Not Supplied				
	Historical Landfill Sites					
141	Licence Holder:	Not Supplied	A17SW (W)	908	2	366990 374579
	Location:	Maiston, Northwich, Cheshire				
	Name:	Ashtons and Neummans Flashes				
	Operator Location:	Northwich, Cheshire				
	Boundary Accuracy:	As Supplied				
	Provider Reference:	EAHLD31957				
	First Input Date:	31st December 1950				
	Last Input Date:	Not Supplied				
	Specified Waste Type:	Deposited Waste included Inert, Industrial and Household Waste, and Liquid Sludge				
	EA Waste Ref:	0				
	Regis Ref:	Not Supplied				
	WRC Ref:	Not Supplied				
	BGS Ref:	2082				
	Other Ref:	Not Supplied				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
142	**Licensed Waste Management Facilities (Locations)** Licence Number: 100425 Location: Land At Brunner - Mond Works, Off Griffiths Road, Lostock, Northwich, Cheshire, CW9 7NY Operator Name: Edelchemie U K Ltd Operator Location: Not Supplied Authority: Environment Agency - North West Region, South Area Site Category: Not Supplied **Licence Status: Expired** Issued: 24th November 2009 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Manually positioned within the geographical locality	A14NW (E)	329	2	368386 374246
143	**Licensed Waste Management Facilities (Locations)** Licence Number: 86241 Location: Wade Works, Lostock, Northwich, Cheshire, CW9 Operator Name: Remedex Ltd Operator Location: 36 , Bristol, Avon, BS9 2PP Authority: Environment Agency - Thames Region, West Area Site Category: Mobile Plant **Licence Status: Issued** Issued: 30th October 2000 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	540	2	367500 373700
144	**Licensed Waste Management Facilities (Locations)** Licence Number: 50076 Location: 249 Middlewich Road, Rudheath, Northwich, Cheshire, CW9 7DR Operator Name: Nelson Eric Operator Location: Not Supplied Authority: Environment Agency - North West Region, South Area Site Category: Household, Commercial And Industrial Transfer Stations **Licence Status: Issued** Issued: 24th August 2001 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A8SW (S)	617	2	367770 373490
144	**Licensed Waste Management Facilities (Locations)** Licence Number: 50008 Location: 249 Middlewich Road, Rudheath, Northwich, Cheshire, CW9 7DR Operator Name: A A A Skip Hire Ltd Operator Location: Not Supplied Authority: Environment Agency - North West Region, South Area Site Category: Household, Commercial And Industrial Transfer Stations **Licence Status: Transferred** Issued: 13th November 1998 Last Modified: Not Supplied Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A8SW (S)	633	2	367746 373478

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
145	**Licensed Waste Management Facilities (Locations)** Licence Number: 53802 Location: Land/premises At, Griffiths Road, Northwich, Cheshire, CW9 7NU Operator Name: Northwich Resource Management Ltd Operator Location: Not Supplied Authority: Environment Agency - North West Region, South Area Site Category: Lagoons **Licence Status: Modified** Issued: 4th February 1993 Last Modified: 2nd December 2014 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 100m	A9SW (SE)	854	2	368600 373500
146	**Licensed Waste Management Facilities (Locations)** Licence Number: 50323 Location: Shannon House, Wincham Avenue, Wincham Lane, Wincham, Cheshire, CW9 6GB Operator Name: M Igoe Ltd Operator Location: Not Supplied Authority: Environment Agency - North West Region, South Area Site Category: Mobile Plant **Licence Status: Modified** Issued: 16th March 2005 Last Modified: 11th April 2006 Expires: Not Supplied Suspended: Not Supplied Revoked: Not Supplied Surrendered: Not Supplied IPPC Reference: Not Supplied Positional Accuracy: Located by supplier to within 10m	A23SW (N)	984	2	367921 375296
	Local Authority Landfill Coverage Name: Vale Royal Borough Council - Has supplied landfill data		0	5	367938 374199
	Local Authority Landfill Coverage Name: Cheshire County Council - Has supplied landfill data		0	6	367938 374199
147	**Local Authority Recorded Landfill Sites** Location: Ici Lostock, Near Rudheath Reference: 4/414 Authority: Vale Royal Borough Council (now part of Cheshire West and Chester Council), Environmental Health Department **Last Reported Status: Not Supplied** Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Good	A13SE (S)	80	5	368000 374024
148	**Local Authority Recorded Landfill Sites** Location: Manchester Road Reference: 4/216 Authority: Vale Royal Borough Council (now part of Cheshire West and Chester Council), Environmental Health Department **Last Reported Status: Not Supplied** Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Good	A13NW (N)	90	5	367888 374372
149	**Local Authority Recorded Landfill Sites** Location: Edward Street, Northwich Reference: 4/207/0 Authority: Vale Royal Borough Council (now part of Cheshire West and Chester Council), Environmental Health Department **Last Reported Status: Not Supplied** Types of Waste: Non-Notifiable Industrial/Commercial/Domestic Refuse, Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Good	A8NW (SW)	400	5	367653 373762

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
150	**Local Authority Recorded Landfill Sites** Location: Wade Street, Northwich Reference: 4/225 Authority: Vale Royal Borough Council (now part of Cheshire West and Chester Council), Environmental Health Department **Last Reported Status: Not Supplied** Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Good	A12SW (W)	644	5	367171 374171
151	**Local Authority Recorded Landfill Sites** Location: Lostock Lime Beds, Northwich Reference: 4/586 Authority: Vale Royal Borough Council (now part of Cheshire West and Chester Council), Environmental Health Department **Last Reported Status: Not Supplied** Types of Waste: Some Industrial Waste, Some Lead Waste Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Good	A9NW (SE)	668	5	368370 373555
152	**Local Authority Recorded Landfill Sites** Location: Chapel Street, Marston Reference: 4/428/0 Authority: Vale Royal Borough Council (now part of Cheshire West and Chester Council), Environmental Health Department **Last Reported Status: Not Supplied** Types of Waste: Construction Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Good	A17SW (NW)	890	5	367057 374671
153	**Local Authority Recorded Landfill Sites** Location: Ashton'S & Nuemann'S Flashes, Northwich Reference: W4-302 Authority: Cheshire County Council (now part of Cheshire East Council), Environmental Planning Department **Last Reported Status: Unknown** Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Good	A17SW (NW)	899	6	367003 374587
154	**Local Authority Recorded Landfill Sites** Location: Ashton'S Flashes Reference: 4/412 Authority: Vale Royal Borough Council (now part of Cheshire West and Chester Council), Environmental Health Department **Last Reported Status: Not Supplied** Types of Waste: Not Supplied Date of Closure: Not Supplied Positional Accuracy: Positioned by the supplier Boundary Quality: Good	A17SW (NW)	909	5	366996 374597

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Registered Landfill Sites				
155	Licence Holder: I.C.I. Ltd Licence Reference: Z 60539 Site Location: I.C.I. Lostock Works, Griffiths Park, Northwich, Cheshire Licence Easting: Not Supplied Licence Northing: Not Supplied Operator Location: Mond Division PO Box 13, The Heath, RUNCORN, Cheshire, WA7 4QF Authority: Environment Agency - North West Region, South Area Site Category: Landfill Max Input Rate: Small (Equal to or greater than 10,000 and less than 25,000 tonnes per year) Waste Source Restrictions: Only waste produced on site Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st May 1977 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Positioned by the supplier Boundary Accuracy: Moderate Authorised Waste: Alloprene Asbestos Calcium Oxide Calcium Sulphate (Plant Scale) Contaminated Rubbish/Bags/Sacks House. + Com. Untreated Waste Ind. Non-Haz. Inert, Non-Flammable Ind. Non-Haz. Potentially Combustible Sodium/Potassium Carbonates Sulphides, Selen'S, Tell'S, Arsen'S $ Thiocyanate Winnofil	A13SE (S)	182	2	367959 373918
	Registered Landfill Sites				
156	Licence Holder: I.C.I. Ltd Licence Reference: X60538A Site Location: I.C.I. Lostock Works, Griffiths Park, Northwich, Cheshire Licence Easting: 368000 Licence Northing: 373800 Operator Location: Mond Division PO Box 13, The Heath, RUNCORN, Cheshire, WA7 4QF Authority: Environment Agency - North West Region, South Area Site Category: Landfill Max Input Rate: Medium (Equal to or greater than 25,000 and less than 75,000 tonnes per year) Waste Source Restrictions: Waste produced/controlled by licence holder Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st June 1991 Preceded By Licence: X60538A Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Accuracy: Not Applicable Authorised Waste: Alloprene Plant Liquid Effluent Asbestos/Asbestos Contam.W. Ex Lostock Brine Plant Scale Burnt Lime Canteen Waste Constr'N/Demol.Wastes Ex Ici Sites Contam.Chlor.Poly-Isoprene/Carbon Tet. Contaminated Ash Distiller Scale Emergency Brine Mud Fly Ash Gen. Cleanings Inc. Off-Spec. Winnofil Ind. Non-Haz. Inert, Non-Flammable Ind. Non-Haz. Potentially Combustible Laboratory Waste Lime Dust Lime Grit Mill.Of Lime Oil Fired Boiler Dust Sodium Bicarbonate Uncontam. Soil For Restoration	A8NE (S)	305	2	368000 373800

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Registered Landfill Sites					
156	Licence Holder:	I.C.I. Ltd	A8NE (S)	305	2	368000 373800
	Licence Reference:	X60538A				
	Site Location:	I.C.I. Lostock Works, Griffiths Park, Northwich, Cheshire				
	Licence Easting:	368000				
	Licence Northing:	373800				
	Operator Location:	Mond Division PO Box 13, The Heath, RUNCORN, Cheshire, WA7 4QF				
	Authority:	Environment Agency - North West Region, South Area				
	Site Category:	Landfill				
	Max Input Rate:	Large (Equal to or greater than 75,000 and less than 250,000 tonnes per year)				
	Waste Source Restrictions:	Only waste produced on site				
	Status:	Record supersededSuperseded				
	Dated:	30th December 1982				
	Preceded By Licence:	Z 60538				
	Superseded By Licence:	X60538A				
	Positional Accuracy:	Manually positioned to the address or location				
	Boundary Accuracy:	Not Applicable				
	Authorised Waste	Alloprene Ammoniacal Crude Liquor Sludge Asbestos Boiler Ash Contam. Vanadium Pentoxide Contaminated Water (To Lagoon Only) Demolition Rubble Domestic Type Waste Ind. Non-Haz. Combustible Ind. Non-Haz. Non-Flammable Sodium Carbonate Traces Of Calcium Oxide/Hydroxide Waste Calcium Carbonate Winnofil				
	Registered Landfill Sites					
157	Licence Holder:	Cheshire C.C.	A18NE (N)	785	2	368000 375100
	Licence Reference:	X61577 RES				
	Site Location:	Wincham Lane Land Reclamation, Northwich, Cheshire				
	Licence Easting:	368000				
	Licence Northing:	375100				
	Operator Location:	As Site Address				
	Authority:	Environment Agency - North West Region, South Area				
	Site Category:	Landfill				
	Max Input Rate:	Medium (Equal to or greater than 25,000 and less than 75,000 tonnes per year)				
	Waste Source Restrictions:	No known restriction on source of waste				
	Status:	Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled				
	Dated:	1st June 1991				
	Preceded By Licence:	Not Given				
	Superseded By Licence:	Not Given				
	Positional Accuracy:	Manually positioned to the address or location				
	Boundary Accuracy:	Not Applicable				
	Authorised Waste	Max.Deposit Permitted By Licence Uncontam. Soil, Sand, Clay				
	Prohibited Waste	Waste N.O.S.				

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Registered Landfill Sites					
158	Licence Holder:	3 C Waste Ltd	A17SW (W)	908	2	366990 374580
	Licence Reference:	X60516				
	Site Location:	Witton Landfill Site, (Ashton'S Flash), Leicester Street, Northwich, Cheshire				
	Licence Easting:	Not Supplied				
	Licence Northing:	Not Supplied				
	Operator Location:	3 Hilliards Court, Chester Business Park, Wrexham Road, CHESTER, Cheshire, CH4 9QX				
	Authority:	Environment Agency - North West Region, South Area				
	Site Category:	Landfill				
	Max Input Rate:	Very Large (Equal to or greater than 250,000 tonnes per year)				
	Waste Source Restrictions:	No known restriction on source of waste				
	Status:	Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled				
	Dated:	1st February 1993				
	Preceded By Licence:	X60516				
	Superseded By Licence:	Not Given				
	Positional Accuracy:	Positioned by the supplier				
	Boundary Accuracy:	Good				
	Authorised Waste	Acid Anhydrides Aliphatic Acids Aliphatic Hydrocarbons Aromatic Acids Aromatic Hydrocarbons Arsenic Compounds Barium Compounds (Water Soluble) Cadmium Compounds Calcium Hydroxide Calcium Oxide Cellulose Wastes (Natural/Synth.) Chromium,Manganese,Cobalt,Molyb.Cpds Construction Ind. Wastes Copper Compounds Difficult Wastes As Detailed Below Dyestuffs Waste Epoxy Resins (Not Finished Prod'S) Fats, Waxes And Greases Food Processing Wastes/Starch Fuel Oil Glue Wastes Household & Commercial Waste Hydrochloric Acid Ind. Non-Haz. Waste Interceptor Pit Wastes Ion-Exchange Resin Wastes Iron Compounds Kerosene And Derv. Latex, Latex/Rubber Sol'Ns/Susp'Ns Lead Compounds Max.Waste Permitted By Licence Mercury Compounds Nickel Compounds Non-Special Asbestos Other Non-Toxic Metal Compounds Other Resins And Polymeric Materials Paint Waste Pharmaceutical/Cosmetic Products Phenol-Formaldehyde Resins (Not Prod) Phenols, Analogues/Derivatives Phosphoric Acid Phthalates Polyester Resins (Not Finished Prod'S) Polyurethane Printing Industry Wastes/Ink Restricted Clinical Wastes Rubber (Incl. Shredded Tyres) Silver Compounds Soaps & Detergents Sodium/Potassium Oxides/Hydroxides Sodium/Potassium Carbonates Sulphuric Acid Synthetic Adhesive Wastes Tank Cleaning Sludge Tannery & Fellmongers Waste Tar, Pitch, Bitumen, Asphalts Thallium Compounds Titanium Compounds Untreated Sewage Sludge/Screenings Vanadium Compounds Vegetable And Other Oils Zinc Compounds				
	Prohibited Waste	Bulk Loads Of Aerosols With Flam.Cont Liquid/Pumpable Sludges				

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
		Organohalogens Special Asbestos Unshredded Tyres Waste Burns Unsupported At 40 C Waste In Drums Waste With Flash Pt < 30 C Waste With Temp. > 40 C (Except By Pa) Wet Pulverised Dom/Com. From Dano Plt.				
	Environment Agency must give specific authorisation for this waste to be acceptedWaste requires prior approval	Contaminated Land Waste				
		Distillation Residues Fertilizer Waste				

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Registered Landfill Sites					
159	Licence Holder:	Cheshire C.C.	A17SW (W)	908	2	366990 374580
	Licence Reference:	X60516				
	Site Location:	Witton Landfill Site, (Ashton'S Flash), Leicester Street, Northwich, Cheshire				
	Licence Easting:	Not Supplied				
	Licence Northing:	Not Supplied				
	Operator Location:	Backford Hall, CHESTER, Cheshire, CH1 6EA				
	Authority:	Environment Agency - North West Region, South Area				
	Site Category:	Landfill				
	Max Input Rate:	Very Large (Equal to or greater than 250,000 tonnes per year)				
	Waste Source Restrictions:	No known restriction on source of waste				
	Status:	Record supersededSuperseded				
	Dated:	21st March 1977				
	Preceded By Licence:	Not Given				
	Superseded By Licence:	X60516				
	Positional Accuracy:	Positioned by the supplier				
	Boundary Accuracy:	Good				
	Authorised Waste	Aliphatic Acids $ Animal Processing Wastes Asbestos Biocides Calcium Hydroxide Calcium Oxide Cellulose Wastes (Natural/Synth.) Construction And Demolition Wastes Contaminated Rubbish/Bags/Sacks Copper Compounds Dyestuffs Waste Empty Used Containers Farm Wastes Fats, Waxes And Greases Food Processing Wastes/Starch Glue Wastes House. + Com. Untreated Waste Hydrochloric Acid Hydrofluoric Acid Ind. Non-Haz. Inert, Non-Flammable Ind. Non-Haz. Potentially Combustible Industrial Effluent Treatment Sludge Inorganic Acids Interceptor Pit Wastes $ Iron Compounds Latex, Latex/Rubber Sol'Ns/Susp'Ns Mineral Processing Wastes Mixed Inorganic Compounds Nickel Compounds Nitric Acid Oil/Water Mixtures Organic Acids + Related Cmpds Other Alkalis Other Industrial Wastes Other Inorganic Materials Other Non-Toxic Metal Compounds Other Resins And Polymeric Materials Paint Waste $ Pharmaceutical/Cosmetic Products Phenol-Formaldehyde Resins (Not Prod)$ Phosphoric Acid Polymeric Material, Products/Scrap Printing Industry Wastes/Ink $ Prod'Ts Of Incomplete Polymerisation $ Scrap Rubber (Including Tyres) Silt And Dredgings Slag, Boiler/Flue Cleanings Sodium Bicarbonate Sodium Carbonate Sodium/Potassium Oxides/Hydroxides Sodium/Potassium Carbonates Spent Catalyst Starch Wastes Sulphuric Acid Synthetic Adhesive Wastes Tank Cleaning Sludge $ Tannery & Fellmongers Waste Tar, Pitch, Bitumen, Asphalts Used Filter Materials $ Vanadium Compounds Vegetable And Other Oils Water (Contaminated) Zinc Compounds				
	Environment Agency must give specific	Waste N.O.S				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	authorisation for this waste to be acceptedWaste requires prior approval				
160	**Registered Waste Transfer Sites** Licence Holder: E Nelson T/A Nortwich Mini Skips Licence Reference: Eawml50076 Site Location: Unit 4 Rudheath Industrial Estate, 249 Middlewich Road, Rudheath, Northwich, Cheshire, Cw9 7dr Operator Location: Unit R8 Verdin Exchange, High Street, Winsford, Cheshire, Cw7 2an Authority: Environment Agency - North West Region, South Area Site Category: Transfer Max Input Rate: Very Small (Less than 10,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Licence Status: Operational as far as is knownOperational Dated: 24th August 2001 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the road within the address or location Boundary Quality: Not Supplied Authorised Waste: New Licence, Wastes Not To Hand Some Ukw 22.00.00 General & Biodegradable Waste Some Ukw 24.00.00 Contaminated General Waste Ukw 21.00.00 Inert Materials - As Ukw 21.01.00 Inert - Naturally Occurring Rocks & Subsoil	A8SW (S)	602	2	367800 373500
160	**Registered Waste Transfer Sites** Licence Holder: A S & Mrs Ashworth t/a Ash Contractors Licence Reference: 50008 Site Location: Plot 13 Farmers Avenue (Rear Of), 249 Middlewich Road, Northwich, Cheshire, Cw9 7dr Operator Location: 24 Owley Wood Road, Weaverham, Northwich, Cheshire Authority: Environment Agency - North West Region, South Area Site Category: Transfer Max Input Rate: Very Small (Less than 10,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Licence Status: Operational as far as is knownOperational Dated: 1st November 1998 Preceded By Licence: Not Given Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the road within the address or location Boundary Quality: Not Supplied Authorised Waste: Max.Waste Permitted By Licence Uncontam. H'Hold & Commercial Waste Uncontam. Non-Haz. Ind. Waste Uncontam. Scrap Metal Uncontam. Soils/Subsoils Prohibited Waste: Putrescible Waste Spec.Waste (Epa'90:S62/1996 Regs) Sub'S In 76/454/Eec Danger Aquatic Env Waste N.O.S.	A8SW (S)	602	2	367800 373500
161	**Registered Waste Treatment or Disposal Sites** Licence Holder: I.C.I. Ltd Licence Reference: Z 60538 Site Location: Griffiths Park, Lostock Works, Northwich, Cheshire Operator Location: Mond Div. Lostock Gralam, Northwich, Cheshire Authority: Environment Agency - North West Region, South Area Site Category: Storage - Reception pit Max Input Rate: Large (Equal to or greater than 75,000 and less than 250,000 tonnes per year) Waste Source Restrictions: Only waste produced on site Licence Status: Record supersededSuperseded Dated: 10th May 1977 Preceded By Licence: Not Given Superseded By Licence: X60538A Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate Authorised Waste: Alloprene (Less Than 500 Ppm) Hydrochloric Acid Water (Contaminated)	A8NW (S)	346	2	367879 373749

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Registered Waste Treatment or Disposal Sites				
162	Licence Holder: I.C.I. Ltd Mond Div. Licence Reference: Z 60544 Site Location: Ponds 6a/6b, Lostock, Northwich, Cheshire Operator Location: Mond Div. Lostock Gralam, Northwich, Cheshire Authority: Environment Agency - North West Region, South Area Site Category: Storage - Lagoon Max Input Rate: Undefined Waste Source Restrictions: Only waste produced on site Licence Status: Record supersededSuperseded Dated: 1st May 1977 Preceded By Licence: Not Given Superseded By Licence: 60540M Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate Authorised Waste Distiller Blow-Off Liquor	A9NW (SE)	531	2	368451 373821
	Registered Waste Treatment or Disposal Sites				
163	Licence Holder: I.C.I. Ltd Licence Reference: 60540 Site Location: Pond 1, Lostock, Northwich, Cheshire Operator Location: Mond Division PO Box 13, The Heath, RUNCORN, Cheshire, WA7 4QF Authority: Environment Agency - North West Region, South Area Site Category: Storage - Lagoon Max Input Rate: Large (Equal to or greater than 75,000 and less than 250,000 tonnes per year) Waste Source Restrictions: Only waste produced on site Licence Status: Record supersededSuperseded Dated: 1st May 1977 Preceded By Licence: Not Given Superseded By Licence: 60540M Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate Authorised Waste Aqueous Effluent Waste Distiller Blow-Off Mud Graphite Less Than 50 Ppm Sodium Chloride Water (Contaminated)	A9NW (SE)	540	2	368483 373856
	Registered Waste Treatment or Disposal Sites				
164	Licence Holder: I.C.I. Ltd Mond Div. Licence Reference: Z 60542 Site Location: Pond 4, Lostock, Northwich, Cheshire Operator Location: Mond Div. Lostock Gralam, Northwich, Cheshire Authority: Environment Agency - North West Region, South Area Site Category: Storage - Lagoon Max Input Rate: Very Large (Equal to or greater than 250,000 tonnes per year) Waste Source Restrictions: Only waste produced on site Licence Status: Record supersededSuperseded Dated: 1st May 1977 Preceded By Licence: Not Given Superseded By Licence: 60540M Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate Authorised Waste Brine Purification Plant Mud Distiller Blow-Off Mud	A14SW (E)	562	2	368593 374038

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Registered Waste Treatment or Disposal Sites				
165	Licence Holder: I.C.I. Ltd Licence Reference: Z 60541 Site Location: Ponds 2/7, Lostock, Northwich, Cheshire Operator Location: Mond Division PO Box 13, The Heath, RUNCORN, Cheshire, WA7 4QF Authority: Environment Agency - North West Region, South Area Site Category: Storage - Lagoon Max Input Rate: Large (Equal to or greater than 75,000 and less than 250,000 tonnes per year) Waste Source Restrictions: Only waste produced on site Licence Status: Record supersededSuperseded Dated: 1st May 1977 Preceded By Licence: Not Given Superseded By Licence: 60540M Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate Authorised Waste: Ex New Cells Room Magnesium Hydroxide Mineral Processing Wastes Sodium/Potassium Carbonates	A9NW (SE)	630	2	368566 373821
	Registered Waste Treatment or Disposal Sites				
166	Licence Holder: I.C.I. Ltd Mond Div. Licence Reference: Z 60545 Site Location: Pond 8, Lostock, Northwich, Cheshire Operator Location: Mond Div. Lostock Gralam, Northwich, Cheshire Authority: Environment Agency - North West Region, South Area Site Category: Storage - Lagoon Max Input Rate: Very Large (Equal to or greater than 250,000 tonnes per year) Waste Source Restrictions: Only waste produced on site Licence Status: Record supersededSuperseded Dated: 1st May 1977 Preceded By Licence: Not Given Superseded By Licence: 60540M Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate Authorised Waste: Boiler Sluicings Brine Purification Plant Mud	A9NW (SE)	669	2	368375 373556
	Registered Waste Treatment or Disposal Sites				
167	Licence Holder: I.C.I. Ltd Mond Div. Licence Reference: Z 60543 Site Location: Pond 5, Lostock, Northwich, Cheshire Operator Location: Mond Division PO Box 13, The Heath, RUNCORN, Cheshire, WA7 4QF Authority: Environment Agency - North West Region, South Area Site Category: Storage - Lagoon Max Input Rate: Large (Equal to or greater than 75,000 and less than 250,000 tonnes per year) Waste Source Restrictions: Only waste produced on site Licence Status: Record supersededSuperseded Dated: 1st May 1977 Preceded By Licence: Not Given Superseded By Licence: 60540M Positional Accuracy: Positioned by the supplier Boundary Quality: Moderate Authorised Waste: Brine Purification Plant Mud Sludge Wastes	A14SE (E)	721	2	368714 373910

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Registered Waste Treatment or Disposal Sites					
168	Licence Holder:	Northwich Resources Management Ltd	A9SW (SE)	854	2	368600 373500
	Licence Reference:	60540M				
	Site Location:	Ponds 1/2/3/4/5/6a/6b/7/8/9, Lostock, Northwich, Cheshire				
	Operator Location:	Mond House, P O Box 4, Winnington, Northwich, Cheshire, Cw8 4dt				
	Authority:	Environment Agency - North West Region, South Area				
	Site Category:	Storage - Lagoon				
	Max Input Rate:	Large (Equal to or greater than 75,000 and less than 250,000 tonnes per year)				
	Waste Source Restrictions:	Only waste produced on site				
	Licence Status:	Operational as far as is knownOperational				
	Dated:	1st March 1993				
	Preceded By Licence:	60540M				
	Superseded By Licence:	Not Given				
	Positional Accuracy:	Manually positioned to the address or location				
	Boundary Quality:	Not Supplied				
	Authorised Waste	Brine & Water Plant Sump Waste Brine Mud - Emengency Only Chlorine Plant - Dcl Liquor Chlorine Plant Acidic/Alkaline Eff. Chlorine Plant Effluent Distiller Blow Off Clear Liquor Gas Scrubber Water Hydrochloric Acid In Emergency Sulphuric Acid In Emergency Unclarified D.B.O Mud - Emengency Only Winnofil Plant - Fortimax Winnofil Plant Filtrate/Water Winnofil Plant Reactor Washings Winnofil Plant Waste Lime				
	Registered Waste Treatment or Disposal Sites					
168	Licence Holder:	Northwich Resources Management Ltd	A9SW (SE)	854	2	368600 373500
	Licence Reference:	60540M				
	Site Location:	Ponds 1/2/3/4/5/6a/6b/7/8/9, Lostock, Northwich, Cheshire				
	Operator Location:	Mond House, P O Box 4, Winnington, Northwich, Cheshire, Cw8 4dt				
	Authority:	Environment Agency - North West Region, South Area				
	Site Category:	Storage - Lagoon				
	Max Input Rate:	Very Large (Equal to or greater than 250,000 tonnes per year)				
	Waste Source Restrictions:	Only waste produced on site				
	Licence Status:	Record supersededSuperseded				
	Dated:	30th December 1982				
	Preceded By Licence:	Z 60543				
	Superseded By Licence:	60540M				
	Positional Accuracy:	Manually positioned to the address or location				
	Boundary Quality:	Not Supplied				
	Authorised Waste	Asbestos Contained In Above Waste Boiler Sluicings Cont.Vanadium Pentox. Brine Purification Mud Distiller Blow-Off Liquors Distiller Blow-Off Slurry Plant Liquid Effluents Silt From Cooling Water Ponds Weak Ammoniacal Salt				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
169	**Control of Major Accident Hazards Sites (COMAH)** Name: Imperial Chemical Industries Ltd Location: PO Box 7, NORTHWICH, Cheshire, CW8 4DJ Reference: Not Supplied Type: Lower Tier **Status: Record Ceased To Be Supplied Under COMAH Regulations** Positional Accuracy: Manually positioned to the address or location	A14NW (E)	292	7	368347 374256
169	**Control of Major Accident Hazards Sites (COMAH)** Name: Ineos Enterprises Ltd Location: Ethylene Plant, Lostock, Po Box 7, Lostock Works, Griffiths Road, Northwich, Cheshire, CW9 7NY Reference: Not Supplied Type: Lower Tier **Status: Active** Positional Accuracy: Manually positioned to the address or location	A14NW (E)	292	7	368346 374267
170	**Control of Major Accident Hazards Sites (COMAH)** Name: Thor Specialities (Uk) Ltd Location: Wincham Avenue, Wincham, NORTHWICH, Cheshire, CW9 6GB Reference: 18374 Type: Lower Tier **Status: Record Ceased To Be Supplied Under COMAH Regulations** Positional Accuracy: Automatically positioned to the address	A18NE (N)	628	7	368015 374943
170	**Control of Major Accident Hazards Sites (COMAH)** Name: Thor Specialities (Uk) Ltd Location: Wincham Avenue, Wincham, Northwich, Cheshire, CW9 6GB Reference: Not Supplied Type: Upper Tier **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NE (N)	628	7	368015 374943
171	**Control of Major Accident Hazards Sites (COMAH)** Name: BG Plc BG Transco Location: Holford, NORTHWICH, Cheshire, CW9 7TG Reference: Not Supplied Type: Upper Tier **Status: Record Ceased To Be Supplied Under COMAH Regulations** Positional Accuracy: Manually positioned within the geographical locality	A19SW (NE)	646	7	368508 374714
172	**Control of Major Accident Hazards Sites (COMAH)** Name: G.Cross & Sons (Northwich) Ltd Location: Canal Side, Chapel Street, Wincham, Northwich, Cheshire, CW9 6DA Reference: Not Supplied Type: Lower Tier **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NW (N)	804	7	367636 375038
173	**Notification of Installations Handling Hazardous Substances (NIHHS)** Name: Imperial Chemical Industries (ICI) Limited Location: Northwich Sites, P O Box 7, Lostock Works, LOSTOCK GRALAM, CW8 4DJ **Status: Record Ceased To Be Supplied Under NIHHS Regulations (1982)** Positional Accuracy: Located by supplier to within 100m	A13SW (W)	0	7	367900 374200
174	**Notification of Installations Handling Hazardous Substances (NIHHS)** Name: Imperial Chemical Industries (ICI) PLC Location: Holford Brinefields, Holford Moss, Lostock Gralam, NORTHWICH, Cheshire, CW9 **Status: Record Ceased To Be Supplied Under NIHHS Regulations (1982)** Positional Accuracy: Manually positioned to the address or location	A14NW (E)	291	7	368347 374251
175	**Planning Hazardous Substance Consents** Name: Ici Chemicals & Polymers Ltd Location: Lostock Works, Lostock, Gralam, Cw9 Authority: Cheshire West and Chester Council, Planning Department Application Ref: Hs8 Hazardous Substance: Combination of Dangerous Substances Maximum Quantity: 35 Application date: 20th October 1999 **Decision: Deemed Consent GrantedGranted** Positional Accuracy: Manually positioned to the address or location	A14NW (E)	293	8	368346 374268

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
176	**Planning Hazardous Substance Consents** Name: Ineos Chlor Location: Chlorine Plant, Lostock Works, Lostock Gralam, CW9 7TD Authority: Cheshire West and Chester Council, Planning Department Application Ref: APP/2004/0334 Hazardous Substance: Combination of Dangerous Substances Maximum Quantity: 798 Application date: 8th March 2004 **Decision: Deemed Consent GrantedGranted** Positional Accuracy: Manually positioned to the address or location	A14SW (SE)	304	8	368293 374007
177	**Planning Hazardous Substance Consents** Name: Ici Chemicals & Polymers Ltd Location: Po Box 7, Lostock, Northwich, Cheshire, Cw8 4dj Authority: Cheshire West and Chester Council, Planning Department Application Ref: Hs1 Hazardous Substance: Chlorine Maximum Quantity: 778 Application date: 4th September 1992 **Decision: Deemed Consent GrantedGranted** Positional Accuracy: Manually positioned to the address or location	A14SW (E)	342	8	368400 374195
177	**Planning Hazardous Substance Consents** Name: Ici Chemicals & Polymers Location: Po Box 7, Lostock, Northwich, Cheshire, Cw8 4dj Authority: Cheshire West and Chester Council, Planning Department Application Ref: HS1 Hazardous Substance: Chlorine Maximum Quantity: 1200 Application date: 4th September 1992 **Decision: Deemed Consent GrantedGranted** Positional Accuracy: Manually positioned to the address or location	A14SW (E)	342	8	368400 374195
178	**Planning Hazardous Substance Consents** Name: Ineos Chlor Location: Ethylene Conditioning Plant, Lostock Works, Lostock Gralam, Northwich, CW9 7TD Authority: Cheshire West and Chester Council, Planning Department Application Ref: APP/2004/0333 Hazardous Substance: Ethylene oxide Maximum Quantity: 15 Application date: 8th March 2004 **Decision: Withdrawn** Positional Accuracy: Manually positioned to the address or location	A14SW (E)	388	8	368425 374083
179	**Planning Hazardous Substance Consents** Name: Thor Specialities (Uk) Ltd Location: Wincham Avenue, Wincham, Northwich, CW9 6GB Authority: Cheshire West and Chester Council, Planning Department Application Ref: 05-0845-HAZ Hazardous Substance: Combination of Dangerous Substances Maximum Quantity: 2145 Application date: 11th May 2005 **Decision: Deemed Consent GrantedGranted** Positional Accuracy: Manually positioned to the address or location	A18NE (N)	628	8	368015 374943
179	**Planning Hazardous Substance Consents** Name: Thor Specialties (Uk) Location: Wincham Avenue, Wincham, Northwich, Cw9 6gb Authority: Cheshire West and Chester Council, Planning Department Application Ref: App/2002/1201 Hazardous Substance: Combination of Dangerous Substances Maximum Quantity: 725.2 Application date: 21st November 2002 **Decision: Deemed Consent GrantedGranted** Positional Accuracy: Manually positioned to the address or location	A18NE (N)	635	8	368010 374950
180	**Planning Hazardous Substance Consents** Name: G Cross And Sons Ltd Location: Chapel Street, Wincham, Northwich, CW9 6DA Authority: Cheshire West and Chester Council, Planning Department Application Ref: 11/05989/HAZ Hazardous Substance: Combination of Dangerous Substances Maximum Quantity: 897 Application date: 29th December 2011 **Decision: Deemed Consent GrantedGranted** Positional Accuracy: Manually positioned to the address or location	A18NW (N)	655	8	367754 374924

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
181	**Planning Hazardous Substance Consents** Name: Thor Specialities Uk Ltd Location: Wincham Avenue, Wincham, Northwich, Cw9 6gb Authority: Cheshire West and Chester Council, Planning Department Application Ref: 11/04377/HAZ Hazardous Substance: Very toxic Maximum Quantity: 0 Application date: 3rd October 2011 **Decision: Unknown at time of reportUnknown** Positional Accuracy: Manually positioned to the address or location	A18NE (N)	679	8	368154 374976
182	**Planning Hazardous Substance Consents** Name: Thor Specialities (Uk) Location: Wincham Avenue, Wincham, Northwich, CW9 6GB Authority: Cheshire West and Chester Council, Planning Department Application Ref: APP/2004/1912 Hazardous Substance: Combination of Dangerous Substances Maximum Quantity: 399 Application date: 27th October 2004 **Decision: Deemed Consent GrantedGranted** Positional Accuracy: Manually positioned to the road within the address or location	A18NE (N)	687	8	368023 375002
183	**Planning Hazardous Substance Consents** Name: Thor Specialities (Uk) Ltd Location: Wincham Avenue, Wincham, Northwich, Cw9 6gb Authority: Cheshire West and Chester Council, Planning Department Application Ref: App/2003/0098 Hazardous Substance: Combination of Dangerous Substances Maximum Quantity: 500 Application date: 22nd January 2003 **Decision: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the address or location	A18NE (N)	777	8	367983 375092

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Triassic Rocks (Undifferentiated)	A13SE (E)	0	4	367938 374199
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13NE (E)	0	4	368010 374218
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (E)	0	4	367938 374199
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NE (NE)	0	4	368000 374257
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (S)	0	4	367960 374137
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (SE)	0	4	368000 374152
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13SE (E)	0	4	368000 374199

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (SE)	24	4	368025 374162
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13SE (SE)	35	4	368000 374074
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (S)	36	4	367983 374068
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A13SE (SE)	42	4	368041 374089
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (S)	95	4	367938 374000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SW (W)	101	4	367714 374199

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (S)	107	4	368000 374000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SE (SE)	124	4	368055 374000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SW (SW)	124	4	367713 374089
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SW (SW)	163	4	367712 374017
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13SW (SW)	174	4	367712 374000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18SW (N)	267	4	367870 374554

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18SW (N)	269	4	367928 374574
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NW (E)	270	4	368318 374289
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18SE (N)	288	4	368000 374603
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SE (SW)	289	4	367573 374000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SW (N)	299	4	367846 374583
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SW (N)	300	4	367923 374605

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SE (N)	311	4	368000 374626
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A12NE (NW)	344	4	367567 374449
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SW (SE)	346	4	368343 374015
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18SW (NW)	346	4	367717 374568
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SW (NW)	346	4	367717 374568
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14SW (SE)	362	4	368352 374000

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18SE (N)	368	4	367938 374680
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18SE (N)	371	4	368000 374686
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18SW (N)	375	4	367834 374664
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SE (SW)	391	4	367461 374000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18SW (N)	398	4	367925 374709
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SE (N)	410	4	368000 374725

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18SW (N)	413	4	367807 374685
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18SW (NW)	428	4	367718 374662
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A14NW (E)	433	4	368452 374397
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SE (N)	443	4	368000 374758
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18SE (N)	443	4	367938 374759
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18SE (N)	450	4	368084 374757

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18SW (N)	455	4	367903 374759
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18SW (N)	455	4	367903 374759
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18SW (NW)	457	4	367718 374695
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SW (NW)	457	4	367718 374695
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SE (NE)	509	4	368255 374756
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18SW (N)	516	4	367719 374761

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SW (N)	522	4	367928 374835
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18SE (N)	529	4	368000 374844
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SW (N)	529	4	367900 374834
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SW (NW)	542	4	367663 374762
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18SW (N)	591	4	367720 374842
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18NW (N)	633	4	367762 374904

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A19SW (NE)	648	4	368477 374754
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18NW (N)	671	4	367721 374929
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NE (N)	685	4	367938 375000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NE (N)	685	4	368000 375000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NW (N)	692	4	367906 375000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A19SW (NE)	709	4	368558 374753

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NW (N)	734	4	367721 374996
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A18NW (N)	738	4	367721 375000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A18NW (N)	740	4	367715 375000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17NE (NW)	798	4	367567 375000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A19NW (NE)	805	4	368423 375000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SW (W)	815	4	367000 374199

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12NW (W)	822	4	367000 374285
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12NW (W)	831	4	367000 374350
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12SW (W)	834	4	367000 374000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A12NW (W)	838	4	367000 374388
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A19SE (NE)	848	4	368731 374752
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A12NW (W)	863	4	367000 374481

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: <15 mg/kg	A19NW (NE)	908	4	368596 375000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17SW (NW)	929	4	367000 374649
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A11NE (W)	933	4	366895 374339
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A19NE (NE)	937	4	368640 375000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15SW (E)	941	4	369000 374199
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15NW (E)	941	4	369000 374221

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15NW (E)	942	4	369000 374260
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15NW (E)	947	4	369000 374315
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15NW (E)	950	4	369000 374341
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A15SW (E)	965	4	369000 374000
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Rural Soil Arsenic Concentration: 15 - 25 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <150 mg/kg Nickel Concentration: 15 - 30 mg/kg	A17SW (NW)	990	4	367000 374768
184	**BGS Recorded Mineral Sites** Site Name: Primrose Hill Shaft Location: , Rudheath, Northwich, Cheshire Source: British Geological Survey, National Geoscience Information Service Reference: 105450 Type: Underground **Status:** **Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Triassic Geology: Northwich Halite Member Commodity: Salt Positional Accuracy: Located by supplier to within 10m	A13SW (W)	30	4	367789 374158

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Recorded Mineral Sites					
185	Site Name:	Primrose Hill Shaft	A13SW (SW)	89	4	367771 374061
	Location:	, Rudheath, Northwich, Cheshire				
	Source:	British Geological Survey, National Geoscience Information Service				
	Reference:	105449				
	Type:	Underground				
	Status:	**Ceased**				
	Operator:	Unknown Operator				
	Operator Location:	Unknown Operator				
	Periodic Type:	Triassic				
	Geology:	Northwich Halite Member				
	Commodity:	Salt				
	Positional Accuracy:	Located by supplier to within 10m				
	BGS Recorded Mineral Sites					
186	Site Name:	Primrose Hill Shaft	A13SW (SW)	112	4	367732 374079
	Location:	, Rudheath, Northwich, Cheshire				
	Source:	British Geological Survey, National Geoscience Information Service				
	Reference:	105448				
	Type:	Underground				
	Status:	**Ceased**				
	Operator:	Unknown Operator				
	Operator Location:	Unknown Operator				
	Periodic Type:	Triassic				
	Geology:	Northwich Halite Member				
	Commodity:	Salt				
	Positional Accuracy:	Located by supplier to within 10m				
	BGS Recorded Mineral Sites					
186	Site Name:	Primrose Hill Shaft	A13SW (W)	121	4	367705 374117
	Location:	, Rudheath, Northwich, Cheshire				
	Source:	British Geological Survey, National Geoscience Information Service				
	Reference:	105447				
	Type:	Underground				
	Status:	**Ceased**				
	Operator:	Unknown Operator				
	Operator Location:	Unknown Operator				
	Periodic Type:	Triassic				
	Geology:	Northwich Halite Member				
	Commodity:	Salt				
	Positional Accuracy:	Located by supplier to within 10m				
	BGS Recorded Mineral Sites					
187	Site Name:	Lostock Brineworks	A13SW (W)	178	4	367655 374090
	Location:	, Wincham, Northwich, Cheshire				
	Source:	British Geological Survey, National Geoscience Information Service				
	Reference:	11773				
	Type:	Underground				
	Status:	**Ceased**				
	Operator:	Unknown Operator				
	Operator Location:	Unknown Operator				
	Periodic Type:	Triassic				
	Geology:	Northwich Halite Formation				
	Commodity:	Salt				
	Positional Accuracy:	Located by supplier to within 10m				
	BGS Recorded Mineral Sites					
188	Site Name:	Primrose Hill Shaft	A13SW (SW)	210	4	367646 374031
	Location:	, Rudheath, Northwich, Cheshire				
	Source:	British Geological Survey, National Geoscience Information Service				
	Reference:	105446				
	Type:	Underground				
	Status:	**Ceased**				
	Operator:	Unknown Operator				
	Operator Location:	Unknown Operator				
	Periodic Type:	Triassic				
	Geology:	Northwich Halite Member				
	Commodity:	Salt				
	Positional Accuracy:	Located by supplier to within 10m				
	BGS Recorded Mineral Sites					
189	Site Name:	Primrose Hill Shaft	A12SE (SW)	355	4	367511 373976
	Location:	, Rudheath, Northwich, Cheshire				
	Source:	British Geological Survey, National Geoscience Information Service				
	Reference:	105445				
	Type:	Underground				
	Status:	**Ceased**				
	Operator:	Unknown Operator				
	Operator Location:	Unknown Operator				
	Periodic Type:	Triassic				
	Geology:	Northwich Halite Member				
	Commodity:	Salt				
	Positional Accuracy:	Located by supplier to within 10m				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Recorded Mineral Sites				
190	Site Name: Manor Croft Shaft Location: , Wincham, Northwich, Cheshire Source: British Geological Survey, National Geoscience Information Service Reference: 105443 Type: Underground **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Triassic Geology: Northwich Halite Member Commodity: Salt Positional Accuracy: Located by supplier to within 10m	A12NE (NW)	475	4	367401 374436
	BGS Recorded Mineral Sites				
191	Site Name: Wincham Mills Sand Pit Location: A559,A530, Wincham, Northwich, Cheshire Source: British Geological Survey, National Geoscience Information Service Reference: 105751 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Unknown Operator Periodic Type: Quaternary Geology: Till, Devensian Commodity: Sand Positional Accuracy: Located by supplier to within 10m	A19SE (NE)	771	4	368671 374703
	BGS Measured Urban Soil Chemistry No data available				
	BGS Urban Soil Chemistry Averages No data available				
	Brine Compensation Area Description: In an area which may be affected by subsidence due to salt extraction. It is recommended that the Cheshire Brine Subsidence Compensation Board is contacted for further information. Contact details are included in the Useful Contacts section. Source: Cheshire Brine Subsidence Compensation Board	A13SE (E)	0	9	367938 374199
	Coal Mining Affected Areas In an area that might not be affected by coal mining				
	Mining Instability Mining Evidence: Conclusive Evaporites Mining Source: Ove Arup & Partners Boundary Quality: As Supplied	A13SE (E)	0	-	367938 374199
	Mining Instability Mining Evidence: Inconclusive Evaporites Mining Source: Ove Arup & Partners Boundary Quality: As Supplied	A13SE (E)	0	-	368000 374199
	Man-Made Mining Cavities Easting: 367200 Northing: 374400 Distance: 648 Quadrant Reference: A12 Quadrant Reference: NW Bearing Ref: W Cavity Type: PILLAR & STALL SALT MINE-DETAILS UNKNOWN Commodity: Salt Solid Geology Detail: Mercia Mudstone Group Superficial Geology Detail: No Details	A12NW (W)	648	10	367200 374400
	Man-Made Mining Cavities Easting: 367400 Northing: 374800 Distance: 713 Quadrant Reference: A17 Quadrant Reference: SE Bearing Ref: NW Cavity Type: PILLAR & STALL SALT MINE-DETAILS UNKNOWN Commodity: Salt Solid Geology Detail: Mercia Mudstone Group Superficial Geology Detail: No Details	A17SE (NW)	713	10	367400 374800

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Man-Made Mining Cavities Easting: 367100 Northing: 374200 Distance: 715 Quadrant Reference: A12 Quadrant Reference: SW Bearing Ref: W Cavity Type: Not supplied Commodity: Salt Solid Geology Detail: No Details Superficial Geology Detail: No Details	A12SW (W)	715	10	367100 374200
	Man-Made Mining Cavities Easting: 366900 Northing: 374300 Distance: 923 Quadrant Reference: A11 Quadrant Reference: NE Bearing Ref: W Cavity Type: Not supplied Commodity: Salt Solid Geology Detail: No Details Superficial Geology Detail: No Details	A11NE (W)	923	10	366900 374300
	Man-Made Mining Cavities Easting: 366900 Northing: 374400 Distance: 938 Quadrant Reference: A11 Quadrant Reference: NE Bearing Ref: W Cavity Type: Not supplied Commodity: Salt Solid Geology Detail: No Details Superficial Geology Detail: No Details	A11NE (W)	938	10	366900 374400
	Man-Made Mining Cavities Easting: 367100 Northing: 374900 Distance: 992 Quadrant Reference: A17 Quadrant Reference: NW Bearing Ref: NW Cavity Type: Not supplied Commodity: Salt Solid Geology Detail: No Details Superficial Geology Detail: No Details	A17NW (NW)	992	10	367100 374900
	Non Coal Mining Areas of Great Britain No Hazard				
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	0	4	367938 374199
	Potential for Collapsible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	0	4	367960 374137
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	35	4	367983 374068
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	0	4	367938 374199
	Potential for Compressible Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	0	4	367960 374137
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	35	4	367983 374068
	Potential for Ground Dissolution Stability Hazards Hazard Potential: High Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	0	4	367938 374199

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	0	4	368010 374218
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	0	4	367938 374199
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	0	4	367938 374199
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	0	4	367960 374137
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	35	4	367983 374068
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	0	4	367938 374199
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	0	4	367938 374199
	Radon Potential - Radon Affected Areas Affected Area: The property is in a lower probability radon area, as less than 1% of homes are above the action level Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	0	4	367938 374199

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
192	**Contemporary Trade Directory Entries** Name: Oakmere Volkswagen Location: Manchester Road, Northwich, Cheshire, CW9 7NA Classification: Car Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	134	-	367812 374378
192	**Contemporary Trade Directory Entries** Name: Oakmere Toyota Location: Manchester Road, Northwich, Cheshire, CW9 7NA Classification: Car Customisation & Conversion Specialists **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	139	-	367851 374405
193	**Contemporary Trade Directory Entries** Name: A & B Autos Location: 211-215, Manchester Road, Northwich, Cheshire, CW9 7NB Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (N)	206	-	367900 374499
193	**Contemporary Trade Directory Entries** Name: M C Garages Ltd Location: 211-215, Manchester Road, Northwich, Cheshire, CW9 7NB Classification: Car Dealers **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (N)	206	-	367900 374499
194	**Contemporary Trade Directory Entries** Name: Cleaning Force Ltd Location: 241-243, Manchester Road, Northwich, Cheshire, CW9 7NE Classification: Commercial Cleaning Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NE (N)	214	-	368011 374529
194	**Contemporary Trade Directory Entries** Name: Intrim Location: 241-243, Manchester Road, Northwich, Cheshire, CW9 7NE Classification: Painting & Decorating Supplies **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (N)	214	-	368011 374529
195	**Contemporary Trade Directory Entries** Name: County Motors (Uk) Ltd Location: 225, Manchester Road, Northwich, Cheshire, CW9 7NB Classification: Car Dealers - Used **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NE (N)	222	-	367942 374530
196	**Contemporary Trade Directory Entries** Name: I C S Tricool Thermal Location: 267, Manchester Road, Northwich, Cheshire, CW9 7NE Classification: Industrial Engineers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18SE (N)	253	-	368085 374553
196	**Contemporary Trade Directory Entries** Name: Rmj Services Ltd Location: 277, Manchester Road, Northwich, Cheshire, CW9 7NE Classification: Road Haulage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	279	-	368122 374565
197	**Contemporary Trade Directory Entries** Name: J E B Precision Ltd Location: Works Lane, Lostock Gralam, NORTHWICH, Cheshire, CW9 7NW Classification: Precision Engineers **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	263	-	368201 374484
197	**Contemporary Trade Directory Entries** Name: Lostock Car Centre Location: 162, Manchester Road, Northwich, Cheshire, CW9 7NN Classification: Car Dealers - Used **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	272	-	368177 374521
198	**Contemporary Trade Directory Entries** Name: Disability Equipment Services Location: 145, Manchester Road, Northwich, Cheshire, CW9 7LS Classification: Disability Equipment - Manufacturers & Suppliers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	269	-	367605 374376

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
199	**Contemporary Trade Directory Entries** Name: Zeneca Resins Location: Lostock Works, Works Lane, Northwich, Cheshire, CW9 7ZR Classification: Chemical Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A14NW (E)	293	-	368346 374268
199	**Contemporary Trade Directory Entries** Name: Solvay Speciality Chemicals Ltd Location: Lostock Works, Works Lane, Northwich, Cheshire, CW9 7ZR Classification: Chemical Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A14NW (E)	293	-	368346 374268
200	**Contemporary Trade Directory Entries** Name: Mid Cheshire Damp & Timber Location: 8, Brook Street, Northwich, Cheshire, CW9 7NH Classification: Damp & Dry Rot Control **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	316	-	368127 374605
201	**Contemporary Trade Directory Entries** Name: Hiq Location: 131, Manchester Road, NORTHWICH, Cheshire, CW9 7LS Classification: Tyre Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (W)	326	-	367531 374364
201	**Contemporary Trade Directory Entries** Name: Hiq Northwich Location: 131, Manchester Road, Northwich, Cheshire, CW9 7LS Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (W)	326	-	367531 374364
201	**Contemporary Trade Directory Entries** Name: Hiq Location: 131, Manchester Road, Northwich, Cheshire, CW9 7LS Classification: Tyre Dealers **Status: Active** Positional Accuracy: Automatically positioned to the address	A12NE (W)	326	-	367531 374364
202	**Contemporary Trade Directory Entries** Name: Mere Classics Location: Cranage Lane, Northwich, Cheshire, CW9 7LY Classification: Classic Car Specialists **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (NW)	377	-	367563 374495
203	**Contemporary Trade Directory Entries** Name: A B Pest Control Location: 323, Manchester Road, Northwich, Cheshire, CW9 7NL Classification: Pest & Vermin Control **Status: Active** Positional Accuracy: Automatically positioned to the address	A18SE (NE)	400	-	368255 374623
204	**Contemporary Trade Directory Entries** Name: Point Preparation Ltd Location: Denton Dr, Northwich, Cheshire, CW9 7LU Classification: Mechanical Engineers **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A12NE (W)	419	-	367437 374382
204	**Contemporary Trade Directory Entries** Name: Chester Exhaust Supplies Location: Denton Dr, Northwich, Cheshire, CW9 7LU Classification: Exhaust System Manufacturers & Wholesalers **Status: Active** Positional Accuracy: Manually positioned to the road within the address or location	A12NE (W)	444	-	367423 374412
205	**Contemporary Trade Directory Entries** Name: Arnold Clark Location: Manchester Road, Northwich, Cheshire, CW9 5GG Classification: Car Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12SE (W)	436	-	367378 374173
205	**Contemporary Trade Directory Entries** Name: Arnold Clark Location: Manchester Road, Northwich, Cheshire, CW9 5GG Classification: Car Dealers **Status: Active** Positional Accuracy: Automatically positioned to the address	A12SE (W)	436	-	367378 374173

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
206	**Contemporary Trade Directory Entries** Name: A J Hancock Location: Denton Drive, Northwich, Cheshire, CW9 7LU Classification: Coal & Smokeless Fuel Merchants & Distributors **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (W)	439	-	367408 374362
206	**Contemporary Trade Directory Entries** Name: A J Hancock Ltd Location: Denton Drive, Northwich, Cheshire, CW9 7LU Classification: Coal & Smokeless Fuel Merchants & Distributors **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (W)	439	-	367408 374362
207	**Contemporary Trade Directory Entries** Name: Peak Engineering Location: Stanley Grove, Northwich, Cheshire, CW9 7NP Classification: Engineers - General **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A19SW (NE)	463	-	368367 374598
207	**Contemporary Trade Directory Entries** Name: Car Go Location: The Workshop, Stanley Grove, Northwich, Cheshire, CW9 7NP Classification: Garage Services **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A19SW (NE)	482	-	368407 374575
207	**Contemporary Trade Directory Entries** Name: Car-Go Location: The Workshop, Stanley Grove, Northwich, Cheshire, CW9 7NP Classification: Garage Services **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A19SW (NE)	482	-	368407 374575
208	**Contemporary Trade Directory Entries** Name: P H & M A Brookes Ltd Location: Unit 6, Denton Drive, Northwich, Cheshire, CW9 7LU Classification: Precision Engineers **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A12NE (NW)	468	-	367476 374534
208	**Contemporary Trade Directory Entries** Name: Hamilton Location: Unit 7, Heron Court, Denton Drive, Northwich, Cheshire, CW9 7LU Classification: Catering Equipment **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	498	-	367451 374552
208	**Contemporary Trade Directory Entries** Name: Truck Port Services Location: Unit 1, Heron Court, Denton Drive, Northwich, Cheshire, CW9 7LU Classification: Commercial Vehicle Servicing, Repairs, Parts & Accessories **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	512	-	367430 374547
209	**Contemporary Trade Directory Entries** Name: Charlie Browns Autocentres Location: Unit 4, Northwich Retail Park, Manchester Road, Northwich, Cheshire, CW9 5LY Classification: Tyre Dealers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (W)	505	-	367342 374372
210	**Contemporary Trade Directory Entries** Name: Ellis Welding Ltd Location: 5, Denton Drive, Northwich, Cheshire, CW9 7LU Classification: Engineering Services **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A12NE (NW)	513	-	367363 374444
210	**Contemporary Trade Directory Entries** Name: European Spectrometry Systems Ltd Location: Genesys House, Denton Drive, Northwich, Cheshire, CW9 7LU Classification: Scientific Apparatus & Instruments - Manufacturers **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A12NE (W)	542	-	367329 374440

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
211	**Contemporary Trade Directory Entries** Name: Multiplastics Europe Ltd Location: Columbus House, 30, Manchester Road, Northwich, Cheshire, CW9 5ND Classification: Manufacturers **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A12SE (W)	529	-	367291 374109
211	**Contemporary Trade Directory Entries** Name: N K Spedition Ltd Location: Columbus House, 30, Manchester Road, Northwich, Cheshire, CW9 5ND Classification: Freight Forwarders **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A12SE (W)	529	-	367291 374109
212	**Contemporary Trade Directory Entries** Name: T G Builders Merchants Location: Wincham Mill, Manchester Road, Wincham, Northwich, Cheshire, CW9 7NS Classification: Builders' Merchants **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A19SW (NE)	534	-	368479 374564
212	**Contemporary Trade Directory Entries** Name: T G Builders Merchants Location: Wincham Mill, Manchester Road, Wincham, Northwich, Cheshire, CW9 7NS Classification: Builders' Merchants **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A19SW (NE)	534	-	368479 374564
213	**Contemporary Trade Directory Entries** Name: Currys Location: Unit 4, Northwich Retail Park, Manchester Road, Northwich, Cheshire, CW9 5LY Classification: Electrical Goods Sales, Manufacturers & Wholesalers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (W)	570	-	367263 374336
214	**Contemporary Trade Directory Entries** Name: Kc Autos Location: M B C House, Denton Drive, Northwich, Cheshire, CW9 7LU Classification: Car Body Repairs **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	571	-	367365 374559
215	**Contemporary Trade Directory Entries** Name: Automatic Handling (Europe) Ltd Location: Denton Drive Indust Est, Northwich, Cheshire, CW9 7LU Classification: Engineers - General **Status:** **Inactive** Positional Accuracy: Manually positioned within the geographical locality	A12NE (NW)	589	-	367312 374512
215	**Contemporary Trade Directory Entries** Name: C C Light Haulage Location: Unit 3, Kingfisher Court, Northwich, Cheshire, CW9 7TT Classification: Road Haulage Services **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (NW)	608	-	367281 374494
215	**Contemporary Trade Directory Entries** Name: Safe T Solutions Ltd Location: Unit 1, Kingfisher Court, Northwich, Cheshire, CW9 7TT Classification: Medical Equipment Manufacturers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (NW)	617	-	367281 374513
215	**Contemporary Trade Directory Entries** Name: Gemini Automatic Doors Location: Unit 7, Kingfisher Court, Northwich, Cheshire, CW9 7TT Classification: Door & Gate Operating Equipment **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A12NW (W)	632	-	367248 374480
215	**Contemporary Trade Directory Entries** Name: Compass Aluminium Ltd Location: Unit 7, Kingfisher Court, Northwich, Cheshire, CW9 7TT Classification: Aluminium Fabricators **Status:** **Inactive** Positional Accuracy: Manually positioned to the address or location	A12NW (W)	632	-	367248 374480

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
215	**Contemporary Trade Directory Entries** Name: Don Richardson Ltd Location: Unit 8, Kingfisher Court, Northwich, Cheshire, CW9 7TS Classification: Chemicals - Distributors & Wholesalers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A12NW (NW)	638	-	367246 374490
216	**Contemporary Trade Directory Entries** Name: Eco Option Uk Ltd Location: Eco Option House, Griffiths Road, Lostock Gralam, Northwich, Cheshire, CW9 7XU Classification: Reclamation Centres **Status:** **Active** Positional Accuracy: Manually positioned to the road within the address or location	A14NW (NE)	591	-	368568 374518
216	**Contemporary Trade Directory Entries** Name: Auto Bodyshop Ltd Location: Griffiths Road, Lostock Gralam, Northwich, Cheshire, CW9 7NU Classification: Commercial Vehicle Servicing, Repairs, Parts & Accessories **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A14NE (NE)	623	-	368618 374490
216	**Contemporary Trade Directory Entries** Name: Jack Richards & Son Ltd Location: Griffiths Road, Lostock Gralam, Northwich, Cheshire, CW9 7NU Classification: Road Haulage Services **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A14NW (NE)	626	-	368611 374512
217	**Contemporary Trade Directory Entries** Name: K B Motors Location: Middlewich Road, Rudheath, Northwich, Cheshire, CW9 7DR Classification: Garage Services **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A8SW (S)	592	-	367795 373510
217	**Contemporary Trade Directory Entries** Name: Ags Autocare Location: 249, Middlewich Road, Rudheath, Northwich, Cheshire, CW9 7DR Classification: Garage Services **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A8SW (S)	634	-	367777 373471
217	**Contemporary Trade Directory Entries** Name: Superclean Location: 249, Middlewich Road, Rudheath, Northwich, Cheshire, CW9 7DR Classification: Carpet, Curtain & Upholstery Cleaners **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A8SW (S)	634	-	367777 373471
218	**Contemporary Trade Directory Entries** Name: Thor Specialities (Uk) Ltd Location: Wincham Avenue, Wincham, NORTHWICH, Cheshire, CW9 6GB Classification: Chemicals & Allied Products **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A18NE (N)	628	-	368015 374943
219	**Contemporary Trade Directory Entries** Name: Dobsons Buses Ltd Location: Chapel Street, Wincham, Northwich, Cheshire, CW9 6DA Classification: Bus & Coach Operators & Stations **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A18SW (NW)	637	-	367612 374842
219	**Contemporary Trade Directory Entries** Name: New Platt Motors Location: Chapel Street, Wincham, Northwich, Cheshire, CW9 6DA Classification: Car Body Repairs **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A18SW (NW)	648	-	367648 374873
220	**Contemporary Trade Directory Entries** Name: Gemini Automatic Doors Location: Unit 4, Kingfisher Court, Northwich, Cheshire, CW9 7TT Classification: Door & Gate Operating Equipment **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	647	-	367269 374552

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
221	**Contemporary Trade Directory Entries** Name: Absolute Cleaning Location: 27, Edward Street, Northwich, Cheshire, CW9 7DQ Classification: Cleaning Services - Domestic **Status: Active** Positional Accuracy: Automatically positioned to the address	A7NE (SW)	651	-	367451 373596
221	**Contemporary Trade Directory Entries** Name: Northwich Radiator Services Location: Edward St, Rudheath/, Northwich, Cheshire, CW9 7DQ Classification: Car Radiator Servicing & Repairs **Status: Active** Positional Accuracy: Manually positioned to the road within the address or location	A7NE (SW)	660	-	367444 373590
222	**Contemporary Trade Directory Entries** Name: G Cross & Sons (Northwich) Ltd Location: Chapel Street, Wincham, Northwich, Cheshire, CW9 6DA Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	655	-	367754 374924
223	**Contemporary Trade Directory Entries** Name: Mots Location: Unit 2,Griffiths Park Ind Est,Middlewich Rd, Northwich, Cheshire, CW9 7DR Classification: Garage Services **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A8SW (S)	658	-	367885 373437
224	**Contemporary Trade Directory Entries** Name: Sovereign Car Centre Location: 201-203, Middlewich Road, Northwich, Cheshire, CW9 7DN Classification: Car Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A7SE (SW)	667	-	367566 373506
224	**Contemporary Trade Directory Entries** Name: Hp Performance Location: 201-203, Middlewich Road, Northwich, Cheshire, CW9 7DN Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A7SE (SW)	667	-	367566 373506
224	**Contemporary Trade Directory Entries** Name: Zenith Motors Location: 201A Middlewich Rd, Northwich, Cheshire, CW9 7DN Classification: Car Dealers - Used **Status: Active** Positional Accuracy: Manually positioned to the road within the address or location	A7SE (SW)	712	-	367559 373460
225	**Contemporary Trade Directory Entries** Name: Rudheath Mot Centre Location: Unit 3/4, Hargreaves Court, Hargreaves Road, Northwich, Cheshire, CW9 7BL Classification: Mot Testing Centres **Status: Active** Positional Accuracy: Automatically positioned to the address	A7NW (SW)	670	-	367252 373794
225	**Contemporary Trade Directory Entries** Name: Utility Innovations Solutions Ltd Location: Unit 2, Hargreaves Court, Hargreaves Road, Northwich, Cheshire, CW9 7BL Classification: Sheet Metal Working Equipment & Supplies **Status: Active** Positional Accuracy: Automatically positioned to the address	A7NW (SW)	686	-	367228 373804
225	**Contemporary Trade Directory Entries** Name: A & B Autos Hargreaves Location: Unit 2, Hargreaves Court, Hargreaves Road, Northwich, Cheshire, CW9 7BL Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A7NW (SW)	686	-	367228 373804
225	**Contemporary Trade Directory Entries** Name: Tyrewise Location: Unit 1, Hargreaves Court, Hargreaves Road, Northwich, Cheshire, CW9 7BL Classification: Tyre Dealers **Status: Active** Positional Accuracy: Automatically positioned to the address	A7NW (SW)	697	-	367222 373792
225	**Contemporary Trade Directory Entries** Name: T W G Nissan Ltd Location: Hargreaves Rd, Northwich, Cheshire, CW9 7BL Classification: Car Dealers **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A7NW (SW)	697	-	367222 373792

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
225	**Contemporary Trade Directory Entries** Name: Three Ways Garage Location: Hargreaves Court,Hargreaves Rd, Northwich, Cheshire, CW9 7BL Classification: Garage Services **Status: Active** Positional Accuracy: Manually positioned within the geographical locality	A7NW (SW)	697	-	367222 373792
226	**Contemporary Trade Directory Entries** Name: North West Truck Services Ltd Location: Griffiths Road, Lostock Gralam, Northwich, Cheshire, CW9 7NU Classification: Commercial Vehicle Servicing, Repairs, Parts & Accessories **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19SE (NE)	689	-	368629 374616
226	**Contemporary Trade Directory Entries** Name: North West Truck Services Ltd Location: Griffiths Road, Lostock Gralam, Northwich, Cheshire, CW9 7NU Classification: Commercial Vehicle Dealers **Status: Active** Positional Accuracy: Automatically positioned to the address	A19SE (NE)	689	-	368629 374616
226	**Contemporary Trade Directory Entries** Name: Francis Transport Location: Griffiths Road, Lostock Gralam, Northwich, Cheshire, CW9 7NU Classification: Road Haulage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A19SE (NE)	719	-	368628 374675
226	**Contemporary Trade Directory Entries** Name: J W Barrow & Co Location: Griffiths Road, Lostock Gralam, Northwich, Cheshire, CW9 7NU Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19SE (NE)	721	-	368654 374637
227	**Contemporary Trade Directory Entries** Name: Tesco Stores Ltd Location: Manchester Road, Northwich, Cheshire, CW9 5LY Classification: Petrol Filling Stations **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12SW (W)	704	-	367121 374060
228	**Contemporary Trade Directory Entries** Name: Eslick & Winnington Location: 18, Farm Road, Rudheath, Northwich, Cheshire, CW9 7DY Classification: Joinery Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8SE (S)	709	-	368070 373401
229	**Contemporary Trade Directory Entries** Name: Olympus Narrow Boats Location: Wincham Wharf,220 Manchester Rd, Lostock Gralam, Northwich, Cheshire, CW9 7NT Classification: Boatbuilders & Repairers **Status: Active** Positional Accuracy: Manually positioned to the address or location	A19SW (NE)	713	-	368587 374720
229	**Contemporary Trade Directory Entries** Name: Wincham Wharf Boat Builders Ltd Location: Wincham Wharf, 220, Manchester Road, Lostock Gralam, Northwich, Cheshire, CW9 7NT Classification: Boatbuilders & Repairers **Status: Active** Positional Accuracy: Automatically positioned to the address	A19SW (NE)	714	-	368588 374721
229	**Contemporary Trade Directory Entries** Name: M & I Marine Ltd Location: Wincham Wharf, 220, Manchester Road, Lostock Gralam, Northwich, Cheshire, CW9 7NT Classification: Printers **Status: Active** Positional Accuracy: Automatically positioned to the address	A19SW (NE)	714	-	368588 374721
230	**Contemporary Trade Directory Entries** Name: Neuman & Esser Location: Ascot Court, 71-73, Middlewich Road, Northwich, Cheshire, CW9 7BP Classification: Air Compressors **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A7NE (SW)	714	-	367269 373689

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
230	**Contemporary Trade Directory Entries** Name: Peak Catering Equipment Ltd Location: Ascot Court, 71-73, Middlewich Road, Northwich, Cheshire, CW9 7BP Classification: Catering Equipment **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A7NE (SW)	714	-	367269 373689
230	**Contemporary Trade Directory Entries** Name: Cheshire Home Help Location: Ascot Court, 71-73, Middlewich Road, Northwich, Cheshire, CW9 7BP Classification: Cleaning Services - Domestic **Status:** **Inactive** Positional Accuracy: Manually positioned to the address or location	A7NE (SW)	714	-	367269 373689
230	**Contemporary Trade Directory Entries** Name: T W G Hyundai Ltd Location: Hargreaves Road, Northwich, Cheshire, CW9 7BL Classification: Car Dealers **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A7NW (SW)	733	-	367229 373712
231	**Contemporary Trade Directory Entries** Name: Oakmere Mazda Location: Weavergate House, Retail Park East, Chester Way, Northwich, Cheshire, CW9 5NN Classification: Car Dealers **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A12NW (W)	733	-	367083 374225
232	**Contemporary Trade Directory Entries** Name: Monarch Food International Location: C,O Yersley Coldstore,Heath Farm,Heath La, Wincham, Northwich, Cheshire, CW9 6DB Classification: Meat - Wholesale **Status:** **Inactive** Positional Accuracy: Manually positioned within the geographical locality	A17SE (NW)	769	-	367327 374812
232	**Contemporary Trade Directory Entries** Name: Monarch Food International Location: Heath La, Wincham, Northwich, Cheshire, CW9 6DB Classification: Meat - Wholesale **Status:** **Inactive** Positional Accuracy: Manually positioned within the geographical locality	A17SE (NW)	769	-	367327 374812
233	**Contemporary Trade Directory Entries** Name: Bartec Paper & Packaging Ltd Location: Wincham Avenue, Wincham, NORTHWICH, Cheshire, CW9 6GB Classification: Packaging Materials Manufacturers & Suppliers **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A18NE (N)	783	-	368077 375094
234	**Contemporary Trade Directory Entries** Name: Exclusively Nine-Porsche Location: Care Of Christopher Neil,Middlewich Rd, Northwich, Cheshire, CW9 7BP Classification: Garage Services **Status:** **Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A7NW (SW)	795	-	367154 373714
235	**Contemporary Trade Directory Entries** Name: Davies Location: 33, Brook Lane, Northwich, Cheshire, CW9 7EY Classification: Building Block Manufacturers & Distributors **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A8SW (S)	796	-	367624 373343
236	**Contemporary Trade Directory Entries** Name: Kingsmead Polymers Location: Canal Side, Chapel Street, Wincham, Northwich, Cheshire, CW9 6DA Classification: PVC-U Products - Manufacturers & Suppliers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	804	-	367636 375038
237	**Contemporary Trade Directory Entries** Name: Lhj Domestic Services Location: 24, Brook Lane, Northwich, Cheshire, CW9 7EY Classification: Cleaning Services - Domestic **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A8SW (S)	819	-	367646 373312

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
237	**Contemporary Trade Directory Entries** Name: Diamond Location: 14, Brook Lane, Northwich, Cheshire, CW9 7EY Classification: Cleaning Services - Domestic **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A8SW (S)	861	-	367618 373278
238	**Contemporary Trade Directory Entries** Name: O'Neils Shutters Location: 32, Richard Street, Northwich, Cheshire, CW9 7DL Classification: Door Manufacturers - Industrial **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A7SE (SW)	840	-	367362 373427
239	**Contemporary Trade Directory Entries** Name: Industrial Cleaning Products Ltd Location: Elm St, Northwich, Cheshire, CW9 5LZ Classification: Cleaning Services - Commercial **Status:** **Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A12SW (W)	851	-	366966 374117
240	**Contemporary Trade Directory Entries** Name: Evans Halshaw Location: Chester Way, Northwich, Cheshire, CW9 5NQ Classification: Mot Testing Centres **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A12NW (W)	864	-	366952 374222
240	**Contemporary Trade Directory Entries** Name: Bramall Quicks Location: Chester Way, Northwich, Cheshire, CW9 5NQ Classification: Car Dealers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A12NW (W)	864	-	366952 374222
241	**Contemporary Trade Directory Entries** Name: Eveque Leisure Equipment Location: Unit 11, Wincham Avenue, Wincham, Northwich, Cheshire, CW9 6GB Classification: Sports Equipment Manufacturers & Distributors **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A18NE (N)	864	-	367991 375179
242	**Contemporary Trade Directory Entries** Name: Andrew Schofield Location: 2, William Street, Northwich, Cheshire, CW9 7AE Classification: Builders' Merchants **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A7NW (SW)	946	-	366959 373762
243	**Contemporary Trade Directory Entries** Name: Auto Service Centre Location: Shannon House, Wincham Avenue, Wincham, Northwich, Cheshire, CW9 6GB Classification: Garage Services **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A23SW (N)	957	-	367868 375263
244	**Contemporary Trade Directory Entries** Name: Express Asphalt Location: Wincham Avenue, Wincham, Northwich, Cheshire, CW9 6GB Classification: Asphalt & Macadam Suppliers **Status:** **Active** Positional Accuracy: Automatically positioned in the proximity of the address	A23SW (N)	963	-	367934 375276
244	**Contemporary Trade Directory Entries** Name: Paul Booth Location: Wincham Av, Wincham, Northwich, Cheshire, CW9 6GB Classification: Garage Services **Status:** **Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A23SW (N)	976	-	367904 375286
245	**Contemporary Trade Directory Entries** Name: Paper Dots Location: 5, Manchester Road, Northwich, Cheshire, CW9 5LY Classification: Greeting Card Publishers & Wholesalers **Status:** **Inactive** Positional Accuracy: Automatically positioned to the address	A11SE (W)	965	-	366869 373988

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
246	**Contemporary Trade Directory Entries** Name: Killsect Location: 26, Cotebrook Road, Northwich, Cheshire, CW9 7AT Classification: Pest & Vermin Control **Status:** **Active** Positional Accuracy: Automatically positioned to the address	A7NW (SW)	972	-	367058 373540
247	**Fuel Station Entries** Name: Middlewich Road Service Station Location: 201-203, Middlewich Road, NORTHWICH, Cheshire, CW9 7DN Brand: Obsolete Premises Type: Not Applicable **Status:** **Obsolete** Positional Accuracy: Automatically positioned to the address	A7SE (SW)	668	-	367566 373506
248	**Fuel Station Entries** Name: Tesco Northwich Location: Manchester Road, Northwich, Cheshire, CW9 5LY Brand: TESCO Premises Type: Hypermarket **Status:** **Open** Positional Accuracy: Manually positioned to the address or location	A12SW (W)	912	-	366926 373974

Sensitive Land Use

Map ID	Details		Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
249	**Areas of Adopted Green Belt**					
	Authority:	Vale Royal Borough Council (now part of Cheshire West and Chester Council)	A12SE (W)	532	11	367283 374193
	Plan Name:	Vale Royal Borough Council Local Plan - First Review Alteration				
	Status:	**Adopted**				
	Plan Date:	16th June 2006				
250	**Nitrate Vulnerable Zones**					
	Name:	Not Supplied	A13SE (E)	0	12	367938 374199
	Description:	Surface Water				
	Source:	Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)				

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
Cheshire East Council - Environmental Health Department	April 2014	Annually
Macclesfield Borough Council (now part of Cheshire East Council) - Health and Public Safety	July 2008	Not Applicable
Vale Royal Borough Council (now part of Cheshire West and Chester Council) - Community Services Directorate	November 2008	Not Applicable
Cheshire West and Chester Council - Environmental Health Department	November 2013	Annually
Discharge Consents		
Environment Agency - North West Region	January 2015	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - North West Region	March 2013	As notified
Integrated Pollution Controls		
Environment Agency - North West Region	October 2008	Not Applicable
Integrated Pollution Prevention And Control		
Environment Agency - North West Region	April 2015	Quarterly
Local Authority Integrated Pollution Prevention And Control		
Macclesfield Borough Council (now part of Cheshire East Council) - Environmental Health Department	February 2009	Not Applicable
Vale Royal Borough Council (now part of Cheshire West and Chester Council) - Environmental Health Department	June 2009	Not Applicable
Cheshire West and Chester Council - Environmental Health Department	October 2013	Annually
Cheshire East Council - Environmental Health Department	September 2014	Annually
Local Authority Pollution Prevention and Controls		
Macclesfield Borough Council (now part of Cheshire East Council) - Environmental Health Department	February 2009	Not Applicable
Vale Royal Borough Council (now part of Cheshire West and Chester Council) - Environmental Health Department	June 2009	Not Applicable
Cheshire West and Chester Council - Environmental Health Department	October 2013	Annually
Cheshire East Council - Environmental Health Department	September 2014	Annually
Local Authority Pollution Prevention and Control Enforcements		
Macclesfield Borough Council (now part of Cheshire East Council) - Environmental Health Department	February 2009	Not Applicable
Vale Royal Borough Council (now part of Cheshire West and Chester Council) - Environmental Health Department	June 2009	Not Applicable
Cheshire West and Chester Council - Environmental Health Department	October 2013	Annually
Cheshire East Council - Environmental Health Department	September 2014	Annually
Nearest Surface Water Feature		
Ordnance Survey	July 2012	Quarterly
Pollution Incidents to Controlled Waters		
Environment Agency - North West Region	January 2000	Not Applicable
Prosecutions Relating to Authorised Processes		
Environment Agency - North West Region	March 2013	As notified
Prosecutions Relating to Controlled Waters		
Environment Agency - North West Region	March 2013	As notified
River Quality		
Environment Agency - Head Office	November 2001	Not Applicable
River Quality Biology Sampling Points		
Environment Agency - Head Office	July 2012	Annually
River Quality Chemistry Sampling Points		
Environment Agency - Head Office	July 2012	Annually
Substantiated Pollution Incident Register		
Environment Agency - North West Region - South Area	April 2015	Quarterly
Water Abstractions		
Environment Agency - North West Region	January 2015	Quarterly

Agency & Hydrological	Version	Update Cycle
Water Industry Act Referrals Environment Agency - North West Region	April 2015	Quarterly
Groundwater Vulnerability Environment Agency - Head Office	April 2015	Not Applicable
Drift Deposits Environment Agency - Head Office	January 1999	Not Applicable
Bedrock Aquifer Designations British Geological Survey - National Geoscience Information Service	October 2012	As notified
Superficial Aquifer Designations British Geological Survey - National Geoscience Information Service	January 2015	As notified
Source Protection Zones Environment Agency - Head Office	April 2015	Quarterly
Extreme Flooding from Rivers or Sea without Defences Environment Agency - Head Office	May 2015	Quarterly
Flooding from Rivers or Sea without Defences Environment Agency - Head Office	May 2015	Quarterly
Areas Benefiting from Flood Defences Environment Agency - Head Office	May 2015	Quarterly
Flood Water Storage Areas Environment Agency - Head Office	May 2015	Quarterly
Flood Defences Environment Agency - Head Office	May 2015	Quarterly
Detailed River Network Lines Environment Agency - Head Office	March 2012	Annually
Detailed River Network Offline Drainage Environment Agency - Head Office	March 2012	Annually

Waste	Version	Update Cycle
BGS Recorded Landfill Sites		
British Geological Survey - National Geoscience Information Service	June 1996	Not Applicable
Historical Landfill Sites		
Environment Agency - North West Region - South Area	February 2015	Quarterly
Integrated Pollution Control Registered Waste Sites		
Environment Agency - North West Region	October 2008	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries)		
Environment Agency - North West Region - South Area	August 2014	Quarterly
Licensed Waste Management Facilities (Locations)		
Environment Agency - North West Region - South Area	April 2015	Quarterly
Environment Agency - Thames Region - West Area	April 2015	Quarterly
Local Authority Landfill Coverage		
Cheshire County Council (now part of Cheshire East Council) - Environmental Planning Department	May 2000	Not Applicable
Macclesfield Borough Council (now part of Cheshire East Council) - Environmental Health Department	May 2000	Not Applicable
Vale Royal Borough Council (now part of Cheshire West and Chester Council) - Environmental Health Department	May 2000	Not Applicable
Local Authority Recorded Landfill Sites		
Cheshire County Council (now part of Cheshire East Council) - Environmental Planning Department	February 2005	Not Applicable
Macclesfield Borough Council (now part of Cheshire East Council) - Environmental Health Department	May 2000	Not Applicable
Vale Royal Borough Council (now part of Cheshire West and Chester Council) - Environmental Health Department	May 2000	Not Applicable
Registered Landfill Sites		
Environment Agency - North West Region - South Area	March 2003	Not Applicable
Registered Waste Transfer Sites		
Environment Agency - North West Region - South Area	March 2003	Not Applicable
Registered Waste Treatment or Disposal Sites		
Environment Agency - North West Region - South Area	March 2003	Not Applicable

Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH)		
Health and Safety Executive	January 2015	Bi-Annually
Explosive Sites		
Health and Safety Executive	October 2014	Bi-Annually
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements		
Vale Royal Borough Council (now part of Cheshire West and Chester Council)	August 2009	Not Applicable
Macclesfield Borough Council (now part of Cheshire East Council) - Planning Department	December 2008	Not Applicable
Cheshire County Council (now part of Cheshire East Council) - Planning Department	July 2008	Annual Rolling Update
Cheshire East Council - Planning Department	October 2013	Annually
Cheshire West and Chester Council - Planning Department	October 2013	Annually
Planning Hazardous Substance Consents		
Vale Royal Borough Council (now part of Cheshire West and Chester Council)	August 2009	Not Applicable
Macclesfield Borough Council (now part of Cheshire East Council) - Planning Department	December 2008	Not Applicable
Cheshire County Council (now part of Cheshire East Council) - Planning Department	July 2008	Annual Rolling Update
Cheshire East Council - Planning Department	October 2013	Annually
Cheshire West and Chester Council - Planning Department	October 2013	Annually

RPS

Data Currency

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	January 2009	Not Applicable
BGS Estimated Soil Chemistry British Geological Survey - National Geoscience Information Service	January 2010	Annually
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	May 2015	Bi-Annually
Brine Compensation Area Cheshire Brine Subsidence Compensation Board	August 2011	Not Applicable
Coal Mining Affected Areas The Coal Authority - Mining Report Service	March 2014	As notified
Mining Instability Ove Arup & Partners	October 2000	Not Applicable
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	July 2014	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2014	Annually
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2014	Annually
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	June 2014	Annually
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2014	Annually
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2014	Annually
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2014	Annually
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	July 2011	As notified
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	July 2011	As notified

Industrial Land Use	Version	Update Cycle
Contemporary Trade Directory Entries Thomson Directories	February 2015	Quarterly
Fuel Station Entries Catalist Ltd - Experian	May 2015	Quarterly

Sensitive Land Use	Version	Update Cycle
Areas of Adopted Green Belt		
Macclesfield Borough Council (now part of Cheshire East Council)	May 2015	As notified
Vale Royal Borough Council (now part of Cheshire West and Chester Council)	May 2015	As notified
Areas of Unadopted Green Belt		
Macclesfield Borough Council (now part of Cheshire East Council)	May 2015	As notified
Vale Royal Borough Council (now part of Cheshire West and Chester Council)	May 2015	As notified
Areas of Outstanding Natural Beauty		
Natural England	February 2015	Bi-Annually
Environmentally Sensitive Areas		
Natural England	August 2014	Annually
Forest Parks		
Forestry Commission	April 1997	Not Applicable
Local Nature Reserves		
Natural England	April 2015	Bi-Annually
Marine Nature Reserves		
Natural England	July 2013	Bi-Annually
National Nature Reserves		
Natural England	March 2015	Bi-Annually
National Parks		
Natural England	February 2015	Bi-Annually
Nitrate Sensitive Areas		
Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	February 2012	Not Applicable
Nitrate Vulnerable Zones		
Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	July 2014	Annually
Ramsar Sites		
Natural England	March 2014	Bi-Annually
Sites of Special Scientific Interest		
Natural England	April 2015	Bi-Annually
Special Areas of Conservation		
Natural England	March 2014	Bi-Annually
Special Protection Areas		
Natural England	April 2015	Bi-Annually

Data Suppliers

A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
Environment Agency	
Scottish Environment Protection Agency	
The Coal Authority	
British Geological Survey	
Centre for Ecology and Hydrology	
Natural Resources Wales	
Scottish Natural Heritage	
Natural England	
Public Health England	
Ove Arup	
Peter Brett Associates	

Useful Contacts

Contact	Name and Address	Contact Details
2	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 08708 506 506 Email: enquiries@environment-agency.gov.uk
3	**Cheshire West and Chester Council - Environmental Health Department** County Hall, Chester, CH1 1SF	Telephone: 0300 1238 123 Email: enquiries@cheshirewestandchester.gov.uk Website: www.cheshirewestandchester.gov.uk
4	**British Geological Survey - Enquiry Service** British Geological Survey, Kingsley Dunham Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
5	**Vale Royal Borough Council (now part of Cheshire West and Chester Council) - Environmental Health Department** 58 Nicholas Street, Chester, Cheshire, CH1 2NP	Telephone: 0300 123 8123 Email: enquiries@cheshirewestandchester.gov.uk Website: www.cheshirewestandchester.gov.uk
6	**Cheshire County Council (now part of Cheshire East Council) - Environmental Planning Department** Westfields, Middlewich Road, Sandbach, Cheshire, CW11 1HZ	Telephone: 0300 123 5015 Website: www.cheshireeast.gov.uk
7	**Health and Safety Executive** 5S.2 Redgrave Court, Merton Road, Bootle, L20 7HS	Website: www.hse.gov.uk
8	**Cheshire West and Chester Council - Planning Department** County Hall, Cheshire, CH1 1SF	Telephone: 0300 1238 123 Email: enquiries@cheshirewestandchester.gov.uk Website: www.cheshirewestandchester.gov.uk
9	**Cheshire Brine Subsidence Compensation Board** Sir Henry Doulton House, Forge Lane, Etruria, Stoke on Trent, Staffordshire, ST1 5BD	Telephone: 0845 002 0562 Fax: 0845 111 8888 Email: info@cheshirebrine.com Website: www.cheshirebrine.com
10	**Peter Brett Associates** Caversham Bridge House, Waterman Place, Reading, Berkshire, RG1 8DN	Telephone: 0118 950 0761 Fax: 0118 959 7498 Email: reading@pba.co.uk Website: www.pba.co.uk
11	**Vale Royal Borough Council (now part of Cheshire West and Chester Council)** 58 Nicholas Street, Chester, Cheshire, CH1 2NP	Telephone: 0300 1238123 Email: enquiries@cheshirewestandchester.gov.uk Website: www.cheshirewestandchester.gov.uk
12	**Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)** Government Buildings, Otley Road, Lawnswood, Leeds, West Yorkshire, LS16 5QT	Telephone: 0113 2613333 Fax: 0113 230 0879
13	**Natural England** Suite D, Unex House, Bourges Boulevard, Peterborough, Cambridgeshire, PE1 1NG	Telephone: 0845 600 3078 Email: enquiries@naturalengland.org.uk Website: www.naturalengland.org.uk
-	**Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards** Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: www.ukradon.org
-	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

Contact	Name and Address	Contact Details

Please note that the Environment Agency / Natural Resources Wales / SEPA have a charging policy in place for enquiries.

Annex 9.A.4: Part IIA (The Contaminated Land Regime)

Contaminated Land Definition

Under Section 57 of the Environmental Act 1995, Part 2A was inserted into the Environmental Protection Act 1990 to include provisions for the management of contaminated land.

Subsequent regulations were first implemented in England in April 2000, Scotland in July 2000 and Wales in July 2001[1], providing a definition of ‘contaminated land’ and setting out the nature of liabilities that can be incurred by owners of contaminated land and groundwater.

According to the Act, contaminated land is defined as ‘any land which appears to the local authority in whose area the land is situated to be in such a condition, by reason of substances in, on or under the land that:

a) *significant harm* is being caused or there is a *significant possibility* of such harm being caused; or
b) *significant pollution* of controlled waters[2] is being caused or there is a significant possibility of such pollution being caused[3]’

The guidance on determining whether a particular possibility is significant is based on the principles of risk assessment and in particular on considerations of the magnitude or consequences of the different types of significant harm caused. The term ‘possibility of significant harm being caused’ should be taken, as referring to a measure of the probability, or frequency, of the occurrence of circumstances that could lead to significant harm being caused.

The following situations are defined where harm is to be regarded as significant:

i. Chronic or acute toxic effect, serious injury or death to humans
ii. Irreversible or other adverse harm to the ecological system
iii. Substantial damage to, or failure of, buildings
iv. Disease, other physical damage or death of livestock or crops
v. The pollution of controlled waters[4].

---

[1] In England by The Contaminated Land (England) Regulations 2000, updated by The Contaminated Land (England) (Amendment) Regulations 2012; in Scotland by The Contaminated Land (Scotland) Regulations 2000, updated by the Contaminated Land (Scotland) Regulations 2005; and in Wales by The Contaminated Land (Wales) Regulations 2001, updated by the Contaminated Land (Wales) Regulations 2006.

[2] In Scotland the term “controlled water” has been updated to “water environment” under the Contaminated Land (Scotland) Regulations 2005 in line with the Water Environment and Water Services (Scotland) Act 2003.

[3] The definition was amended in 2012 by implementation of the Water Act 2003.

[4] Groundwater in this context does not include waters within underground strata but above the saturated zone.

With regard to radioactivity, contaminated land is defined as 'any land which appears to be in such a condition, by reason of substances in, on or under the land that harm is being caused, or there is a *significant possibility of such harm being caused*[5]'.

The Risk Assessment Methodology

Risk assessment is the process of collating known information on a hazard or set of hazards in order to estimate actual or potential risks to receptors. The receptor may be humans, a water resource, a sensitive local ecosystem or future construction materials. Receptors can be connected with the hazard via one or several exposure pathways (e.g. the pathway of direct contact). Risks are generally managed by isolating or removing the hazard, isolating the receptor, or by intercepting the exposure pathway. Without the three essential components of a source (hazard), pathway and receptor, there can be no risk. Thus, the mere presence of a hazard at a site does not mean that there will necessarily be attendant risks.

The Risk Assessment

By considering where a viable pathway exists which connects a source with a receptor, this assessment will identify where pollutant linkages may exist. A pollutant linkage is the term used by the DEFRA in their standard procedure on risk assessment. If there is no pollutant linkage, then there is no risk. Therefore, only where a viable pollutant linkage is established does this assessment go on to consider the level of risk. Risk should be based on a consideration of both:

- The likelihood of an event (probability) - takes into account both the presence of the hazard and receptor and the integrity of the pathway.
- The severity of the potential consequence - takes into account both the potential severity of the hazard and the sensitivity of the receptor.

For further information please see the Contaminated Land section on the DEFRA website (www.defra.gov.uk).

[5] The Radioactive Contaminated Land (Modification of Enactments) (England) Regulations 2006 and Contaminated Land (Wales) Regulations 2006.

Appendix 9.B: Van Elle 2009 Phase II Factual Report

PHASE II Factual Report

Contract :	Lostock Works, Cheshire
Date :	16th June 2009
Job Reference :	G900000

	NAME	SIGNATURE	DATE
Prepared by:			
Checked by:			
Authorised by:			

CONTENTS

APPENDICES

1.0 INTRODUCTION

1.1 Introduction

Van Elle Total Foundation Solutions (Van Elle) has been appointed by the Client, Viridor Limited, to undertake a Phase II Factual Site Investigation at the Lostock Works site, Cheshire. Van Elle employed the services of GeoDyne Limited to provide certain consultancy services and site supervision of the works.

1.2 Site Investigation Rationale

The objective of the Phase II Factual Site Investigation was to provide information regarding ground conditions in order to facilitate the production of an interpretive geotechnical and environmental assessment to assist in the redevelopment of the site for an alternative land use.

The scope of the works to be undertaken was provided to Van Elle by Wardell Armstrong LLP in their tender information dated 23rd December 2008. The actual scope of works undertaken during the ground investigation is provided in Section 2.0. The actual scope of works completed varied slightly from the information in the tender pack to accommodate changes / requests from Wardell Armstrong in reaction to unforeseen ground conditions and site constraints.

1.3 Site Location

The site constitutes a former Chlorine Plant located to the west of the Lostock Works industrial complex. The works is situated off Griffiths Road, Lostock Gralam, Cheshire and may be located from approximate Ordnance Survey National Grid Reference 367938E 374204N. A Site Location Plan (Figure No. 29002/01) is presented in Appendix A. The Chlorine Plant where ground investigation works has been undertaken by Van Elle is referenced as 'Lostock Works' within this report (see Drawing 29002/02).

1.4 Site Description

The following is transcribed from ICI Soil & Groundwater Contamination Assessment Stage 1 (ref. IC 17971):

'The main process areas are located in the centre of the site and include the chlorine Cellroom and workshop with offices, control room and chlorine and brine treatment to the south. Liquid chlorine storage and loading areas are located to the south with cooling towers to the west and further storages (caustic soda and sodium hypochlorite) to the east of the plant. There is a Pilot Plant, Hydrogen Cooling and Blowing Plant and small electrical substation to the north east. The majority of the remainder of the site is covered by access roads, hardstandings and gravelled areas with rail lines at the north, west and south boundaries'.

The site is surrounded to the east by the Brunner Mond Soda Ash Plant and to the south by Wade Brook, beyond which lies railway lines and further industrial works and associated areas. A mixture of open ground, warehousing, a pond (70m) and a works are located to the north of the site. Railway lines and open ground surround the site to the west.

We understand that the site has been disused for approximately eight years, with much of the former plant infrastructure remaining in situ and unused during this period.

1.5 Limitations and Disclaimers

The ground is a product of continuing natural and artificial process. As a result, the ground will exhibit a variety of characteristics that vary from place to place across a site, and also with time.

The exploratory hole logs given in this report were prepared for the sole benefit of the client in accordance with the brief provided. As such these do not necessarily address all aspects of the ground behaviour on site.

This report relates to the Lostock Works site, Lostock Gralam, Cheshire. Attention is drawn to the fact that the findings are based on data obtained from the exploratory holes and associated laboratory and in-situ testing. The possibility of variation in ground conditions around the trial holes should not be overlooked. Any opinion or diagram of a possible configuration of strata beyond the trial holes or extrapolated to greater depth is conjectural and given for guidance only. No liability can be accepted for such variations.

Van Elle Conditions & Limitations are presented in Appendix H.

2.0 SITE WORKS

2.1 Introduction

The basis for the scope of the site works was outlined in the Wardell Armstrong tender information dated 23rd December 2008. The information included the number of exploratory holes, methods of excavation and the testing to be completed (in / ex situ). The works were undertaken under the full time supervision of Van Elle and GeoDyne and predominately full time supervision of Wardell Armstrong between 30th March and 24th April 2009.

2.2 Health & Safety

A comprehensive health and safety system was employed during the site works for the protection of the site investigation personnel at the request, and under the supervision, of Ineos Chlor (the site owners). The system included the following elements:

- Site induction.
- Permit to dig system including:
    - Preliminary sub contracted service scan.
    - Ineos Chlor service scan.
    - Hand dig to 1.2m below existing ground level (begl).
    - Ineos Chlor second service scan.
- Permit to work system including training of key staff.

2.3 Scope of works

2.3.1 Exploratory Holes

The following exploratory holes were advanced during the course of the ground investigation:

- 23No. Cable percussive boreholes to depths ranging between 1.45m and 15.5m begl including Standard Penetration Tests (SPT). These included BH1-BH7, BH7B, BH8-BH11, BH11A, BH12-BH18, BH18A, BH19-BH20.
- 9No. Window sample boreholes to depths ranging between 1.20m and 5.00m begl including SPT's. These included WS1-WS4, WS7-WS11.
- 11No. Trial pits (excavated with tracked backhoe excavator) to depths ranging between 1.00m to 4.40m begl. These included TP1-TP6, TP8, TP10-TP13.

Representative samples of the Made Ground/Natural Strata were collected during the advancement of the exploratory holes.

The advancement of the following exploratory holes was not possible for the reasons detailed below:

- BH11 – Obstruction encountered at 1.80m begl.
- WS5 – High density of underground services obstructed borehole.

- WS6 – Drilled via cable percussive methods.
- TP7 & TP9 – Underground services exposed during excavation of 1.0m preliminary service inspection pit. These positions were drilled using window sample methods (referenced WS10 and WS8 respectively).

The Exploratory Hole Location Plan is presented in Appendix B (Drawing No. 29002/02) and the exploratory hole logs are presented in Appendix C. Plates providing views of the exploratory holes and resultant horizons are provided in Appendix G.

2.3.2.1 In Situ Testing

The following in situ testing was undertaken during the course of the ground investigation:

- 20No. Plate bearing tests (see Appendix D). Note: plate bearing tests were undertaken in the position of the window sample and trial pit locations.
- SPT Testing (see logs presented in Appendix C).
- Hand shear vane tests (see logs presented in Appendix C).

2.3.3 Ex Situ Testing (Laboratory Analysis)

2.3.3.1 Geotechnical Testing

The following geotechnical laboratory testing was undertaken has been undertaken on samples collected during the course of the ground investigation:

- 22No. 4 Point liquid & plastic Limit
- 32No. Natural moisture content (NMC) tests.
- 29 No. Multistage triaxial tests.
- 16No. Dry density / moisture content relationship tests.
- 28No. Sulphate (water soluble 2:1 extract).
- 32No. Particle size distribution tests (PSD).
- 10No. Consolidation tests (oedometer).

The results of the geotechnical laboratory testing are presented in Appendix E.

2.3.3.2 Environmental Testing (Solid)

The following suites of determinands were scheduled for analysis on soil samples collected during the course of the ground investigation:

- 21No. Solid Suite A (see below)

Metals (As, Cd, Cr, Pb, Hg, Se, Cu, Ni, Zn)
pH
FOC
Speciated PAH (EPA 16) by GC-MS

- 22No. Solid Suite B (see below)

Metals (As, Cd, Cr, Pb, Hg, Se, Cu, Ni, Zn)
Asbestos screen
TPH – CWG (aliphatic/aromatic speciation)
SVOC Suite + Tentatively Identified Compounds (TIC)
pH
VOC Suite + TIC
FOC
Speciated PAH (EPA 16) by GC-MS

- 2 No. Leachate Suite A (see below)

Metals (As, Cd, Cr, Pb, Hg, Se, Cu, Ni, Zn)
pH
Speciated PAH (EPA 16) by GC-MS
Leachate Prep - BSEN12457 (single batch 2:1)

- 14No. Leachate Suite B (see below)

Metals (As, Cd, Cr, Pb, Hg, Se, Cu, Ni, Zn)
TPH – CWG (aliphatic/aromatic)
pH
SVOC Suite + TIC
VOC Suite + TIC
Speciated PAH (EPA 16) by GC-MS
Leachate Prep - BSEN12457 (single batch 2:1)

The results of the solid environmental laboratory testing are presented in Appendix F.

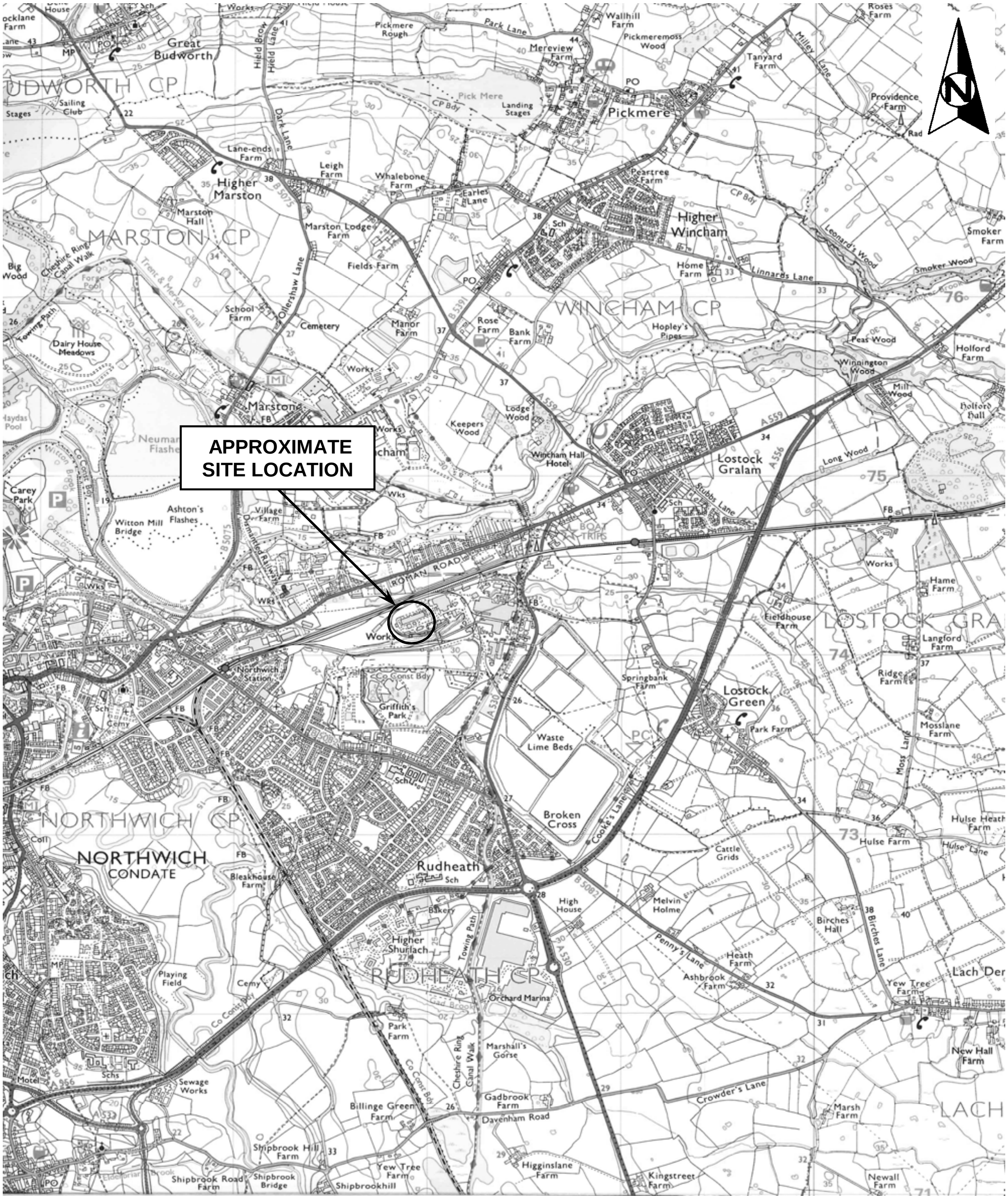
Phase II Factual Report

Contract: Lostock Works, Cheshire

Ref: G900000

Appendix A

Site Location Plan



DO NOT SCALE

Project No.	29002	Drawn	GJS
Client	Viridor Limited	Checked	
Project	Lostock Works Cheshire	Approved	
		Scale	NTS
Title	Site Location Plan	Rev.	

GeoDyne

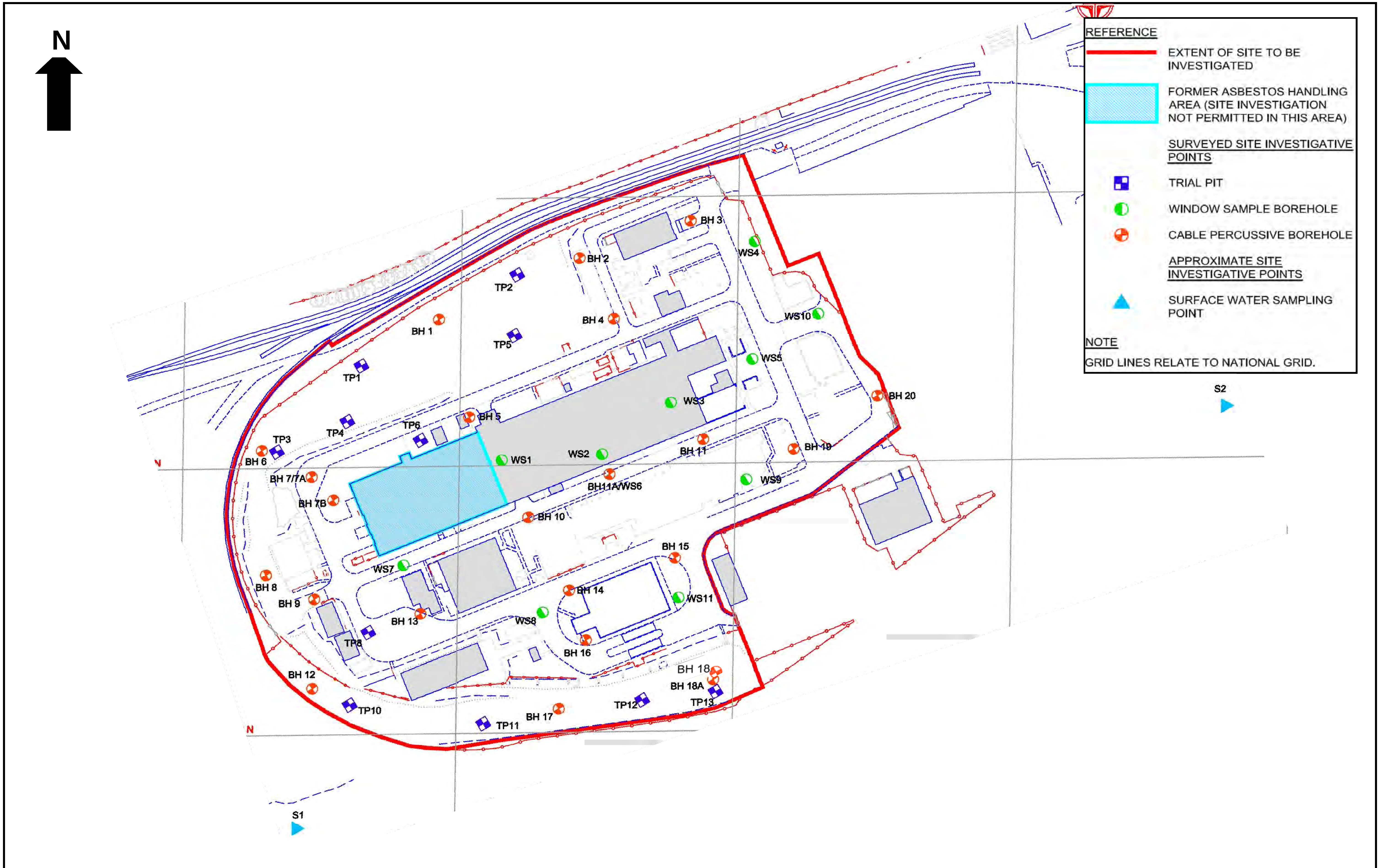
Phase II Factual Report

Contract: Lostock Works, Cheshire

Ref: G900000

Appendix B

Exploratory Hole Location Plan



NOTE REPRODUCED FROM THE ORDNANCE SURVEY MAP WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATIONARY OFFICE. CROWN COPYRIGHT RESERVED. LICENSE NO. AL 100041272. DO NOT SCALE	Project No. 29002 Client Viridor Ltd Project Lostock Works Cheshire	Title Exploratory Hole & Sampling Point Location Plan Scale NTS Revision	Scale NTS Revision Date Drawn 30/04/2009	Drawn GJS Checked Approved	GeoDyne
			Figure No. 29002/02		

Phase II Factual Report

Contract: Lostock Works, Cheshire

Ref: G900000

Appendix C

Exploratory Hole Logs

GeoDyne
The Granary, Church Lane
Thrumpton, Nottingham NG11 0AX
Tel: 0115 983 0006 Fax: 0115 983 0009
email: info@geodyne.co.uk

BH1

Project No.29002

Samples and Tests

Depth (m)	Type	Sample Ref	SPT "N" Value
0.50-1.00	B	B2	
0.60	D	D1	
1.20-1.65	S		3
1.20-1.70	B	B4	
1.20-1.65	D	SD3	
2.00-2.45	U	U5	26 Blows
2.65	D	D6	
3.10-3.55	S		12
3.10-3.60	B	B8	
3.10-3.55	D	SD7	
4.00-4.60	B	B9	
4.60-5.25	U	U10	37 Blows
5.45	D	D11	
6.10	D	D12	
6.20-6.65	S		32
6.20-7.00	B	B14	
6.20-6.65	D	SD13	
7.60-8.05	S		50/190mm
7.60-8.05	D	SD15	
8.50-9.00	B	B16	
9.20-9.65	S		50/100mm

Strata

Description of Strata	Depth & (Thickness) (m)	Casing (m)	Groundwater
Dark brown clayey sand and gravel including brick, coal, ash and limestone fragments (MADE GROUND)	(0.50) 0.50		
Made Ground comprising predominantly ashy clay with occasional coal and brick fragments (MADE GROUND)	(0.65) 1.15		▽
Firm to stiff grey-brown very sandy clay with occasional fine to medium gravel of brick and coal (MADE GROUND)	(0.55) 1.70		
Firm to stiff red-brown grey mottled sandy CLAY with sandy partings (BOULDER CLAY)	(0.30) 2.00		
Stiff red-brown locally grey mottled slightly silty slightly sandy CLAY (BOULDER CLAY)	(1.90) 3.90		
Stiff red-brown slightly sandy gravelly CLAY. Gravel is predominantly fine to medium sub-angular to sub-rounded mudstone (BOULDER CLAY)	(2.10) 6.00	6.00	
Weak red-brown highly to completely weathered MUDSTONE recovered as a hard friable slightly gravelly sandy clay. Gravel is predominantly fine to coarse sub-angular mudstone (MUDSTONE)	(3.65) 9.65		

End of Borehole at 9.65 m

Remarks:
1.Borehole cased to 6.00m begl.
2.Water encountered at approximately 0.65m begl and as seepage between approximately 1.70m and 2.00m begl and 3.10m and 6.00m begl.
3.Hand-dug pit to 1.20m begl.
4.Chiselling from 8.20m to 9.20m begl (1hr).
5.Plain pipe installed from ground level to 1.00m begl with a bentonite surround, slotted pipe installed from 1.00m to 2.00m begl with a gravel surround and bentonite backfill from 2.00m to 9.65m begl.
6.Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire		**Client:** Viridor Limited	
Logged: GJS	**Checked:**	**Field Book Ref:** GS09/01	**Plant:** Dando 2000
Date: 30/03/2009	**Approved:**		**Scale:** 1:50
Drawing Ref: BH1			

GeoDyne

The Granary, Church Lane
Thrumpton, Nottingham NG11 0AX
Tel: 0115 983 0006 Fax: 0115 983 0009
email: info@geodyne.co.uk

BH2

Project No.29002

Samples and Tests

Depth (m)	Type	Sample Ref	SPT 'N' Value
0.50-1.00	B	B1/B2	
0.75	D	D3	
1.10	D	D4	
1.20-1.65	S		9
1.20-1.50	B	B5	
1.50	B	B6	
1.80	B	D7	
2.00-2.45	U	U8	16 Blows
2.65	D	D9	
2.90-3.35	U	U10	29 Blows
3.55	D	D11	
4.00-4.45	S		21
4.00-4.50	B	B13	
4.00-4.45	D	SD12	
5.10-5.55	U	U14	70 Blows
5.75	D	D15	
6.50	D	D16	
6.60-7.05	S		50/295mm
6.60-7.00	D	SD17	
7.50	D	D18	
8.05-8.50	S		46
8.05-8.50	D	SD19	
9.00	D	D20	
9.40-9.85	C		50/175mm
9.40-9.90	D	D21	

Description of Strata

Description of Strata	Depth & (Thickness) (m)	Casing (m)
Concrete hard standing (MADE GROUND)	0.10	
Loose to medium dense light grey sandy gravel of limestone (MADE GROUND)	0.16	
Loosely compacted grey slightly clayey gravelly sand with occasional medium to coarse brick fragments (MADE GROUND) ...with frequent tarmacadam gravel at approximately 0.35m begl	(0.54) 0.70	
Loose to medium dense compacted grey ashy gravelly sand. Gravel is predominantly fine to medium sub-angular clinker, concrete and occasional fine brick (MADE GROUND)	(0.40) 1.10	
Medium dense dark grey-brown slightly clayey slightly ashy gravelly sand. Gravel included medium to coarse brick, fine coal traces, rare roots and a slight unknown odour (MADE GROUND)	(0.70) 1.80	
Firm black closely mottled dark grey sandy organic clay with occasional fine brick and black clinker gravel (MADE GROUND)	2.00	
Stiff locally soft brown mottled light grey silty slightly sandy CLAY with rare fine black root remains (BOULDER CLAY) ...becoming very stiff with depth ...becoming fissile and with much blocky mudstone gravel below approximately 9.00m begl	(7.40) 9.40	6.50
Very weak completely weathered grey silty slightly sandy MUDSTONE. Recovered as a sandy		

Continued on next sheet

Remarks:
1.Borehole sides cased to 6.50m begl.
2.Water encountered at approximately 1.80m begl rising to 1.70m begl after 20 minutes.
3.Hand-dug pit to 1.20m begl.
4.Chiselling from 6.30m to 6.35m begl (0.5hrs) and from 10.85m to 11.20m begl (1hr).
5.Plain pipe installed from ground level to 1.00m begl with a bentonite surround, slotted pipe installed from 1.00m to 5.00m begl with a gravel surround and bentonite backfill from 5.00m to 11.20m begl.
6.Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire		**Client:** Viridor Limited	
Logged: DJH	**Checked:**	**Field Book Ref:** GS09/01	**Plant:** Dando 2000
Date: 09/04/2009	**Approved:**		**Scale:** 1:50
		Drawing Ref: BH2	

GeoDyne
The Granary, Church Lane
Thrumpton, Nottingham NG11 0AX
Tel: 0115 983 0006 Fax: 0115 983 0009
email: info@geodyne.co.uk

BH2

Project No.29002

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				clay (MUDSTONE)		(1.80)			
11.20-11.65 11.20	C D	 D22	50/87mm	End of Borehole at 11.20 m		11.20			

Remarks:

1.Borehole sides cased to 6.50m begl.
2.Water encountered at approximately 1.60m begl rising to 1.70m begl after 20 minutes
3.Hand-dug pit to 1.20m begl.
4.Chiselling from 6.30m to 6.35m begl (0.5hrs) and from 10.85m to 11.20m begl (1hr).
5.Plain pipe installed from ground level to 1.00m begl with a bentonite surround, slotted pipe installed from 1.00m to 5.00m begl with a gravel surround and bentonite backfill from 5.00m to 11.20m begl.
6 Bung, valve and lockable cover installed

Key:

D	Disturbed Sample	S	Standard Penetration Test (Split Spoon)
U	Undisturbed Sample	C	Standard Penetration Test (Cone)
B	Bulk Sample	▽	Water Strike (m)
J	Jar Sample	▼	Steady Water Level (m)
W	Water Sample		

Project: Lostock Works, Cheshire		**Client:** Viridor Limited	
Logged: DJH	**Checked:**	**Field Book Ref:** GS09/01	**Plant:** Dando 2000
Date: 09/04/2009	**Approved:**		**Scale:** 1:50
		Drawing Ref: BH2	

GeoDyne

The Granary, Church Lane
Thrumpton, Nottingham NG11 0AX
Tel: 0115 983 0006 Fax: 0115 983 0009
email: info@geodyne.co.uk

BH3

Project No.29002

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Tarmacadam surfacing (MADE GROUND)		0.20			
0.30-0.50	J/D								
0.40-0.90	B	B1/B2		Loose to medium dense light grey sandy gravel of limestone (MADE GROUND)		(0.70) 0.90			
0.90-1.20	B	B3							
1.20-1.65	S		9	Stiff yellow-brown to red-brown slightly sandy slightly gravelly clay. Gravel is predominantly fine to medium sub-angular to sub-rounded mudstone (reworked natural) (MADE GROUND)		(2.60) 3.50			
1.20-1.65	D	SD4							
1.50-2.00	B	B5/B6							
2.00-2.45	S		11						
2.00-2.45	D	SD7							
2.50-2.90	B	B7/B8A							
2.90-3.35	U	U8	30 Blows						
3.35-3.50	D	D9							
3.50-4.00	B	B10/B11		Very stiff red-brown slightly gravelly sandy CLAY. Gravel is predominantly fine to medium sub-angular to sub-rounded mudstone (BOULDER CLAY)		(1.80) 5.30	3.90		
3.60-3.80	J/D								
4.10-4.55	S		23						
4.10-4.50	D	SD12							
4.80	D	D13							
5.30-5.75	S		45	Hard red-brown to grey-green sandy gravelly CLAY. Gravel is predominantly sub-angular mudstone (MUDSTONE)		(0.40) 5.70			
5.30-5.75	D	D14							
5.40-5.60	J/D								
6.40	D	D15		Weak red-brown to grey-green highly weathered MUDSTONE (MUDSTONE)		(1.80) 7.50			
7.00-7.45	S		50/275mm						
7.00-7.45	D	SD16							
				End of Borehole at 7.50 m					

Remarks:
1.Borehole cased to 3.90m begl.
2.Water encountered at 3.40m begl rising to 3.00m begl after 20 minutes
3.Hand-dug pit to 1.20m begl.
4.Chiselling from 1.80m to 1.90m begl (0.75hr), from 3.60m to 3.80m begl (1hrs) and from 5.00m to 5.30m begl (1hr).
5.Plain pipe installed from ground level to 1.00m begl with a bentonite surround, slotted pipe installed from 1.00m to 4.00m begl with a gravel surround and bentonite backfill from 4.00m to 7.00m begl.
6.Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire		**Client:** Viridor Limited
Logged: GJS	**Checked:** ℓℓ	**Field Book Ref:** GS09/01	**Plant:** Dando 2000	**Drawing Ref:** BH3
Date: 22/04/2009	**Approved:** ℓS		**Scale:** 1:50	

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BH4

Project No.29002

Samples and Tests

Depth (m)	Type	Sample Ref	SPT "N" Value
0.50-1.00	B	B1/B2	
0.60	D	D3	
1.20-1.65	S		2
1.20-1.70	B	B4	
1.70-2.00	B	B6	
1.70	D	D5	
2.20-2.65	U	U7	11 Blows
2.85-3.30	S		16
2.85	D	D8	
2.85-3.30	D/B	SD9/B10	
3.50-3.95	S		38
3.50-4.00	B	B12	
3.50-3.95	D	SD11	
4.30	D	D13	
4.40-4.85	U	U14	40 Blows
4.95	D	D15	
5.50-5.95	S		37
5.50-6.00	B	B17	
5.50-5.95	D	SD16	
6.50	D	D18	
7.50-7.95	U	U19	80 Blows
8.00	D	D20	
8.50	D	D21	
9.00-9.45	C		50/250mm
9.00-9.50	D	D22	

Description of Strata	Depth & (Thickness) (m)	Casing (m)
Concrete slab (MADE GROUND)	0.20	
Loose to medium dense light grey sandy gravel of limestone (MADE GROUND)	(0.50) 0.70	
Loose black ashy sand with gravel of brick, concrete, sandstone, coal, mudstone and quartzite (MADE GROUND)	(0.80) 1.50	
Stiff red-brown locally grey-green mottled clay (reworked natural) (MADE GROUND)	(1.35) 2.85	
Very stiff red-brown sandy silty clay with frequent fine to coarse sub-angular gravel of mudstone (reworked natural) (MADE GROUND)	(1.45) 4.30	
Very stiff red-brown slightly silty gravelly CLAY. Gravel is predominantly fine to medium sub-angular to sub-rounded quartzite and mudstone (BOULDER CLAY)	(3.40) 7.70	6.00
Very weak highly weathered red-brown sandy MUDSTONE. Recovered as fine to medium friable gravel in a sandy matrix (MUDSTONE)		

Continued on next sheet

Remarks:
1.Borehole cased to 6.00m begl.
2.Water encountered at approximately 1.50m begl rising to 1.40m begl after 20 minutes and at 8.80m begl
3.Hand-dug pit to 1.20m begl.
4.Chiselling from 13.20m begl to 13.60m begl (1hr). Pushing cobble from 6.90m begl to 7.40m begl.
5 Plain pipe installed from ground level to 1.00m begl with a bentonite surround, slotted pipe installed from 1.00m to 10.00m begl with a gravel surround and bentonite backfill from 10.00m to 13.60m begl.
6.Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire
Client: Viridor Limited
Logged: DJH
Checked: KB
Date: 08/04/2009
Approved: KB
Field Book Ref: GS09/01
Plant: Dando 2000
Scale: 1:50
Drawing Ref: BH4

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BH4

Project No.29002

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT 'N' Value						
				Very weak highly weathered red-brown sandy MUDSTONE. Recovered as fine to medium friable gravel in a sandy matrix (MUDSTONE)					
10.50-10.95	C		50/200mm	...becoming grey below approximately 10.50m begl					
10.50-11.00	D	D23				(5.90)			
11.60	D	D24							
12.00-12.45	C		50/100mm						
12.00-12.50	D	D25							
13.00	D	D26							
13.20-13.65	C		50/70mm	...becoming less weathered and with thin gypsiferous laminations below approximately 13.00m begl					
13.20-13.60	D	D27							
13.60-14.05	C		50/55mm			13.60			
				End of Borehole at 13.60 m					

Remarks:
1.Borehole cased to 6.00m begl.
2.Water encountered at approximately 1.50m begl rising to 1.40m begl after 20 minutes and at 8.80m begl.
3.Hand-dug pit to 1.20m begl.
4.Chiselling from 13.20m begl to 13.60m begl (1hr). Pushing cobble from 6.90m begl to 7.40m begl.
5.Plain pipe installed from ground level to 1.00m begl with a bentonite surround, slotted pipe installed from 1.00m to 10.00m begl with a gravel surround and bentonite backfill from 10.00m to 13.60m begl.
6.Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire		**Client:** Viridor Limited	
Logged: DJH	**Checked:**	**Field Book Ref:** GS09/01	**Plant:** Dando 2000
Date: 08/04/2009	**Approved:**	**Scale:** 1:50	**Drawing Ref:** BH4

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BH5

Project No.29002

Samples and Tests

Depth (m)	Type	Sample Ref	SPT "N" Value
0.50-1.00	B	B1/B2	
0.50	D	D3	
1.20-1.65	C		31
1.20-1.70	B	B4/B5	
1.90	D	D6	
2.00-2.45	C		26
2.00-2.40	B	B7	
2.10-2.30	D/J		
2.60-3.05	S		11
2.60-3.10	B	B8	
3.10	D	D9	
3.40-3.85	U	U11	18 Blows
4.05	D	D12	
4.10-4.55	S		32
4.10-4.60	B	B14	
4.10-4.55	D	SD13	
5.10-5.50	U	U16	50 Blows
5.60	D	D17	
6.00	D	D16	
6.50-6.95	S		24
6.50-6.95	D	SD19	
8.00-8.45	U	U20	75 Blows
8.50	D	D21	
9.10	D	D22	
9.60-10.05	S		50/250mm
9.60-10.00	D	SD23	

Description of Strata

Description of Strata	Depth (m)	(Thickness)
Loose to medium dense light grey sandy gravel of limestone (MADE GROUND)	0.30	(0.30)
Stiff to very stiff brown very sandy very clayey gravel of sandstone and mudstone fragments (MADE GROUND)	1.90	(1.60)
Made Ground comprising brown clayey ashy sand and gravel. Gravel is brick and coal with frequent pieces of wood and a slight to moderate bituminous odour (MADE GROUND)	2.40	(0.50)
Stiff brown very sandy clay with frequent gravel of sandstone and mudstone (MADE GROUND)	3.10	(0.70)
Stiff brown slightly sandy CLAY with occasional gravelly pockets. Gravel is predominantly fine to medium sub-angular to sub-rounded mudstone (BOULDER CLAY)	4.20	(1.10)
Very stiff red-brown locally grey-green mottled sandy gravelly CLAY with thin bands of sand. Gravel is predominantly fine to medium sub-angular to sub-rounded mudstone (BOULDER CLAY)	8.20	(4.00)
Weak red-brown highly to completely weathered MUDSTONE (MUDSTONE)		

Casing (m): 6.00

Continued on next sheet

Remarks:
1.Borehole cased to 6.00m begl.
2.Water encountered at approximately 2.80m begl and rising to 2.60m begl after 20 minutes.
3.Hand-dug pit to 1.20m begl.
4.Chiselling from 2.10m to 2.30m begl (0.5hrs), from 10.20m to 10.35m begl (0.5hrs) and from 13.30m to 13.50m begl (0.50hrs).
5.Plain pipe installed from ground level to 1.00m begl with a bentonite surround, slotted pipe installed from 1.00m to 3.50m begl with a gravel surround and bentonite backfill from 3.50m to 15.00m begl.
6.Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire
Client: Viridor Limited
Logged: GJS
Date: 07/04/2009
Checked: RS
Approved: RS
Field Book Ref: GS09/01
Plant: Dando 2000
Scale: 1:50
Drawing Ref: BH5

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BH5

Project No.29002

Samples and Tests									
Depth (m)	Type	Sample Ref	SPT 'N' Value	Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
				Weak red-brown highly to completely weathered MUDSTONE (MUDSTONE)					
11.00-11.45	S		50/190mm						
11.00-11.35	D	SD24							
						(6.80)			
12.50-12.95	S		50/200mm						
12.50-13.00	B	B26							
12.50	D	SD25							
13.90-14.35	C		50/200mm						
13.90-14.30	D	D27							
15.00-15.45	C		50/153mm			15.00			
15.00-15.45	D	SD28		End of Borehole at 15.00 m					

Remarks:
1.Borehole cased to 6.00m begl.
2.Water encountered at approximately 2.80m begl and rising to 2.60m begl after 20 minutes.
3.Hand-dug pit to 1.20m begl.
4.Chiselling from 2.10m to 2.30m begl (0.5hrs), from 10.20m to 10.35m begl (0.5hrs) and from 13.30m to 13.50m begl (0.50hrs).
5.Plain pipe installed from ground level to 1.00m begl with a bentonite surround, slotted pipe installed from 1.00m to 3.50m begl with a gravel surround and bentonite backfill from 3.50m to 15.00m begl.
6.Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire		**Client:** Viridor Limited	
Logged: GJS	**Checked:**	**Field Book Ref:** GS09/01	**Plant:** Dando 2000
Date: 07/04/2009	**Approved:**		**Scale:** 1:50
			Drawing Ref: BH5

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BH6

Project No.29002

Samples and Tests

Depth (m)	Type	Sample Ref	SPT "N" Value
0.50	D/B	D1/B2	
1.05-1.20	B/J	B3/J	
1.20-1.65	S		3
1.20-1.70	B	B5	
1.20-1.65	D	D4	
1.50-1.70	J		
1.70	D	D6	18 Blows
1.80-2.25	U	U7	
1.90-2.10	J		
2.45	D	D8	
2.80-3.25	S		10
2.80-3.30	B	B9	
3.70-4.15	U	U10	26 Blows
4.35	D	D11	
4.60-5.05	S		17
4.60-5.10	B	B13	
4.60-5.05	D	SD12	
5.60-6.05	U	U14	55 Blows
6.25	D	D15	
6.30-6.75	S		16
6.30-6.80	B	B18	
6.30	D	D16	
6.30-6.75	D	SD17	
6.90	D	D19	
7.20-7.65	S		30
7.20-7.70	B	B21	
7.20-7.65	D	SD20	
8.70-9.15	U	U22	75 Blows
9.00	D	D23	
9.05-9.50	C		50/115mm
9.05-9.50	B	B24	

Description of Strata

Description of Strata	Depth & (Thickness) (m)	Casing (m)
Grass overlying brown sandy clay with frequent gravel of limestone and occasional fragments of coal (MADE GROUND)	(0.30) 0.30	
Medium dense ashy gravel of clinker (MADE GROUND)	(0.75) 1.05	
Soft to firm grey to black silty sandy locally very sandy clay with occasional fine to coarse gravel of clinker and a slight hydrocarbon odour (possible diesel) (MADE GROUND)	1.20 (0.50) 1.70	
Soft to firm brown black mottled silty sandy CLAY with occasional carbonaceous inclusions and unknown odour (possible hydrocarbon) (BOULDER CLAY)	(1.20)	
Firm to stiff red-brown grey mottled slightly silty sandy CLAY (BOULDER CLAY)	2.90	
Stiff red-brown slightly silty slightly gravelly sandy CLAY. Gravel is predominantly subrounded fine to medium mudstone (BOULDER CLAY)	(3.30) 6.20	
Medium dense brown silty SAND (running sand conditions) (BOULDER CLAY)	(0.70) 6.90	
Very stiff becoming hard red-brown sand gravelly CLAY. Gravel is predominantly fine to medium subangular to subrounded mudstone (BOULDER CLAY)	(3.10)	7.00

Continued on next sheet

Remarks:
1.Borehole cased to 7.00m begl.
2.Water encountered at approximately 0.50m begl and rising to 0.45m begl after 20 minutes. Water seepage encountered between 3.60m to 6.00m and at approximately 6.20m begl.
3.Hand-dug pit to 1.20m begl.
4.Chiselling from 9.05m begl to 9.40m(1hrs), from 9.50m to 9.65m begl (0.5hrs) and from 9.80m to 9.85m begl (0.50hrs).
5.Plain pipe installed from ground level to 5.50m begl with a bentonite surround, slotted pipe installed from 5.50m to 10.00m begl with a gravel surround.
6 Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire	**Client:** Viridor Limited
Logged: GS	**Checked:**
Date: 01/04/2009	**Approved:**
Field Book Ref: GS09/01	**Plant:** Dando 2000
Scale: 1:50	**Drawing Ref:** BH6

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BH6

Project No.29002

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
10.00-10.45	S		50/220mm			10.00			
10.00-10.35	D	SD25		End of Borehole at 10.35 m					

Remarks:
1.Borehole cased to 7.00m begl.
2.Water encountered at approximately 0.50m begl and rising to 0.45m begl after 20 minutes. Water seepage encountered between 3.60m to 6.00m and at approximately 6.20m begl.
3.Hand-dug pit to 1.20m begl.
4.Chiselling from 9.05m begl to 9.40m(1hrs), from 9.50m to 9.65m begl (0.5hrs) and from 9.80m to 9.85m begl (0.50hrs).
5.Plain pipe installed from ground level to 5.50m begl with a bentonite surround, slotted pipe installed from 5.50m to 10.00m begl with a gravel surround.
6.Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire		**Client:** Viridor Limited	
Logged: GS	**Checked:**	**Field Book Ref:** GS09/01	**Plant:** Dando 2000
Date: 01/04/2009	**Approved:**	**Scale:** 1:50	**Drawing Ref:** BH6

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BH7

Project No.29002

Samples and Tests

Depth (m)	Type	Sample Ref	SPT "N" Value
0.70-1.20	B	B1	
1.20-1.65	U	U2	54 Blows
1.65-1.80	D	D3	
1.80-2.10	D	D4	
2.10-2.55	S		34
2.10-2.30	B	B6	
2.10-2.55	D	SD5	
2.30-2.60	B	B7	
2.60-2.80	B	B8	
2.80-3.25	C		50/30mm
2.80-2.90	D	SD9	

Description of Strata	Depth & (Thickness) (m)	Casing (m)	Groundwater	Installation
Tarmacadam surfacing (MADE GROUND)	0.20			
Loose to medium dense light grey slightly clayey sandy gravel with many cobbles. Gravel is fine to coarse sub-rounded limestone (MADE GROUND)	(0.50) 0.70			
Stiff red-brown sandy clay with frequent fine to medium sub-angular gravel of mudstone and flint (reworked Natural Strata) (MADE GROUND)	(1.90) 2.60	1.80		
Grey locally dark grey ashy sand with frequent fine gravel of brick and coal fragments with localised carbonaceous inclusions (MADE GROUND)	(0.30) 2.90			

End of Borehole at 2.90 m

Remarks:
1.Borehole cased to 1.80m begl.
2.No water encountered.
3.Hand-dug pit to 1.20m begl.
4.Borehole terminated at 2.90m begl due to buried obstruction.
5.Plain pipe installed from ground level to 1.00m begl with a bentonite surround, slotted pipe installed from 1.00m to 2.90m begl with a gravel surround.
6.Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire
Client: Viridor Limited
Logged: DJH
Checked: RS
Date: 08/04/2009
Approved: LS
Field Book Ref: GS09/01
Plant: Dando 3000
Scale: 1:50
Drawing Ref: BH7

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BH7B

Project No.29002

Samples and Tests: Depth (m)	Type	Sample Ref	SPT "N" Value	Description of Strata	Depth & (Thickness) (m)	Casing (m)	Groundwater
				Concrete (MADE GROUND)	0.10		
0.50-1.00	B	B1/B2		Loose to medium dense red-brown clayey sand with some fine to medium gravel of sandstone (MADE GROUND)			
0.75	D	D3					
					(1.80)		
1.20-1.65	C		22				
1.20-1.70	B	B4/B5		...with cobbles of sandstone below 1.20m			
1.50	D	D6					
1.90	D	D7			1.90		
2.00-2.45	S		22	Medium dense becoming loose brown to black slightly clayey sandy ash with frequent fine to coarse gravel of clinker (MADE GROUND)			
2.00-2.50	B	B9/B10					
2.00-2.45	D	SD8					
3.10-3.55	C		25				
3.10-3.60	B	B11/B12					
3.40	D	D13			(3.10)		
4.00-4.45	S		8				
4.00-4.45	B	B15/B16					
4.00-4.45	D	SD14					
5.00	D	D15	21 Blows		5.00		
5.00-5.45	U	U16		Stiff becoming very stiff red-brown gravelly very sandy CLAY. Gravel is predominantly fine to medium subangular to subrounded mudstone (BOULDER CLAY)			
5.60-6.25	U	U17	34 Blows				
						6.00	
6.45	D	D16					
7.00	D	D19					
7.50-7.95	S		30				
7.50-8.00	B	B21					
7.50-7.95	D	SD20					
8.40	D	D22			(6.80)		
9.00-9.45	U	U23	80 Blows	...becoming very stiff below approximately 9.00m begl			
9.50	D	D24					

Continued on next sheet

Remarks:
1.Borehole cased to 6.00m begl.
2.Water encountered at approximately 2.80m begl rising to 2.70m begl after 20 minutes.
3.Hand dug pit to 1.20m begl.
4.Chiselling from 8.60m begl to 8.75m (0.5hrs), from 11.80m to 11.90m begl (0.75hrs) and from 14.20m to 14.25m begl (0.5hr).
5.Plain pipe installed from ground level to 1.00m begl with a bentonite surround, slotted pipe installed from 1.00m to 10.00m begl with a gravel surround and bentonite backfill from 10.00m to 15.00m begl.
6.Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire
Client: Viridor Limited

Logged: GS
Date: 22/04/2009
Checked: GS
Approved: GS
Field Book Ref: GS09/01
Plant: Dando 2000
Scale: 1:50
Drawing Ref: BH7B

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BH7B

Project No.29002

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
10.00	D	D25		Stiff becoming very stiff red-brown gravelly very sandy CLAY. Gravel is predominantly fine to medium subangular to subrounded mudstone (BOULDER CLAY)					
10.50-10.95	C		37						
10.50-11.00	D	D26							
11.80	D	D27				11.80			
11.90-12.35	C		50/125mm	Weak red-brown to grey-green highly to completely weathered MUDSTONE (MUDSTONE)					
11.90-12.50	B	B28							
11.90-12.50	B	B29							
12.90	D	D30							
13.50-13.95	S		50/162mm			(3.45)			
13.50-13.85	D	SD31							
14.50	D	D32							
15.00-15.45	S		50/125mm						
15.00-15.25	D	SD33				15.25			
				End of Borehole at 15.25 m					

Remarks:

1.Borehole cased to 6.00m begl.
2.Water encountered at approximately 2.80m begl rising to 2.70m begl after 20 minutes.
3.Hand dug pit to 1.20m begl.
4.Chiselling from 8.60m begl to 8.75m (0.5hrs), from 11.80m to 11.90m begl (0.75hrs) and from 14.20m to 14.25m begl (0.5hr).
5.Plain pipe installed from ground level to 1.00m begl with a bentonite surround, slotted pipe installed from 1.00m to 10.00m begl with a gravel surround and bentonite backfill from 10.00m to 15.00m begl.
6 Bung, valve and lockable cover installed

Key:

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire

Client: Viridor Limited

Logged: GS

Date: 22/04/2009

Checked:

Approved:

Field Book Ref: GS09/01

Plant: Dando 2000

Scale: 1:50

Drawing Ref: BH7B

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BH8

Project No.29002

Samples and Tests

Depth (m)	Type	Sample Ref	SPT 'N' Value
0.50-1.00	B	B2	
0.50	D	D1	
1.20-1.65	S		36
1.20-1.65	D	SD3	
1.50-1.70	B	B4	
1.60-1.80	J		
2.20	D	D5	
2.40-2.85	S		15
2.60-2.90	B	B7	
2.60-2.90	D	SD6	
2.70-2.90	J		
3.10	D	D8	
3.30-3.75	U	U9	33 Blows
3.85	D	D10	
4.20	D	D11	
4.25-4.70	S		14
4.25-4.70	D	SD12	
5.00-5.45	U	U13	50 Blows
5.65	D	D14	
6.60-7.05	U	U15	75 Blows
7.10	D	D16	
8.00-8.45	C		44
8.00-8.50	B	B17	
9.50-9.95	U	U18	80 Blows

Description of Strata

Description of Strata	Depth & (Thickness) (m)	Casing (m)	Ground-water
Grass overlying brown sandy clay with fragments of fine to coarse subangular gravel of mudstone and rare brick fragments (MADE GROUND)	(0.30) 0.30		
Very stiff red-brown grey mottled slightly clayey very sandy gravel of mudstone (MADE GROUND)	(1.15) 1.45		
Stiff red-brown grey mottled ashy sandy clay with occasional gravel of mudstone and brick fragments with a moderate unidentified hydrocarbon odour (MADE GROUND)	(1.15) 2.60		
Stiff red-brown grey mottled slightly sandy slightly gravelly CLAY. Gravel is predominantly fine to medium subrounded mudstone (BOULDER CLAY)	(0.50) 3.10		
Stiff red-brown slightly silty very gravelly sandy CLAY. Gravel is predominantly fine to medium subrounded mudstone and sandstone (BOULDER CLAY)			
...becoming locally very sandy below 4.20m			
...becoming very stiff to hard below 5.00m begl		7.00	
	(10.90)		

Continued on next sheet

Remarks:
1.Borehole cased to 7.00m begl.
2.Water seepage encountered at 4.20m begl to 6.50m begl.
3.Hand dug pit to 1.20m begl.
4.Chiselling from 7.60m begl to 7.75m and 7.90m begl to 8.00m begl (0.75hrs), from 12.70m to 12.80m begl (0.5hrs) and from 13.40m begl to 13.45m begl (0.5hrs).
5.Plain pipe installed from ground level to 3.20m begl with a bentonite surround, slotted pipe installed from 3.20m to 14.00m begl with a gravel surround and bentonite backfill from 14.00m to 15.00m begl.
6.Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire
Client: Viridor Limited
Logged: GS
Date: 02/04/2009
Checked: RS
Approved: RS
Field Book Ref: GS09/01
Plant: Dando 2000
Scale: 1:50
Drawing Ref: BH8

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BH8

Project No.29002

Samples and Tests									
Depth (m)	Type	Sample Ref	SPT Value	Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
10.00	D	D19		Stiff red-brown slightly silty very gravelly sandy CLAY. Gravel is predominantly fine to medium subrounded mudstone and sandstone (BOULDER CLAY)					
11.00-11.45	S		50/425mm						
11.00-11.50	B	B21							
11.00-11.45	D	SD20							
12.00	D	D22							
12.60-13.05	C		50/435mm						
12.60-13.10	B	B23							
13.50	U	U24							
14.00-14.45	U	U25	75 Blows	Hard red-brown silty sandy gravelly CLAY. Gravel is fine to medium sub-angular mudstone (BOULDER CLAY)		14.00			
						(1.40)			
14.60	D	D26							
15.00-15.45	S		50/235mm						
15.00-15.40	D	SD27							
15.40		SD28		End of Borehole at 15.40 m		15.40			

Remarks:
1.Borehole cased to 7.00m begl.
2.Water seepage encountered at 4.20m begl to 6.50m begl.
3.Hand dug pit to 1.20m begl.
4.Chiselling from 7.60m begl to 7.75m and 7.90m begl to 8.00m begl (0.75hrs), from 12.70m to 12.80m begl (0.5hrs) and from 13.40m begl to 13.45m begl (0.5hrs).
5.Plain pipe installed from ground level to 3.20m begl with a bentonite surround, slotted pipe installed from 3.20m to 14.00m begl with a gravel surround and bentonite backfill from 14.00m to 15.00m begl .
6.Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire		**Client:** Viridor Limited	
Logged: GS	**Checked:** RS	**Field Book Ref:** GS09/01	**Plant:** Dando 2000
Date: 02/04/2009	**Approved:** RS		**Scale:** 1:50
			Drawing Ref: BH8

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BH9

Project No.29002

Samples and Tests

Depth (m)	Type	Sample Ref	SPT "N" Value
0.60-1.10	B	B2/B3	
0.60	D	D1	
1.20-1.65	C		6
1.20-1.70	B	B5	
1.50	D	D4	
2.00-2.45	S		5
2.00-2.50	B	B7/B8	
2.00-2.45	D	SD6	
3.05-3.50	S		7
3.10-3.50	B	B9/B10	
3.75	D	D11	
4.00	D	D12/D13	
4.00-4.25	D	D14	
4.65-5.10	S		13
4.65-5.20	B	B16	
4.65	D	D15	
6.00	D	D17	35 Blows
6.00-6.45	U	U18	
6.65	D	D19	
7.00	D	D20	
7.70-8.15	S		44
7.70	D	D21	
7.70-8.15	D	SD22	
8.60	D	D23	
9.00-9.45	U	U24	80 Blows
9.50	D	D25	

Description of Strata	Depth & (Thickness) (m)	Casing (m)
Loose to medium dense grey sandy gravel of limestone (MADE GROUND)	(0.40) 0.40	
Firm red-brown sandy locally ashy clay with fine to medium gravel of mudstone and sandstone (MADE GROUND)	(3.60) 4.00	
Loose to medium dense brown wet silty fine grained SAND (BOULDER CLAY)	(0.65) 4.65	
Firm to stiff red-brown sandy gravelly CLAY. Gravel is predominantly fine to medium subangular to subrounded mudstone (BOULDER CLAY)		6.00

Continued on next sheet

Remarks:
1.Borehole cased to 6.00m begl.
2.Water encountered at 2.70m begl (no level change after 20 minutes) and 4.00m begl rising to 3.80m begl after 20 minutes.
3.Hand dug pit to 1.20m begl.
4.Chiselling from 1.20m begl to 1.25m (0.75hrs) and from 6.80m begl to 6.85m begl (0.5hrs).
5.Plain pipe installed from ground level to 1.00m begl with a bentonite surround, slotted pipe installed from 1.00m to 3.50m begl with a gravel surround and bentonite backfill from 3.50m to 15.00m begl .
6.Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire
Client: Viridor Limited
Logged: GS
Checked:
Date: 16/04/2009
Approved:
Field Book Ref: GS09/01
Plant: Dando 2000
Scale: 1:50
Drawing Ref: BH9

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BH9

Project No.29002

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
10.10	D	D26		Firm to stiff red-brown sandy gravelly CLAY. Gravel is predominantly fine to medium subangular to subrounded mudstone (BOULDER CLAY)		(10.85)			
10.60-11.05	C		50/250mm						
10.60-11.00	B	B27							
11.70	D	D28							
12.05-12.50	U	U29	86 Blows						
12.55	D	D30							
13.00	D	D31							
13.40-13.85	C		50/290mm						
13.40-13.90	D	D32							
14.50	D	D33							
15.00-15.45	U	U34	73 Blows						
15.50	D	D35		End of Borehole at 15.50 m		15.50			

Remarks:
1.Borehole cased to 6.00m begl.
2.Water encountered at 2.70m begl (no level change after 20 minutes) and 4.00m begl rising to 3.80m begl after 20 minutes.
3.Hand dug pit to 1.20m begl.
4.Chiselling from 1.20m begl to 1.25m (0.75hrs) and from 6.80m begl to 6.85m begl (0.5hrs).
5.Plain pipe installed from ground level to 1.00m begl with a bentonite surround, slotted pipe installed from 1.00m to 3.50m begl with a gravel surround and bentonite backfill from 3.50m to 15.00m begl .
6 Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire		**Client:** Viridor Limited	
Logged: GS	**Checked:** GS	**Field Book Ref:** GS09/01	**Plant:** Dando 2000 / **Drawing Ref:** BH9
Date: 16/04/2009	**Approved:** GS		**Scale:** 1:50

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BH10

Project No.29002

Depth (m)	Type	Sample Ref	SPT "N" Value	Description of Strata	Depth & (Thickness) (m)	Casing (m)
				Tarmacadam surfacing (MADE GROUND)	0.10	
				Loose to medium dense grey sandy gravel of limestone (MADE GROUND)	(1.00)	
1.10	D	D1		Firm red-brown sandy clay with gravel of quartzite and sandstone (MADE GROUND)	1.10	
1.20-1.65	S		6			
1.20-1.70	B	B2			(0.60)	
1.50	D	D3				
1.70	D	D4			1.70	
1.80-2.25	U	U5	23 Blows	Stiff becoming very stiff to hard red-brown slightly gravelly sandy silty CLAY. Gravel is predominantly fine to medium subrounded mudstone (BOULDER CLAY)		
2.45	D	D6				
3.00-3.45	S		18			
3.00-3.45	B	B8				
3.00-3.45	D	SD7				
4.00-4.45	U	U9	29 Blows			
4.65	D	D10				
5.10-5.55	S		28			
5.10-5.55	D	SD11			(7.00)	
6.00	D	D12				
6.50-6.95	U	U13	41 Blows			
7.15	D	D14				
7.50	D	D15				
8.00-8.45	C		34			8.00
8.00-8.50	B	B16				
8.20-9.25	D	SD18				
8.70	D	D17		Weak grey-green highly to completely weathered silty MUDSTONE (MUDSTONE)	8.70	
8.80-9.25	S		50/175mm			
9.50	D	D19				

Continued on next sheet

Remarks:

1.Borehole cased to 8.00m begl.
2.Water encountered at 1.20m begl (no level change after 20 minutes) and 6.70m begl and rose to 6.30m begl after 20 minutes.
3.Hand dug pit to 1.20m begl.
4.Chiselling from 7.70m begl to 8.70m (0.75hrs), from 8.80m begl to 8.95m begl (0.5hrs) and from 12.80m begl to 13.10m begl (1hrs).
5.Plain pipe installed from ground level to 2.65m begl with a bentonite surround, slotted pipe installed from 2.65m to 8.70m begl with a gravel surround and bentonite backfill from 8.70m to 13.20m begl .
6.Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire
Client: Viridor Limited
Logged: GS
Checked:
Date: 14/04/2009
Approved:
Field Book Ref: GS09/01
Plant: Dando 2000
Scale: 1:50
Drawing Ref: BH10

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BH10

Project No.29002

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Weak grey-green highly to completely weathered silty MUDSTONE (MUDSTONE)					
10.30-10.75	S		50/125mm						
10.30-10.60	D	SD20							
11.00	D	D21				(4.50)			
11.50-11.95	C		50/140mm						
11.50	D	D22							
12.50	D	D23							
13.10-13.55	C		50/70mm						
13.10	D	D24		End of Borehole at 13.20 m		13.20			

Remarks:
1.Borehole cased to 8.00m begl.
2.Water encountered at 1.20m begl (no level change after 20 minutes) and 6.70m begl and rose to 6.30m begl after 20 minutes.
3.Hand dug pit to 1.20m begl.
4.Chiselling from 7.70m begl to 8.70m (0.75hrs), from 8.60m begl to 8.95m begl (0.5hrs) and from 12.80m begl to 13.10m begl (1hrs).
5.Plain pipe installed from ground level to 2.65m begl with a bentonite surround, slotted pipe installed from 2.65m to 8.70m begl with a gravel surround and bentonite backfill from 8.70m to 13.20m begl .
6.Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire		**Client:** Viridor Limited	
Logged: GS	**Checked:** GS	**Field Book Ref:** GS09/01	**Plant:** Dando 2000
Date: 14/04/2009	**Approved:** GS		**Scale:** 1:50

Drawing Ref: BH10

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BH11

Project No.29002

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Tarmacadam surfacing (MADE GROUND)		0.20			
0.50-1.00	B	B1/B2		Loose to medium dense light grey sandy gravel of limestone (MADE GROUND)		(0.60) 0.80			
1.20-1.65 1.20-1.80 1.20-1.65	S B D	 B4 SD3	20	Firm to stiff gravelly clay. Gravel is predominantly fine to medium subangular to subrounded mudstone (MADE GROUND)		(1.10)			
1.80-2.25 1.80-1.90	S D	 SD5	50/40mm	...with an obstruction at 1.80m begl		1.90	1.80		
				End of Borehole at 1.90 m					

Remarks:
1. Borehole cased to 1.80m begl.
2. No water encountered.
3. Hand dug pit to 1.20m begl.
4. Chiselling from 1.80m begl to 1.90m begl (1hr).
5. Borehole terminated at 1.90m due to unidentified obstruction.
6. Borehole moved to BH11A/WS6.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire

Client: Viridor Limited

Logged: GS

Date: 16/04/2009

Checked:

Approved:

Field Book Ref: GS09/01

Plant: Dando 3000

Scale: 1:50

Drawing Ref: BH11

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BH11A/WS6

Project No.29002

Samples and Tests

Depth (m)	Type	Sample Ref	SPT "N" Value
0.10-0.30	J/D		
0.50-1.00	B	B1/B2	
0.60-0.80	J/D		
1.00-2.00	B	B3	
1.10-1.30	J/D		
1.80-2.25	S		12
1.80-2.25	D	SD4	
1.90-2.10	J/D		
2.50-3.00	B	B5	
2.50-3.00	B	B6	
2.60-2.80	J/D		
3.10-3.55	U	U7	46 Blows
3.55	D	D8	
3.70-4.10	B	B9/B10	
4.10-4.55	S		18
4.10-4.55	D	SD11	
4.50-5.00	B	B13	
4.60-4.80	J/D		
5.00-5.45	U	U14	41 Blows
5.45-5.60	D	D15	
5.60-6.20	B	B16/B17	
6.20-6.65	S		33
6.20-6.65	D	SD18	
6.30-6.80	B	B19/B20	
7.50-7.95	S		50/70mm
7.50-7.70	D	SD21	
8.00-8.50	B	B22/B23	
8.80-9.25	S		50/75mm
8.80-8.95	D	SD24	
9.10	D	D25	
9.20-9.65	S		50/40mm
9.20-9.30	D	SD26	
9.50-9.95	S		50/30mm
9.50-9.60	D	SD27	

Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Tarmacadam surfacing (MADE GROUND)		0.05 (0.45)			
Medium dense grey sandy gravel of limestone (MADE GROUND)		0.50 (0.50)			
Firm red-brown slightly sandy clay with occasional fine to medium gravel of mudstone sandstone and localised pockets of ash (MADE GROUND)		1.00 (0.80)			
Firm red-brown sandy clay with fine to medium subangular gravel of mudstone (poor recovery as obstruction advanced with tool) (MADE GROUND)		1.80			
Firm to stiff red-brown slightly sandy slightly gravelly CLAY. Gravel is predominantly fine to medium subangular to subrounded mudstone (BOULDER CLAY)		(4.50)	4.10		
Very stiff becoming hard red-brown silty sandy gravelly CLAY. Gravel is predominantly fine to medium subangular mudstone (PENARTH & MERCIA MUDSTONE GROUP)		6.30 (2.80)			
Weak red-brown grey-green mottled highly to completely weathered MUDSTONE (PENARTH & MERCIA MUDSTONE GROUP)		9.10 (0.50) 9.60			

End of Borehole at 9.60 m

Remarks:

1.Borehole cased to 4.10m begl.
2.No water encountered.
3.Hand dug pit to 1.20m begl.
4.Chiselling from 3.90m begl to 4.00m (0.75hrs) and from 5.70m begl to 5.80m begl (0.75hrs).
5.Plain pipe installed from ground level to 1.00m begl with a bentonite surround, slotted pipe installed from 1.00m to 9.60m begl with a gravel surround.
6.Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire
Client: Viridor Limited
Logged: GJS
Checked: RS
Date: 16/04/2009
Approved: RS
Field Book Ref: GS09/01
Plant: Dando 3000
Scale: 1:50
Drawing Ref: BH11A/WS6

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BH12

Project No.29002

Samples and Tests

Depth (m)	Type	Sample Ref	SPT "N" Value
0.95	D	D1	
1.05	D	D2	
1.20-1.80	B	B5/B6	
1.65	U	U3	21 Blows
1.85	D	D4	
2.20-2.65	S		13
2.20-2.70	B	B8/B9	
2.20-2.65	D	SD7	
3.10-3.55	U	U10	30 Blows
3.75	D	D11	
4.00-4.45	S		12
4.00-4.50	B	B12/B13	
4.00-4.50	D	D14	
5.10-5.55	U	U15	45 Blows
5.65	D	D16	
6.50-6.95	S		25
6.50-6.95	D	D18	
6.60	D	D17	
7.50	D	D19	
8.00-8.45	S		33
8.00-8.45	D	SD20	
9.20	D	D21	
9.50-9.95	S		36
9.50-9.95	D	SD22	

Strata

Description of Strata	Depth & (Thickness) (m)	Casing (m)
Light grey sandy gravel of limestone (MADE GROUND)	0.10	
Firm brown wet very sandy SILT (BOULDER CLAY)	(0.85)	
	0.95	
Firm to stiff red-brown mottled grey-green slightly sandy CLAY (BOULDER CLAY)	(2.80)	
...becoming stiff below approximately 3.10m begl		
	3.75	
Stiff to very stiff red-brown slightly gravelly sandy CLAY. Gravel is predominantly fine to medium subangular to subrounded mudstone (BOULDER CLAY)	(9.55)	4.50

Continued on next sheet

Remarks:
1.Borehole cased to 4.50m begl.
2.Water encountered at 4.00m begl rising to 3.70m begl after 20 minutes.
3.Hand dug pit to 1.20m begl.
4.Chiselling from 13.60m begl to 13.75m (0.5hrs), from 14.20m begl to 14.35m begl (0.5hrs) and from 14.90m begl to 15.00m begl (0.5hrs).
5.Plain pipe installed from ground level to 1.50m begl with a bentonite surround, slotted pipe installed from 1.50m to 15.00m begl with a gravel surround.
6.Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire
Client: Viridor Limited
Logged: PDA
Date: 21/04/2009
Checked:
Approved:
Field Book Ref: GS09/01
Plant: Dando 2000
Scale: 1:50
Drawing Ref: BH12

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BH12

Project No.29002

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
10.10	D	D23		Stiff to very stiff red-brown slightly gravelly sandy CLAY. Gravel is predominantly fine to medium subangular to subrounded mudstone (BOULDER CLAY)					
11.00-11.45	S		37						
11.00-12.00	D/B	D25/B26							
11.00-11.45	D	SD24							
12.50-12.95	U	U27	100 Blows						
13.00	D	D28							
13.30-13.75	S		50/162mm	Very weak to weak red-brown mottled grey-green MUDSTONE (MUDSTONE)		13.30			
						(2.15)			
14.50-14.95	S		50/130mm						
				End of Borehole at 15.45 m		15.45			

Remarks:
1.Borehole cased to 4.50m begl.
2.Water encountered at 4.00m begl rising to 3.70m begl after 20 minutes.
3.Hand dug pit to 1.20m begl.
4.Chiselling from 13.60m begl to 13.75m (0.5hrs), from 14.20m begl to 14.35m begl (0.5hrs) and from 14.90m begl to 15.00m begl (0.5hrs).
5.Plain pipe installed from ground level to 1.50m begl with a bentonite surround, slotted pipe installed from 1.50m to 15.00m begl with a gravel surround.
6.Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire		**Client:** Viridor Limited	
Logged: PDA	**Checked:**	**Field Book Ref:** GS09/01	**Plant:** Dando 2000
Date: 21/04/2009	**Approved:**	**Scale:** 1:50	**Drawing Ref:** BH12

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BH13

Project No.29002

Samples and Tests: Depth (m)	Type	Sample Ref	SPT "N" Value	Description of Strata	Depth & (Thickness) (m)	Casing (m)	Ground-water
				Tarmacadam surfacing (MADE GROUND)	0.10		
0.40-1.30	B	B3					
				Loose to medium dense grey sandy gravel of limestone (MADE GROUND)	(0.80)		▽
0.90-1.30	B	B2		Loose black-brown locally clayey sandy ash with gravel of sandstone and mudstone (MADE GROUND)	0.90		
0.90	D	D1					
1.20-1.65	S		3				
1.20-1.65	D	SD4					
					(1.70)		
1.90-2.35	S		2				
1.90-2.30	B	B6					
1.90-2.35	D	SD5					
2.30-2.60	B	B7					▽
2.60	D	D8		Firm red-brown slightly sandy slightly gravelly CLAY. Gravel is predominantly fine to medium subangular to subrounded mudstone (BOULDER CLAY)	2.60		
2.60-3.05	U	U9	26 Blows				
	U						
3.15-3.60	B	B11/B12					
3.15	D	D10					
4.00-4.45	S		6				
4.00-4.50	B	B14/B15					
4.00	D	D13					
5.00-5.45	U	U16	29 Blows	...becoming stiff below approximately 5.00m begl			
					(5.50)		
5.65	D	D17					
6.00	D	SD18					
6.50-6.95	S		31			6.50	
6.50-6.95	D	SD19					
6.70-7.00	B	B20					
7.50	D	D21					
8.00-8.45	U	U22	79 Blows				
				Weak red-brown to grey-green highly to completely weathered MUDSTONE (MUDSTONE)	8.10		
8.30	D	D23					
9.00	D	D24					
9.40-9.85	S		50/200mm				
9.40-9.90	B	B26/B27					
9.40-9.85	D	SD25					

Continued on next sheet

Remarks:
1.Borehole cased to 6.50m begl.
2.Water encountered at 0.70m begl and 2.40m begl (no rising level after 20 minutes). Water encountered as seepage between approximately 6.00m and 8.00m begl.
3.Hand dug pit to 1.20m begl.
4.Chiselling from 13.80m begl to 13.95m (0.5hrs) and from 14.10m begl to 14.25m begl (0.5hrs).
5.Plain pipe installed from ground level to 1.00m begl with a bentonite surround, slotted pipe installed from 1.00m to 5.00m begl with a gravel surround and bentonite backfill to 15.25m begl.
6 Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire
Client: Viridor Limited
Logged: GS
Checked:
Date: 17/04/2009
Approved:
Field Book Ref: GS09/01
Plant: Dando 2000
Scale: 1:50
Drawing Ref: BH13

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BH13

Project No.29002

Samples and Tests: Depth (m)	Type	Sample Ref	SPT "N" Value	Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
				Weak red-brown to grey-green highly to completely weathered MUDSTONE (MUDSTONE)					
10.50	D	D28							
11.00-11.45	S		50/225mm						
11.00-11.45	D	SD29							
						(7.15)			
12.10	D	D30							
12.50-12.95	S		50/200mm						
12.50-12.90	D	SD31							
13.10	D	D32							
13.80-14.25	C		50/140mm						
13.80-14.20	D	D33							
15.00-15.45	S		50/100mm						
				End of Borehole at 15.25 m		15.25			

Remarks:
1.Borehole cased to 6.50m begl.
2.Water encountered at 0.70m begl and 2.40m begl (no rising level after 20 minutes). Water encountered as seepage between approximately 6.00m and 8.00m begl.
3 Hand dug pit to 1.20m begl.
4.Chiselling from 13.80m begl to 13.95m (0.5hrs) and from 14.10m begl to 14.25m begl (0.5hrs).
5.Plain pipe installed from ground level to 1.00m begl with a bentonite surround, slotted pipe installed from 1.00m to 5.00m begl with a gravel surround and bentonite backfill to 15.25m begl.
6.Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire	**Client:** Viridor Limited
Logged: GS	**Checked:** GS
Date: 17/04/2009	**Approved:** GS
Field Book Ref: GS09/01	**Plant:** Dando 2000
Scale: 1:50	**Drawing Ref:** BH13

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BH14

Project No.29002

Samples and Tests

Depth (m)	Type	Sample Ref	SPT 'N' Value
0.80-1.20	B	B1	
1.20-1.65	S		8
1.20-1.65	D	SD2	
1.50-2.00	B	B3	
2.00-2.45	S		15
2.00-2.45	D	SD4	
3.00	B	B5	33 Blows
3.00-3.45	U	U6	
3.45-3.60	D	D7	
3.60-4.00	B	B8	
4.00-4.45	S		17
4.00-4.50	B	B10	
4.00-4.45	D	SD9	
4.50-5.00	B	B11	
5.10-5.55	S		18
5.10-5.55	D	SD12	
5.80-6.30	B	B13	
6.40-6.85	U	U14	55 Blows
6.85-7.00	D	D15	
7.50-8.00	B	B16	
8.10-8.55	S		25
8.10-8.55	D	SD17	
8.60-9.00	B	B18	
9.00-9.45	U	U19	84 Blows
9.45-9.60	D	D20	
9.80-10.30	B	B21	

Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Tarmacadam surfacing (MADE GROUND)		0.09 (0.41)			
Loose to medium dense light grey sandy gravel of limestone (MADE GROUND)		0.50		▽	
Loose to medium dense red-brown wet gravel to cobble grade quartzite, mudstone and occasional clinker in a clayey sandy matrix (MADE GROUND)		(1.80) 2.30			
Stiff red-brown sandy CLAY with occasional fine to medium sub-angular to sub-rounded quartzite and flint (BOULDER CLAY)		(6.30) 8.60	2.80		
Very weak completely weathered grey silty slightly sandy MUDSTONE (MUDSTONE)		(1.85)			

Continued on next sheet

Remarks:
1.Borehole sides cased to 2.80m begl.
2.Standing water encountered in hand-dug pit at 0.70m begl. Standing water encountered in borehole after weekend at approximately 6.50m begl.
3.Hand-dug pit to 1.20m begl.
4.Chiselling from 4.60m to 4.70m begl (0.5hrs) and from 6.20m to 6.30m begl.
5.Plain pipe installed from ground level to 1.00m begl with a bentonite surround, slotted pipe installed from 1.00m to 10.45m begl with a gravel surround.
6.Bung, valve and lockable cover installed

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire
Client: Viridor Limited
Logged: DJH
Date: 09/04/2009
Checked:
Approved:
Field Book Ref: GS09/01
Plant: Dando 3000
Scale: 1:50
Drawing Ref: BH14

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BH14

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT 'N' Value						
10.30-10.75 10.30-10.45	S D	 SD22	50/45mm	Very weak completely weathered grey silty slightly sandy MUDSTONE (MUDSTONE) ...becoming less weathered and friable below approximately 10.20m begl		10.45			
				End of Borehole at 10.45 m					

Remarks:
1.Borehole sides cased to 2.80m begl.
2.Standing water encountered in hand-dug pit at 0.70m begl. Standing water encountered in borehole after weekend at approximately 6.50m begl.
3.Hand-dug pit to 1.20m begl.
4.Chiselling from 4.60m to 4.70m begl (0.5hrs) and from 6.20m to 6.30m begl.
5.Plain pipe installed from ground level to 1.00m begl with a bentonite surround, slotted pipe installed from 1.00m to 10.45m begl with a gravel surround.
6 Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire	**Client:** Viridor Limited
Logged: DJH	**Checked:** RS
Date: 09/04/2009	**Approved:** RS
Field Book Ref: GS09/01	**Plant:** Dando 3000
Scale: 1:50	**Drawing Ref:** BH14

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BH15

Project No.29002

Depth (m)	Type	Sample Ref	SPT "N" Value	Description of Strata	Depth & (Thickness) (m)	Casing (m)	Groundwater
				Tarmacadam surfacing (MADE GROUND)	0.20		
0.50-1.00	B	B1/B2		Loose to medium dense grey very sandy gravel of limestone (MADE GROUND)	(1.20)		
1.40-1.90	B	B4			1.40		
1.40	D	D3		Firm to stiff grey sandy CLAY (BOULDER CLAY)	(0.50)		
1.90-2.35	S		16		1.90		
1.90-2.35	D	SD5		Firm to stiff red-brown mottled grey-green slightly gravelly sandy CLAY. Gravel is fine to medium sub-angular to sub-rounded mudstone (BOULDER CLAY)		2.10	
2.50-2.90	B	B6/B7					
2.90-3.35	U	U8	48 Blows				▽
3.35-3.50	D	D9					
3.50-4.00	B	B10/B11					
4.00-4.45	S		21				
4.00-4.45	D	SD12					
4.80	D	D13					
5.00-5.45	U	U14	71 Blows				
					(6.65)		
5.45-5.60	D	D15					
6.20	D	D16					
6.40-6.85	S		17				
6.40-6.85	D	SD17					
7.50-8.00	B	B18/B19					
8.10-8.55	S		47	...becoming hard after 8.00m begl			
8.10	D	SD20					
				End of Borehole at 8.55 m	8.55		

Remarks:
1.Borehole cased to 2.10m begl.
2.Water encountered at 3.00m begl (no level change after 20 minutes).
3.Pit hand dug to 1.20m begl.
4.Chiselling from 1.10m begl to 1.30m (1hrs) and from 6.20m begl to 6.40m begl (1hrs).
5.Plain pipe installed from ground level to 2.50m begl with a bentonite surround, slotted pipe installed from 2.50m to 8.10m begl with a gravel surround.
6 Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire
Client: Viridor Limited
Logged: PDA
Checked: RS
Date: 21/04/2009
Approved: RS
Field Book Ref: GS09/01
Plant: Dando 2000
Scale: 1:50
Drawing Ref: BH15

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BH16

Project No.29002

Depth (m)	Type	Sample Ref	SPT 'N' Value	Description of Strata	Depth & (Thickness) (m)	Casing (m)	Groundwater
0.50	D	D1		Loose to medium dense sandy gravel of limestone (MADE GROUND)	(0.95)		
					0.95		
1.20-1.65	S		5	Comprising slightly clayey sandy ash and clinker (MADE GROUND)	(0.55)		
1.20-1.65	D	SD2					
1.50-1.90	B	B4			1.50		
1.50	D	D3		Soft to firm brown sandy clay with gravel of coal, clinker, mudstone and brick fragments (MADE GROUND)	(0.40)		
1.90	D	D5			1.90		
2.00-2.45	U	U6	18 Blows	Firm brown sandy CLAY (BOULDER CLAY)	(0.30) 2.20	2.00	
2.65	D	D7		Firm to stiff red-brown locally grey-green mottled slightly silty slightly gravelly sandy CLAY. Gravel is predominantly fine to medium subangular to subrounded mudstone (BOULDER CLAY)			
3.10-3.55	S		14				
3.10-3.60	B	B9					
3.10-3.55	D	SD8					
4.00-4.45	U	U10	33 Blows	...becoming stiff to very stiff below approximately 4.00m begl			
4.65	D	D11					
5.10-5.55	S		23				
5.10-5.60	B	B13					
5.10-5.55	D	SD12			(6.80)		
				...becoming brown below 5.70m begl			
6.50-6.95	U	U21	50 Blows				
7.15	D	D14					
7.50	D	D15					
8.00-8.45	S		25				
8.00-8.45	D	SD16					
9.00	D	D17			9.00		
9.20-9.65	U	U18	60 Blows	Weak grey silty MUDSTONE. Recovered as fine to coarse subangular gravel (MUDSTONE)			
9.70	D	D19			(1.30)		

Continued on next sheet

Remarks:
1.Borehole cased to 2.00m begl.
2.No water encountered.
3.Pit hand dug to 1.20m begl.
4.Chiselling from 9.70m begl to 10.00m (1hrs).
5.Plain pipe installed from ground level to 1.00m begl with a bentonite surround, slotted pipe installed from 1.00m to 3.00m begl with a gravel surround and filled with bentonite from 3.00m to 10.00m begl.
6.Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire
Client: Viridor Limited
Logged: GS
Date: 06/04/2009
Checked: GS
Approved: KP
Field Book Ref: GS09/01
Plant: Dando 2000
Scale: 1:50
Drawing Ref: BH16

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BH16

Project No.29002

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
10.00-10.45 10.00	C D	 D20	50/60mm	Weak grey silty MUDSTONE. Recovered as fine to coarse subangular gravel (MUDSTONE)		10.30			
				End of Borehole at 10.30 m					

Remarks:
1.Borehole cased to 2.00m begl.
2.No water encountered.
3.Pit hand dug to 1.20m begl.
4.Chiselling from 9.70m begl to 10.00m (1hrs).
5.Plain pipe installed from ground level to 1.00m begl with a bentonite surround, slotted pipe installed from 1.00m to 3.00m begl with a gravel surround and filled with bentonite from 3.00m to 10.00m begl.
6 Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire		**Client:** Viridor Limited	
Logged: GS	**Checked:** gs	**Field Book Ref:** GS09/01	**Plant:** Dando 2000
Date: 06/04/2009	**Approved:** gs	**Drawing Ref:** BH16	**Scale:** 1:50

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BH17

Project No.29002

Samples and Tests

Depth (m)	Type	Sample Ref	SPT 'N' Value
0.50-1.00	B	B1/B2	
1.20-1.65	S		4
1.40-1.60	B	B3	
1.70-2.20	B	B5	
1.70	D	D4	
2.20-2.65	S		9
2.20-2.65	D	SD6	
2.50-3.00	B	B7/B8	
3.00-3.45	U	U9	31 Blows
3.45-3.60	D	D10	
3.90-4.35			50/240mm
4.50-5.00	B	B11/B12	
5.10-5.55	S		38
5.10-5.55	D	SD13	
6.00-6.50	B	B14	
6.60-7.05	S		50/115mm
7.50-7.95	S		50/45mm

Strata

Description of Strata	Depth & (Thickness) (m)	Casing (m)	Groundwater
Loose to medium dense grey sandy gravel of limestone with some cobbles (MADE GROUND)	(1.40) 1.40		
Firm grey-brown sandy clay (reworked natural strata) (MADE GROUND)	1.60		
Firm grey to brown locally black sandy locally peaty clay with occasional gravel of coal (MADE GROUND)	(0.50) 2.10	2.10	
Firm to stiff red-brown sandy CLAY with localised black carbonaceous inclusions (BOULDER CLAY)	(1.60) 3.70		
No recovery due to advancement of unknown obstruction (NO RECOVERY)	(0.80) 4.50		
Hard grey-green to brown slightly sandy slightly gravelly CLAY. Gravel is predominately fine to medium subangular mudstone. (MUDSTONE)	(2.20) 6.70		
Weak grey-green silty highly weathered MUDSTONE (MUDSTONE)	(0.90) 7.60		

End of Borehole at 7.60 m

Remarks:

1. Borehole cased to 2.10m begl.
2. No water encountered.
3. Pit hand dug to 1.20m begl.
4. Chiselling from 3.70m begl to 3.90m (1hrs), from 3 90m to 4.30m begl (1hrs), from 7.50m begl to 7.60m (0.5hrs) and from 7.70m to 7.80m begl (0.5hrs).
5. Plain pipe installed from ground level to 1.00m begl with a bentonite surround, slotted pipe installed from 1.00m to 4.00m begl with a gravel surround and filled with bentonite to 7.70m begl.
6 Bung, valve and lockable cover installed.

Key:

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire		**Client:** Viridor Limited	
Logged: GS	**Checked:** RS	**Field Book Ref:** GS09/01	**Plant:** Dando TBC
Date: 23/04/2009	**Approved:** RS	**Scale:** 1:50	**Drawing Ref:** BH17

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BH18

Project No.29002

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
				Loose to medium dense grey sandy gravel of stone (MADE GROUND)		(1.00) 1.00			
1.20-1.65	C		50/175mm	Firm to stiff red-brown sandy clay (MADE GROUND)		(0.45)	1.20		
1.40-1.85	C		25/6mm			1.45			
				End of Borehole at 1.45 m					

Remarks:
1.Borehole cased to 1.20m begl.
2.No water encountered.
3.Pit hand dug to 1.20m begl.
4.Chiselling from 1.40m begl to 1.45m begl (1hrs).
5 Borehole terminated at 1.45m begl due to unknown obstruction (possible concrete).

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire		**Client:** Viridor Limited		
Logged: GS	**Checked:** GS	**Field Book Ref:** GS09/01	**Plant:** Dando 2000	**Drawing Ref:** BH18
Date: 23/04/2009	**Approved:** GS		**Scale:** 1:50	

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BH18A

Project No.29002

Samples and Tests

Depth (m)	Type	Sample Ref	SPT "N" Value
1.20-1.65	S		9
1.20-1.70	B	B2/B3	
1.20-1.65	D	SD1	
1.50	D	D4	
2.00-2.50	B	B5/B6	
2.10-2.55	C		11
2.50	D	D7	
2.80-3.30	B	B10	23 Blows
2.80-3.25	U	U8	
3.00-3.20	B	B13	
3.30-3.80	B	B11	
3.45	D	D9	
3.80-4.25	S		12
3.80-4.25	D	SD12	
4.20-4.60	B	B14	
4.60-5.05	U	U15	31 Blows
5.25	D	D16	
5.95	D	D17	
6.00-6.45	S		36
6.00-6.45	D	SD18	
7.00	D	D19	
7.50-7.95	S		50
7.50-7.95	D	SD20	
8.50	D	D21	
8.90-9.35	C		50/125mm
9.50	D	D22	
9.90-10.35	C		50/85mm

Strata

Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Groundwater	Installation
Loose to medium dense sandy gravel of limestone (MADE GROUND)		(1.10) 1.10			
Loose black sandy gravelly ash with fine to medium clinker (MADE GROUND)		(1.30) 2.40			
Firm to stiff red-brown sandy gravelly CLAY. Gravel is predominantly fine to medium subangular to subrounded mudstone (BOULDER CLAY)		(3.55) 5.95			
Very stiff becoming hard red-brown locally grey-green sandy gravelly CLAY. Gravel is predominately fine to medium subangular mudstone (MUDSTONE)		(4.05)	8.00		

End of Borehole at 10.00 m

Remarks:
1.Borehole cased to 8.00m begl.
2.Water encountered as seepage between approximately 2.40m and 4.50m begl. Water encountered at 7.00m begl rising to 6.20m begl after 20 minutes and 7.20m begl rising to 6.70m begl after 20 minutes.
3.Pit hand dug to 1.20m begl.
4.Chiselling from 1.20m begl to 1.75m begl (0.5hrs) and from 9.60m begl to 9.90m begl (1hrs).
5.Plain pipe installed from ground level to 6.00m begl with a bentonite surround, slotted pipe installed from 6.00m to 10.00m begl with a gravel surround.
6.Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire

Client: Viridor Limited

Logged: GS

Date: 24/04/2009

Checked: RS

Approved: RS

Field Book Ref: GS09/01

Plant: Dando 2000

Scale: 1:50

Drawing Ref: BH18A

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BH19

Project No.29002

Sheet 1 of 1

Depth (m)	Type	Sample Ref	SPT 'N' Value	Description of Strata	Depth & (Thickness) (m)	Casing (m)
0.00-0.40	B	B1/B2		Loose grey sandy gravel of limestone (MADE GROUND)	(0.40)	
0.10-0.30	D/J				0.40	
0.50-0.70	J/D			Wood fragments in a sandy matrix with a strong hydrocarbon odour (possible creosote) (MADE GROUND)	(1.10)	
1.50-2.00	B	B3/B4			1.50	
1.60-1.80	J/D			Stiff becoming very stiff red-brown slightly sandy slightly gravelly CLAY. Gravel is predominantly fine to medium subangular to subrounded mudstone with a slight hydrocarbon odour (possible creosote) (possible reworked in upper horizons) (BOULDER CLAY)		
2.00-2.45	S		16			
2.00-2.45	D	SD4				
2.50-3.00	B	B6/B7				
3.00-3.20	J/D					
3.10-3.55	U	U8	48 Blows			
3.55-3.70	D	D9			(4.40)	
3.90-4.35	S		20			
3.90-4.35	D	SD10				
4.20-4.40	J/D					4.20
4.50-5.00	B	B11/B12				
5.10-5.55	S		50/45mm	...becoming hard below approximately 5.00m begl		
5.90	D	D13			5.90	
6.00-6.45	S		43	Very stiff red-brown sandy gravelly CLAY. Gravel is predominantly fine to medium subangular mudstone (MUDSTONE)	(0.55)	
6.00-6.45	D	SD14			6.45	

End of Borehole at 6.45 m

Remarks:

1.Borehole cased to 4.20m begl.
2.Water encountered at 0.70m begl (no level change after 20 minutes), and at 3.80m begl and rising to 3.60m begl after 20 minutes.
3.Pit hand dug to 1.20m.
4.Chiselling from 1.20m begl to 1.50m begl (1hrs), from 5.10m begl to 5.50m begl (1hrs) and from 5.80m begl to 5.90m begl (0.5hrs).
5.Plain pipe installed from ground level to 2.50m begl with a bentonite surround, slotted pipe installed from 2.50m to 5.40m begl with a gravel surround and bentonite backfill from 5.40m to 6.45m begl. Bale bent at 5.40m.
6.Bung, valve and lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire
Client: Viridor Limited
Logged: GS
Checked: GS
Date: 20/04/2009
Approved: GS
Field Book Ref: GS09/01
Plant: Dando 3000
Scale: 1:50
Drawing Ref: BH19

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BH20

Project No.29002

Samples and Tests									
Depth (m)	Type	Sample Ref	SPT "N" Value	Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
0.20-0.60	B	B1		Tarmacadam surfacing (MADE GROUND)		0.20			
						(0.40)			
0.60-1.10	B	B2		Loose to medium dense grey sandy gravel of limestone (MADE GROUND)		0.60			
1.20-1.65	S		10	Firm to stiff red-brown locally grey mottled silty sandy CLAY (BOULDER CLAY)					
1.20-1.70	B	B4							
1.20-1.65	D	SD3				(1.80)	1.60		
1.80-2.25	S		9						
1.80-2.25	D	SD5							
2.50-3.00	B	B6		Firm to stiff red-brown locally grey mottled silty sandy gravelly CLAY. Gravel is predominately fine to medium subangular to subrounded mudstone (BOULDER CLAY)		2.40			
3.20-3.65	U	U7	65 Blows						
3.65-3.80	D	D8							
3.80-4.10	B	B9							
4.10-4.55	S		16						
4.10-4.55	D	SD10							
						(4.20)			
4.60-5.00	B	B11							
5.00-5.45	U	U12	84 Blows						
5.45-5.60	D	D13							
5.60-6.00	B	B14							
6.00-6.45	S		26						
6.00-6.45	D	SD15							
6.60-7.00	U	U16	150 Blows	Very stiff red-brown locally grey-green sandy gravelly CLAY. Gravel is predominantly fine to medium subangular mudstone (MUDSTONE)		6.60			
7.00-7.15	D	D17							
						(1.30)			
7.50-8.00	B	B18/B19							
				Weak red-brown to grey-green highly weathered MUDSTONE (MUDSTONE)		7.90			
8.10-8.55	S		48						
8.10-8.55	D	SD20							
8.90-9.40	B	B21/B22							
						(2.70)			
9.40-9.85	S		50/275mm						
9.40-9.80	D	SD23							
9.80-10.20	B	B24							

Continued on next sheet

Remarks:

1.Borehole cased to 1.60m begl.
2.No water encountered.
3.Pit hand dug to 1.20m
4.Chiselling from 3.00m begl to 3.20m begl (0.75hrs), from 5.80m begl to 6.00m begl (0.5hrs), from 10.20m begl to 10.3m begl (0.5hrs) and from 10.30m begl to 10.50m begl (1hrs).
5.Plain pipe installed from ground level to 1.00m begl with a bentonite surround, slotted pipe installed from 1.00m to 10.60m begl with a gravel surround.
6.Bung, valve and lockable cover installed.

Key:

D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire		**Client:** Viridor Limited	
Logged: GS	**Checked:**	**Field Book Ref:** GS09/01	**Plant:** Dando 3000
Date: 14/04/2009	**Approved:**	**Scale:** 1:50	**Drawing Ref:** BH20

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BH20

Project No.29002

Samples and Tests									
Depth (m)	Type	Sample Ref	SPT "N" Value	Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
10.30-10.75	S		50/80mm	Weak red-brown to grey-green highly weathered MUDSTONE (MUDSTONE)					
10.30-10.45	D	SD25							
10.50-10.95	S		50/125mm			10.60			
10.50-10.60	D	SD26		End of Borehole at 10.60 m					

Remarks:
1.Borehole cased to 1.60m begl.
2.No water encountered.
3.Pit hand dug to 1.20m
4.Chiselling from 3.00m begl to 3.20m begl (0.75hrs), from 5.80m begl to 6.00m begl (0.5hrs), from 10.20m begl to 10.3m begl (0.5hrs) and from 10.30m begl to 10.50m begl (1hrs).
5.Plain pipe installed from ground level to 1.00m begl with a bentonite surround, slotted pipe installed from 1.00m to 10.60m begl with a gravel surround.
6.Bung, valve end lockable cover installed.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire		**Client:** Viridor Limited	
Logged: GS	**Checked:** GS	**Field Book Ref:** GS09/01	**Plant:** Dando 3000
Date: 14/04/2009	**Approved:** GS		**Scale:** 1:50
			Drawing Ref: BH20

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TP1

Project No: 29002

Sheet 1 of 1

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-Water
Loose light grey gravelly sand. Gravel is predominantly limestone (MADE GROUND)		0.00-0.30 0.10-0.30		B J/D			
Loose to medium dense black clayey sandy gravelly ash. Gravel is predominantly clinker and concrete locally with brick and a moderate suspected diesel odour (MADE GROUND) ...with a layer of whitish-grey sandy gravel between approximately 0.75m and 0.95m begl ...with a visible oil sheen on pooled water at approximately 0.95m begl		0.30 0.40-0.60 0.50-1.00		J/D B			▽
Firm to stiff red-brown locally mottled light grey slightly sandy CLAY (BOULDER CLAY)		1.70 1.90 2.00		D/J	SV	76 82	
End of Trial Pit at 2.50 m		2.50					

Remarks:
1.Trial pit sides slightly unstable in Made Ground.
2.Water seepage encountered below approximately 0.95m begl.
3.Shear Vane test taken on ex-situ soil from 2.00m begl: 76kPa and 82kPa.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m^2) P = Penetrometer (kN/m^2)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire	**Client:** Viridor Limited

Logged: DJH	**Checked:** RS	**Field Book Ref:** GS09/01	**Plant:** JCB 3CX	**Drawing No.** TP1
Date: 14/04/2009	**Approved:** RS		**Scale:** 1:20	

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TP2

Project No: 29002

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-Water
Loose grey ashy clayey very sandy gravel. Gravel includes brick and clinker (MADE GROUND)		0.20	B	B			
		0.30					
Loose to medium dense dark grey and black clayey very sandy ashy gravel. Gravel is predominantly fine to medium angular to sub-angular clinker with occasional coal fragments (MADE GROUND)		0.40		B			
		0.40		D/J			
...with a land drain at approximately 1.60m begl							▽
		1.80					
Firm to stiff red-brown locally mottled light grey slightly sandy CLAY (BOULDER CLAY)		2.00		B			
		2.00		D/J			
		2.50					
End of Trial Pit at 2.50 m							

Remarks:
1. Trial pit sides generally stable.
2. Water seepage encountered around periphery of pit sides. Water running from drain at approximately 1.60m begl.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m^2) P = Penetrometer (kN/m^2)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire			**Client:** Viridor Limited	
Logged: DJH	**Checked:** KS	**Field Book Ref:** GS09/01	**Plant:** JCB 3CX	**Drawing No.** TP2
Date: 14/04/2009	**Approved:** KS		**Scale:** 1:20	

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TP3

Project No: 29002

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-Water
Loose to medium dense light grey sandy gravel of limestone (MADE GROUND)		0.01-0.30		J/D			
		0.30					
Soft dark brown sandy clay/silt with localised black mottling and rare fine sub-rounded quartzite gravel and porcelain fragments (MADE GROUND)		0.50		B			
		0.50		D/J			
		0.50-0.70		J/T			
...with a silty organic odour		0.90-1.20		B			
		1.20					
Firm to stiff red-brown locally mottled light grey very sandy CLAY with occasional fine sub-rounded quartzite gravel (BOULDER CLAY)		1.40		B			
		1.40		D/J			
							▽
End of Trial Pit at 2.10 m		2.10					

Remarks:
1. Trial pit sides slightly unstable in saturated soils.
2. Water seepage encountered below approximately 1.90m begl.
3. Trial pit terminated at 2.10m begl due to flooding.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m^2) P = Penetrometer (kN/m^2)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire	**Client:** Viridor Limited

Logged: DJH	**Checked:** RS	**Field Book Ref:** GS09/01	**Plant:** JCB 3CX	**Drawing No.** TP3
Date: 14/04/2009	**Approved:** RS		**Scale:** 1:20	

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TP4

Project No: 29002

Sheet 1 of 1

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-Water
Loose to medium dense grey sandy gravel of limestone with occasional brick fragments (MADE GROUND)		0.10					
		0.10-0.30		J/D			
Firm locally wet black organic sandy slightly silty clay with occasional clinker gravel inclusions and white crystallite sandy pockets (MADE GROUND)		0.40		D/J			
		0.40-0.60		J/D			
Medium dense brown very silty fine to coarse SAND locally with light greenish-brown clay pockets (BOULDER CLAY)		1.10					
		1.30		B			
		1.30		D			
Stiff red-brown slightly sandy CLAY with pockets of light brown silty sand (BOULDER CLAY)		1.50					
		1.80			SV	100	
		1.80		B			
		1.80		D/J			
End of Trial Pit at 1.90 m		1.90					

Remarks:

1.Trial pit sides generally stable.
2.Water seepage encountered at approximately 1.40m begl.
3.Shear Vane test taken on ex-situ soil from 1.80m begl: 100kPa.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m^2) P = Penetrometer (kN/m^2)
J = Jar Sample V = Vial Sample ▽= Water Strike (m) ▼= Steady Water Level (m)

Project: Lostock Works, Cheshire			**Client:** Viridor Limited	
Logged: DJH	**Checked:**	**Field Book Ref:** GS09/01	**Plant:** JCB 3CX	**Drawing No.** TP4
Date: 14/04/2009	**Approved:**		**Scale:** 1:20	

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TP5

Project No: 29002

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-Water
Loose to medium dense light grey sandy gravel of limestone (MADE GROUND)		0.00-0.40		B			
		0.10-0.30		J/D			
		0.40-0.50		J/D			
		0.50					
Loose sandy ash with gravel of brick, concrete, clinker and ceramics (MADE GROUND)		0.60-0.70		J/D			
		0.70					
Firm to stiff brown very sandy ashy clay with occasional gravel of brick, coal, mudstone and sandstone (MADE GROUND)		0.70-1.00		B			
		0.80-1.00		J/D			
		0.90			SV	55 85 90	
...with a service drain at approximately 1.00m begl		1.00					
End of Trial Pit at 1.00 m							

Remarks:

1. Trial pit sides generally stable.
2. Water encountered at approximately 1.00m begl.
3. Service drain encountered at 1.00m begl. Trial pit terminated.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m^2) P = Penetrometer (kN/m^2)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire			**Client:** Viridor Limited	
Logged: GJS	**Checked:** RS	**Field Book Ref:** GS09/01	**Plant:** JCB 3CX	**Drawing No.** TP5
Date: 09/04/2009	**Approved:** RS		**Scale:** 1:20	

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TP6

Project No: 29002

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-Water
Loose to medium dense light grey sandy gravel of limestone (MADE GROUND)		0.00-0.50		B			
		0.10-0.30		J/D			
		0.25					
Moderately compacted red-brown clayey gravelly sand. Gravel is predominantly fine to coarse sub-angular sandstone (REWORKED NATURAL STRATA)		0.40-0.60		J/D			
		0.60		D			
		1.80					
Dark grey ashy gravelly sand. Gravel is predominantly fine to medium clinker with rare wood pieces (MADE GROUND)		2.00		D/J			
							▽
		2.90					

Continued on next sheet

Remarks:
1. Trial pit sides slightly unstable in Made Ground.
2. Water seepage encountered at approximately 2.50m begl.
3. Shear Vane values for ex-situ soils from 3.00m begl: 95kPa, 91kPa, and 93kPa.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m^2) P = Penetrometer (kN/m^2)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire			**Client:** Viridor Limited	
Logged: DJH	**Checked:** RS	**Field Book Ref:** GS09/01	**Plant:** JCB 3CX	**Drawing No.** TP6
Date: 14/04/2009	**Approved:** RS		**Scale:** 1:20	

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TP6

Project No: 29002

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-Water
Firm to stiff brown mottled light grey and light brown slightly sandy silty CLAY with rare fine gravel inclusions and sandy pockets (BOULDER CLAY)		3.00			SV	95 91 93	
		3.30		B			
		3.30		D/J			
End of Trial Pit at 3.40 m		3.40					

Remarks:
1. Trial pit sides slightly unstable in Made Ground.
2. Water seepage encountered at approximately 2.50m begl.
3. Shear Vane values for ex-situ soils from 3.00m begl: 95kPa, 91kPa, and 93kPa.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m^2) P = Penetrometer (kN/m^2)
J = Jar Sample V = Vial Sample ▽= Water Strike (m) ▼= Steady Water Level (m)

Project: Lostock Works, Cheshire	**Client:** Viridor Limited

Logged:	Checked:	Field Book Ref:	Plant:	Drawing No.
DJH	RS	GS09/01	JCB 3CX	TP6
Date: 14/04/2009	**Approved:** RS		**Scale:** 1:20	

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TP8

Project No: 29002

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-Water
Reinforced concrete (MADE GROUND)		0.18					
Loose compacted reddish-brown slightly clayey very gravelly sand. Gravel is predominantly fine to coarse limestone (MADE GROUND)		0.30-1.00 0.30 0.50		B D/J D			
Loose to medium dense dark grey slightly ashy gravelly sand. Gravel includes fine to coarse concrete, brick and frequent clinker with occasional concrete cobbles, locally with rare wood fragments and metal wire, slate, roots and timber pieces (MADE GROUND)		1.05 1.20 1.20		 B D/J			

Continued on next sheet

Remarks:
1.Trial pit sides generally stable.
2.Water seepage encountered at approximately 3.00m begl.
3.Trial pit terminated due to buried concrete slab.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m^2) P = Penetrometer (kN/m^2)
J = Jar Sample V = Vial Sample ▽= Water Strike (m) ▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire	**Client:** Viridor Limited

Logged: DJH	**Checked:** RS	**Field Book Ref:** GS09/01	**Plant:** JCB 3CX	**Drawing No.** TP8
Date: 14/04/2009	**Approved:** RS		**Scale:** 1:20	

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TP8

Project No: 29002

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-Water
Remaining Detail : 2.90m - 2.90m : ...with much gravel of clinker below approximately 2.90m begl		3.00 3.10		D/J			▽
End of Trial Pit at 3.10 m							

Remarks:
1.Trial pit sides generally stable.
2.Water seepage encountered at approximately 3.00m begl.
3.Trial pit terminated due to buried concrete slab.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m^2) P = Penetrometer (kN/m^2)
J = Jar Sample V = Vial Sample ▽= Water Strike (m) ▼= Steady Water Level (m)

Project: Lostock Works, Cheshire			**Client:** Viridor Limited	
Logged: DJH	**Checked:** [signature]	**Field Book Ref:** GS09/01	**Plant:** JCB 3CX	**Drawing No.** TP8
Date: 14/04/2009	**Approved:** [signature]		**Scale:** 1:20	

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TP10

Project No: 29002

Sheet 1 of 1

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-Water
Loose to medium dense light grey sandy gravel of limestone (MADE GROUND)		0.10-0.30		J/D			
		0.40		B			
		0.40-0.60		J/D			
		0.60					
Firm dark grey-brown sandy slightly silty clay with occasional black carbonaceous inclusions (MADE GROUND)		0.70		D			
		0.90					
Stiff red-brown locally mottled light grey very sandy CLAY with some fine to medium sub-angular to sub-rounded flint (BOULDER CLAY)		0.90		B			
		1.20		D			
End of Trial Pit at 1.30 m		1.30			SV	120 115 91	

Remarks:
1.Trial pit sides generally stable. Slightly unstable in Made Ground.
2.No water encountered.
3.Shear vane values for ex-situ soils from 1.30m begl: 120kPa, 115kPa and 91kPa.
4.Trial pit terminated to allow second scan at 1.30m. Scan not undertaken therefore trial pit abandoned.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m^2) P = Penetrometer (kN/m^2)
J = Jar Sample V = Vial Sample ▽= Water Strike (m) ▼= Steady Water Level (m)

Project: Lostock Works, Cheshire			**Client:** Viridor Limited	
Logged: DJH	**Checked:** PS	**Field Book Ref:** GS09/01	**Plant:** JCB 3CX	**Drawing No.** TP10
Date: 14/04/2009	**Approved:** PS		**Scale:** 1:20	

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TP11

Project No: 29002

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-Water
Loose to medium dense light grey sandy gravel of limestone (MADE GROUND)		0.50		B			
		0.50		J/D			
Dark grey slightly silty gravelly sand with inclusions of fine to medium clinker and brick (in the south side of pit). In north side of pit, grey sandy gravel of predominantly fine limestone in a wet matrix (MADE GROUND)		0.80					
		1.00					
Firm to stiff red-brown very sandy CLAY with some fine to medium sub-angular to sub-rounded flint gravel (BOULDER CLAY)		1.20		B			
		1.20		J/D			
...with a fast water seepage at approximately 1.85m begl in north side of pit							▽
		2.00		J/D			
End of Trial Pit at 2.90 m		2.90					

Remarks:
1. Trial pit sides slightly unstable in granular Made Ground.
2. Water encountered as fast seepage at approximately 1.80m begl.
3. Trial pit terminated at 2.90m begl due to water ingress.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m^2) P = Penetrometer (kN/m^2)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire			**Client:** Viridor Limited	
Logged: DJH	Checked: BS	Field Book Ref: GS09/01	Plant: JCB 3CX	Drawing No. TP11
Date: 14/04/2009	Approved: BS		Scale: 1:20	

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TP12

Project No: 29002

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-Water
Loose to medium dense light grey sandy gravel of limestone (MADE GROUND)		0.10-0.20		J/D			
...becoming more sandy with depth		0.50-0.90		B			
		0.60-0.90		B			
		0.70-0.90		J/D			
		0.75					
Medium dense red-brown clayey gravelly sand. Gravel is predominantly medium to coarse sub-angular limestone and occasional fine to medium flint (MADE GROUND)		1.00					
Medium dense dark grey-brown ashy clayey very sandy gravel. Gravel includes fine to medium clinker, brick and coal fragments (MADE GROUND)		1.00		B			
		1.00		D/J/V			
		1.40					
Light grey/white locally yellow-brown/beige crystallite gravel in a sandy matrix (MADE GROUND)		1.60		B			
		1.60		D/J			
		2.00					
Firm dark grey-brown becoming brown slightly clayey gravelly sand. Gravel includes black ash and clinker, occasional brick and rare crystallite whole gravel (MADE GROUND)		2.60					
Light grey/white locally yellow-brown/beige crystallite gravel is a slightly clayey sandy matrix (MADE GROUND)							

Continued on next sheet

Remarks:
1. Trial pit sides unstable in near surface region and below approximately 3.70m begl.
2. Water seepage encountered at approximately 4.30m begl.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m^2) P = Penetrometer (kN/m^2)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: **Lostock Works, Cheshire**

Client: **Viridor Limited**

Logged: DJH	Checked: PS	Field Book Ref: GS09/01	Plant: JCB 3CX	Drawing No. TP12
Date: 14/04/2009	Approved: PS		Scale: 1:20	

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TP12

Project No: 29002

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-Water
Loose mixture of fine to coarse brick and clinker gravel in a sandy slightly clayey locally wet matrix (MADE GROUND)		3.00					
		3.40		D/J			
...with a large piece of decomposing timber (railway sleeper) at approximately 3.50m begl							
...with much large timber pieces below approximately 3.70m begl							
Firm to stiff red-brown slightly sandy CLAY with occasional fine to medium sub-rounded quartzite gravel (BOULDER CLAY)		4.10					
		4.30		D/J			▽
End of Trial Pit at 4.40 m		4.40					

Remarks:
1.Trial pit sides unstable in near surface region and below approximately 3.70m begl.
2.Water seepage encountered at approximately 4.30m begl.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m²) P = Penetrometer (kN/m²)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire			**Client:** Viridor Limited	
Logged: DJH	**Checked:** PS	**Field Book Ref:** GS09/01	**Plant:** JCB 3CX	**Drawing No.** TP12
Date: 14/04/2009	**Approved:** PS		**Scale:** 1:20	

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TP13

Project No: 29002

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-Water
Loose to medium dense light grey sandy gravel of limestone with a slight unknown odour (MADE GROUND)							
		0.30-0.50		J/D			
		0.40-0.90		J/D			
...becoming more sandy with depth							
Medium dense red-brown slightly clayey gravelly sand. Gravel is predominantly medium to coarse sub-angular limestone and occasional fine to medium flint (MADE GROUND)		0.80					
Locally compacted dark grey ashy slightly clayey sandy gravel of predominantly fine to coarse brick, clinker and concrete (MADE GROUND)		1.10					
		1.50		B			
		1.50		D/J			
...brick wall in north of pit to 2.30m begl							▽

Continued on next sheet

Remarks:

1. Trial pit sides locally unstable and collapsing in ashy Made Ground.
2. Slight water seepage at base of wall and at 3.40m begl.
3. Shear Vane values for ex-situ soils from 3.20m begl: 51kPa, 47kPa, and 62kPa.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m^2) P = Penetrometer (kN/m^2)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: **Lostock Works, Cheshire**			**Client:** **Viridor Limited**	
Logged: DJH	**Checked:** RS	**Field Book Ref:** GS09/01	**Plant:** JCB 3CX	**Drawing No.** TP13
Date: 14/04/2009	**Approved:** RS		**Scale:** 1:20	

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TP13

Project No: 29002

Description of Strata	Legend	Depth (m)	Sample Ref	Sample Type	Field Test Type	Field Test Result	Ground-Water
Firm to stiff red-brown sandy locally mottled light brown CLAY with occasional fine to medium sub-angular to sub-rounded quartzite (BOULDER CLAY)		3.00					
		3.20			SV	51	
		3.20		B		47	
		3.20		D/J		62	▽
End of Trial Pit at 3.50 m		3.50					

Remarks:
1. Trial pit sides locally unstable and collapsing in ashy Made Ground.
2. Slight water seepage at base of wall and at 3.40m begl.
3. Shear Vane values for ex-situ soils from 3.20m begl: 51kPa, 47kPa, and 62kPa.

Key: B = Bulk Sample D = Disturbed Sample W = Water Sample SV = Shear Vane (kN/m^2) P = Penetrometer (kN/m^2)
J = Jar Sample V = Vial Sample ▽ = Water Strike (m) ▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire			**Client:** Viridor Limited	
Logged: DJH	**Checked:** RS	**Field Book Ref:** GS09/01	**Plant:** JCB 3CX	**Drawing No.** TP13
Date: 14/04/2009	**Approved:** RZ		**Scale:** 1:20	

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WS1

Project No.29002

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	**Type**	**Sample Ref**	**SPT "N" Value**						
0.20-0.40	J/D			Concrete (MADE GROUND)		0.10			
				Firm to stiff red-brown sandy friable clay (MADE GROUND)		(1.00)			
1.00-1.45	S		35			1.10			
1.20-1.40	J/D			Firm to stiff black to brown sandy ashy friable clay with occasional gravel of mudstone, sandstone and brick (MADE GROUND)		(1.00)			
2.00-2.45	S		1			2.10			
2.20-2.40	J/D			Soft becoming stiff brown silty very sandy damp clay (MADE GROUND)		(1.40)		▽	
3.00-3.45	S		19			3.50			
				Loose silty clayey wet fine grained sand (MADE GROUND)		(0.50)			
4.00-4.45	S		30			4.00			
				No recovery (possible loose strata) (NO RECOVERY)		(0.50)			
						4.50			
4.60-4.80	J/D			Firm to stiff red-brown sandy gravelly CLAY. Gravel is fine to coarse subangular to subrounded mudstone (BOULDER CLAY)		(0.50)			
						5.00			
				End of Borehole at 5.00 m					

Remarks:
1. Borehole sides generally stable.
2. Water encountered at approximately 2.80m begl.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire		**Client:** Viridor Limited	
Logged: GJS	**Checked:**	**Field Book Ref:** GS09/01	**Plant:** Competitor Rig
Date: 22/04/2009	**Approved:**	**Scale:** 1:50	**Drawing Ref:** WS1

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WS2

Project No.29002

Samples and Tests									
Depth (m)	Type	Sample Ref	SPT "N" Value	Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
				Concrete slab (MADE GROUND)		(0.30) 0.30			
0.40-0.60	J/D			Firm to stiff red-brown silty sandy clay with gravel and cobbles of sandstone (MADE GROUND)		(0.30) 0.60			
0.70-0.90	J/D								
1.00-1.45	S		27	Stiff sandy clay with fine to medium subangular to subrounded gravel of sandstone and mudstone with black carbonaceous inclusions and with a slight unidentified odour (MADE GROUND)		(0.80) 1.40		▽	
1.50-1.70	J/D								
2.00-2.45	S		20	Weak light grey silty sandstone with a slight unidentified odour (MADE GROUND)		(0.60) 2.00			
				Stiff grey-brown sandy clay with a slight unidentified odour (MADE GROUND)		2.20			
				No recovery (NO RECOVERY)		(0.80) 3.00			

End of Borehole at 3.00 m

Remarks:
1.Borehole sides generally stable.
2.Water encountered at approximately 1.30m begl.
3.Borehole terminated at 3.00m begl due to no recovery possible in loose strata.

Key:

D	Disturbed Sample	S	Standard Penetration Test (Split Spoon)
U	Undisturbed Sample	C	Standard Penetration Test (Cone)
B	Bulk Sample	▽	Water Strike (m)
J	Jar Sample	▼	Steady Water Level (m)
W	Water Sample		

Project: Lostock Works, Cheshire		**Client:** Viridor Limited	
Logged: GJS	**Checked:**	**Field Book Ref:** GS09/01	**Plant:** Competitor Rig
Date: 08/04/2009	**Approved:**		**Scale:** 1:50
		Drawing Ref: WS2	

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WS3

Project No.29002

Depth (m)	Type	Sample Ref	SPT "N" Value	Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
				Concrete slab (MADE GROUND)		(0.30) 0.30			
0.40-0.60	J/D			Compact firm to stiff red-brown silty very sandy clay with occasional gravel of mudstone and quartzite (MADE GROUND)		(0.30) 0.60			
0.70-0.90	J/D								
1.00-1.45	S		15	Stiff brown sandy clay with occasional gravel of mudstone (reworked natural) (MADE GROUND)		(1.40) 2.00			
2.00-2.45	S		16	Stiff red-brown slightly sandy slightly gravelly CLAY. Gravel is predominantly fine to medium subangular to subrounded mudstone (BOULDER CLAY)		(3.00) 5.00			
2.00-5.00	B								
2.10-2.30	J/D								
3.00-3.45	C		22	...becoming gravelly below 3.00m					
4.00-4.45	S		22						
4.10-4.30	J/D								
5.00-5.45	S		24	End of Borehole at 5.00 m					

Remarks:
1.Borehole sides generally stable.
2.No water encountered.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire
Client: Viridor Limited
Logged: GJS
Date: 08/04/2009
Checked: GS
Approved: GS
Field Book Ref: GS09/01
Plant: Competitor Rig
Scale: 1:50
Drawing Ref: WS3

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WS4

Project No.29002

Depth (m)	Type	Sample Ref	SPT 'N' Value	Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
0.05-1.00	B			Loose grey sandy gravel of limestone (MADE GROUND)		0.05			
0.05-0.20	J/D					0.20			
0.30-0.50	J/D			Firm to stiff light brown sandy clay (MADE GROUND)		(0.30) 0.50			
0.60-0.80	J/D			Loose to medium dense black sandy ash with gravel of brick, clinker, mudstone and coal (MADE GROUND)		(0.50)			
1.00-1.30	J/D			Stiff to firm slightly silty very sandy clay (MADE GROUND)		1.00			
1.20-4.50	B			Firm to stiff red-brown sandy gravelly CLAY. Gravel is predominantly fine to medium subangular to subrounded mudstone (BOULDER CLAY)					
2.10-2.30	J/D								
3.10-3.30	J/D					(4.00)			
4.10-4.30	J/D								
				End of Borehole at 5.00 m		5.00			

Remarks:
1.Borehole sides generally stable.
2.No water encountered.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire		**Client:** Viridor Limited	
Logged: GJS	**Checked:** GS	**Field Book Ref:** GS09/01	**Plant:** Competitor Rig
Date: 21/04/2009	**Approved:** GS	**Scale:** 1:50	**Drawing Ref:** WS4

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WS7

Project No.29002

Sheet 1 of 1

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
0.10-0.80 0.20-0.40	B J/D			Tarmacadam surfacing (MADE GROUND)		0.10			
				Loose to medium dense grey sandy gravel of limestone (MADE GROUND)		(0.90) 1.00			
1.00-1.45 1.10-1.30	S J/D		20	Stiff red-brown locally ashy sandy to very sandy clay with frequent gravel of quartzite, mudstone and occasional clinker (MADE GROUND)		(0.80) 1.80			
				End of Borehole at 1.80 m					

Remarks:
1.Borehole sides generally stable.
2.No water encountered.
3.Borehole terminated at 1.80m begl due to unknown obstruction.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire		**Client:** Viridor Limited	
Logged: GJS	**Checked:** GS	**Field Book Ref:** GS09/01	**Plant:** Competitor Rig
Date: 21/04/2009	**Approved:** GS	**Drawing Ref:** WS7	**Scale:** 1:50

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WS8

Project No.29002

Depth (m)	Type	Sample Ref	SPT "N" Value	Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
0.10-0.80 0.10-0.30	B J/D			Tarmacadam surfacing (MADE GROUND)		0.10 (0.40)			
0.60-0.80	J/D			Loose to medium dense grey sandy gravel of limestone (MADE GROUND)		0.50 (0.50)			
1.00-1.45 1.10-1.30	S J/D		5	Loose to medium dense sandy ash with gravel of brick, clinker and mudstone (MADE GROUND)		1.00 (1.00)			
2.00-2.45 2.10-3.50 2.10-2.30	S B J/D		13	Firm grey-brown very sandy clay with occasional brick fragments and occasional carbonaceous inclusions (MADE GROUND)		2.00			
3.00-3.45 3.10-3.30	S J/D		24	Stiff red-brown sandy gravelly CLAY. Gravel is predominantly fine to medium subangular to subrounded mudstone (BOULDER CLAY)		(3.00)			
4.00-4.45 4.10-4.30	S J/D		25					▽	
5.00-5.45	S		31	End of Borehole at 5.00 m		5.00			

Remarks:
1.Borehole sides generally stable.
2.Water encountered at approximately 4.00m begl.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire		**Client:** Viridor Limited	
Logged: GJS	**Checked:** RS	**Field Book Ref:** GS09/01	**Plant:** Competitor Rig
Date: 21/04/2009	**Approved:** RS		**Scale:** 1:50
			Drawing Ref: WS8

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WS9

Project No.29002

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
0.00-0.70	B			Loose grey sandy gravel of limestone (MADE GROUND)		0.20			
0.00-0.20	J/D								
0.30-0.50	J/D			Firm red-brown sandy clay with pockets of ash (MADE GROUND)		(1.00)		▽	
						1.20			
				End of Borehole at 1.20 m					

Remarks:
1. Borehole sides generally stable.
2. Water encountered at approximately 0.60m begl.
3. Borehole terminated at 1.20m due to unknown obstruction.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire	**Client:** Viridor Limited
Logged: GJS	**Checked:** RS
Date: 21/04/2009	**Approved:** 88
Field Book Ref: GS09/01	**Plant:** Competitor Rig
Scale: 1:50	**Drawing Ref:** WS9

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WS10

Project No.29002

Samples and Tests									
Depth (m)	Type	Sample Ref	SPT "N" Value	Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
0.20-0.40	J/D			Tarmacadam surfacing (MADE GROUND)		0.10 (0.40)			
0.60-0.80	J/D			Loose to medium dense grey sandy gravel of limestone (MADE GROUND)		0.50 (0.50)			
1.00-1.45 1.10-1.30	S J/D		13	Firm to stiff red-brown sandy gravelly clay (reworked natural strata) (MADE GROUND)		1.00			
2.00-2.45 2.10-3.50 2.10-2.20	S B J/D		21	Stiff red-brown sandy gravelly CLAY. Gravel is predominantly fine to medium subangular to subrounded mudstone (BOULDER CLAY)					
3.00-3.45 3.10-3.30	S J/D		24	...becoming silty below 3.00m		(4.00)			
4.00-4.45 4.10-4.30	S J/D		30						
5.00-5.45	S		37	End of Borehole at 5.00 m		5.00			

Remarks:
1.Borehole sides generally stable.
2.No water encountered.

Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire		**Client:** Viridor Limited	
Logged: GJS	**Checked:** RS	**Field Book Ref:** GS09/01	**Plant:** Competitor Rig
Date: 21/04/2009	**Approved:** RS	**Scale:** 1:50	**Drawing Ref:** WS10

GeoDyne
The Granary, Church Lane
Thrumpton, Nottingham NG11 0AX
Tel: 0115 983 0006 Fax: 0115 983 0009
email: info@geodyne.co.uk

WS11

Project No.29002

Samples and Tests				Description of Strata	Legend	Depth & (Thickness) (m)	Casing (m)	Ground-water	Installation
Depth (m)	Type	Sample Ref	SPT "N" Value						
0.20-0.40	J/D			Loose to medium dense grey sandy gravel of limestone (MADE GROUND)		(0.50) 0.50			
1.00-1.45	S		12	Stiff red-brown sandy clay with occasional fine to medium subangular to subrounded gravel of mudstone (MADE GROUND)		(1.50) 2.00		▽	
				End of Borehole at 2.00 m					

Remarks:
1.Borehole sides generally stable.
2.Water encountered at approximately 0.80m begl.
3.Borehole terminated at 2.00m begl due to unidentified obstruction.

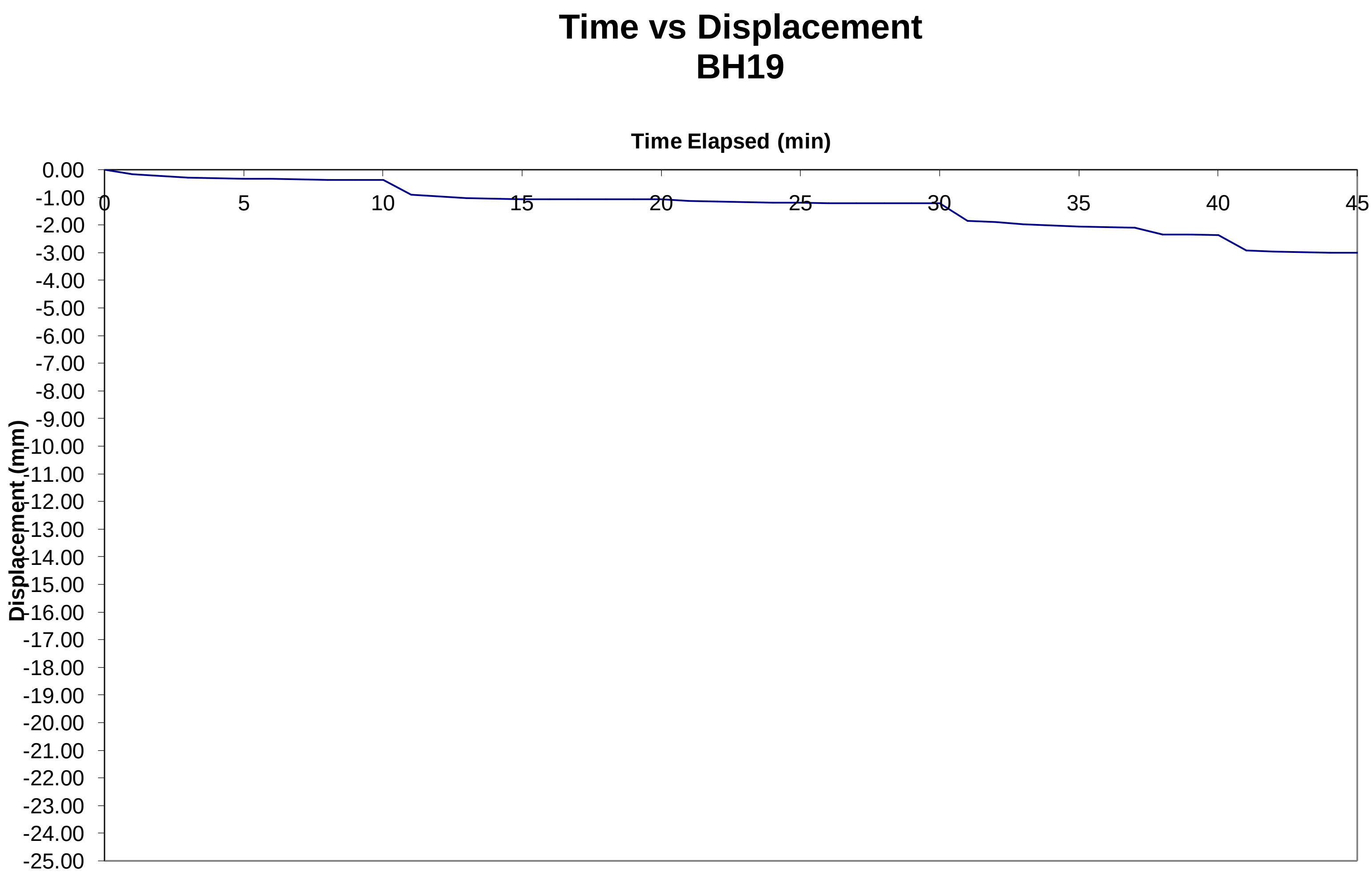
Key:
D = Disturbed Sample
U = Undisturbed Sample
B = Bulk Sample
J = Jar Sample
W = Water Sample
S = Standard Penetration Test (Split Spoon)
C = Standard Penetration Test (Cone)
▽ = Water Strike (m)
▼ = Steady Water Level (m)

Project: Lostock Works, Cheshire
Client: Viridor Limited
Logged: GJS
Checked: RS
Date: 22/04/2009
Approved: RS
Field Book Ref: GS09/01
Plant: Competitor Rig
Scale: 1:50
Drawing Ref: WS11

Appendix D

Plate Bearing Test Results

Time (mins)	Pressure (kN/m^2)	Disp 1 (mm)	Disp 2 (mm)	Disp 3 (mm)	Displacement (mm)	Movement (mm)
0	0	0.00	0.00	0.00	**0.00**	0.00
1	7	0.19	0.24	0.08	**-0.17**	0.00
2	7	0.24	0.38	0.08	**-0.23**	0.23
3	7	0.32	0.43	0.11	**-0.29**	0.05
4	7	0.32	0.46	0.16	**-0.32**	0.03
5	7	0.32	0.49	0.19	**-0.33**	0.02
6	7	0.32	0.49	0.19	**-0.33**	0.00
7	7	0.32	0.51	0.19	**-0.34**	0.01
8	7	0.41	0.51	0.19	**-0.37**	0.03
9	7	0.41	0.51	0.19	**-0.37**	0.00
10	7	0.41	0.51	0.19	**-0.37**	0.00
11	14	0.89	1.19	0.62	**-0.90**	0.53
12	14	0.89	1.24	0.78	**-0.97**	0.07
13	14	0.89	1.27	0.92	**-1.03**	0.05
14	14	0.92	1.30	0.95	**-1.05**	0.03
15	14	0.92	1.32	0.95	**-1.06**	0.01
16	14	0.92	1.35	0.95	**-1.07**	0.01
17	14	0.95	1.35	0.95	**-1.08**	0.01
18	14	0.95	1.35	0.95	**-1.08**	0.00
19	14	0.95	1.35	0.95	**-1.08**	0.00
20	14	0.95	1.35	0.95	**-1.08**	0.00
21	28	1.19	1.27	0.94	**-1.13**	0.05
22	28	1.20	1.31	0.95	**-1.15**	0.02
23	28	1.21	1.33	0.97	**-1.17**	0.02
24	28	1.22	1.34	0.98	**-1.18**	0.01
25	28	1.24	1.34	1.01	**-1.20**	0.01
26	28	1.27	1.34	1.02	**-1.21**	0.02
27	28	1.28	1.34	1.03	**-1.22**	0.01
28	28	1.30	1.34	1.03	**-1.22**	0.00
29	28	1.30	1.34	1.03	**-1.22**	0.00
30	28	1.30	1.34	1.03	**-1.22**	0.00
31	56	1.87	2.15	1.55	**-1.86**	0.63
32	56	1.91	2.21	1.58	**-1.90**	0.04
33	56	2.02	2.24	1.64	**-1.97**	0.07
34	56	2.09	2.27	1.69	**-2.02**	0.05
35	56	2.11	2.33	1.74	**-2.06**	0.04
36	56	2.14	2.36	1.76	**-2.09**	0.03
37	56	2.14	2.38	1.79	**-2.10**	0.01
38	56	2.87	2.38	1.79	**-2.34**	0.24
39	56	2.89	2.38	1.79	**-2.35**	0.01
40	56	2.92	2.38	1.79	**-2.36**	0.01
41	113	2.94	3.35	2.47	**-2.92**	0.56
42	113	2.96	3.41	2.51	**-2.96**	0.04


Time vs Displacement
BH19
Time Elapsed (min)
Displacement (mm)
0 5 10 15 20 25 30 35 40 45
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
-11.00
-12.00
-13.00
-14.00
-15.00
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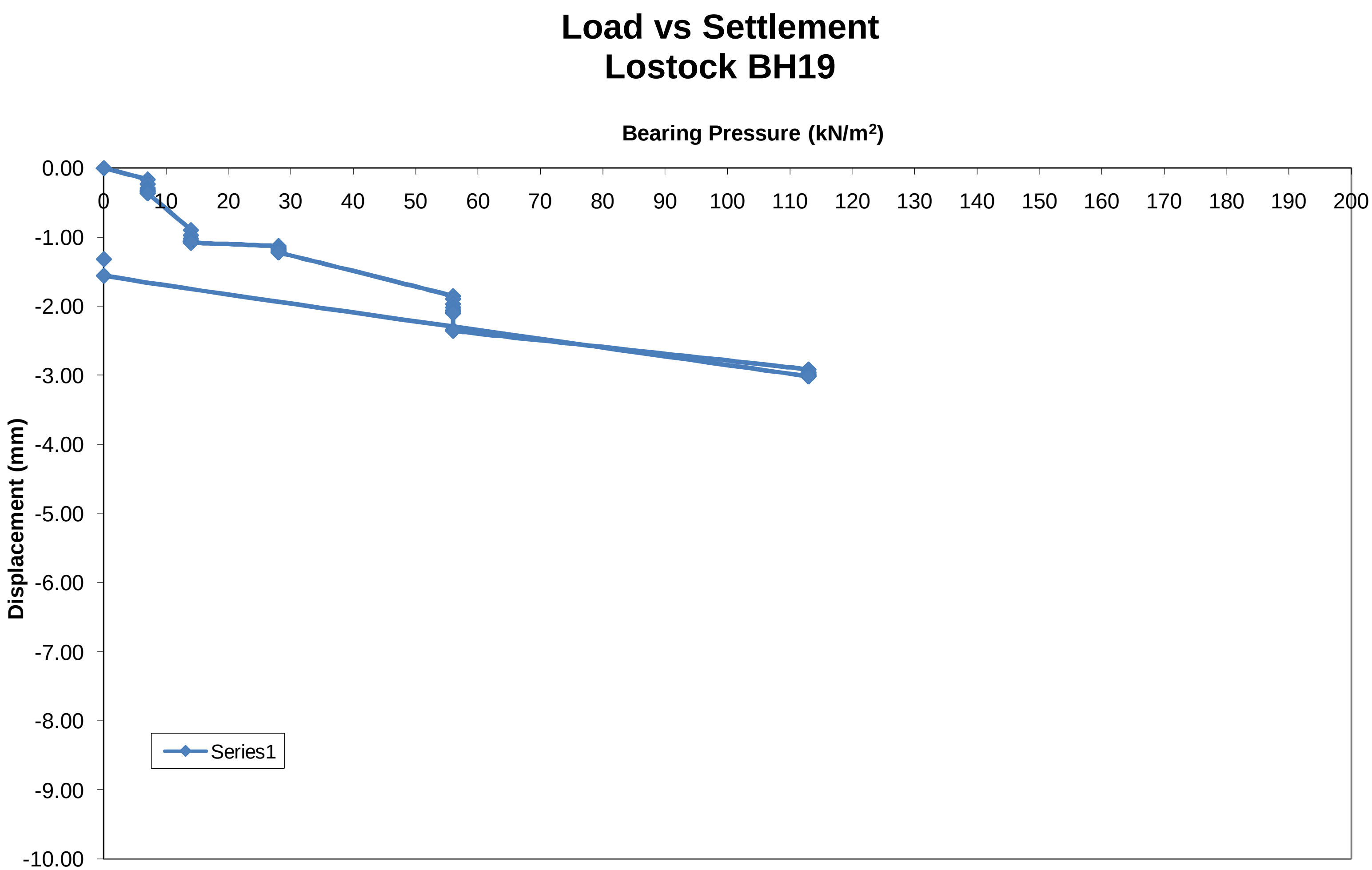
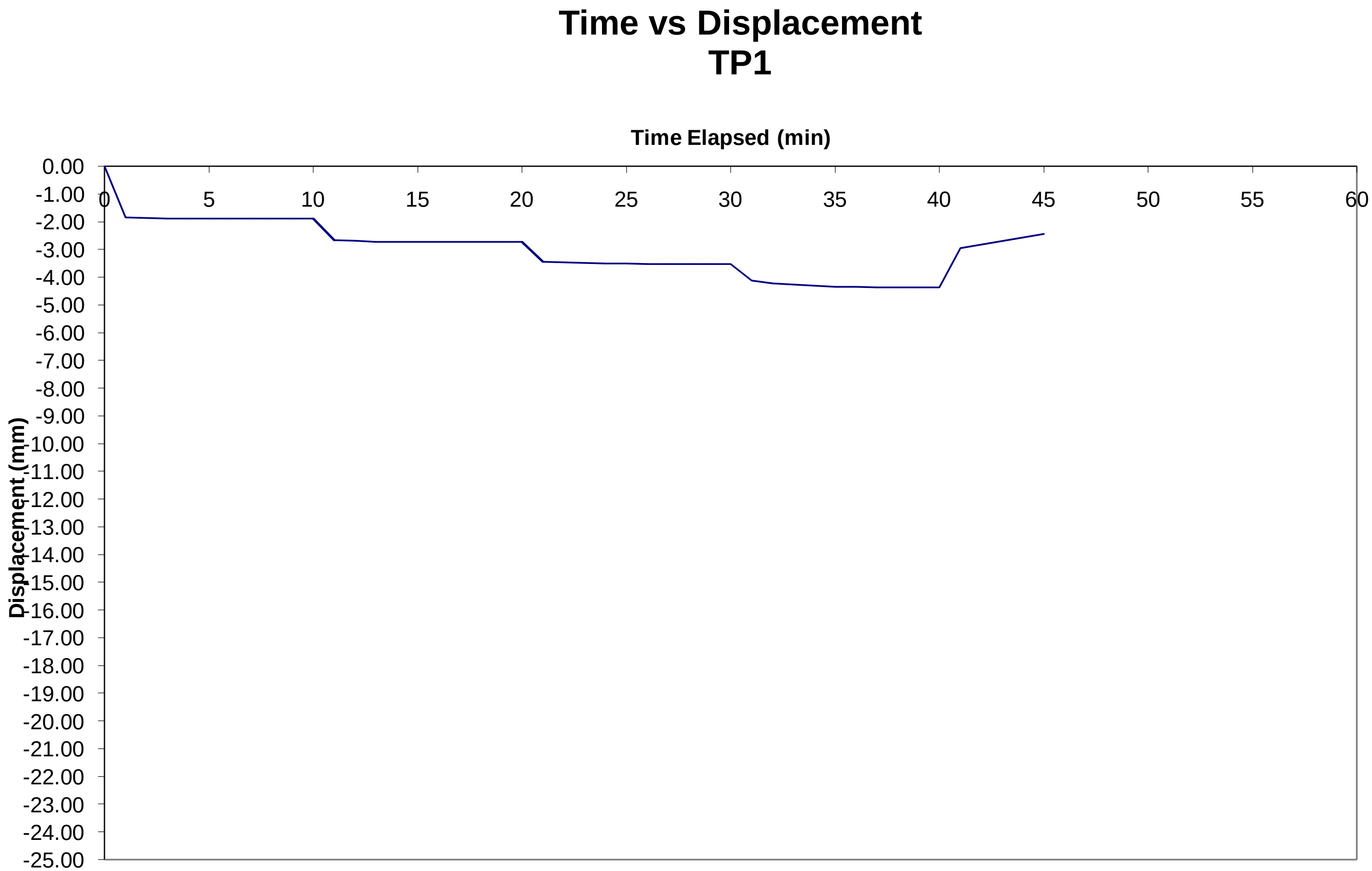
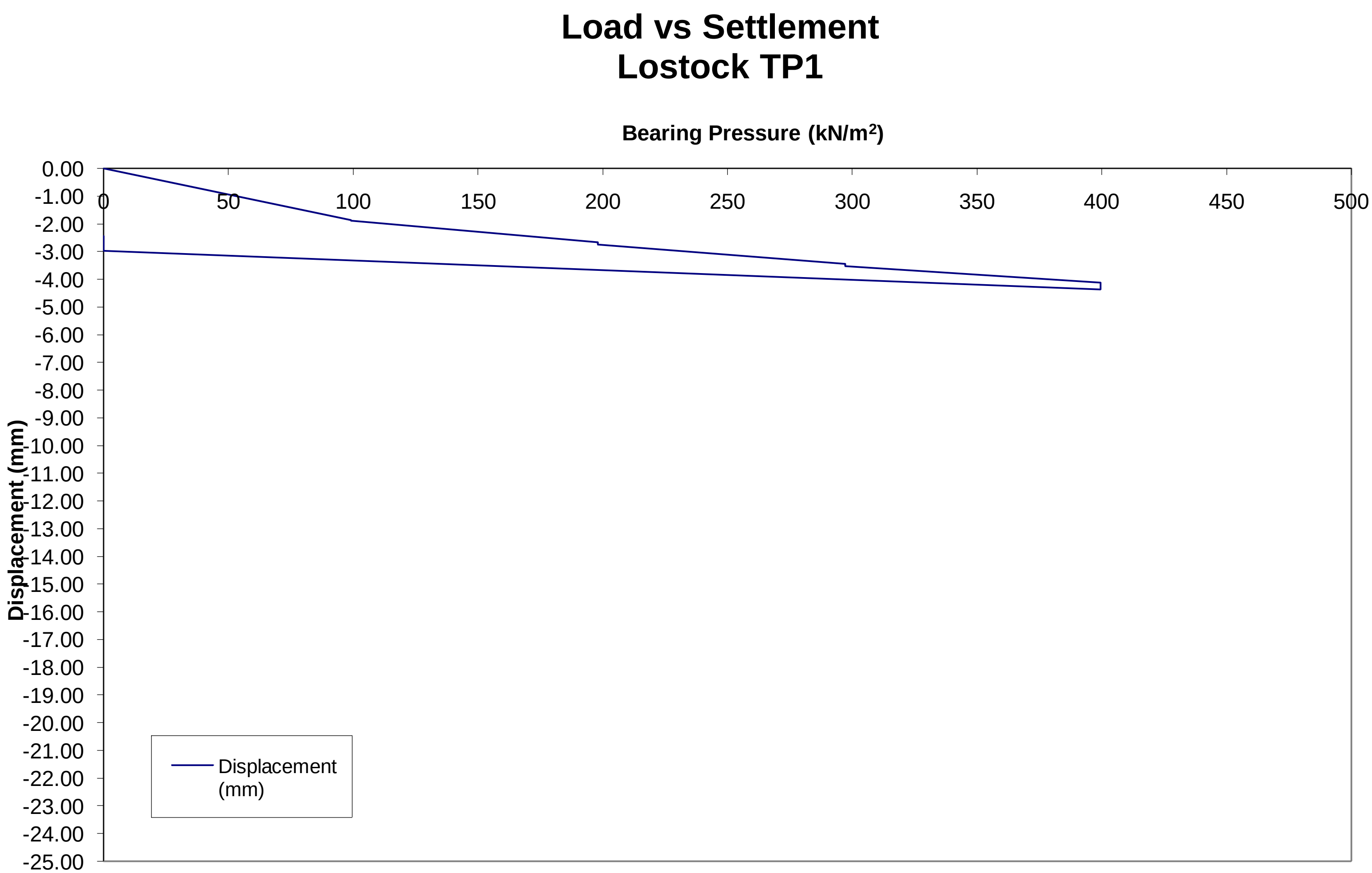
-24.00
-25.00


Load vs Settlement
Lostock BH19
Bearing Pressure (kN/m²)
Displacement (mm)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
Series1

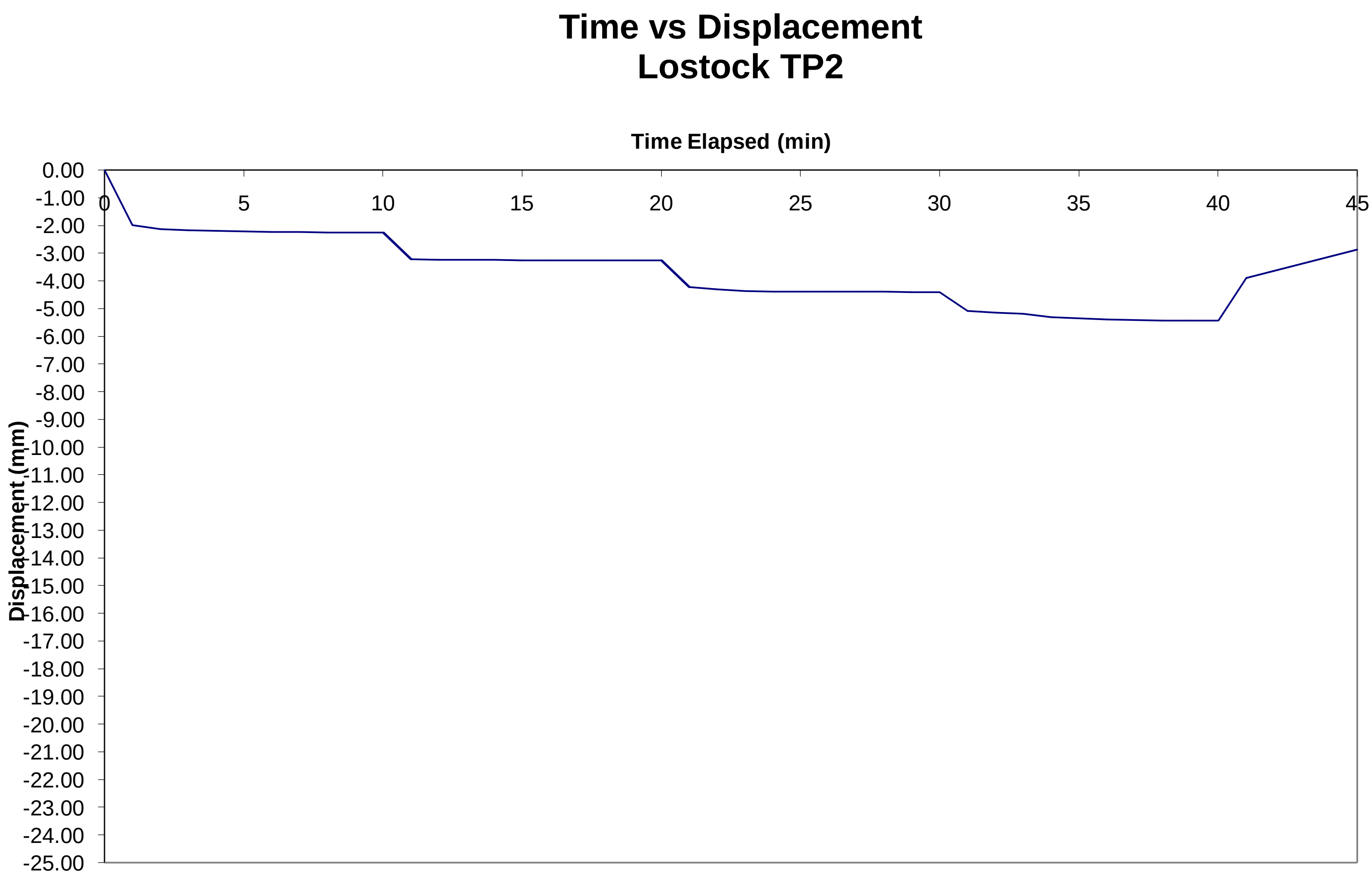
Time (mins)	Pressure (kN/m^2)	Disp 1 (mm)	Disp 2 (mm)	Disp 3 (mm)	Displacement (mm)	Movement (mm)
0	0	0.00	0.00	0.00	**0.00**	0.00
1	99	2.51	2.11	0.94	**-1.85**	0.00
2	99	2.53	2.12	0.95	**-1.87**	1.87
3	99	2.54	2.13	0.96	**-1.88**	0.01
4	99	2.54	2.14	0.96	**-1.88**	0.00
5	99	2.54	2.15	0.96	**-1.88**	0.00
6	99	2.54	2.15	0.96	**-1.88**	0.00
7	99	2.54	2.15	0.96	**-1.88**	0.00
8	99	2.54	2.15	0.96	**-1.88**	0.00
9	99	2.54	2.15	0.96	**-1.88**	0.00
10	99	2.54	2.15	0.96	**-1.88**	0.00
11	198	3.65	2.91	1.43	**-2.66**	0.78
12	198	3.71	2.92	1.45	**-2.69**	0.03
13	198	3.75	2.92	1.48	**-2.72**	0.02
14	198	3.77	2.93	1.49	**-2.73**	0.01
15	198	3.78	2.93	1.49	**-2.73**	0.00
16	198	3.78	2.93	1.49	**-2.73**	0.00
17	198	3.78	2.93	1.49	**-2.73**	0.00
18	198	3.78	2.93	1.49	**-2.73**	0.00
19	198	3.78	2.93	1.49	**-2.73**	0.00
20	198	3.78	2.93	1.49	**-2.73**	0.00
21	297	4.77	3.56	2.01	**-3.45**	0.71
22	297	4.78	3.61	2.01	**-3.47**	0.02
23	297	4.79	3.64	2.02	**-3.48**	0.02
24	297	4.82	3.65	2.02	**-3.50**	0.01
25	297	4.85	3.65	2.02	**-3.51**	0.01
26	297	4.87	3.66	2.02	**-3.52**	0.01
27	297	4.89	3.66	2.02	**-3.52**	0.01
28	297	4.91	3.66	2.02	**-3.53**	0.01
29	297	4.91	3.66	2.02	**-3.53**	0.00
30	297	4.91	3.66	2.02	**-3.53**	0.00
31	400	5.93	4.06	2.38	**-4.12**	0.59
32	400	6.16	4.09	2.43	**-4.23**	0.10
33	400	6.23	4.12	2.45	**-4.27**	0.04
34	400	6.29	4.16	2.48	**-4.31**	0.04
35	400	6.34	4.18	2.49	**-4.34**	0.03
36	400	6.35	4.19	2.52	**-4.35**	0.02
37	400	6.36	4.19	2.52	**-4.36**	0.00
38	400	6.37	4.19	2.52	**-4.36**	0.00
39	400	6.37	4.19	2.52	**-4.36**	0.00
40	400	6.37	4.19	2.52	**-4.36**	0.00
41	0	4.15	3.02	1.71	**-2.96**	-1.40
45	0	3.65	2.33	1.33	**-2.44**	-0.52

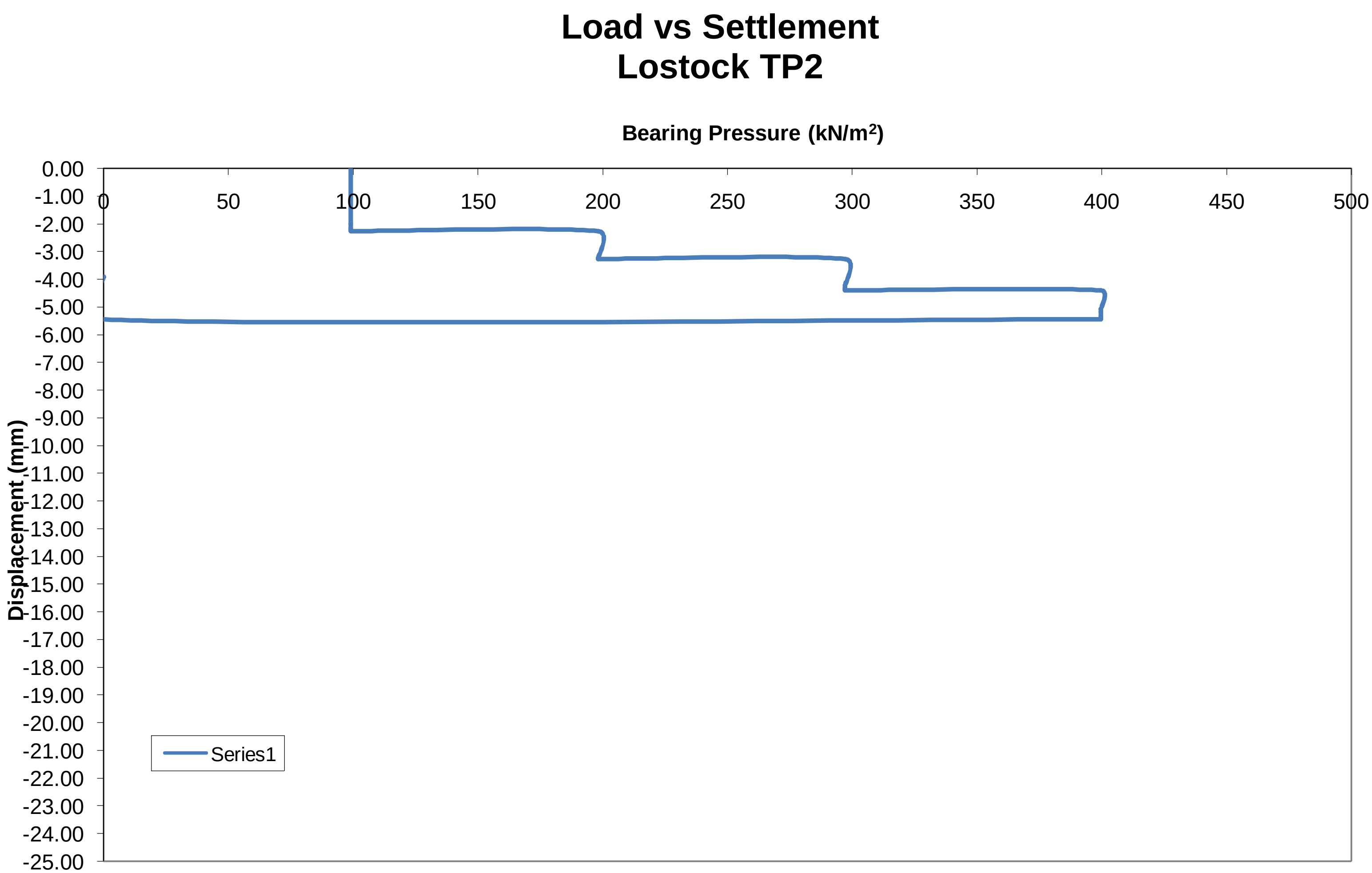

Time vs Displacement
TP1
Time Elapsed (min)
Displacement (mm)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
-11.00
-12.00
-13.00
-14.00
-15.00
-16.00
-17.00
-18.00
-19.00
-20.00
-21.00
-22.00
-23.00
-24.00
-25.00
0
5
10
15
20
25
30
35
40
45
50
55
60


Load vs Settlement
Lostock TP1
Bearing Pressure (kN/m²)
0
50
100
150
200
250
300
350
400
450
500
Displacement (mm)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
-11.00
-12.00
-13.00
-14.00
-15.00
-16.00
-17.00
-18.00
-19.00
-20.00
-21.00
-22.00
-23.00
-24.00
-25.00
Displacement (mm)

Lostock TP2

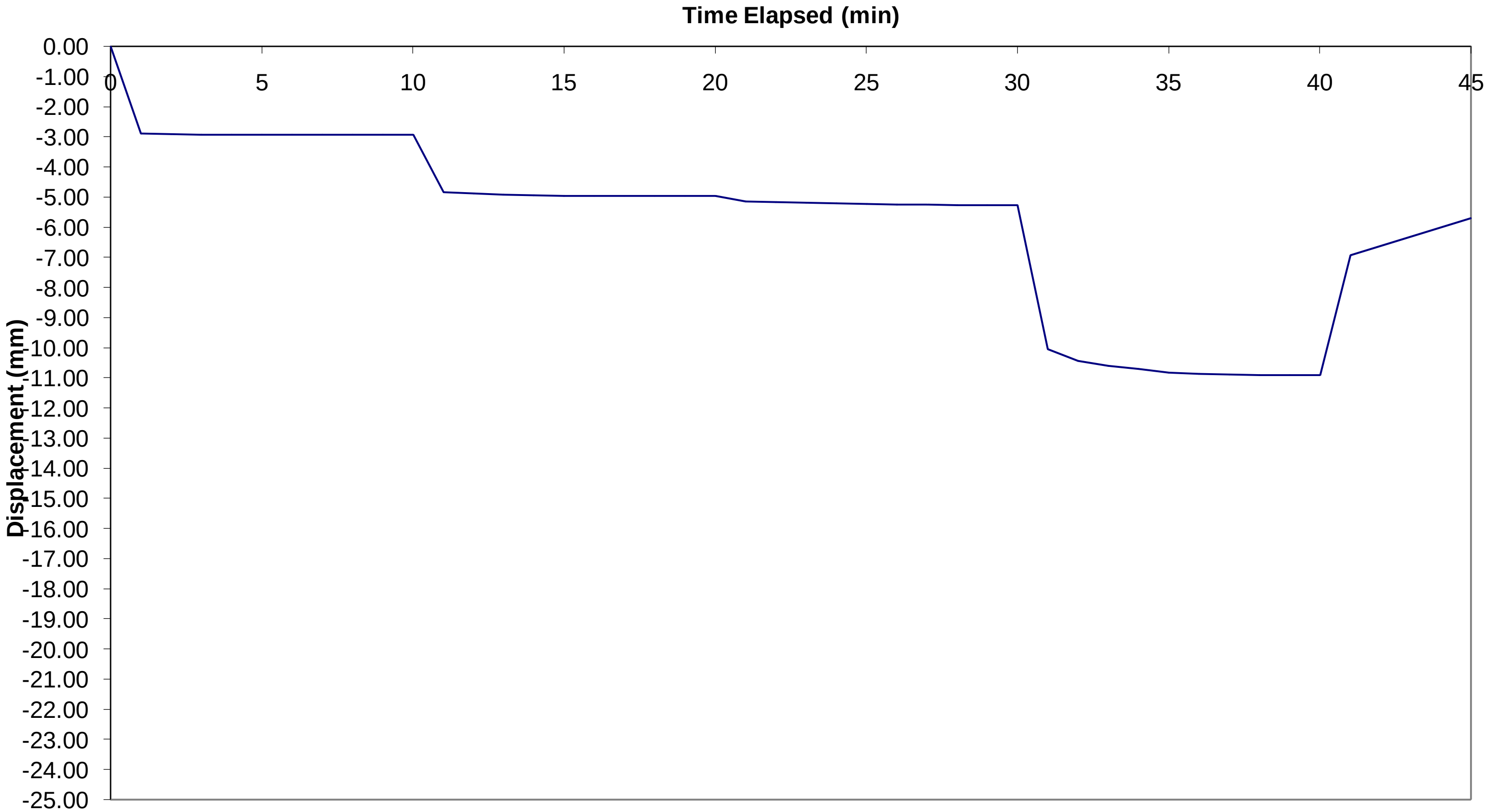
Time (mins)	Pressure (kN/m^2)	Disp 1 (mm)	Disp 2 (mm)	Disp 3 (mm)	Displacement (mm)	Movement (mm)
0	0	0.00	0.00	0.00	**0.00**	0.00
1	99	2.28	1.46	2.22	**-1.99**	0.00
2	99	2.32	1.47	2.60	**-2.13**	2.13
3	99	2.34	1.48	2.70	**-2.17**	0.04
4	99	2.35	1.48	2.75	**-2.19**	0.02
5	99	2.36	1.48	2.79	**-2.21**	0.02
6	99	2.36	1.48	2.84	**-2.23**	0.02
7	99	2.36	1.48	2.88	**-2.24**	0.01
8	99	2.36	1.48	2.90	**-2.25**	0.01
9	99	2.36	1.48	2.91	**-2.25**	0.00
10	99	2.36	1.48	2.92	**-2.25**	0.00
11	198	3.63	2.37	3.68	**-3.23**	0.97
12	198	3.63	2.39	3.68	**-3.23**	0.01
13	198	3.63	2.42	3.68	**-3.24**	0.01
14	198	3.56	2.45	3.68	**-3.23**	-0.01
15	198	3.63	2.47	3.68	**-3.26**	0.03
16	198	3.63	2.47	3.68	**-3.26**	0.00
17	198	3.63	2.47	3.68	**-3.26**	0.00
18	198	3.63	2.47	3.68	**-3.26**	0.00
19	198	3.63	2.47	3.68	**-3.26**	0.00
20	198	3.63	2.47	3.68	**-3.26**	0.00
21	297	4.73	3.14	4.78	**-4.22**	0.96
22	297	4.89	3.22	4.80	**-4.30**	0.09
23	297	4.91	3.23	4.93	**-4.36**	0.05
24	297	4.97	3.23	4.93	**-4.38**	0.02
25	297	4.98	3.23	4.93	**-4.38**	0.00
26	297	4.98	3.23	4.93	**-4.38**	0.00
27	297	4.98	3.27	4.93	**-4.39**	0.01
28	297	4.98	3.27	4.93	**-4.39**	0.00
29	297	4.98	3.27	4.94	**-4.40**	0.00
30	297	4.98	3.27	4.94	**-4.40**	0.00
31	400	5.75	3.82	5.66	**-5.08**	0.68
32	400	5.89	3.87	5.69	**-5.15**	0.07
33	400	5.95	3.89	5.72	**-5.19**	0.04
34	400	6.01	3.93	5.99	**-5.31**	0.12
35	400	6.09	3.95	6.03	**-5.36**	0.05
36	400	6.11	3.98	6.09	**-5.39**	0.04
37	400	6.13	4.00	6.11	**-5.41**	0.02
38	400	6.15	4.01	6.12	**-5.43**	0.01
39	400	6.15	4.02	6.12	**-5.43**	0.00
40	400	6.15	4.03	6.12	**-5.43**	0.00
41	0	4.28	2.41	4.99	**-3.89**	-1.54
45	0	3.18	1.56	3.89	**-2.88**	-1.02


Time vs Displacement
Lostock TP2
Time Elapsed (min)
Displacement (mm)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
-11.00
-12.00
-13.00
-14.00
-15.00
-16.00
-17.00
-18.00
-19.00
-20.00
-21.00
-22.00
-23.00
-24.00
-25.00
0
5
10
15
20
25
30
35
40
45

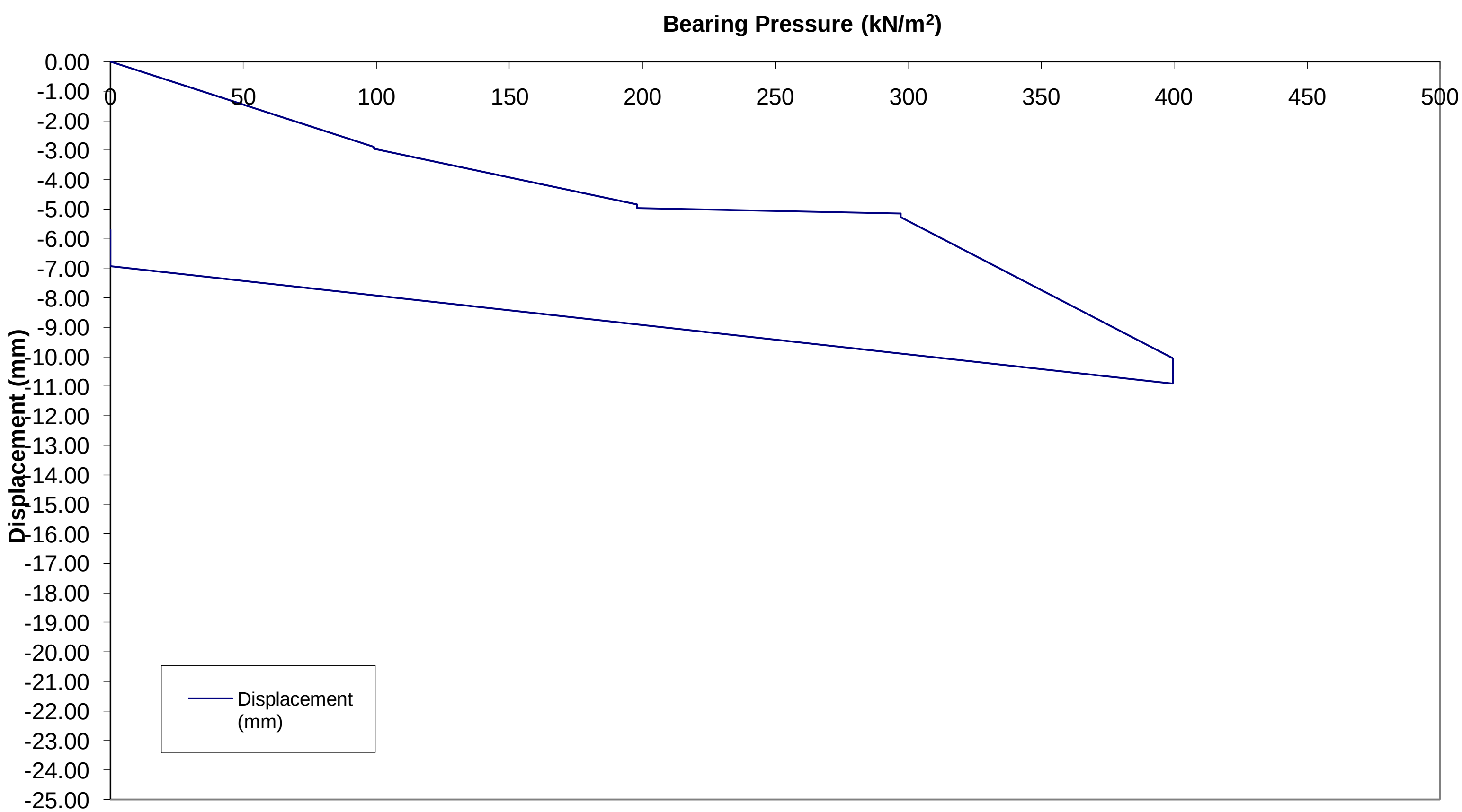

Load vs Settlement
Lostock TP2
Bearing Pressure (kN/m²)
Displacement (mm)
0 50 100 150 200 250 300 350 400 450 500
0.00 -1.00 -2.00 -3.00 -4.00 -5.00 -6.00 -7.00 -8.00 -9.00 -10.00 -11.00 -12.00 -13.00 -14.00 -15.00 -16.00 -17.00 -18.00 -19.00 -20.00 -21.00 -22.00 -23.00 -24.00 -25.00
Series1

Time (mins)	**Pressure (kN/m^2)**	**Disp 1 (mm)**	**Disp 2 (mm)**	**Disp 3 (mm)**	**Displacement (mm)**	**Movement (mm)**
0	0	0.00	0.00	0.00	**0.00**	0.00
1	99	3.92	3.29	1.47	**-2.89**	0.00
2	99	3.95	3.31	1.48	**-2.91**	2.91
3	99	3.96	3.32	1.50	**-2.93**	0.02
4	99	3.96	3.34	1.50	**-2.93**	0.01
5	99	3.96	3.35	1.50	**-2.94**	0.01
6	99	3.96	3.35	1.50	**-2.94**	0.00
7	99	3.96	3.35	1.50	**-2.94**	0.00
8	99	3.96	3.35	1.50	**-2.94**	0.00
9	99	3.96	3.35	1.50	**-2.94**	0.00
10	99	3.96	3.35	1.50	**-2.94**	0.00
11	198	6.62	5.27	2.59	**-4.83**	1.89
12	198	6.72	5.29	2.63	**-4.88**	0.05
13	198	6.80	5.29	2.68	**-4.92**	0.04
14	198	6.83	5.31	2.70	**-4.95**	0.02
15	198	6.85	5.31	2.70	**-4.95**	0.01
16	198	6.85	5.31	2.70	**-4.95**	0.00
17	198	6.85	5.31	2.70	**-4.95**	0.00
18	198	6.85	5.31	2.70	**-4.95**	0.00
19	198	6.85	5.31	2.70	**-4.95**	0.00
20	198	6.85	5.31	2.70	**-4.95**	0.00
21	297	7.11	5.30	2.99	**-5.14**	0.18
22	297	7.12	5.38	2.99	**-5.17**	0.03
23	297	7.14	5.42	3.01	**-5.19**	0.02
24	297	7.18	5.44	3.01	**-5.21**	0.02
25	297	7.23	5.44	3.01	**-5.22**	0.01
26	297	7.26	5.45	3.01	**-5.24**	0.01
27	297	7.29	5.45	3.01	**-5.25**	0.01
28	297	7.32	5.45	3.01	**-5.26**	0.01
29	297	7.32	5.45	3.01	**-5.26**	0.00
30	297	7.32	5.45	3.01	**-5.26**	0.00
31	400	13.88	9.50	6.78	**-10.05**	4.79
32	400	14.41	9.57	7.31	**-10.43**	0.38
33	400	14.58	9.64	7.56	**-10.59**	0.16
34	400	14.72	9.73	7.66	**-10.70**	0.11
35	400	14.84	9.78	7.89	**-10.84**	0.13
36	400	14.86	9.80	7.93	**-10.86**	0.03
37	400	14.88	9.80	7.95	**-10.88**	0.01
38	400	14.91	9.80	7.99	**-10.90**	0.02
39	400	14.91	9.80	8.02	**-10.91**	0.01
40	400	14.91	9.80	8.03	**-10.91**	0.00
41	0	9.71	7.07	4.00	**-6.93**	-3.99
45	0	8.54	5.45	3.11	**-5.70**	-1.22

Time vs Displacement TP3



Load vs Settlement
Lostock TP3

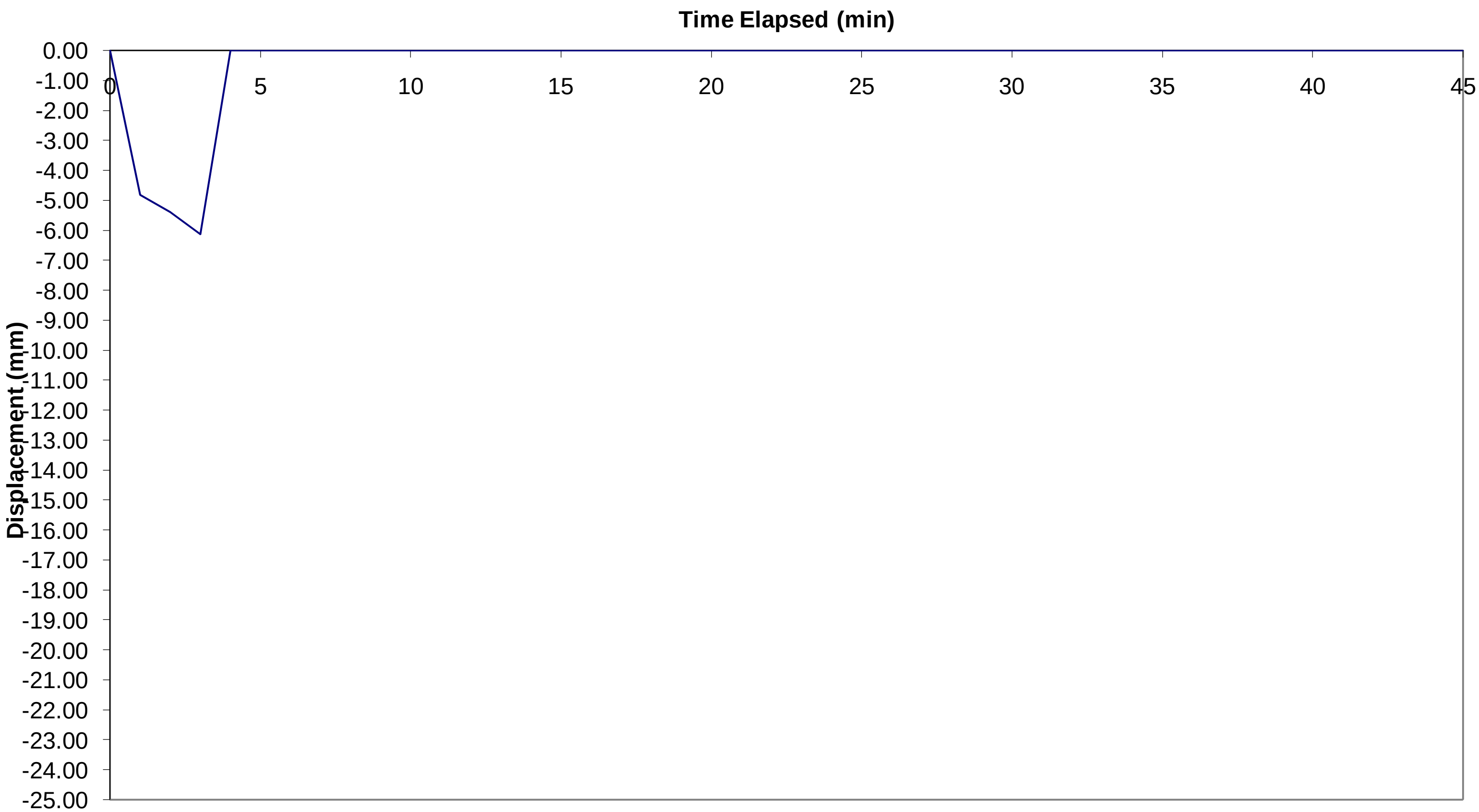


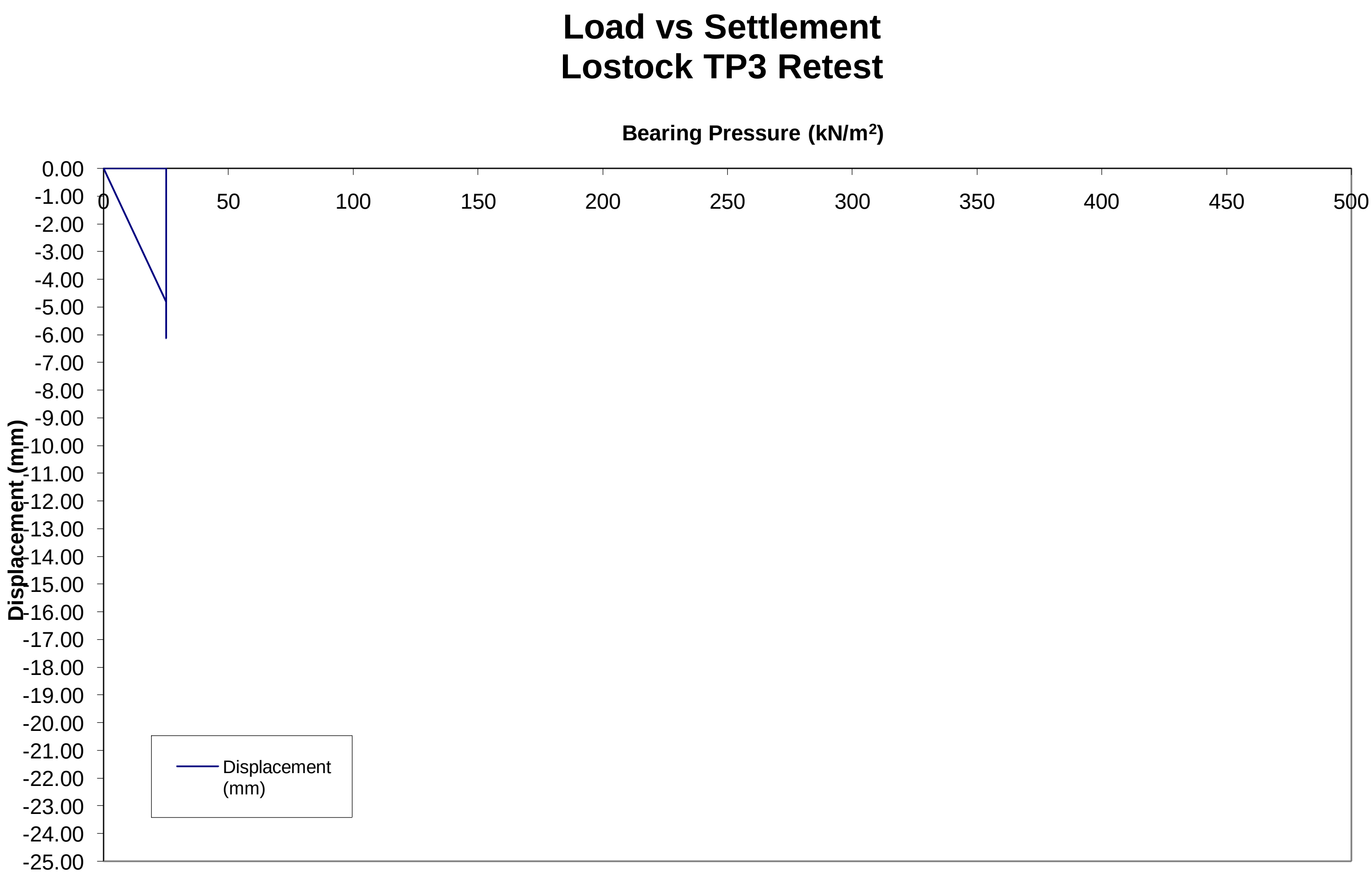
Lostock

TP3 Retest

Time (mins)	Pressure (kN/m^2)	Disp 1 (mm)	Disp 2 (mm)	Disp 3 (mm)	Displacement (mm)	Movement (mm)
0	0	0.00	0.00	0.00	**0.00**	0.00
1	25	4.56	5.44	4.44	**-4.81**	0.00
2	25	4.78	6.17	5.22	**-5.39**	5.39
3	25	5.02	7.32	6.02	**-6.12**	0.73
4	25	0.00	0.00	0.00	**0.00**	-6.12
5	25	0.00	0.00	0.00	**0.00**	0.00
6	25	0.00	0.00	0.00	**0.00**	0.00
7	25	0.00	0.00	0.00	**0.00**	0.00
8	25	0.00	0.00	0.00	**0.00**	0.00
9	25	0.00	0.00	0.00	**0.00**	0.00
10	25	0.00	0.00	0.00	**0.00**	0.00
11	0	0.00	0.00	0.00	**0.00**	0.00
12	0	0.00	0.00	0.00	**0.00**	0.00
13	0	0.00	0.00	0.00	**0.00**	0.00
14	0	0.00	0.00	0.00	**0.00**	0.00
15	0	0.00	0.00	0.00	**0.00**	0.00
16	0	0.00	0.00	0.00	**0.00**	0.00
17	0	0.00	0.00	0.00	**0.00**	0.00
18	0	0.00	0.00	0.00	**0.00**	0.00
19	0	0.00	0.00	0.00	**0.00**	0.00
20	0	0.00	0.00	0.00	**0.00**	0.00
21	0	0.00	0.00	0.00	**0.00**	0.00
22	0	0.00	0.00	0.00	**0.00**	0.00
23	0	0.00	0.00	0.00	**0.00**	0.00
24	0	0.00	0.00	0.00	**0.00**	0.00
25	0	0.00	0.00	0.00	**0.00**	0.00
26	0	0.00	0.00	0.00	**0.00**	0.00
27	0	0.00	0.00	0.00	**0.00**	0.00
28	0	0.00	0.00	0.00	**0.00**	0.00
29	0	0.00	0.00	0.00	**0.00**	0.00
30	0	0.00	0.00	0.00	**0.00**	0.00
31	0	0.00	0.00	0.00	**0.00**	0.00
32	0	0.00	0.00	0.00	**0.00**	0.00
33	0	0.00	0.00	0.00	**0.00**	0.00
34	0	0.00	0.00	0.00	**0.00**	0.00
35	0	0.00	0.00	0.00	**0.00**	0.00
36	0	0.00	0.00	0.00	**0.00**	0.00
37	0	0.00	0.00	0.00	**0.00**	0.00
38	0	0.00	0.00	0.00	**0.00**	0.00
39	0	0.00	0.00	0.00	**0.00**	0.00
40	0	0.00	0.00	0.00	**0.00**	0.00
41	0	0.00	0.00	0.00	**0.00**	0.00
45	0	0.00	0.00	0.00	**0.00**	0.00

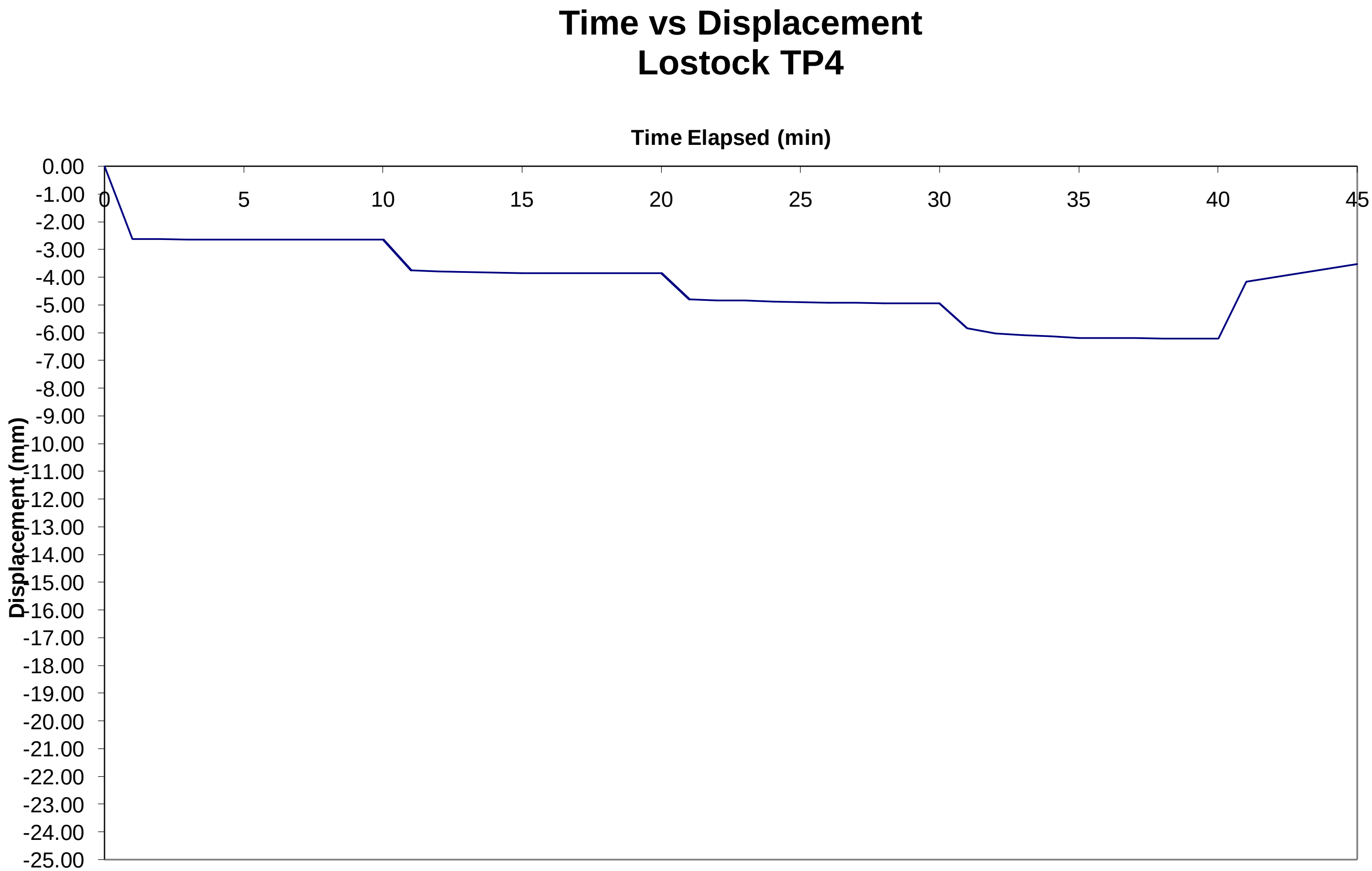
Time vs Displacement
TP3 Retest



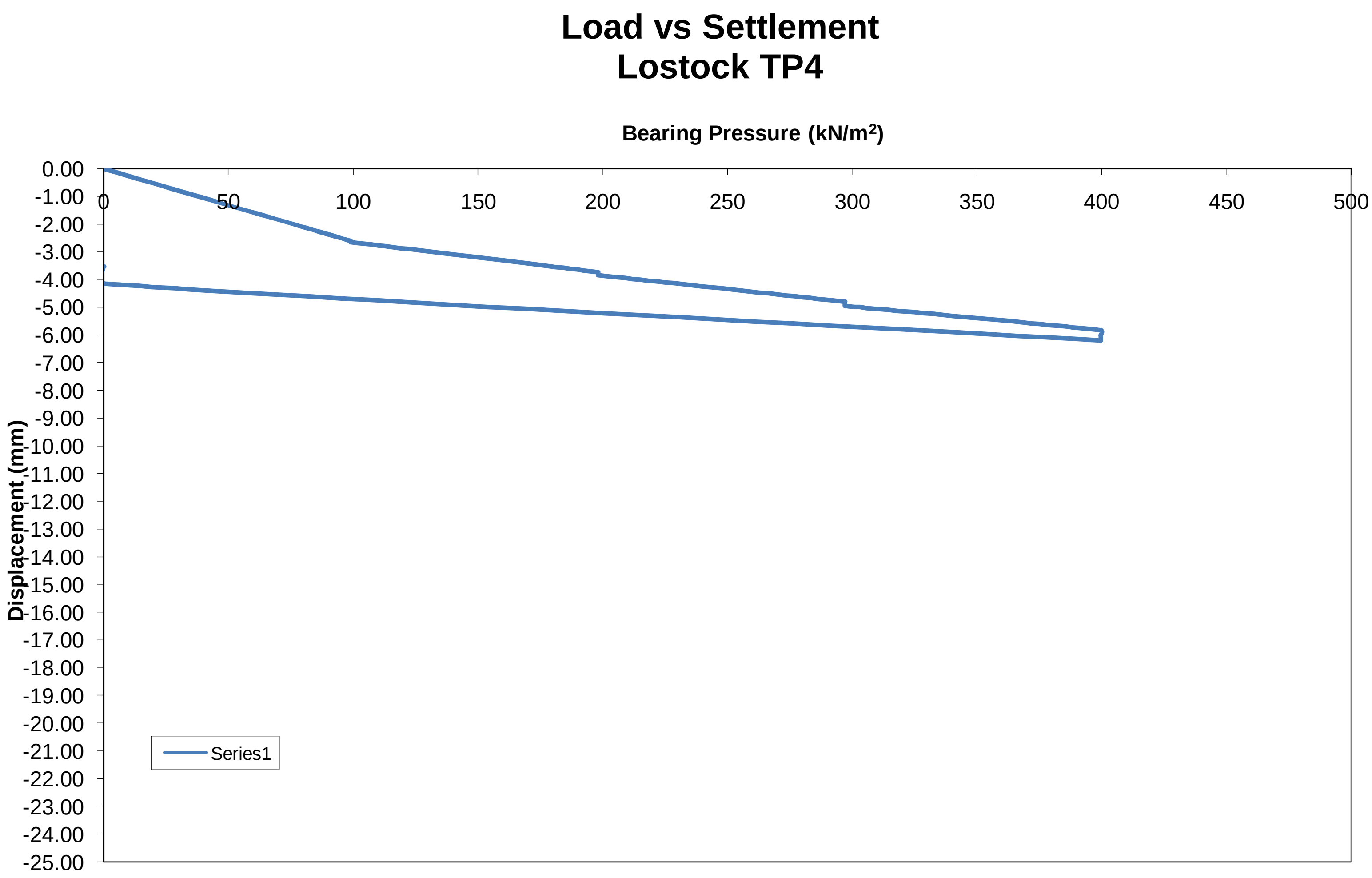


Load vs Settlement
Lostock TP3 Retest
Bearing Pressure (kN/m2)
Displacement (mm)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
-11.00
-12.00
-13.00
-14.00
-15.00
-16.00
-17.00
-18.00
-19.00
-20.00
-21.00
-22.00
-23.00
-24.00
-25.00
0
50
100
150
200
250
300
350
400
450
500
Displacement (mm)

Time (mins)	Pressure (kN/m^2)	Disp 1 (mm)	Disp 2 (mm)	Disp 3 (mm)	Displacement (mm)	Movement (mm)
0	0	0.00	0.00	0.00	**0.00**	0.00
1	99	2.76	2.32	2.76	**-2.61**	0.00
2	99	2.78	2.33	2.78	**-2.63**	2.63
3	99	2.79	2.34	2.79	**-2.64**	0.01
4	99	2.79	2.35	2.79	**-2.65**	0.00
5	99	2.79	2.37	2.79	**-2.65**	0.00
6	99	2.79	2.37	2.79	**-2.65**	0.00
7	99	2.79	2.37	2.79	**-2.65**	0.00
8	99	2.79	2.37	2.79	**-2.65**	0.00
9	99	2.79	2.37	2.79	**-2.65**	0.00
10	99	2.79	2.37	2.79	**-2.65**	0.00
11	198	4.02	3.20	4.02	**-3.74**	1.09
12	198	4.08	3.21	4.08	**-3.79**	0.05
13	198	4.13	3.21	4.13	**-3.82**	0.03
14	198	4.15	3.22	4.15	**-3.84**	0.02
15	198	4.16	3.22	4.16	**-3.85**	0.01
16	198	4.16	3.22	4.16	**-3.85**	0.00
17	198	4.16	3.22	4.16	**-3.85**	0.00
18	198	4.16	3.22	4.16	**-3.85**	0.00
19	198	4.16	3.22	4.16	**-3.85**	0.00
20	198	4.16	3.22	4.16	**-3.85**	0.00
21	297	5.25	3.92	5.25	**-4.80**	0.96
22	297	5.26	3.97	5.26	**-4.83**	0.03
23	297	5.27	4.00	5.27	**-4.85**	0.02
24	297	5.30	4.02	5.30	**-4.87**	0.03
25	297	5.34	4.02	5.34	**-4.90**	0.02
26	297	5.36	4.03	5.36	**-4.91**	0.02
27	297	5.38	4.03	5.38	**-4.93**	0.01
28	297	5.40	4.03	5.40	**-4.94**	0.01
29	297	5.40	4.03	5.40	**-4.94**	0.00
30	297	5.40	4.03	5.40	**-4.94**	0.00
31	400	6.52	4.47	6.52	**-5.84**	0.89
32	400	6.78	4.50	6.78	**-6.02**	0.18
33	400	6.85	4.53	6.85	**-6.08**	0.06
34	400	6.92	4.58	6.92	**-6.14**	0.06
35	400	6.97	4.60	6.97	**-6.18**	0.04
36	400	6.99	4.61	6.99	**-6.19**	0.01
37	400	7.00	4.61	7.00	**-6.20**	0.01
38	400	7.01	4.61	7.01	**-6.21**	0.01
39	400	7.01	4.61	7.01	**-6.21**	0.00
40	400	7.01	4.61	7.01	**-6.21**	0.00
41	0	4.57	3.32	4.57	**-4.15**	-2.06
45	0	4.02	2.56	4.02	**-3.53**	-0.62



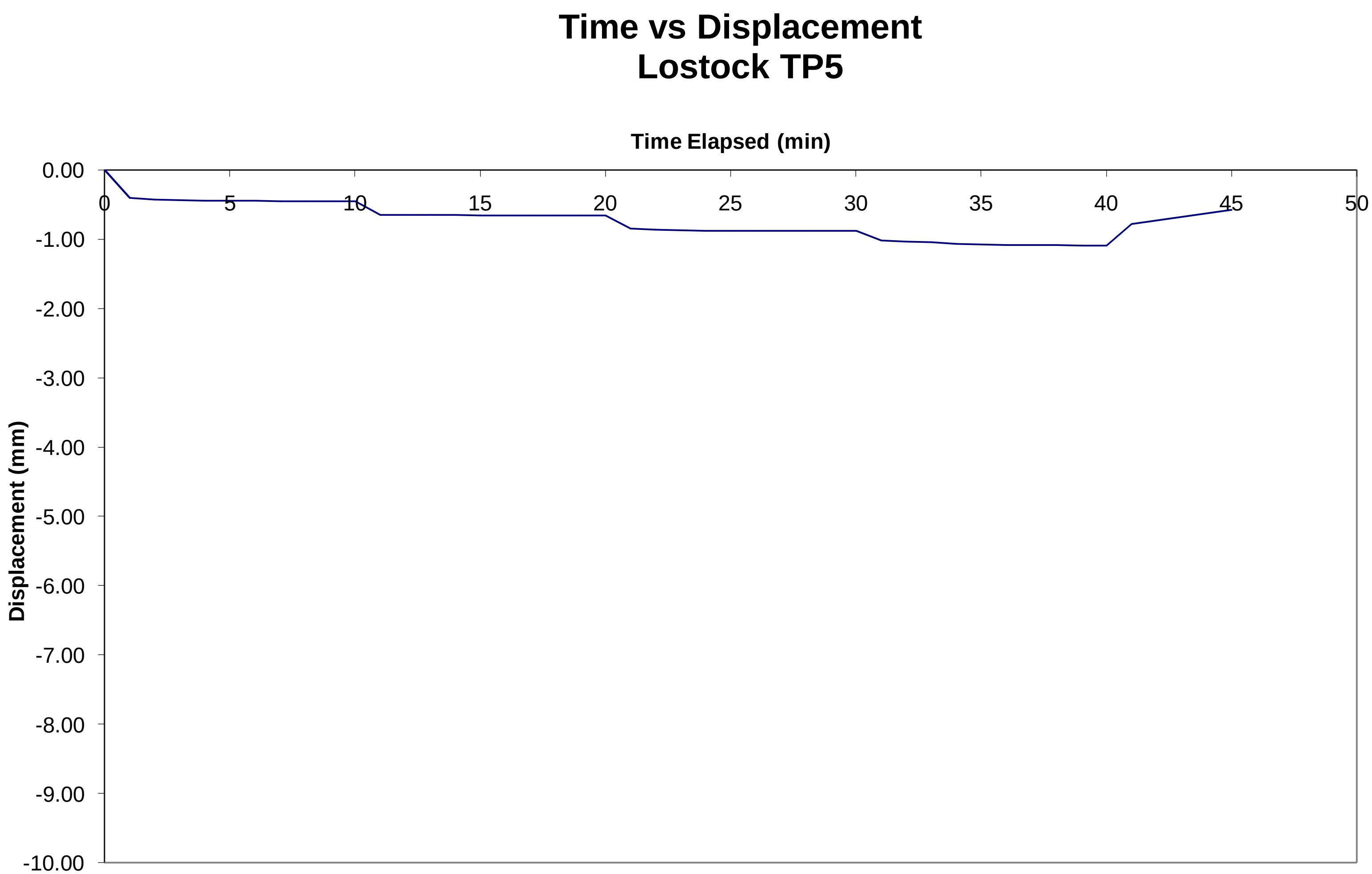
Time vs Displacement
Lostock TP4
Time Elapsed (min)
Displacement (mm)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
-11.00
-12.00
-13.00
-14.00
-15.00
-16.00
-17.00
-18.00
-19.00
-20.00
-21.00
-22.00
-23.00
-24.00
-25.00
0
5
10
15
20
25
30
35
40
45

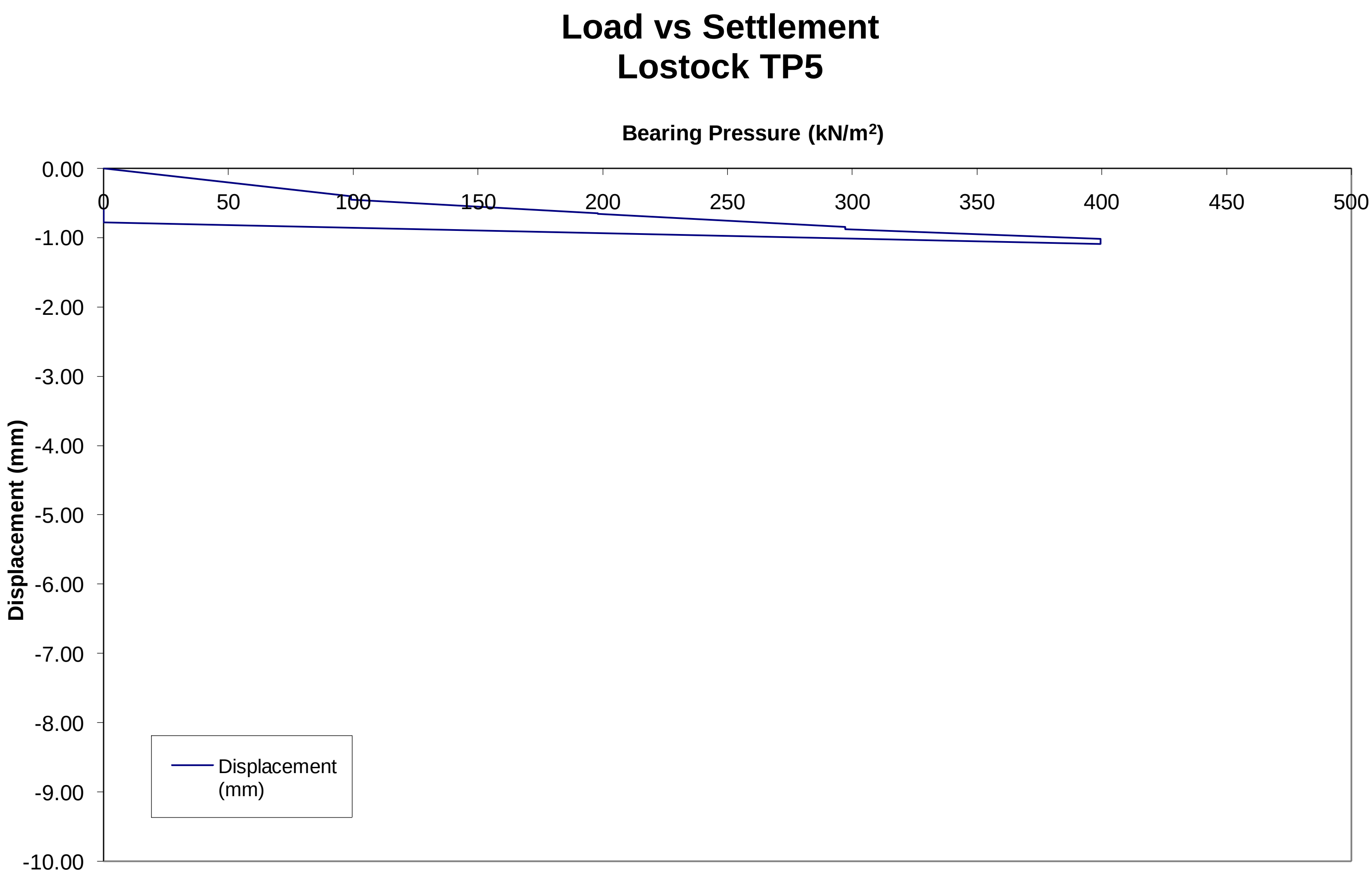


Load vs Settlement
Lostock TP4
Bearing Pressure (kN/m2)
Displacement (mm)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
-11.00
-12.00
-13.00
-14.00
-15.00
-16.00
-17.00
-18.00
-19.00
-20.00
-21.00
-22.00
-23.00
-24.00
-25.00
0
50
100
150
200
250
300
350
400
450
500
Series1

Lostock TP5

Time (mins)	Pressure (kN/m^2)	Disp 1 (mm)	Disp 2 (mm)	Disp 3 (mm)	Displacement (mm)	Movement (mm)
0	0	0.00	0.00	0.00	**0.00**	0.00
1	99	0.46	0.29	0.44	**-0.40**	0.00
2	99	0.46	0.29	0.52	**-0.43**	0.43
3	99	0.47	0.30	0.54	**-0.43**	0.01
4	99	0.47	0.30	0.55	**-0.44**	0.00
5	99	0.47	0.30	0.56	**-0.44**	0.00
6	99	0.47	0.30	0.57	**-0.45**	0.00
7	99	0.47	0.30	0.58	**-0.45**	0.00
8	99	0.47	0.30	0.58	**-0.45**	0.00
9	99	0.47	0.30	0.58	**-0.45**	0.00
10	99	0.47	0.30	0.58	**-0.45**	0.00
11	198	0.73	0.47	0.74	**-0.65**	0.19
12	198	0.73	0.48	0.74	**-0.65**	0.00
13	198	0.73	0.48	0.74	**-0.65**	0.00
14	198	0.71	0.49	0.74	**-0.65**	0.00
15	198	0.73	0.49	0.74	**-0.65**	0.01
16	198	0.73	0.49	0.74	**-0.65**	0.00
17	198	0.73	0.49	0.74	**-0.65**	0.00
18	198	0.73	0.49	0.74	**-0.65**	0.00
19	198	0.73	0.49	0.74	**-0.65**	0.00
20	198	0.73	0.49	0.74	**-0.65**	0.00
21	297	0.95	0.63	0.96	**-0.84**	0.19
22	297	0.98	0.64	0.96	**-0.86**	0.02
23	297	0.98	0.65	0.99	**-0.87**	0.01
24	297	0.99	0.65	0.99	**-0.88**	0.00
25	297	1.00	0.65	0.99	**-0.88**	0.00
26	297	1.00	0.65	0.99	**-0.88**	0.00
27	297	1.00	0.65	0.99	**-0.88**	0.00
28	297	1.00	0.65	0.99	**-0.88**	0.00
29	297	1.00	0.65	0.99	**-0.88**	0.00
30	297	1.00	0.65	0.99	**-0.88**	0.00
31	400	1.15	0.76	1.13	**-1.02**	0.14
32	400	1.18	0.77	1.14	**-1.03**	0.01
33	400	1.19	0.78	1.14	**-1.04**	0.01
34	400	1.20	0.79	1.20	**-1.06**	0.02
35	400	1.22	0.79	1.21	**-1.07**	0.01
36	400	1.22	0.80	1.22	**-1.08**	0.01
37	400	1.23	0.80	1.22	**-1.08**	0.00
38	400	1.23	0.80	1.22	**-1.09**	0.00
39	400	1.23	0.80	1.22	**-1.09**	0.00
40	400	1.23	0.81	1.22	**-1.09**	0.00
41	0	0.86	0.48	1.00	**-0.78**	-0.31
45	0	0.64	0.31	0.78	**-0.58**	-0.20

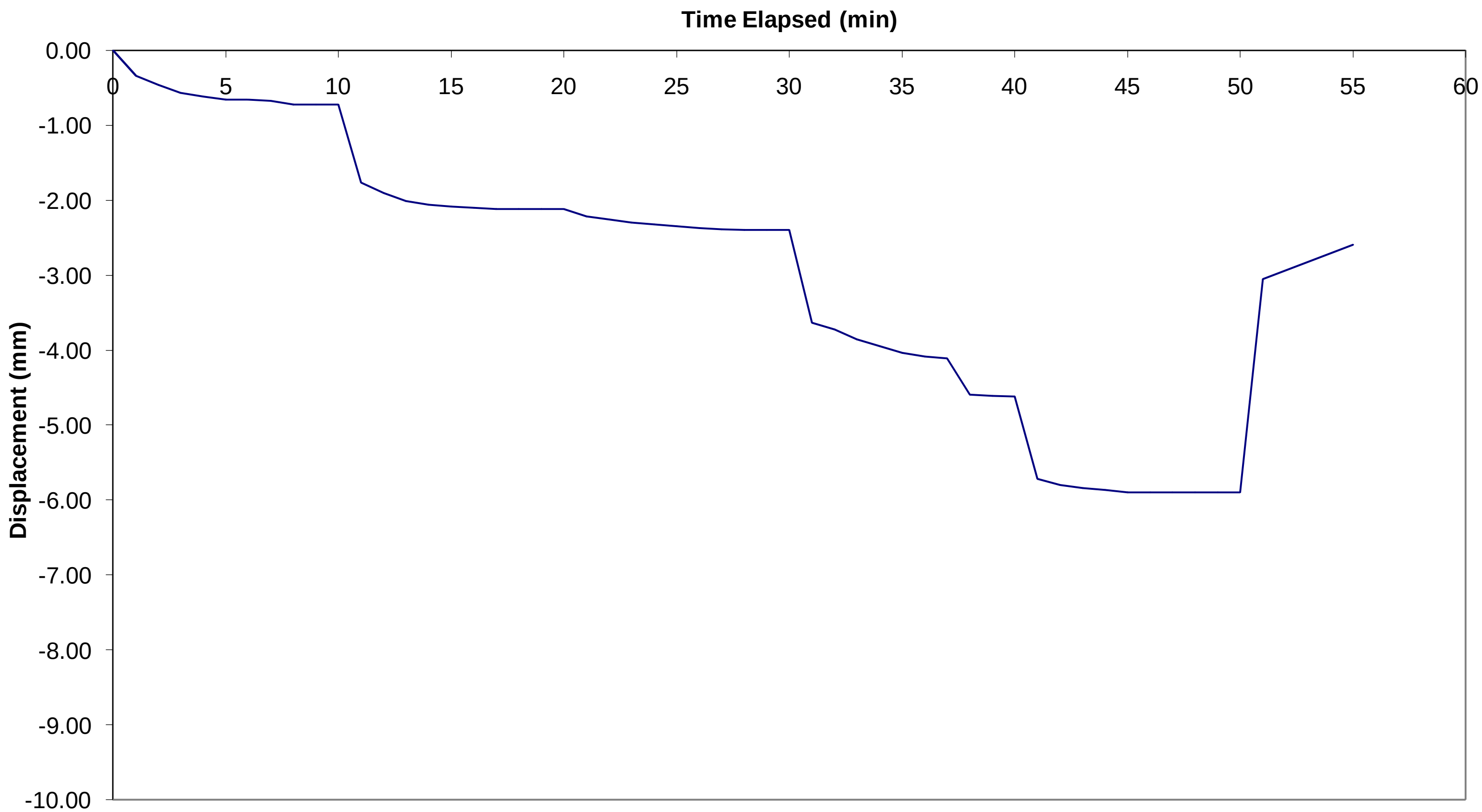

Time vs Displacement
Lostock TP5
Time Elapsed (min)
Displacement (mm)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
0
5
10
15
20
25
30
35
40
45
50


Load vs Settlement
Lostock TP5
Bearing Pressure (kN/m2)
Displacement (mm)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
0
50
100
150
200
250
300
350
400
450
500
Displacement (mm)

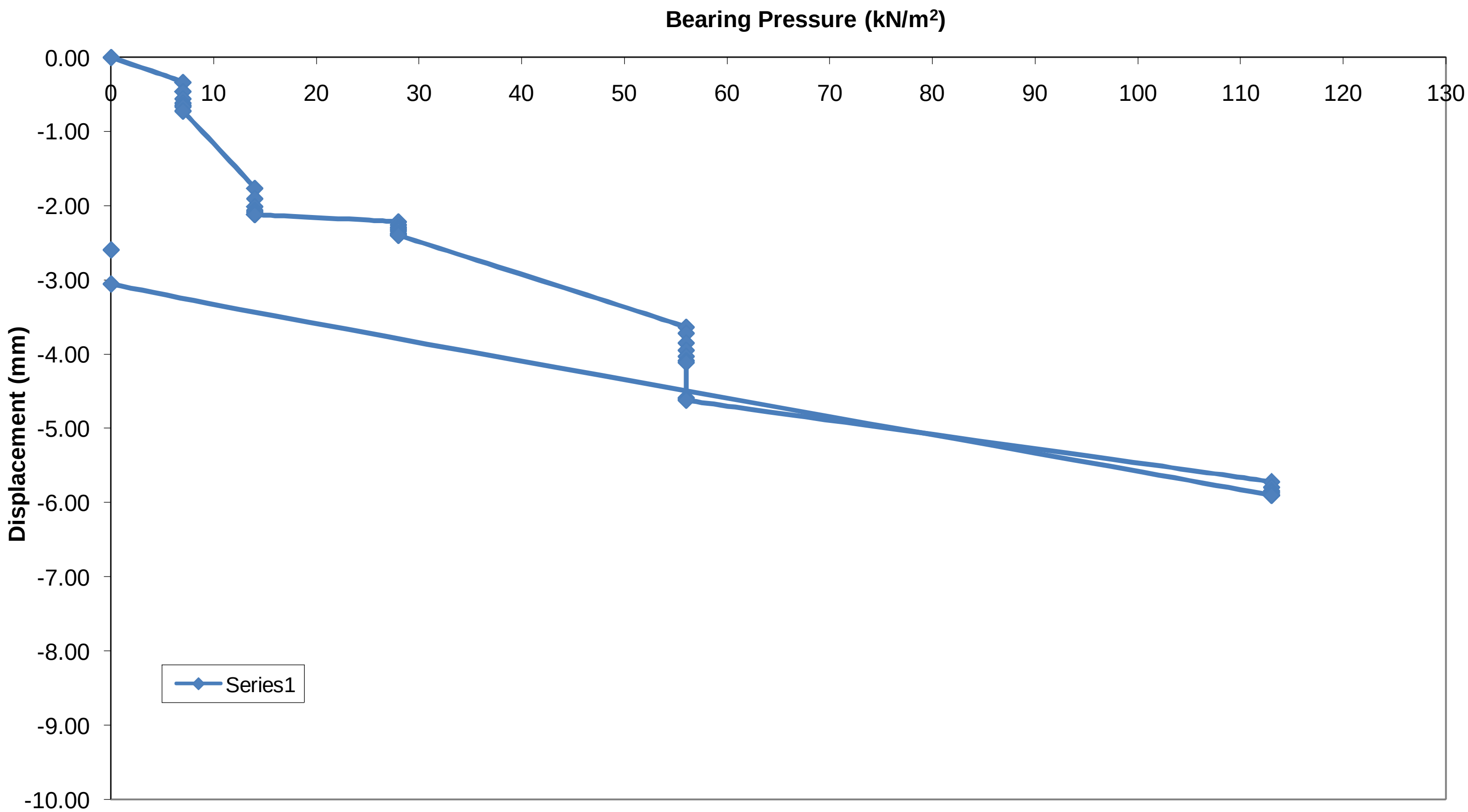
Lostock TP6

Time (mins)	Pressure (kN/m^2)	Disp 1 (mm)	Disp 2 (mm)	Disp 3 (mm)	Displacement (mm)	Movement (mm)
0	0	0.00	0.00	0.00	**0.00**	0.00
1	7	0.37	0.48	0.16	**-0.33**	0.00
2	7	0.48	0.74	0.16	**-0.46**	0.46
3	7	0.63	0.85	0.21	**-0.56**	0.11
4	7	0.63	0.90	0.32	**-0.62**	0.05
5	7	0.63	0.95	0.37	**-0.65**	0.04
6	7	0.63	0.95	0.37	**-0.65**	0.00
7	7	0.63	1.00	0.37	**-0.67**	0.02
8	7	0.79	1.00	0.37	**-0.72**	0.05
9	7	0.79	1.00	0.37	**-0.72**	0.00
10	7	0.79	1.00	0.37	**-0.72**	0.00
11	14	1.74	2.33	1.22	**-1.76**	1.04
12	14	1.74	2.43	1.53	**-1.90**	0.14
13	14	1.74	2.48	1.80	**-2.01**	0.11
14	14	1.80	2.54	1.85	**-2.06**	0.05
15	14	1.80	2.59	1.85	**-2.08**	0.02
16	14	1.80	2.64	1.85	**-2.10**	0.02
17	14	1.85	2.64	1.85	**-2.11**	0.02
18	14	1.85	2.64	1.85	**-2.11**	0.00
19	14	1.85	2.64	1.85	**-2.11**	0.00
20	14	1.85	2.64	1.85	**-2.11**	0.00
21	28	2.33	2.49	1.83	**-2.22**	0.10
22	28	2.35	2.56	1.86	**-2.26**	0.04
23	28	2.37	2.61	1.90	**-2.29**	0.04
24	28	2.40	2.63	1.93	**-2.32**	0.02
25	28	2.42	2.63	1.97	**-2.34**	0.02
26	28	2.49	2.63	2.00	**-2.37**	0.03
27	28	2.51	2.63	2.02	**-2.39**	0.02
28	28	2.54	2.63	2.02	**-2.40**	0.01
29	28	2.54	2.63	2.02	**-2.40**	0.00
30	28	2.54	2.63	2.02	**-2.40**	0.00
31	56	3.67	4.21	3.03	**-3.63**	1.24
32	56	3.74	4.32	3.10	**-3.72**	0.09
33	56	3.95	4.39	3.22	**-3.85**	0.13
34	56	4.09	4.44	3.31	**-3.95**	0.09
35	56	4.14	4.56	3.41	**-4.03**	0.09
36	56	4.18	4.63	3.45	**-4.09**	0.05
37	56	4.18	4.65	3.50	**-4.11**	0.02
38	56	5.62	4.65	3.50	**-4.59**	0.48
39	56	5.66	4.65	3.50	**-4.61**	0.02
40	56	5.71	4.65	3.50	**-4.62**	0.02
41	113	5.76	6.56	4.84	**-5.72**	1.10
42	113	5.80	6.67	4.91	**-5.80**	0.08

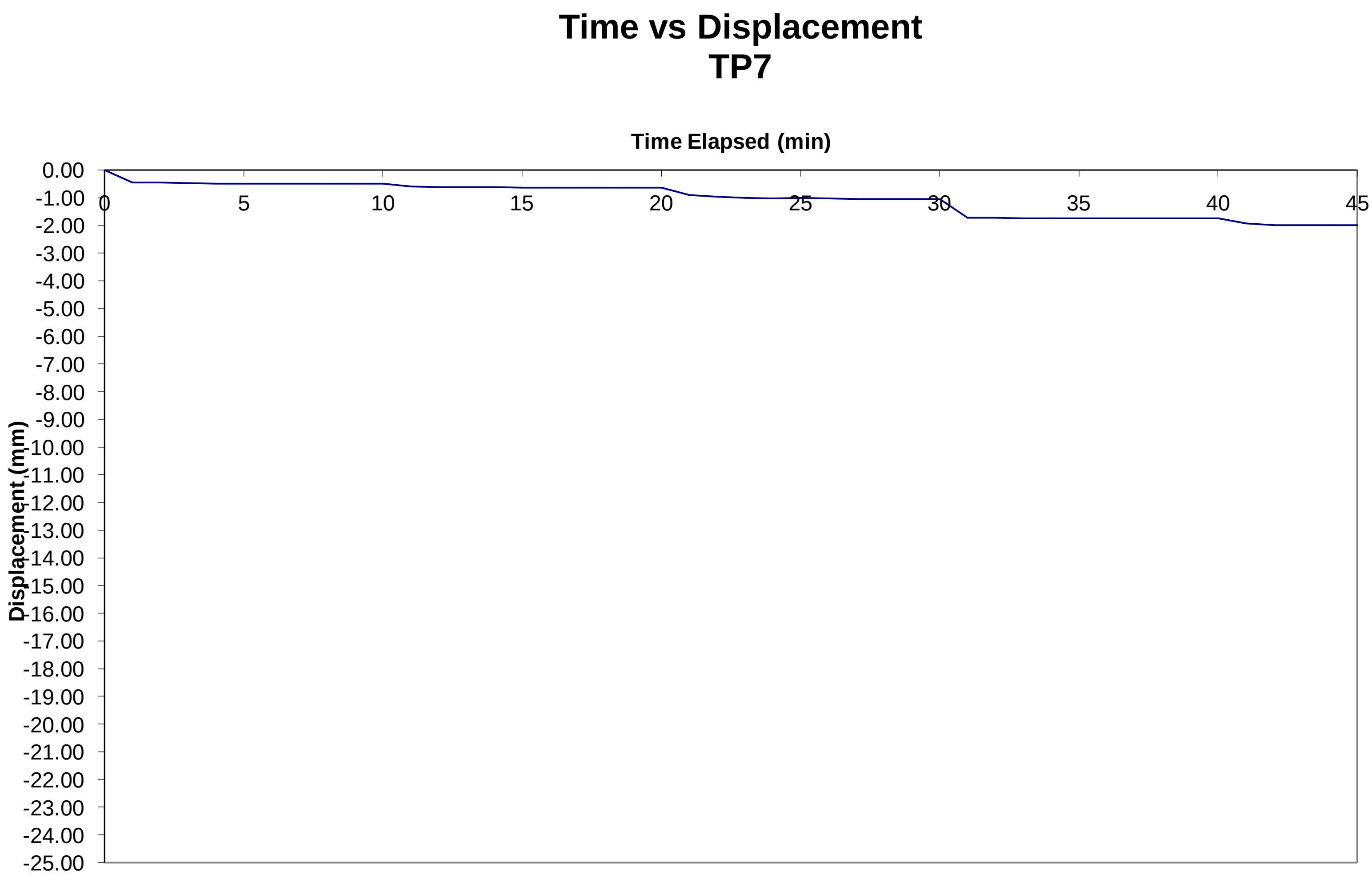
Time vs Displacement
TP6



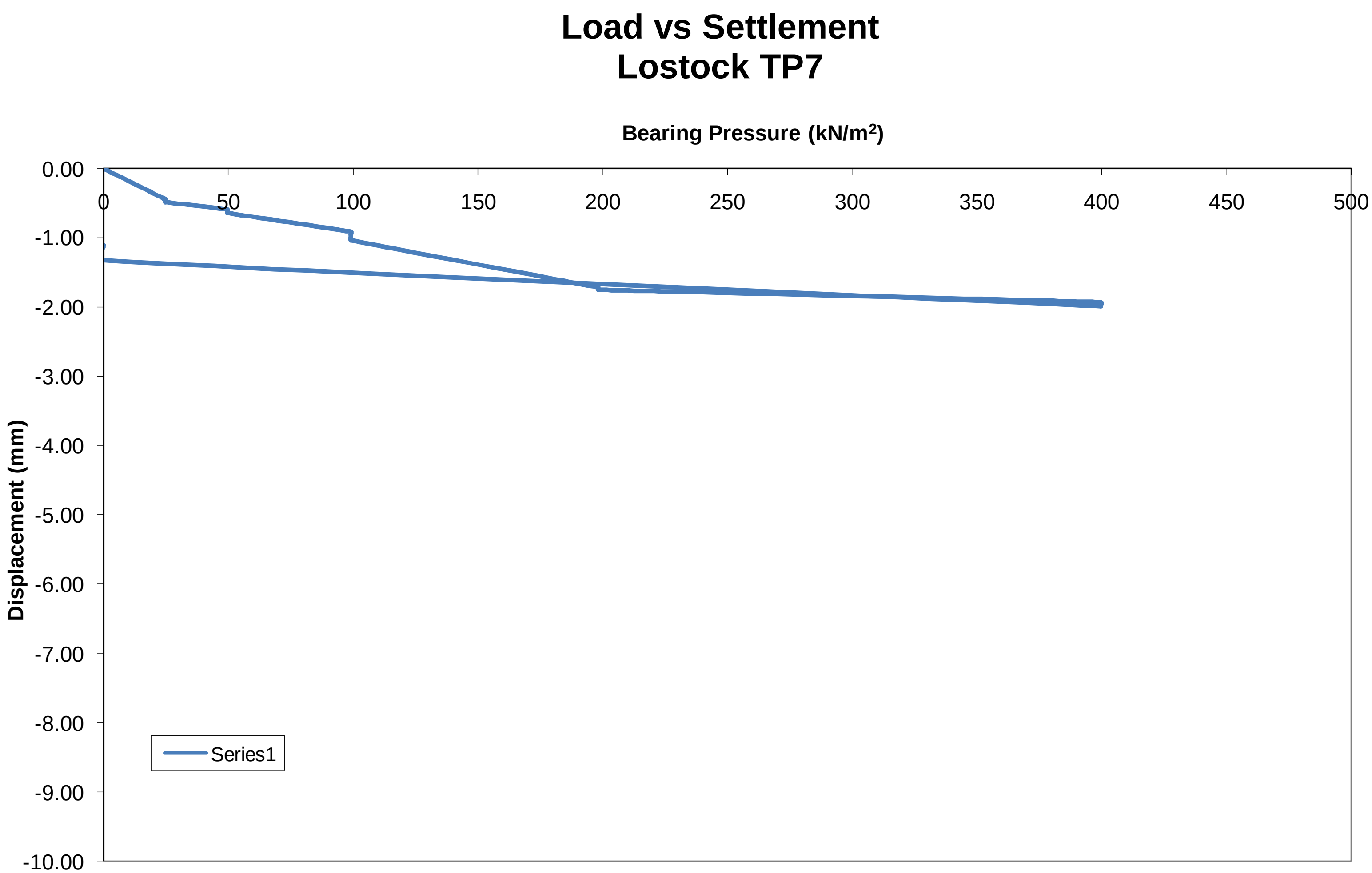
Load vs Settlement
Lostock TP6



Time (mins)	Pressure (kN/m^2)	Disp 1 (mm)	Disp 2 (mm)	Disp 3 (mm)	Displacement (mm)	Movement (mm)
0	0	0.00	0.00	0.00	**0.00**	0.00
1	25	0.38	0.73	0.22	**-0.44**	0.00
2	25	0.39	0.73	0.23	**-0.45**	0.45
3	25	0.42	0.73	0.26	**-0.47**	0.02
4	25	0.43	0.73	0.28	**-0.48**	0.01
5	25	0.45	0.73	0.29	**-0.49**	0.01
6	25	0.45	0.73	0.29	**-0.49**	0.00
7	25	0.45	0.73	0.29	**-0.49**	0.00
8	25	0.45	0.73	0.29	**-0.49**	0.00
9	25	0.45	0.73	0.29	**-0.49**	0.00
10	25	0.45	0.73	0.29	**-0.49**	0.00
11	50	0.64	0.74	0.40	**-0.59**	0.10
12	50	0.65	0.74	0.43	**-0.61**	0.01
13	50	0.65	0.74	0.45	**-0.61**	0.01
14	50	0.67	0.74	0.45	**-0.62**	0.01
15	50	0.67	0.74	0.46	**-0.62**	0.00
16	50	0.68	0.74	0.47	**-0.63**	0.01
17	50	0.69	0.74	0.47	**-0.63**	0.00
18	50	0.71	0.74	0.47	**-0.64**	0.01
19	50	0.72	0.74	0.47	**-0.64**	0.00
20	50	0.72	0.74	0.47	**-0.64**	0.00
21	99	0.81	1.25	0.67	**-0.91**	0.27
22	99	0.89	1.28	0.69	**-0.95**	0.04
23	99	0.92	1.34	0.72	**-0.99**	0.04
24	99	0.93	1.38	0.74	**-1.02**	0.02
25	99	0.95	1.32	0.75	**-1.01**	-0.01
26	99	0.98	1.35	0.76	**-1.03**	0.02
27	99	0.98	1.35	0.78	**-1.04**	0.01
28	99	0.98	1.35	0.78	**-1.04**	0.00
29	99	0.98	1.35	0.78	**-1.04**	0.00
30	99	0.98	1.35	0.78	**-1.04**	0.00
31	198	1.56	1.99	1.59	**-1.71**	0.68
32	198	1.67	2.02	1.44	**-1.71**	0.00
33	198	1.73	2.02	1.46	**-1.74**	0.03
34	198	1.73	2.02	1.47	**-1.74**	0.00
35	198	1.73	2.02	1.49	**-1.75**	0.01
36	198	1.73	2.02	1.49	**-1.75**	0.00
37	198	1.73	2.02	1.49	**-1.75**	0.00
38	198	1.73	2.02	1.49	**-1.75**	0.00
39	198	1.73	2.02	1.49	**-1.75**	0.00
40	198	1.73	2.02	1.49	**-1.75**	0.00
41	400	2.22	2.09	1.49	**-1.93**	0.19
42	400	2.23	2.12	1.59	**-1.98**	0.05



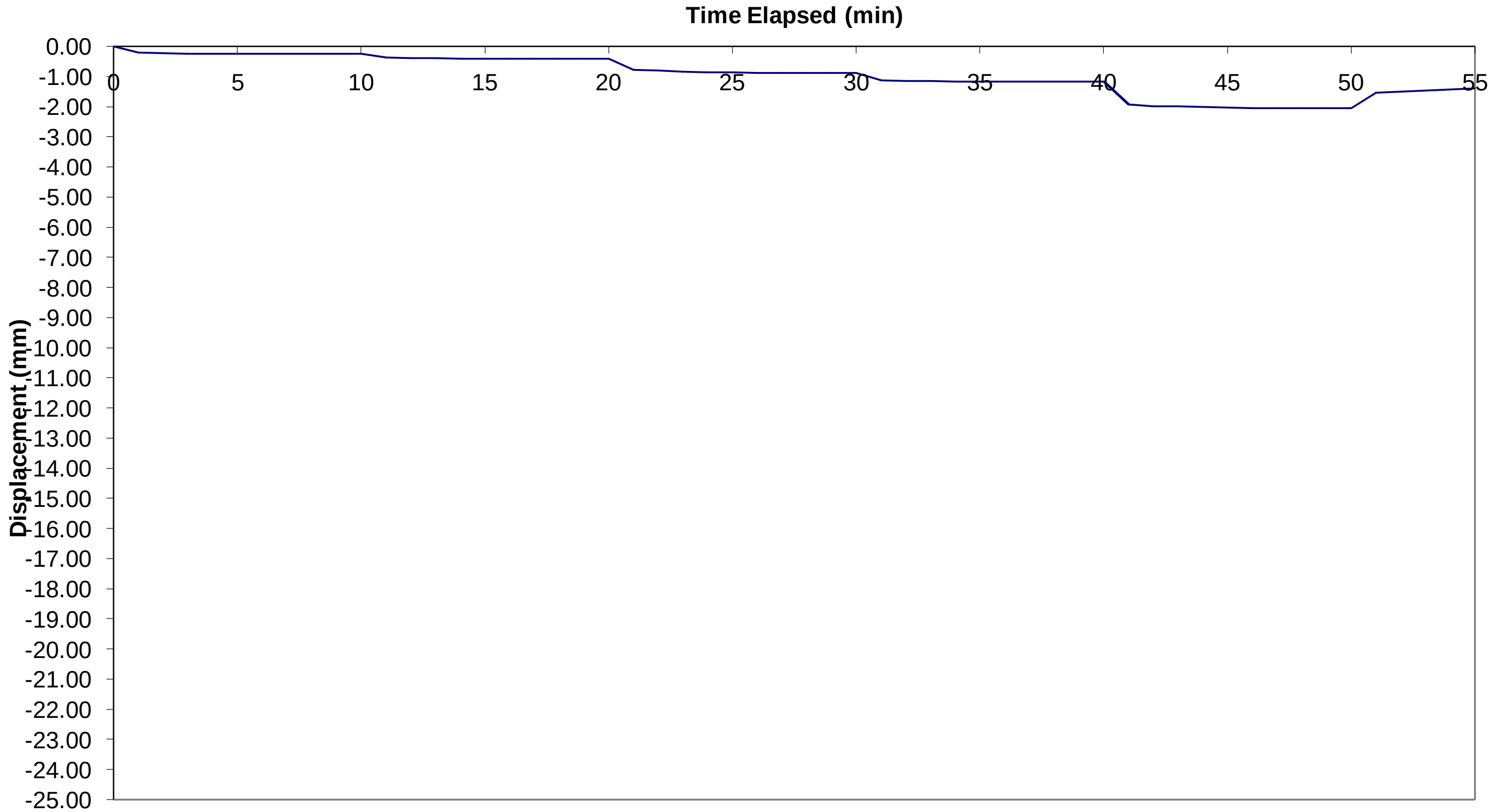
Time vs Displacement
TP7
Time Elapsed (min)
Displacement (mm)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
-11.00
-12.00
-13.00
-14.00
-15.00
-16.00
-17.00
-18.00
-19.00
-20.00
-21.00
-22.00
-23.00
-24.00
-25.00
0
5
10
15
20
25
30
35
40
45

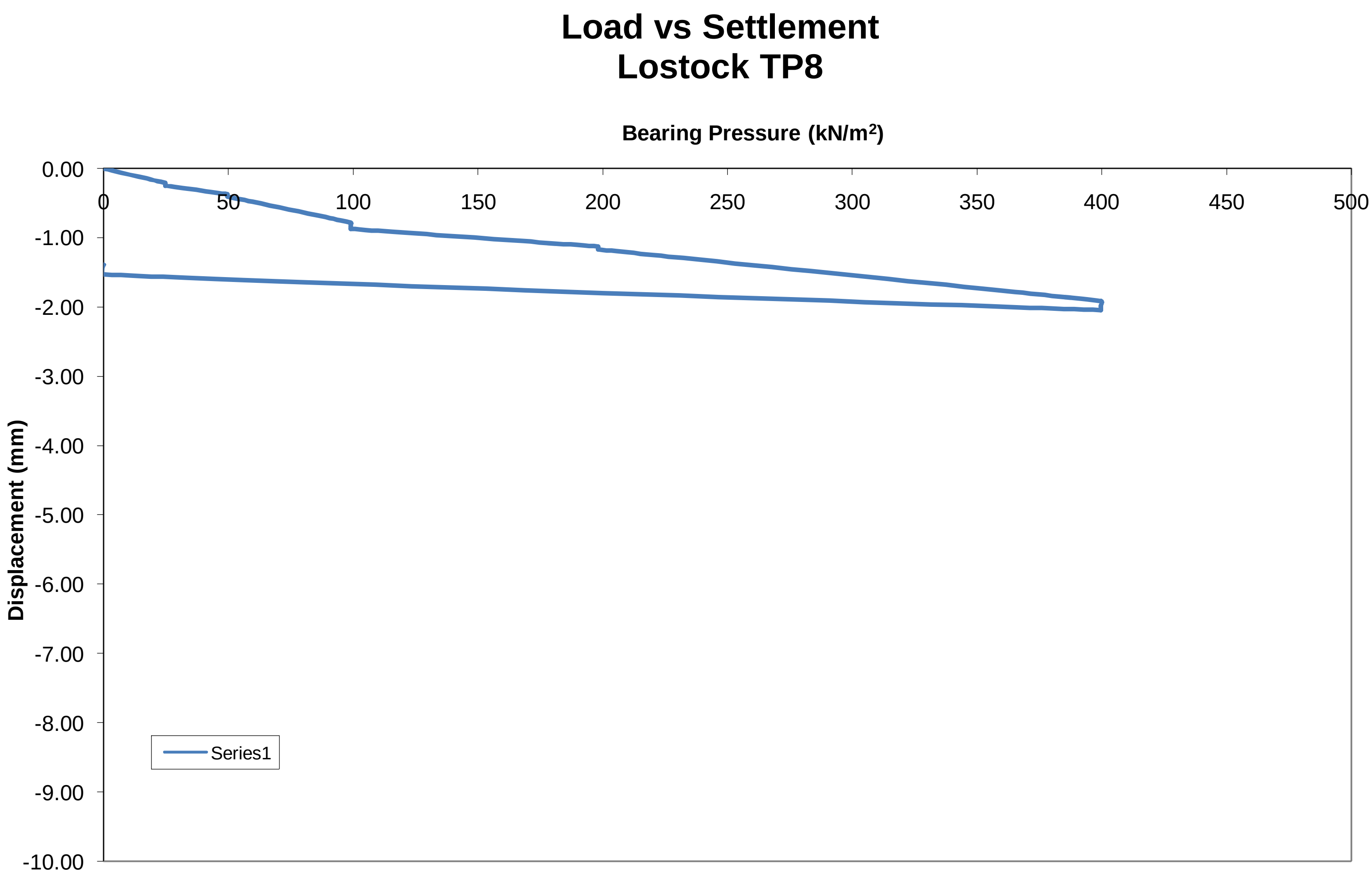

Load vs Settlement
Lostock TP7
Bearing Pressure (kN/m2)
0
50
100
150
200
250
300
350
400
450
500
Displacement (mm)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
Series1

Lostock TP8

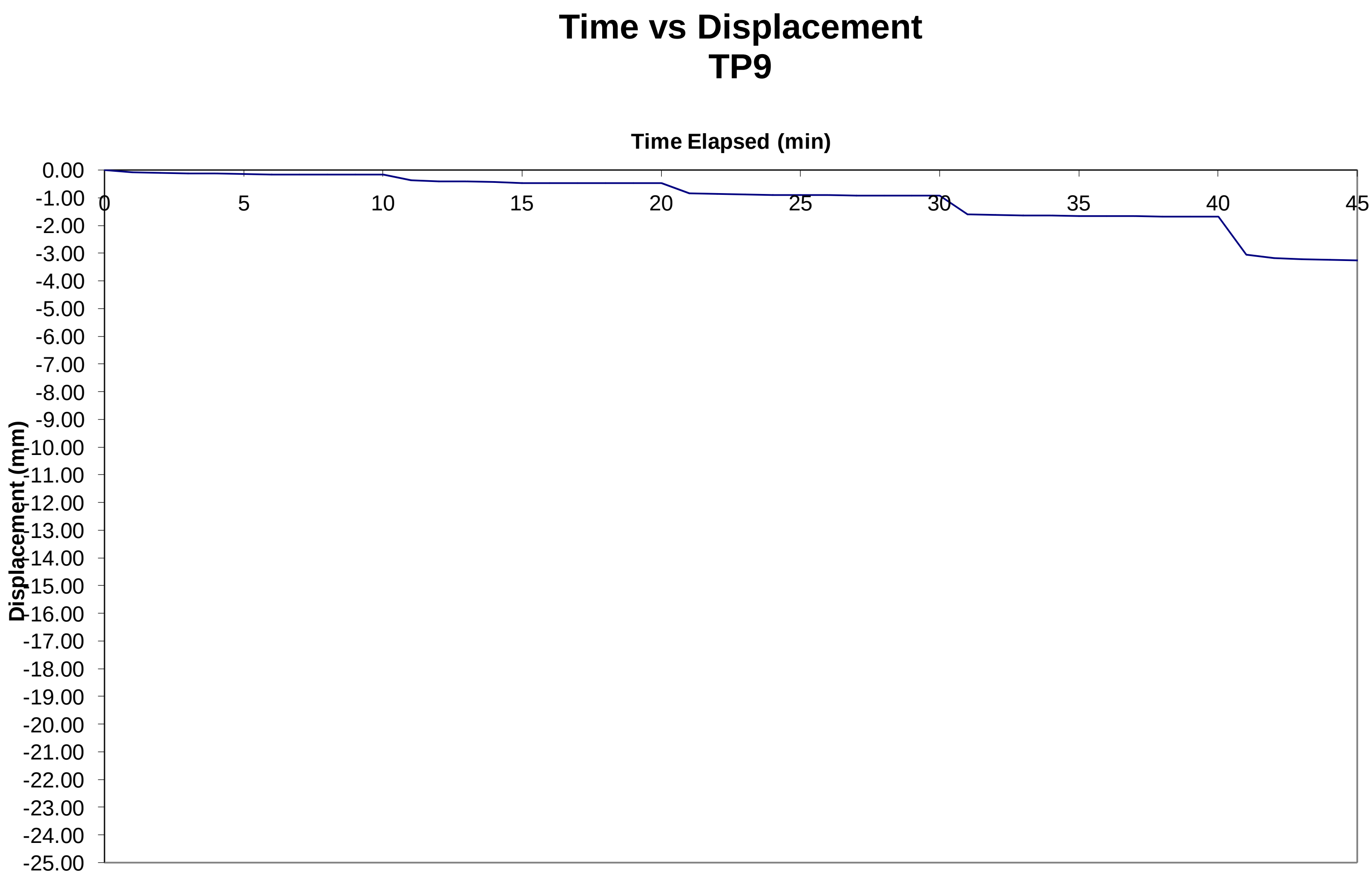
Time (mins)	Pressure (kN/m^2)	Disp 1 (mm)	Disp 2 (mm)	Disp 3 (mm)	Displacement (mm)	Movement (mm)
0	0	0.00	0.00	0.00	**0.00**	0.00
1	25	0.22	0.21	0.20	**-0.21**	0.00
2	25	0.23	0.22	0.21	**-0.22**	0.22
3	25	0.24	0.23	0.23	**-0.23**	0.01
4	25	0.25	0.24	0.24	**-0.24**	0.01
5	25	0.25	0.24	0.26	**-0.25**	0.01
6	25	0.25	0.24	0.26	**-0.25**	0.00
7	25	0.25	0.24	0.26	**-0.25**	0.00
8	25	0.25	0.24	0.26	**-0.25**	0.00
9	25	0.25	0.24	0.26	**-0.25**	0.00
10	25	0.25	0.24	0.26	**-0.25**	0.00
11	50	0.30	0.39	0.42	**-0.37**	0.12
12	50	0.37	0.39	0.42	**-0.39**	0.02
13	50	0.38	0.39	0.42	**-0.40**	0.00
14	50	0.39	0.39	0.42	**-0.40**	0.00
15	50	0.39	0.39	0.42	**-0.40**	0.00
16	50	0.39	0.39	0.42	**-0.40**	0.00
17	50	0.39	0.39	0.42	**-0.40**	0.00
18	50	0.39	0.39	0.42	**-0.40**	0.00
19	50	0.39	0.39	0.42	**-0.40**	0.00
20	50	0.39	0.39	0.42	**-0.40**	0.00
21	99	0.77	0.75	0.83	**-0.78**	0.38
22	99	0.79	0.78	0.85	**-0.81**	0.02
23	99	0.82	0.83	0.87	**-0.84**	0.03
24	99	0.83	0.86	0.89	**-0.86**	0.02
25	99	0.84	0.87	0.89	**-0.87**	0.01
26	99	0.85	0.87	0.89	**-0.87**	0.00
27	99	0.85	0.87	0.89	**-0.87**	0.00
28	99	0.85	0.87	0.89	**-0.87**	0.00
29	99	0.85	0.87	0.89	**-0.87**	0.00
30	99	0.85	0.87	0.89	**-0.87**	0.00
31	198	1.12	1.22	1.03	**-1.12**	0.25
32	198	1.15	1.23	1.03	**-1.14**	0.01
33	198	1.18	1.25	1.03	**-1.15**	0.02
34	198	1.19	1.27	1.03	**-1.16**	0.01
35	198	1.19	1.29	1.03	**-1.17**	0.01
36	198	1.19	1.29	1.03	**-1.17**	0.00
37	198	1.19	1.29	1.03	**-1.17**	0.00
38	198	1.19	1.29	1.03	**-1.17**	0.00
39	198	1.19	1.29	1.03	**-1.17**	0.00
40	198	1.19	1.29	1.03	**-1.17**	0.00
41	400	2.10	1.87	1.78	**-1.92**	0.75
42	400	2.11	1.93	1.89	**-1.98**	0.06

Time vs Displacement
TP8

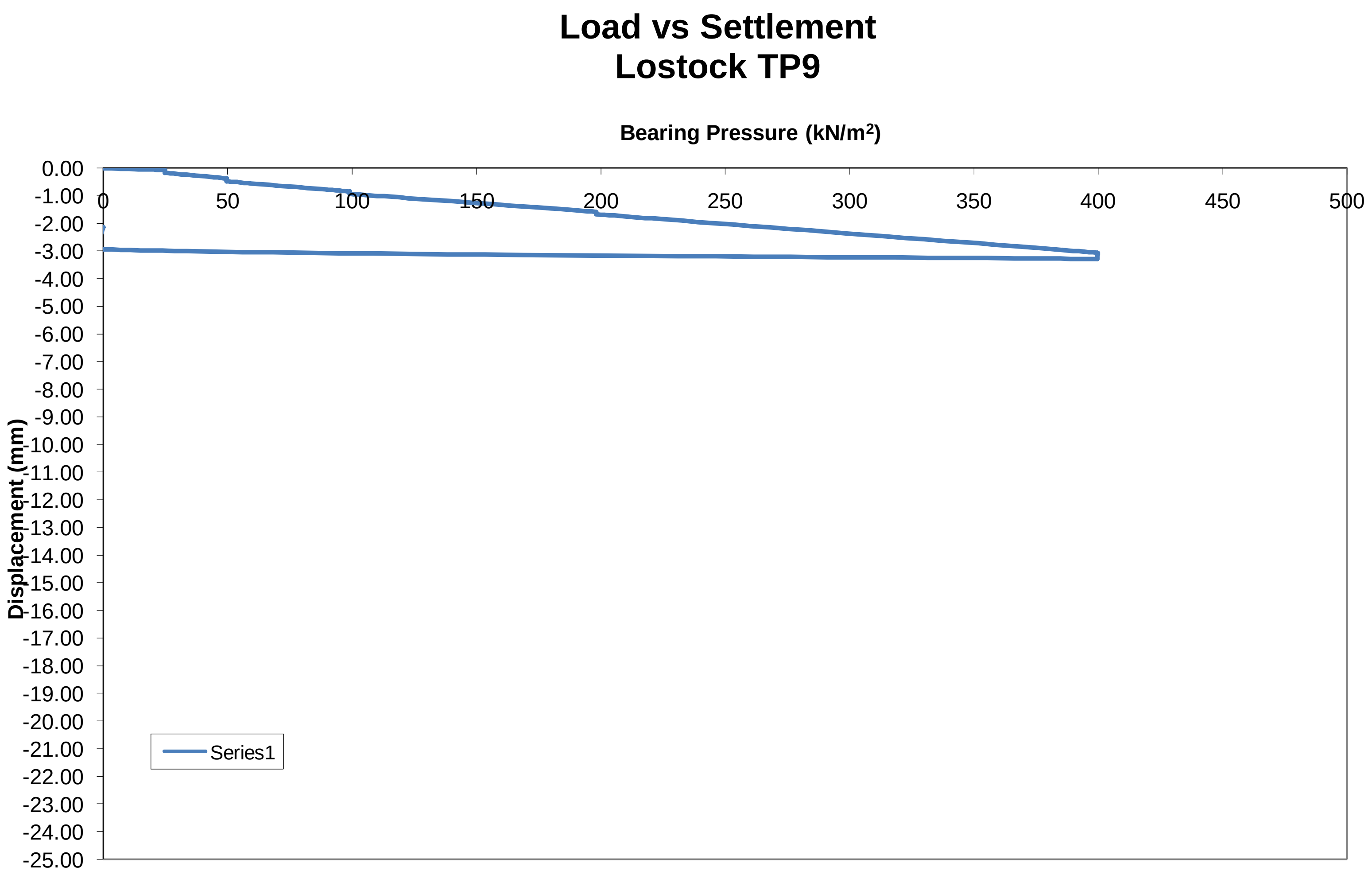



Load vs Settlement
Lostock TP8
Bearing Pressure (kN/m²)
Displacement (mm)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
0
50
100
150
200
250
300
350
400
450
500
Series1

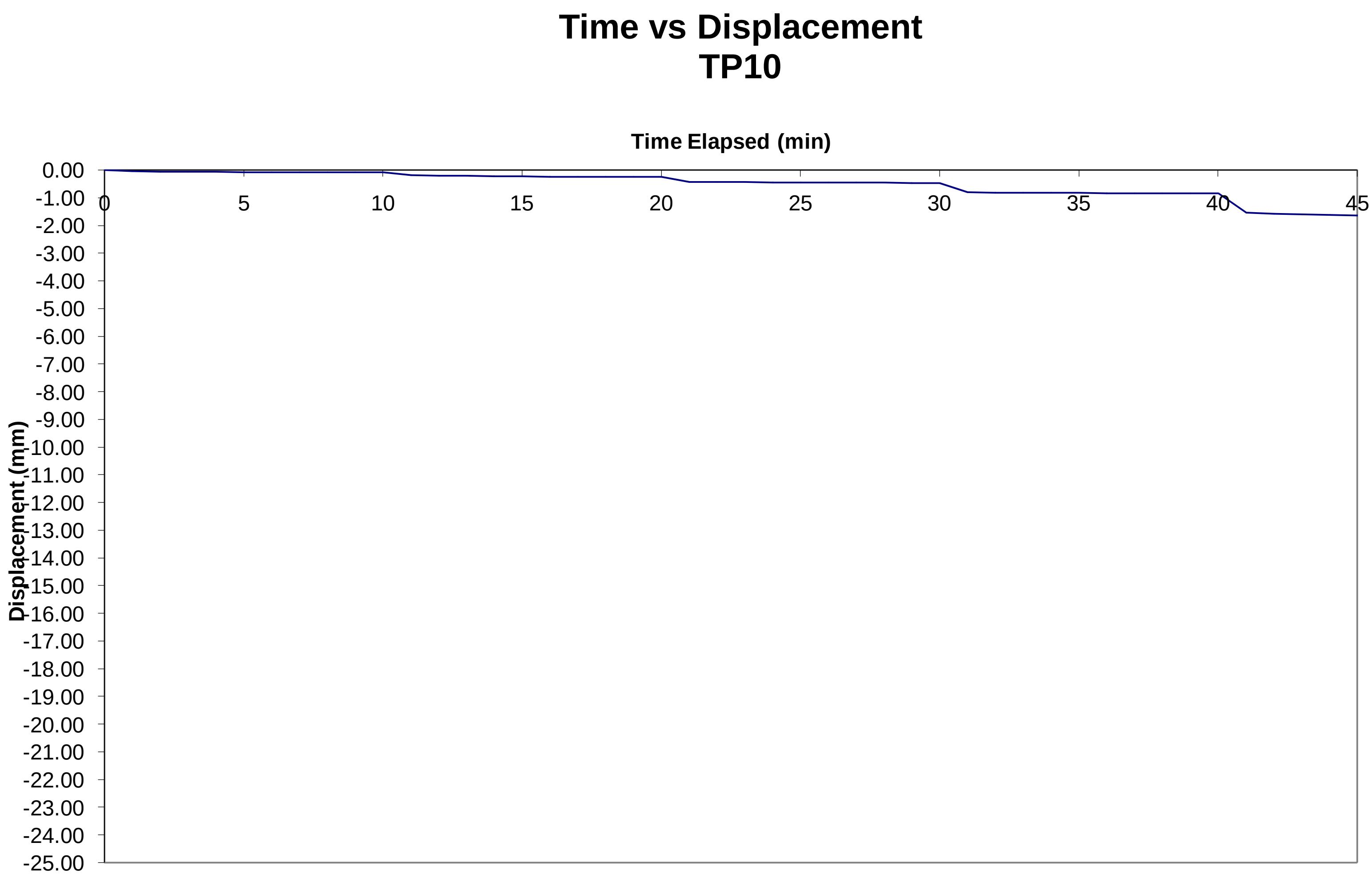
Time (mins)	Pressure (kN/m^2)	Disp 1 (mm)	Disp 2 (mm)	Disp 3 (mm)	Displacement (mm)	Movement (mm)
0	0	0.00	0.00	0.00	**0.00**	0.00
1	25	0.09	0.11	0.03	**-0.08**	0.00
2	25	0.11	0.15	0.05	**-0.10**	0.10
3	25	0.12	0.16	0.07	**-0.12**	0.01
4	25	0.13	0.17	0.09	**-0.13**	0.01
5	25	0.17	0.18	0.10	**-0.15**	0.02
6	25	0.22	0.18	0.10	**-0.17**	0.02
7	25	0.22	0.18	0.10	**-0.17**	0.00
8	25	0.22	0.18	0.10	**-0.17**	0.00
9	25	0.22	0.18	0.10	**-0.17**	0.00
10	25	0.22	0.18	0.10	**-0.17**	0.00
11	50	0.34	0.49	0.29	**-0.37**	0.21
12	50	0.37	0.52	0.32	**-0.40**	0.03
13	50	0.38	0.53	0.34	**-0.42**	0.01
14	50	0.39	0.56	0.35	**-0.43**	0.02
15	50	0.42	0.58	0.38	**-0.46**	0.03
16	50	0.43	0.59	0.38	**-0.47**	0.01
17	50	0.44	0.60	0.38	**-0.47**	0.01
18	50	0.44	0.60	0.38	**-0.47**	0.00
19	50	0.44	0.60	0.38	**-0.47**	0.00
20	50	0.45	0.60	0.38	**-0.48**	0.00
21	99	0.87	1.05	0.61	**-0.84**	0.37
22	99	0.88	1.06	0.63	**-0.86**	0.01
23	99	0.89	1.08	0.66	**-0.88**	0.02
24	99	0.89	1.09	0.69	**-0.89**	0.01
25	99	0.89	1.09	0.71	**-0.90**	0.01
26	99	0.89	1.09	0.73	**-0.90**	0.01
27	99	0.89	1.09	0.76	**-0.91**	0.01
28	99	0.89	1.09	0.77	**-0.92**	0.00
29	99	0.89	1.09	0.78	**-0.92**	0.00
30	99	0.89	1.09	0.79	**-0.92**	0.00
31	198	1.36	1.98	1.44	**-1.59**	0.67
32	198	1.37	1.99	1.50	**-1.62**	0.03
33	198	1.39	2.00	1.53	**-1.64**	0.02
34	198	1.42	2.00	1.52	**-1.65**	0.01
35	198	1.43	2.00	1.53	**-1.65**	0.01
36	198	1.44	2.00	1.53	**-1.66**	0.00
37	198	1.45	2.00	1.54	**-1.66**	0.01
38	198	1.46	2.00	1.55	**-1.67**	0.01
39	198	1.47	2.00	1.55	**-1.67**	0.00
40	198	1.47	2.00	1.55	**-1.67**	0.00
41	400	2.50	3.88	2.81	**-3.06**	1.39
42	400	2.56	4.04	2.91	**-3.17**	0.11



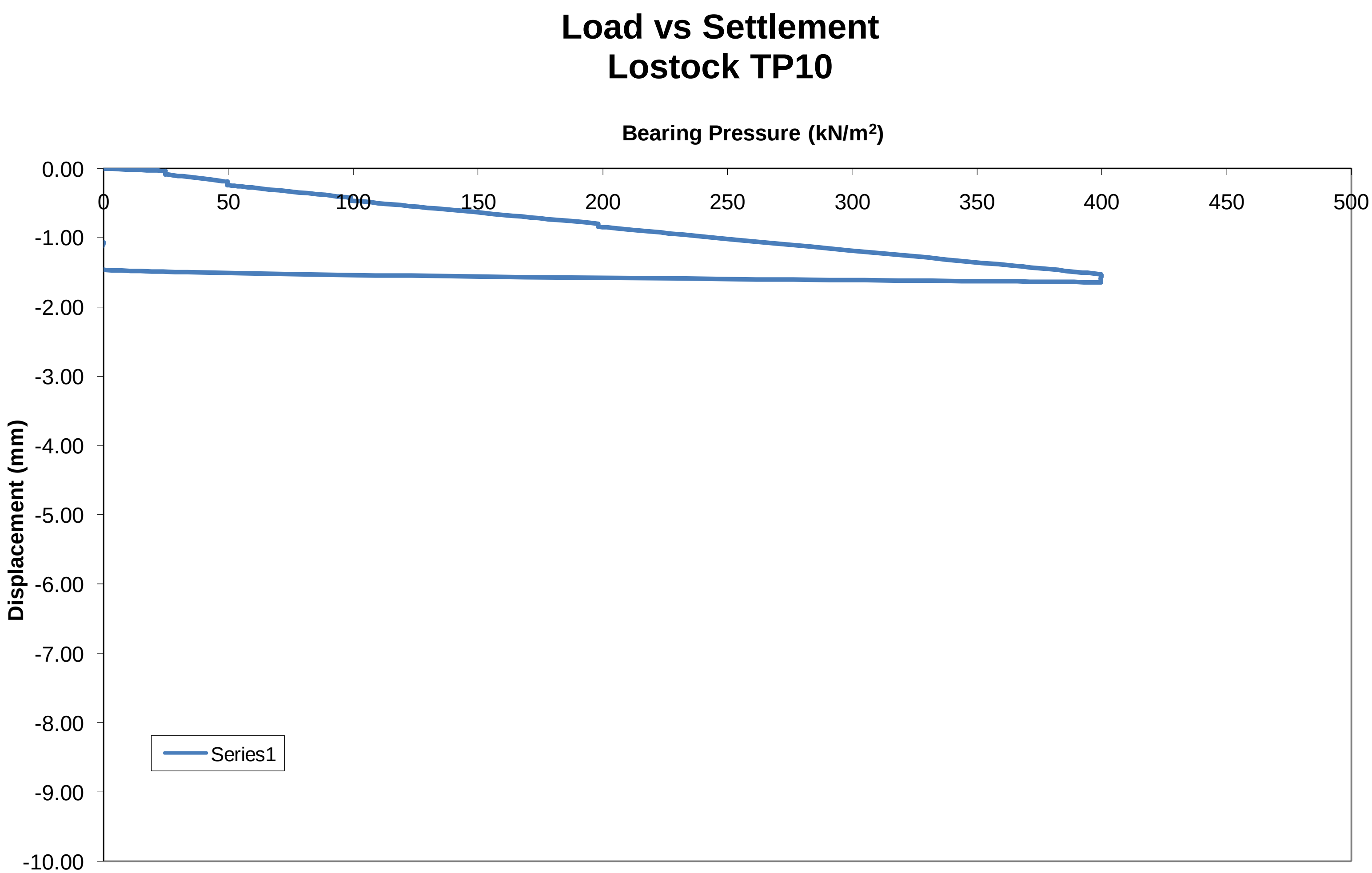
Time vs Displacement
TP9
Time Elapsed (min)
Displacement (mm)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
-11.00
-12.00
-13.00
-14.00
-15.00
-16.00
-17.00
-18.00
-19.00
-20.00
-21.00
-22.00
-23.00
-24.00
-25.00
0
5
10
15
20
25
30
35
40
45


Load vs Settlement
Lostock TP9
Bearing Pressure (kN/m²)
0
50
100
150
200
250
300
350
400
450
500
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
-11.00
-12.00
-13.00
-14.00
-15.00
-16.00
-17.00
-18.00
-19.00
-20.00
-21.00
-22.00
-23.00
-24.00
-25.00
Displacement (mm)
Series1

Time (mins)	Pressure (kN/m^2)	Disp 1 (mm)	Disp 2 (mm)	Disp 3 (mm)	Displacement (mm)	Movement (mm)
0	0	0.00	0.00	0.00	**0.00**	0.00
1	25	0.05	0.06	0.02	**-0.04**	0.00
2	25	0.06	0.08	0.03	**-0.05**	0.05
3	25	0.06	0.08	0.04	**-0.06**	0.01
4	25	0.07	0.09	0.05	**-0.07**	0.01
5	25	0.09	0.09	0.05	**-0.08**	0.01
6	25	0.11	0.09	0.05	**-0.08**	0.01
7	25	0.11	0.09	0.05	**-0.08**	0.00
8	25	0.11	0.09	0.05	**-0.08**	0.00
9	25	0.11	0.09	0.05	**-0.08**	0.00
10	25	0.11	0.09	0.05	**-0.08**	0.00
11	50	0.17	0.25	0.15	**-0.19**	0.10
12	50	0.19	0.26	0.16	**-0.20**	0.02
13	50	0.19	0.27	0.17	**-0.21**	0.01
14	50	0.20	0.28	0.18	**-0.22**	0.01
15	50	0.21	0.29	0.19	**-0.23**	0.01
16	50	0.22	0.30	0.19	**-0.23**	0.00
17	50	0.22	0.30	0.19	**-0.24**	0.00
18	50	0.22	0.30	0.19	**-0.24**	0.00
19	50	0.22	0.30	0.19	**-0.24**	0.00
20	50	0.23	0.30	0.19	**-0.24**	0.00
21	99	0.44	0.53	0.31	**-0.42**	0.18
22	99	0.44	0.53	0.32	**-0.43**	0.01
23	99	0.45	0.54	0.33	**-0.44**	0.01
24	99	0.45	0.55	0.35	**-0.45**	0.01
25	99	0.45	0.55	0.36	**-0.45**	0.00
26	99	0.45	0.55	0.37	**-0.45**	0.00
27	99	0.45	0.55	0.38	**-0.46**	0.01
28	99	0.45	0.55	0.39	**-0.46**	0.00
29	99	0.45	0.55	0.39	**-0.46**	0.00
30	99	0.45	0.55	0.40	**-0.46**	0.00
31	198	0.68	0.99	0.72	**-0.80**	0.34
32	198	0.69	1.00	0.75	**-0.81**	0.01
33	198	0.70	1.00	0.77	**-0.82**	0.01
34	198	0.71	1.00	0.76	**-0.82**	0.00
35	198	0.72	1.00	0.77	**-0.83**	0.00
36	198	0.72	1.00	0.77	**-0.83**	0.00
37	198	0.73	1.00	0.77	**-0.83**	0.00
38	198	0.73	1.00	0.78	**-0.84**	0.00
39	198	0.74	1.00	0.78	**-0.84**	0.00
40	198	0.74	1.00	0.78	**-0.84**	0.00
41	400	1.25	1.94	1.41	**-1.53**	0.70
42	400	1.28	2.02	1.46	**-1.59**	0.05

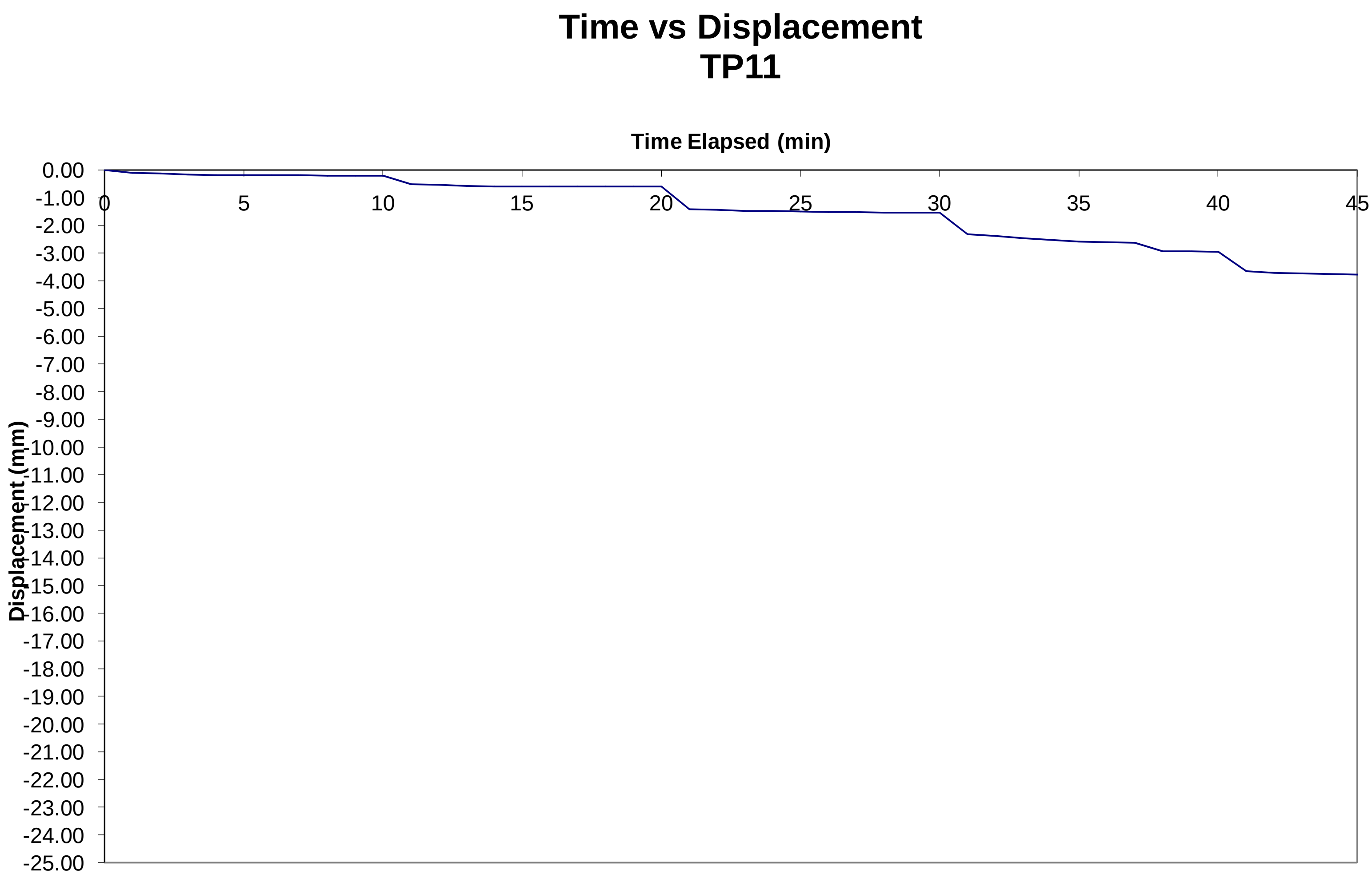


Time vs Displacement
TP10
Time Elapsed (min)
0
5
10
15
20
25
30
35
40
45
Displacement (mm)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
-11.00
-12.00
-13.00
-14.00
-15.00
-16.00
-17.00
-18.00
-19.00
-20.00
-21.00
-22.00
-23.00
-24.00
-25.00


Load vs Settlement
Lostock TP10
Bearing Pressure (kN/m²)
0
50
100
150
200
250
300
350
400
450
500
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
Displacement (mm)
Series1

Lostock TP11

Time (mins)	Pressure (kN/m^2)	Disp 1 (mm)	Disp 2 (mm)	Disp 3 (mm)	Displacement (mm)	Movement (mm)
0	0	0.00	0.00	0.00	**0.00**	0.00
1	25	0.11	0.14	0.05	**-0.10**	0.00
2	25	0.14	0.21	0.05	**-0.13**	0.13
3	25	0.18	0.24	0.06	**-0.16**	0.03
4	25	0.18	0.26	0.09	**-0.18**	0.02
5	25	0.18	0.27	0.11	**-0.19**	0.01
6	25	0.18	0.27	0.11	**-0.19**	0.00
7	25	0.18	0.29	0.11	**-0.19**	0.01
8	25	0.23	0.29	0.11	**-0.21**	0.02
9	25	0.23	0.29	0.11	**-0.21**	0.00
10	25	0.23	0.29	0.11	**-0.21**	0.00
11	50	0.50	0.66	0.35	**-0.50**	0.30
12	50	0.50	0.69	0.44	**-0.54**	0.04
13	50	0.50	0.71	0.51	**-0.57**	0.03
14	50	0.51	0.72	0.53	**-0.59**	0.02
15	50	0.51	0.74	0.53	**-0.59**	0.01
16	50	0.51	0.75	0.53	**-0.60**	0.01
17	50	0.53	0.75	0.53	**-0.60**	0.01
18	50	0.53	0.75	0.53	**-0.60**	0.00
19	50	0.53	0.75	0.53	**-0.60**	0.00
20	50	0.53	0.75	0.53	**-0.60**	0.00
21	99	1.49	1.59	1.17	**-1.42**	0.82
22	99	1.50	1.64	1.19	**-1.44**	0.03
23	99	1.52	1.67	1.22	**-1.47**	0.02
24	99	1.53	1.68	1.23	**-1.48**	0.01
25	99	1.55	1.68	1.26	**-1.50**	0.02
26	99	1.59	1.68	1.28	**-1.52**	0.02
27	99	1.61	1.68	1.29	**-1.53**	0.01
28	99	1.62	1.68	1.29	**-1.53**	0.00
29	99	1.62	1.68	1.29	**-1.53**	0.00
30	99	1.62	1.68	1.29	**-1.53**	0.00
31	198	2.34	2.69	1.94	**-2.32**	0.79
32	198	2.39	2.76	1.98	**-2.38**	0.05
33	198	2.52	2.81	2.06	**-2.46**	0.09
34	198	2.61	2.84	2.12	**-2.52**	0.06
35	198	2.64	2.91	2.18	**-2.58**	0.06
36	198	2.67	2.96	2.21	**-2.61**	0.03
37	198	2.67	2.97	2.24	**-2.63**	0.02
38	198	3.59	2.97	2.24	**-2.93**	0.31
39	198	3.62	2.97	2.24	**-2.94**	0.01
40	198	3.65	2.97	2.24	**-2.95**	0.01
41	400	3.68	4.19	3.09	**-3.65**	0.70
42	400	3.71	4.26	3.14	**-3.70**	0.05



Time vs Displacement
TP11
Time Elapsed (min)
0
5
10
15
20
25
30
35
40
45
Displacement (mm)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
-11.00
-12.00
-13.00
-14.00
-15.00
-16.00
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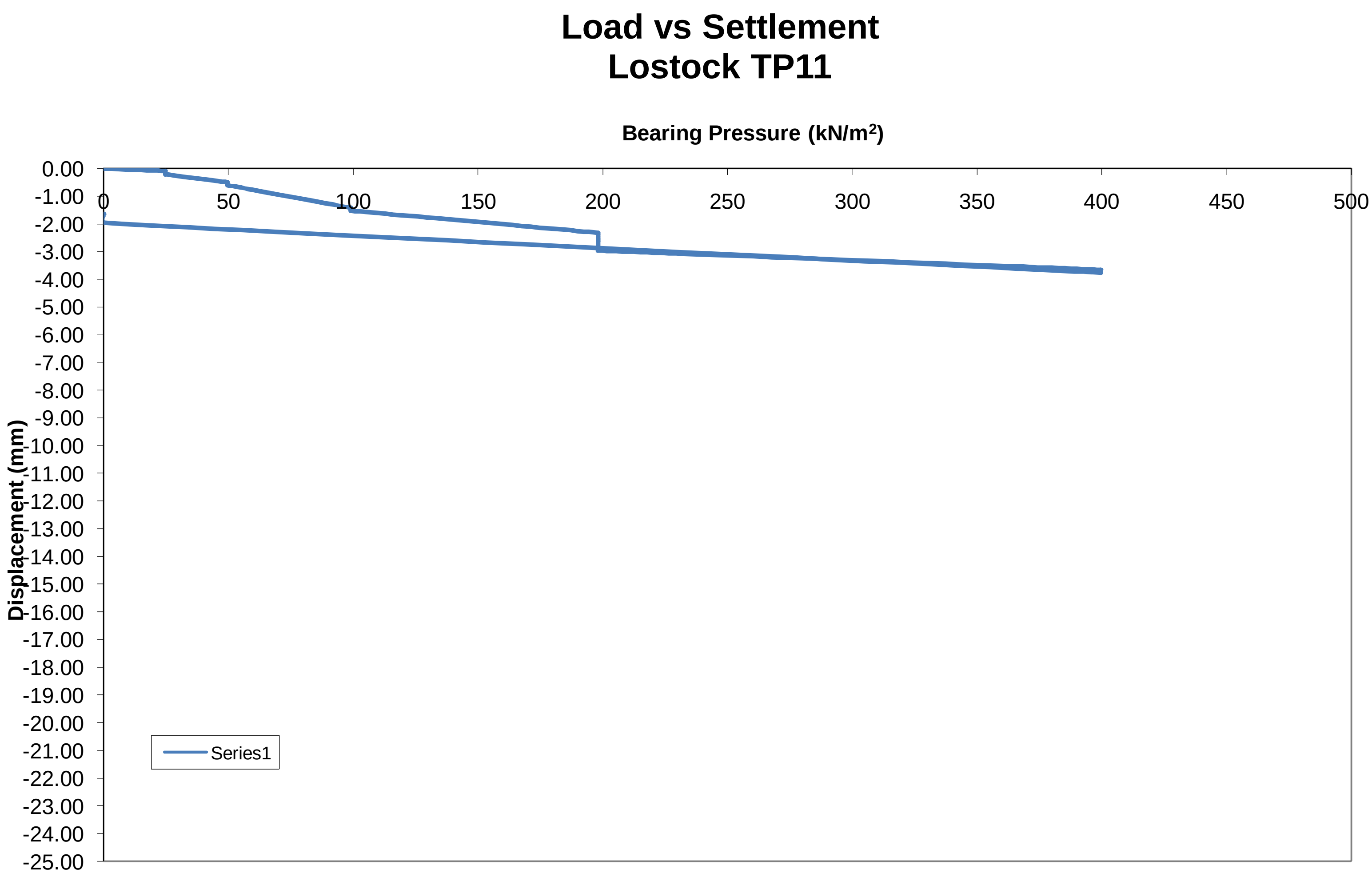
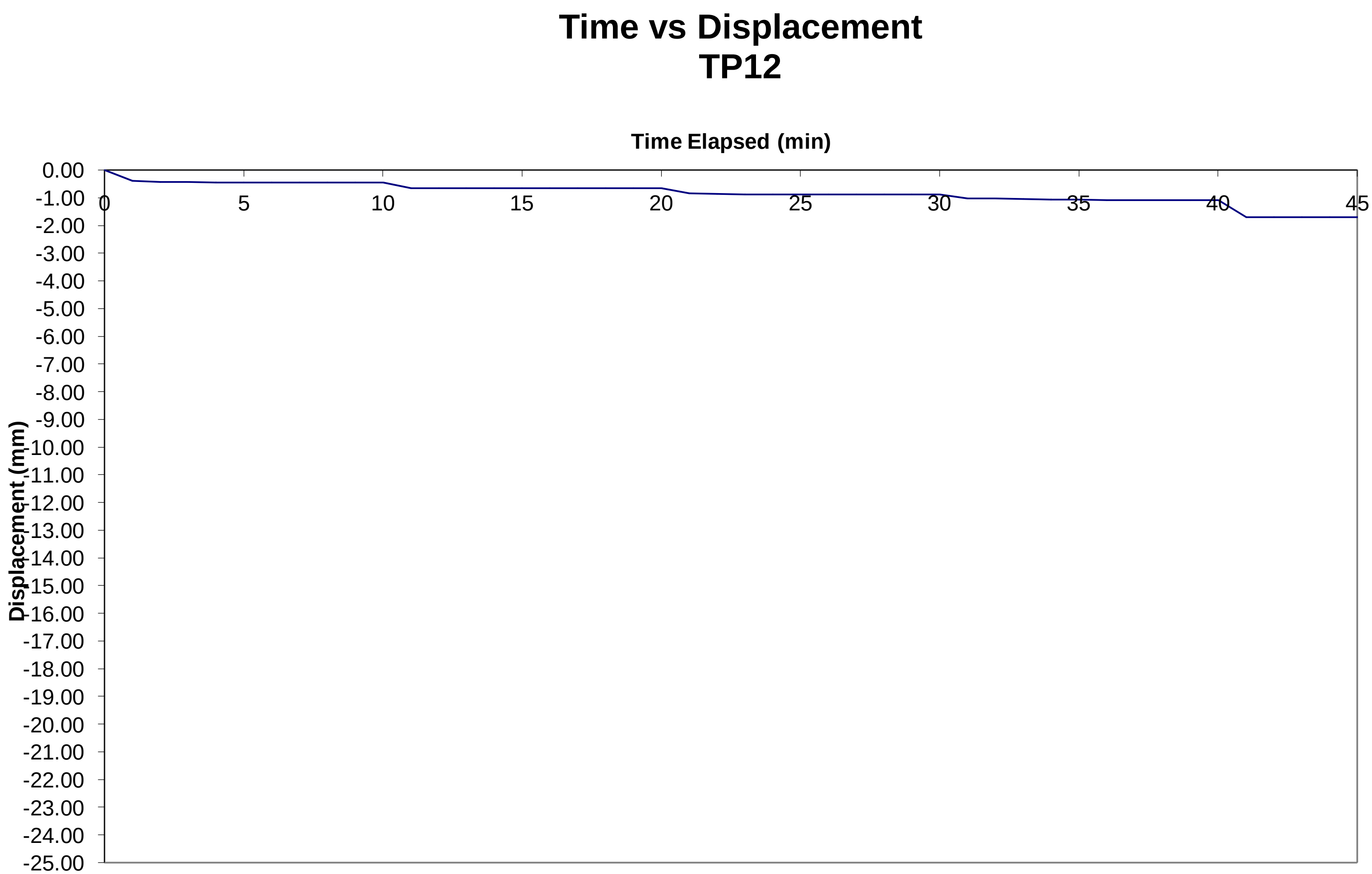
-18.00
-19.00
-20.00
-21.00
-22.00
-23.00
-24.00
-25.00

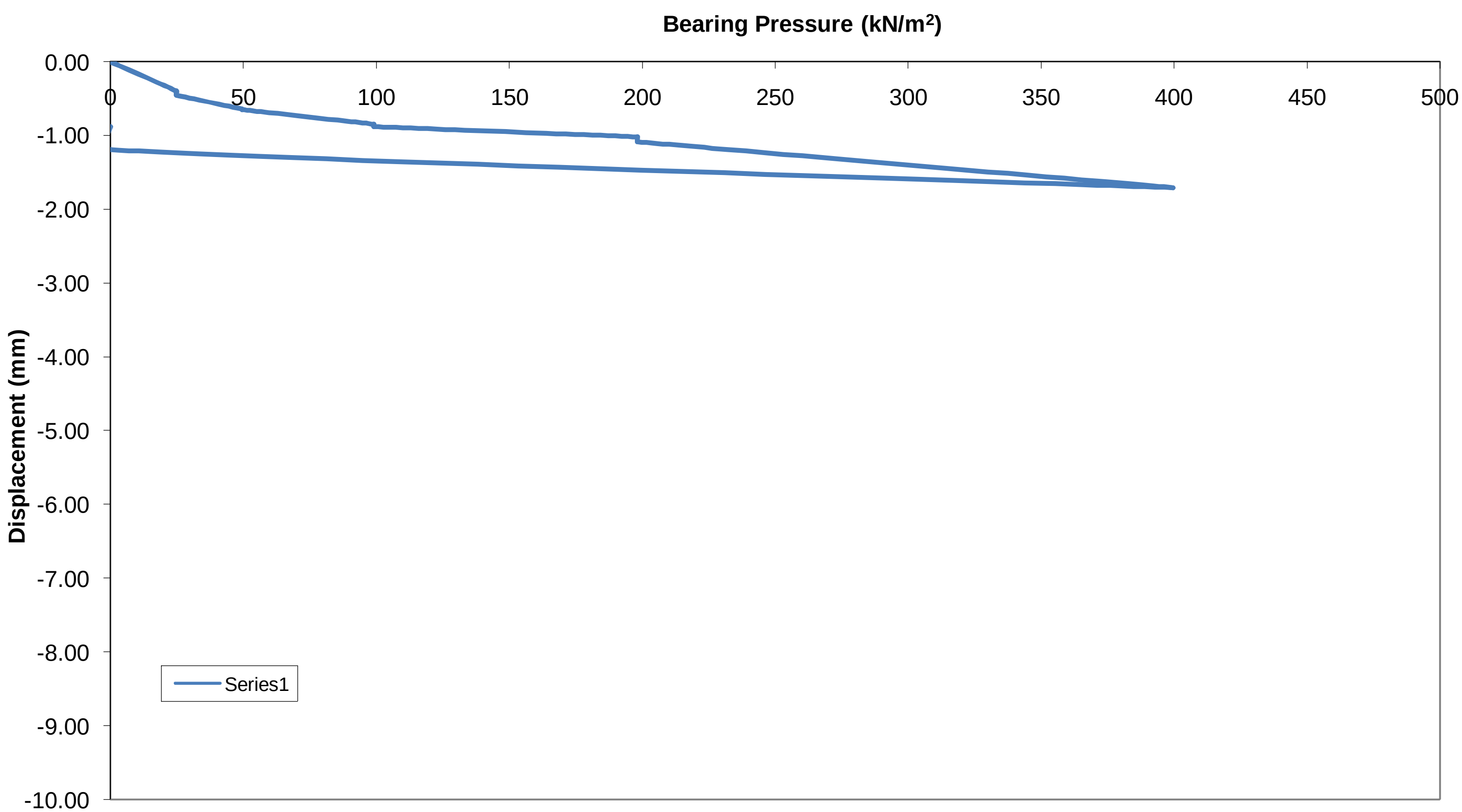


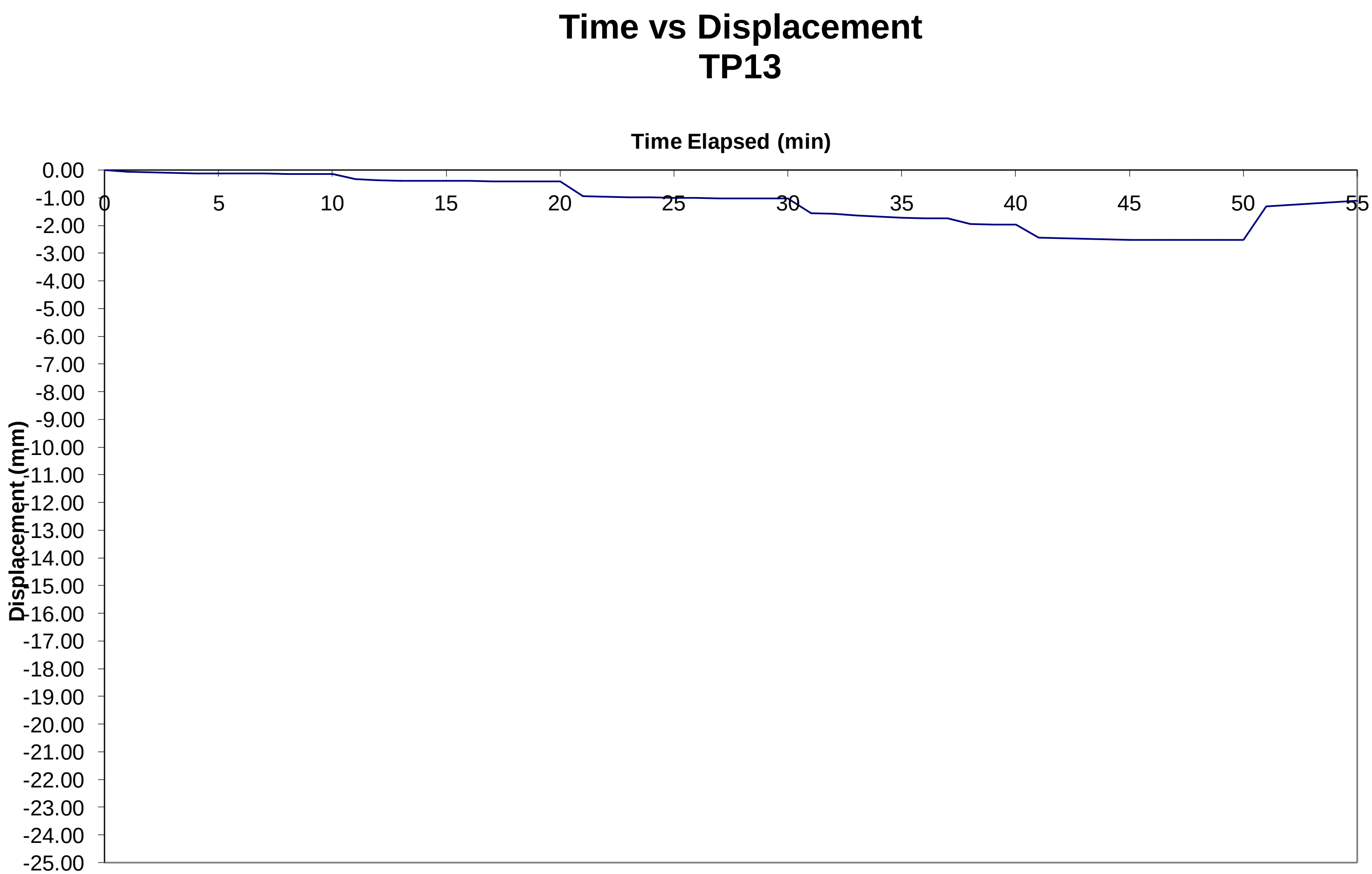
Load vs Settlement
Lostock TP11
Bearing Pressure (kN/m2)
Displacement (mm)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
-11.00
-12.00
-13.00
-14.00
-15.00
-16.00
-17.00
-18.00
-19.00
-20.00
-21.00
-22.00
-23.00
-24.00
-25.00
0
50
100
150
200
250
300
350
400
450
500
Series1

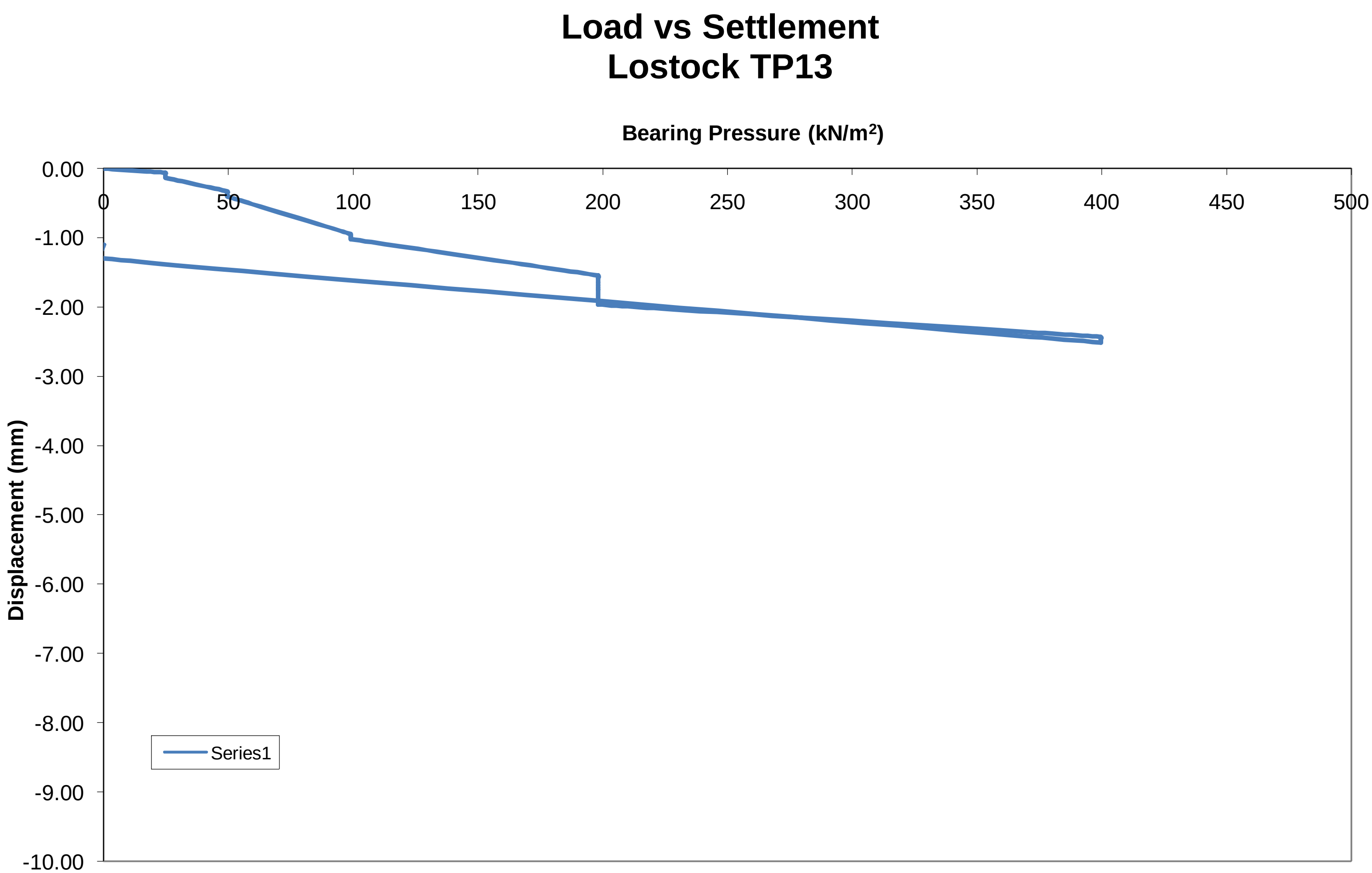
Time (mins)	Pressure (kN/m^2)	Disp 1 (mm)	Disp 2 (mm)	Disp 3 (mm)	Displacement (mm)	Movement (mm)
0	0	0.00	0.00	0.00	**0.00**	0.00
1	25	0.46	0.29	0.44	**-0.40**	0.00
2	25	0.46	0.29	0.52	**-0.43**	0.43
3	25	0.47	0.30	0.54	**-0.43**	0.01
4	25	0.47	0.30	0.55	**-0.44**	0.00
5	25	0.47	0.30	0.56	**-0.44**	0.00
6	25	0.47	0.30	0.57	**-0.45**	0.00
7	25	0.47	0.30	0.58	**-0.45**	0.00
8	25	0.47	0.30	0.58	**-0.45**	0.00
9	25	0.47	0.30	0.58	**-0.45**	0.00
10	25	0.47	0.30	0.58	**-0.45**	0.00
11	50	0.73	0.47	0.74	**-0.65**	0.19
12	50	0.73	0.48	0.74	**-0.65**	0.00
13	50	0.73	0.48	0.74	**-0.65**	0.00
14	50	0.71	0.49	0.74	**-0.65**	0.00
15	50	0.73	0.49	0.74	**-0.65**	0.01
16	50	0.73	0.49	0.74	**-0.65**	0.00
17	50	0.73	0.49	0.74	**-0.65**	0.00
18	50	0.73	0.49	0.74	**-0.65**	0.00
19	50	0.73	0.49	0.74	**-0.65**	0.00
20	50	0.73	0.49	0.74	**-0.65**	0.00
21	99	0.95	0.63	0.96	**-0.84**	0.19
22	99	0.98	0.64	0.96	**-0.86**	0.02
23	99	0.98	0.65	0.99	**-0.87**	0.01
24	99	0.99	0.65	0.99	**-0.88**	0.00
25	99	1.00	0.65	0.99	**-0.88**	0.00
26	99	1.00	0.65	0.99	**-0.88**	0.00
27	99	1.00	0.65	0.99	**-0.88**	0.00
28	99	1.00	0.65	0.99	**-0.88**	0.00
29	99	1.00	0.65	0.99	**-0.88**	0.00
30	99	1.00	0.65	0.99	**-0.88**	0.00
31	198	1.15	0.76	1.13	**-1.02**	0.14
32	198	1.18	0.77	1.14	**-1.03**	0.01
33	198	1.19	0.78	1.14	**-1.04**	0.01
34	198	1.20	0.79	1.20	**-1.06**	0.02
35	198	1.22	0.79	1.21	**-1.07**	0.01
36	198	1.22	0.80	1.22	**-1.08**	0.01
37	198	1.23	0.80	1.22	**-1.08**	0.00
38	198	1.23	0.80	1.22	**-1.09**	0.00
39	198	1.23	0.80	1.22	**-1.09**	0.00
40	198	1.23	0.81	1.22	**-1.09**	0.00
41	400	1.86	1.48	1.78	**-1.71**	0.62
42	400	1.86	1.48	1.78	**-1.71**	0.00


Time vs Displacement
TP12
Time Elapsed (min)
0
5
10
15
20
25
30
35
40
45
Displacement (mm)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
-11.00
-12.00
-13.00
-14.00
-15.00
-16.00
-17.00
-18.00
-19.00
-20.00
-21.00
-22.00
-23.00
-24.00
-25.00

Load vs Settlement
Lostock TP12



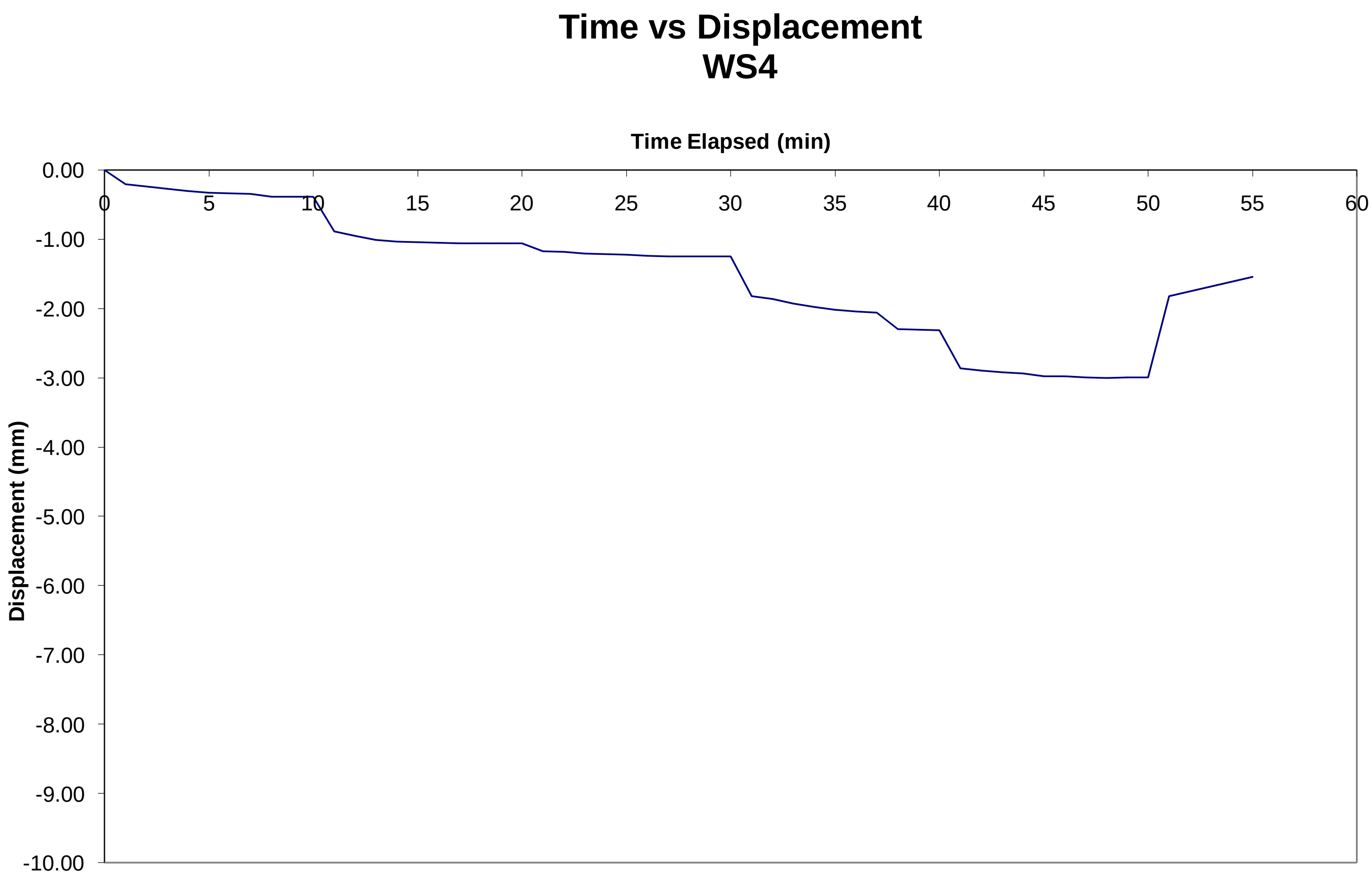

Time vs Displacement
TP13
Time Elapsed (min)
Displacement (mm)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
-11.00
-12.00
-13.00
-14.00
-15.00
-16.00
-17.00
-18.00
-19.00
-20.00
-21.00
-22.00
-23.00
-24.00
-25.00
0
5
10
15
20
25
30
35
40
45
50
55

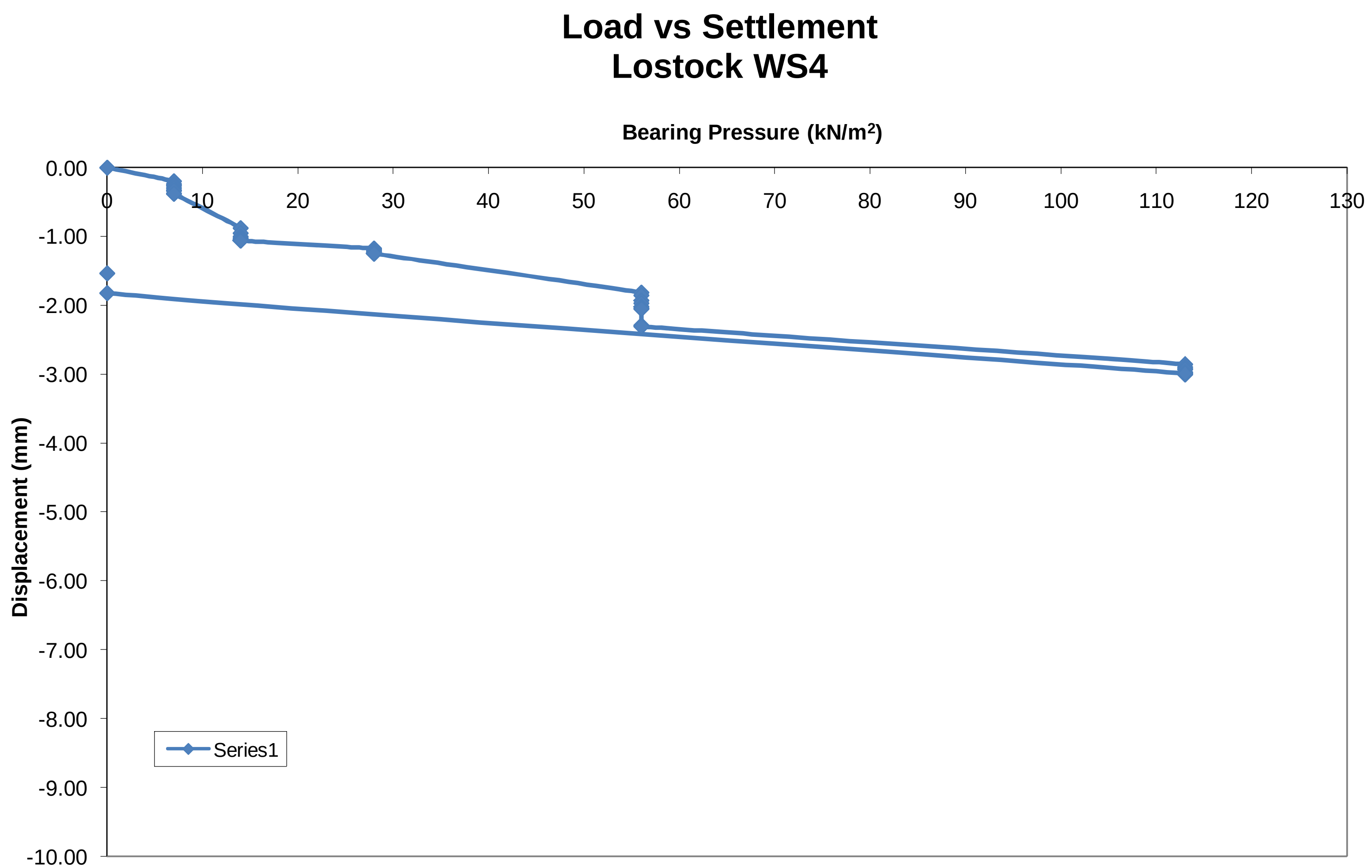


Load vs Settlement
Lostock TP13
Bearing Pressure (kN/m²)
Displacement (mm)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
0
50
100
150
200
250
300
350
400
450
500
Series1

Time (mins)	Pressure (kN/m^2)	Disp 1 (mm)	Disp 2 (mm)	Disp 3 (mm)	Displacement (mm)	Movement (mm)
0	0	0.00	0.00	0.00	**0.00**	0.00
1	25	0.07	0.09	0.03	**-0.06**	0.00
2	25	0.09	0.14	0.03	**-0.09**	0.09
3	25	0.12	0.16	0.04	**-0.11**	0.02
4	25	0.12	0.17	0.06	**-0.12**	0.01
5	25	0.12	0.18	0.07	**-0.12**	0.01
6	25	0.12	0.18	0.07	**-0.12**	0.00
7	25	0.12	0.19	0.07	**-0.13**	0.00
8	25	0.15	0.19	0.07	**-0.14**	0.01
9	25	0.15	0.19	0.07	**-0.14**	0.00
10	25	0.15	0.19	0.07	**-0.14**	0.00
11	50	0.33	0.44	0.23	**-0.33**	0.20
12	50	0.33	0.46	0.29	**-0.36**	0.03
13	50	0.33	0.47	0.34	**-0.38**	0.02
14	50	0.34	0.48	0.35	**-0.39**	0.01
15	50	0.34	0.49	0.35	**-0.39**	0.00
16	50	0.34	0.50	0.35	**-0.40**	0.00
17	50	0.35	0.50	0.35	**-0.40**	0.00
18	50	0.35	0.50	0.35	**-0.40**	0.00
19	50	0.35	0.50	0.35	**-0.40**	0.00
20	50	0.35	0.50	0.35	**-0.40**	0.00
21	99	0.99	1.06	0.78	**-0.94**	0.54
22	99	1.00	1.09	0.79	**-0.96**	0.02
23	99	1.01	1.11	0.81	**-0.98**	0.02
24	99	1.02	1.12	0.82	**-0.99**	0.01
25	99	1.03	1.12	0.84	**-1.00**	0.01
26	99	1.06	1.12	0.85	**-1.01**	0.01
27	99	1.07	1.12	0.86	**-1.02**	0.01
28	99	1.08	1.12	0.86	**-1.02**	0.00
29	99	1.08	1.12	0.86	**-1.02**	0.00
30	99	1.08	1.12	0.86	**-1.02**	0.00
31	198	1.56	1.79	1.29	**-1.55**	0.53
32	198	1.59	1.84	1.32	**-1.58**	0.04
33	198	1.68	1.87	1.37	**-1.64**	0.06
34	198	1.74	1.89	1.41	**-1.68**	0.04
35	198	1.76	1.94	1.45	**-1.72**	0.04
36	198	1.78	1.97	1.47	**-1.74**	0.02
37	198	1.78	1.98	1.49	**-1.75**	0.01
38	198	2.39	1.98	1.49	**-1.95**	0.20
39	198	2.41	1.98	1.49	**-1.96**	0.01
40	198	2.43	1.98	1.49	**-1.97**	0.01
41	400	2.45	2.79	2.06	**-2.43**	0.47
42	400	2.47	2.84	2.09	**-2.47**	0.03

Time (mins)	Pressure (kN/m^2)	Disp 1 (mm)	Disp 2 (mm)	Disp 3 (mm)	Displacement (mm)	Movement (mm)
0	0	0.00	0.00	0.00	**0.00**	0.00
1	7	0.19	0.31	0.11	**-0.20**	0.00
2	7	0.24	0.37	0.11	**-0.24**	0.24
3	7	0.32	0.38	0.11	**-0.27**	0.03
4	7	0.32	0.42	0.16	**-0.30**	0.03
5	7	0.33	0.48	0.19	**-0.33**	0.03
6	7	0.34	0.48	0.19	**-0.33**	0.00
7	7	0.34	0.50	0.19	**-0.34**	0.01
8	7	0.45	0.51	0.19	**-0.38**	0.04
9	7	0.45	0.51	0.19	**-0.38**	0.00
10	7	0.45	0.51	0.19	**-0.38**	0.00
11	14	0.87	1.16	0.61	**-0.88**	0.50
12	14	0.87	1.22	0.77	**-0.95**	0.07
13	14	0.87	1.24	0.90	**-1.00**	0.05
14	14	0.90	1.27	0.93	**-1.03**	0.03
15	14	0.90	1.30	0.93	**-1.04**	0.01
16	14	0.90	1.32	0.93	**-1.05**	0.01
17	14	0.93	1.31	0.93	**-1.05**	0.00
18	14	0.93	1.31	0.93	**-1.05**	0.00
19	14	0.93	1.32	0.93	**-1.06**	0.00
20	14	0.93	1.32	0.93	**-1.06**	0.00
21	28	1.16	1.44	0.92	**-1.17**	0.12
22	28	1.17	1.45	0.93	**-1.18**	0.01
23	28	1.19	1.47	0.95	**-1.20**	0.02
24	28	1.20	1.47	0.96	**-1.21**	0.01
25	28	1.21	1.47	0.99	**-1.22**	0.01
26	28	1.25	1.47	1.00	**-1.24**	0.02
27	28	1.26	1.47	1.01	**-1.25**	0.01
28	28	1.27	1.47	1.01	**-1.25**	0.00
29	28	1.27	1.47	1.01	**-1.25**	0.00
30	28	1.27	1.47	1.01	**-1.25**	0.00
31	56	1.83	2.10	1.52	**-1.82**	0.57
32	56	1.87	2.16	1.55	**-1.86**	0.04
33	56	1.97	2.20	1.61	**-1.93**	0.07
34	56	2.04	2.22	1.66	**-1.97**	0.05
35	56	2.07	2.28	1.70	**-2.02**	0.04
36	56	2.09	2.31	1.73	**-2.04**	0.03
37	56	2.09	2.33	1.75	**-2.06**	0.01
38	56	2.81	2.33	1.75	**-2.29**	0.24
39	56	2.83	2.33	1.75	**-2.30**	0.01
40	56	2.85	2.33	1.75	**-2.31**	0.01
41	113	2.88	3.28	2.42	**-2.86**	0.55
42	113	2.90	3.34	2.46	**-2.90**	0.04

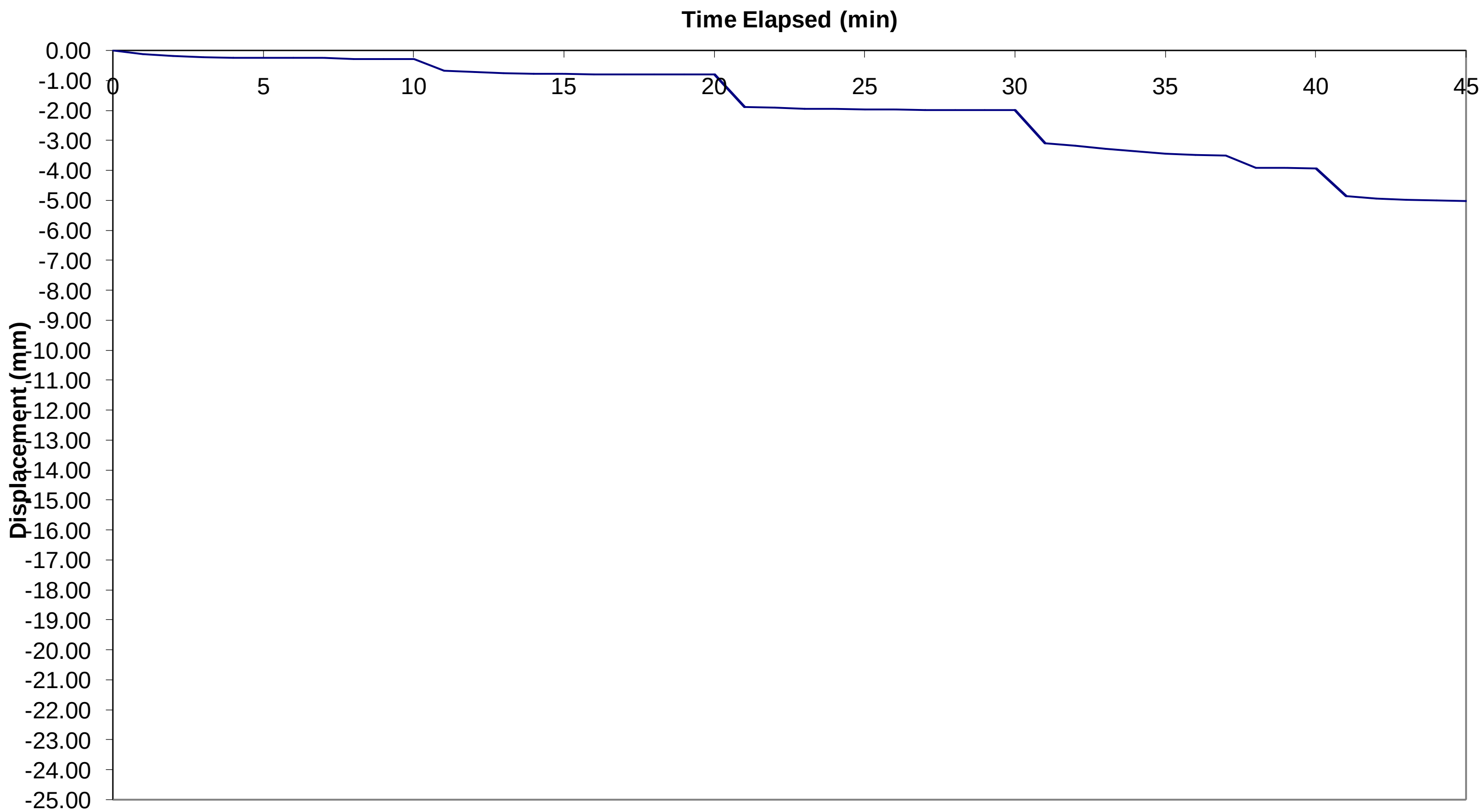

Time vs Displacement
WS4
Time Elapsed (min)
0
5
10
15
20
25
30
35
40
45
50
55
60
Displacement (mm)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00

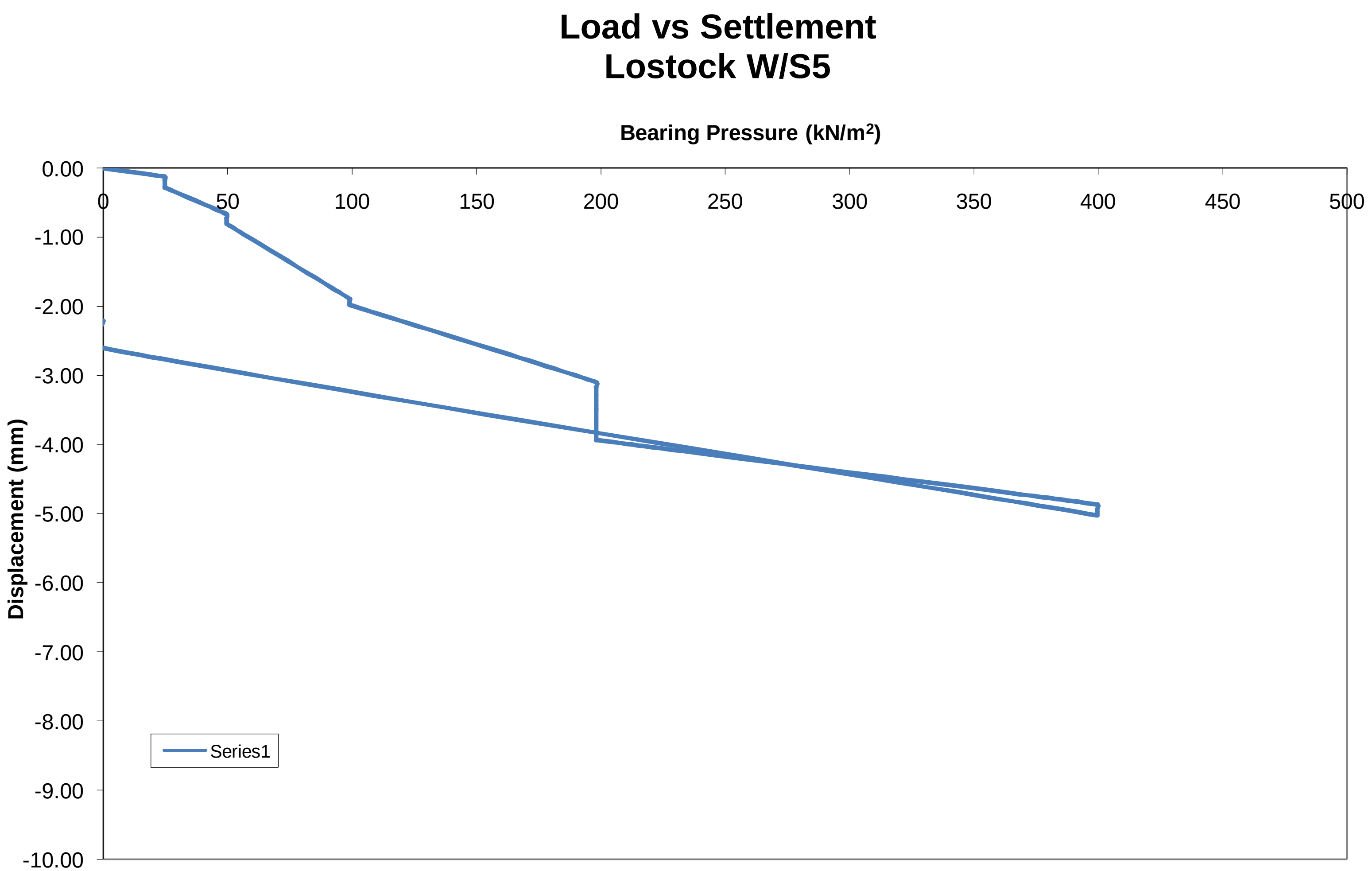


Load vs Settlement
Lostock WS4
Bearing Pressure (kN/m²)
Displacement (mm)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
0
10
20
30
40
50
60
70
80
90
100
110
120
130
Series1

Time (mins)	Pressure (kN/m^2)	Disp 1 (mm)	Disp 2 (mm)	Disp 3 (mm)	Displacement (mm)	Movement (mm)
0	0	0.00	0.00	0.00	**0.00**	0.00
1	25	0.14	0.18	0.06	**-0.13**	0.00
2	25	0.18	0.28	0.06	**-0.17**	0.17
3	25	0.24	0.32	0.08	**-0.21**	0.04
4	25	0.24	0.34	0.12	**-0.23**	0.02
5	25	0.24	0.36	0.14	**-0.25**	0.01
6	25	0.24	0.36	0.14	**-0.25**	0.00
7	25	0.24	0.38	0.14	**-0.25**	0.01
8	25	0.30	0.40	0.14	**-0.28**	0.03
9	25	0.30	0.40	0.14	**-0.28**	0.00
10	25	0.30	0.40	0.14	**-0.28**	0.00
11	50	0.66	0.88	0.46	**-0.67**	0.39
12	50	0.66	0.92	0.58	**-0.72**	0.05
13	50	0.66	0.94	0.68	**-0.76**	0.04
14	50	0.68	0.96	0.70	**-0.78**	0.02
15	50	0.68	0.98	0.70	**-0.79**	0.01
16	50	0.68	1.00	0.70	**-0.79**	0.01
17	50	0.70	1.01	0.70	**-0.80**	0.01
18	50	0.70	1.02	0.70	**-0.81**	0.00
19	50	0.70	1.02	0.70	**-0.81**	0.00
20	50	0.70	1.02	0.70	**-0.81**	0.00
21	99	1.98	2.12	1.56	**-1.89**	1.08
22	99	1.98	2.18	1.58	**-1.91**	0.03
23	99	1.98	2.22	1.62	**-1.94**	0.03
24	99	1.98	2.24	1.64	**-1.95**	0.01
25	99	1.98	2.24	1.68	**-1.97**	0.01
26	99	1.98	2.24	1.70	**-1.97**	0.01
27	99	1.98	2.24	1.72	**-1.98**	0.01
28	99	1.98	2.24	1.72	**-1.98**	0.00
29	99	1.98	2.24	1.72	**-1.98**	0.00
30	99	1.98	2.24	1.72	**-1.98**	0.00
31	198	3.12	3.58	2.58	**-3.09**	1.11
32	198	3.18	3.68	2.64	**-3.17**	0.07
33	198	3.36	3.74	2.74	**-3.28**	0.11
34	198	3.48	3.78	2.82	**-3.36**	0.08
35	198	3.52	3.88	2.90	**-3.43**	0.07
36	198	3.56	3.94	2.94	**-3.48**	0.05
37	198	3.56	3.96	2.98	**-3.50**	0.02
38	198	4.78	3.96	2.98	**-3.91**	0.41
39	198	4.82	3.96	2.98	**-3.92**	0.01
40	198	4.86	3.96	2.98	**-3.93**	0.01
41	400	4.90	5.58	4.12	**-4.87**	0.93
42	400	4.94	5.68	4.18	**-4.93**	0.07

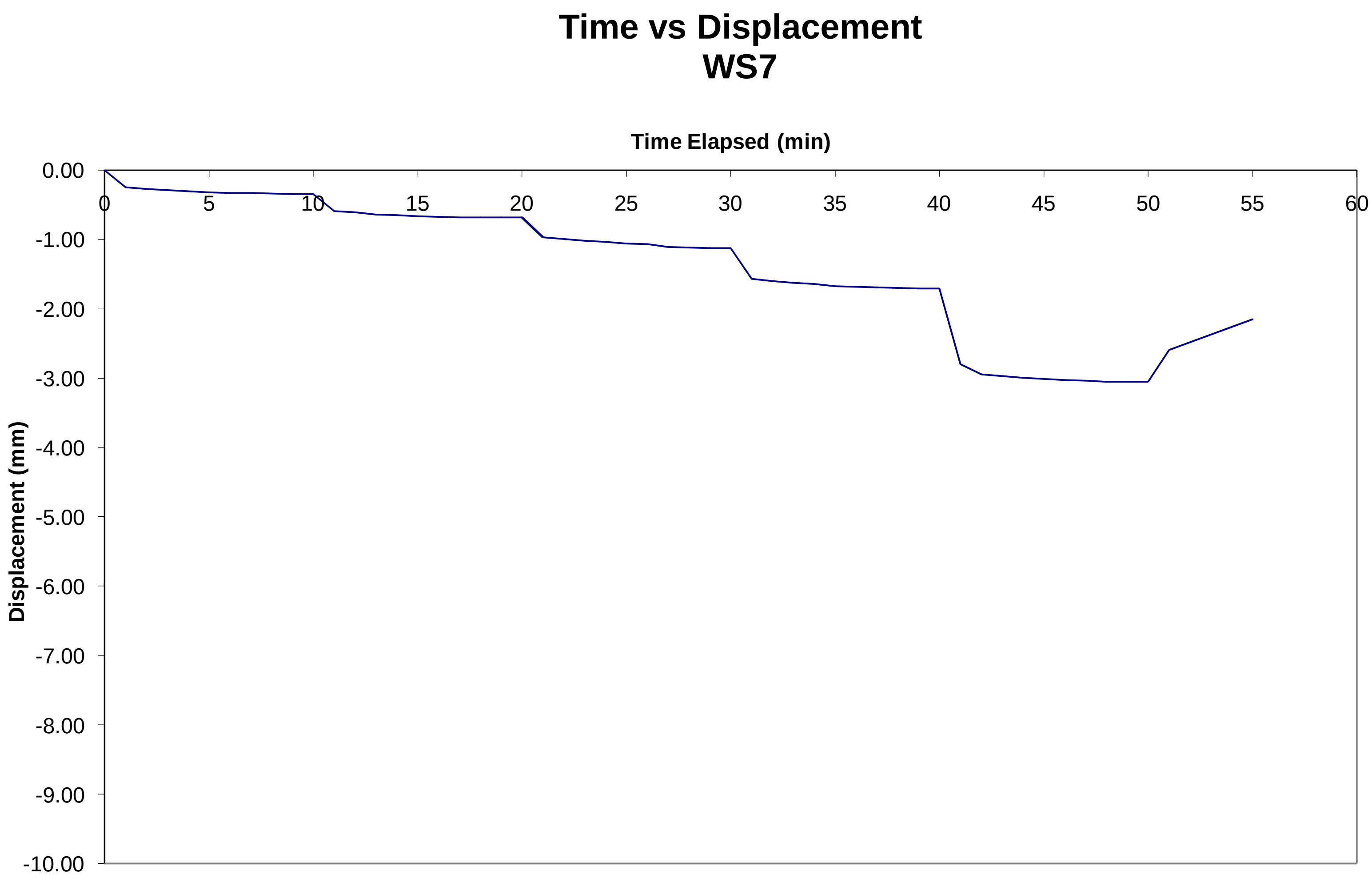
Time vs Displacement
W/S5

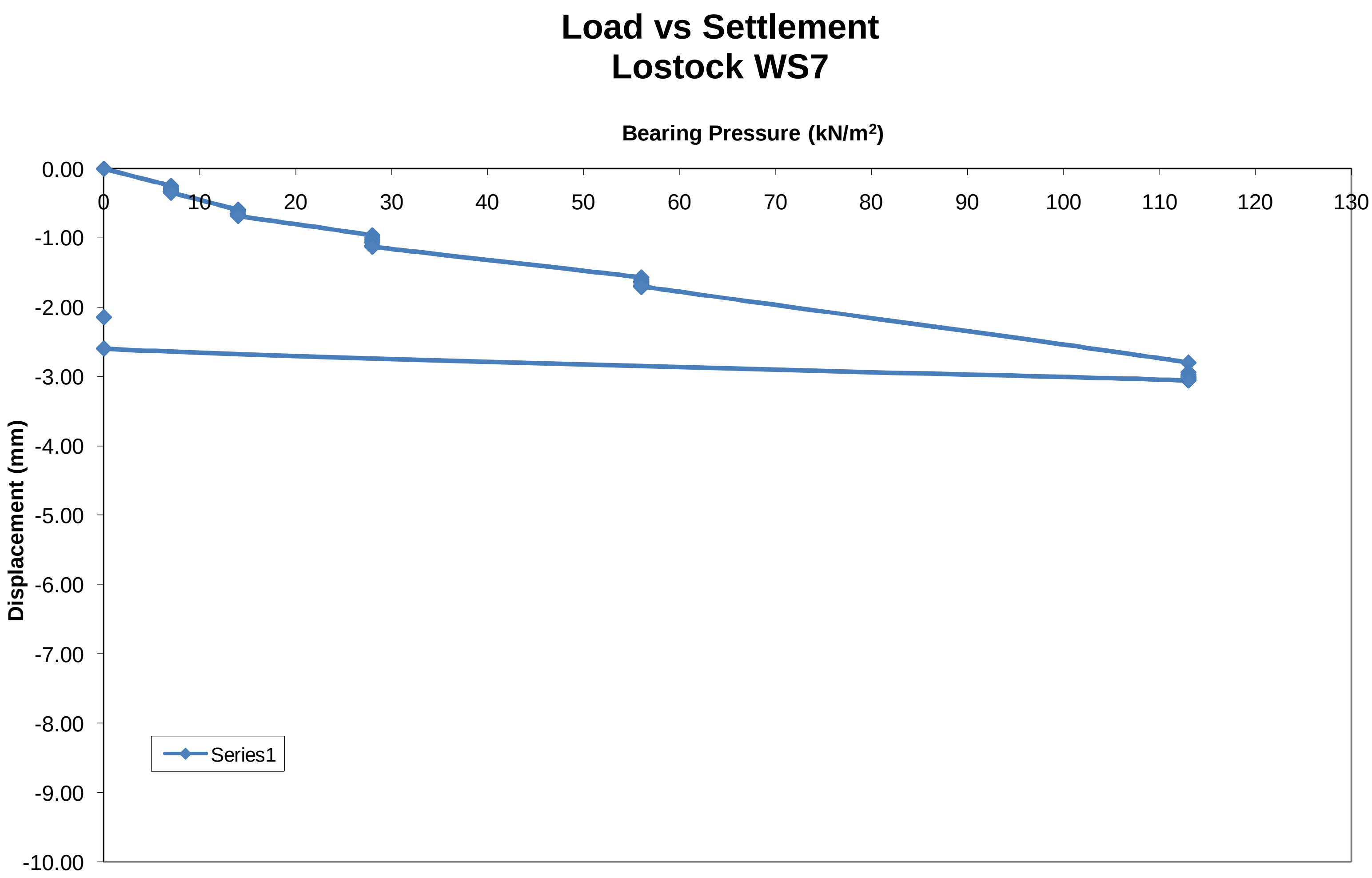




Load vs Settlement
Lostock W/S5
Bearing Pressure (kN/m²)
0
50
100
150
200
250
300
350
400
450
500
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
Displacement (mm)
Series1

Time (mins)	Pressure (kN/m^2)	Disp 1 (mm)	Disp 2 (mm)	Disp 3 (mm)	Displacement (mm)	Movement (mm)
0	0	0.00	0.00	0.00	**0.00**	0.00
1	7	0.22	0.49	0.03	**-0.25**	0.00
2	7	0.23	0.53	0.04	**-0.27**	0.27
3	7	0.25	0.56	0.05	**-0.29**	0.02
4	7	0.26	0.59	0.06	**-0.30**	0.02
5	7	0.27	0.62	0.07	**-0.32**	0.02
6	7	0.28	0.62	0.08	**-0.33**	0.01
7	7	0.28	0.62	0.09	**-0.33**	0.00
8	7	0.28	0.62	0.10	**-0.33**	0.00
9	7	0.28	0.66	0.10	**-0.35**	0.01
10	7	0.28	0.66	0.10	**-0.35**	0.00
11	14	0.34	0.98	0.45	**-0.59**	0.24
12	14	0.35	0.99	0.49	**-0.61**	0.02
13	14	0.36	0.99	0.57	**-0.64**	0.03
14	14	0.36	0.99	0.59	**-0.65**	0.01
15	14	0.37	1.00	0.62	**-0.66**	0.02
16	14	0.38	1.00	0.64	**-0.67**	0.01
17	14	0.38	1.00	0.65	**-0.68**	0.00
18	14	0.38	1.00	0.65	**-0.68**	0.00
19	14	0.38	1.00	0.65	**-0.68**	0.00
20	14	0.38	1.01	0.65	**-0.68**	0.00
21	28	0.77	1.23	0.89	**-0.96**	0.28
22	28	0.78	1.26	0.94	**-0.99**	0.03
23	28	0.79	1.29	0.97	**-1.02**	0.02
24	28	0.79	1.32	0.98	**-1.03**	0.01
25	28	0.80	1.37	0.99	**-1.05**	0.02
26	28	0.80	1.39	1.01	**-1.07**	0.01
27	28	0.80	1.43	1.10	**-1.11**	0.04
28	28	0.80	1.44	1.11	**-1.12**	0.01
29	28	0.80	1.45	1.12	**-1.12**	0.01
30	28	0.80	1.45	1.13	**-1.13**	0.00
31	56	1.36	1.89	1.45	**-1.57**	0.44
32	56	1.38	1.91	1.51	**-1.60**	0.03
33	56	1.40	1.91	1.56	**-1.62**	0.02
34	56	1.42	1.91	1.59	**-1.64**	0.02
35	56	1.46	1.90	1.65	**-1.67**	0.03
36	56	1.47	1.90	1.67	**-1.68**	0.01
37	56	1.48	1.90	1.69	**-1.69**	0.01
38	56	1.48	1.90	1.71	**-1.70**	0.01
39	56	1.48	1.92	1.72	**-1.71**	0.01
40	56	1.48	1.92	1.71	**-1.70**	0.00
41	113	2.50	3.88	2.02	**-2.80**	1.10
42	113	2.67	4.04	2.11	**-2.94**	0.14


Time vs Displacement
WS7
Time Elapsed (min)
Displacement (mm)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
0
5
10
15
20
25
30
35
40
45
50
55
60


Load vs Settlement
Lostock WS7
Bearing Pressure (kN/m²)
Displacement (mm)
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
-7.00
-8.00
-9.00
-10.00
0
10
20
30
40
50
60
70
80
90
100
110
120
130
Series1

Phase II Factual Report

Contract: Lostock Works, Cheshire

Ref: G900000

Appendix E

Geotechnical Laboratory Testing

VAN ELLE
TOTAL FOUNDATION SOLUTIONS

SUMMARY OF CHEMICAL ANALYSES

(B.S. 1377 : PART 3 : 1990 AND BRE CP2/79)

Hole Number	Sample Number	Depth m	Sulphate Content SO3 (as SO_4) Acid Soluble Sulphate as % SO_4 Clause 5.5.	Aqueous Extract Sulphate as g/l SO_4 Clause 5.5.	Ground-water g/l Clause 5.4.	Chloride Content Soluble Chloride as % equiv. NaCl Clause 7.3	Ground-water g/l Clause 7.2	pH Value @ 25°C Clause 9.	Organic Matter Content % Clause 3.	Loss on Ignition % Clause 4.	Remarks
TP2		0.20		0.01 (0.02)				7.09			
TP3		0.90		0.01 (0.02)				7.17			
TP5		0.70		0.01 (0.02)				6.96			
TP6		3.30		0.03 (0.03)				7.21			
TP8		0.30		0.03 (0.04)				7.39			
TP10		0.90		0.02 (0.02)				7.29			
TP11		1.20		0.03 (0.04)				7.56			
TP12		1.00		0.02 (0.02)				7.49			
TP13		1.50		0.02 (0.02)				7.50			
BH4		7.50		0.02 (0.02)				7.34			
BH5		8.00		<.01 (<.01)				7.20			
BH8		14.00		0.02 (0.02)				7.72			
BH14		9.00		0.02 (0.02)				7.33			
BH16		14.00		0.01 (0.02)				7.36			

NCP -No Chloride present

Checked By **Date** **Approved By** **Date**

Contract No. GEO/7772/09

Lostock Works, Cheshire

Client Ref No. LE10104

LABORATORY TESTING SERVICES LIMITED

Page of

Bynea, Llanelli, SA14 9SU.

Summary of Laboratory Sample Descriptions

Hole Number	Sample Number	Type	Depth (m)	Description of Sample*
BH1	2	B	0.50-1.00	Dark brown clayey silty sandy GRAVEL.
BH1	5	U	2.00-2.45	Brown slightly gravelly clayey SILT.
BH1	10	U	4.80-5.25	Reddish brown gravelly sandy silty CLAY.
BH4	14	U	4.40-4.85	Brown gravelly silty CLAY.
BH4	19	U	7.50-7.95	Reddish brown silty CLAY.
BH5	1+2	B	0.50-1.00	Brown sandy gravelly silty CLAY.
BH5	11	U	3.40-3.85	Brown silty CLAY.
BH5	20	U	8.00-8.45	Reddish brown silty CLAY.
BH6	22	U	8.70-9.15	Brown gravelly silty CLAY.
BH7	1	B	0.70-1.20	Reddish brown gravelly sandy silty CLAY.
BH8	2	B	0.50-1.00	Brown gravelly silty CLAY.
BH8	9	U	3.30-3.75	Brown silty CLAY.
BH8	25	U	14.00-14.45	Brown gravelly silty CLAY.
BH10	2	B	1.20-1.70	Brown gravelly silty CLAY.
BH10	5	U	1.80-2.25	Brown gravelly silty CLAY.
BH10	9	U	4.00-4.45	Brown gravelly silty CLAY.
BH14	1	B	0.80-1.20	Reddish brown gravelly sandy silty CLAY.
BH14	6	U	3.00-3.45	Brown gravelly silty CLAY.
BH14	19	U	9.00-9.45	Brown gravelly silty CLAY.
BH16	4	B	1.20-1.90	Greyish brown gravelly silty CLAY.
BH16	6	U	2.00-2.45	Brown gravelly SAND.
BH16	25	U	14.00-14.45	Reddish brown gravelly sandy silty CLAY.
TP2			0.20	Dark brown clayey silty sandy GRAVEL.
TP3			0.90-1.20	Dark brown clayey silty sandy GRAVEL.
TP5			0.70-1.00	Reddish brown gravelly sandy silty CLAY.
TP6			3.30	Dark brown clayey silty sandy GRAVEL.
TP8			0.30-1.00	Dark brown clayey silty sandy GRAVEL.
TP10			0.90	Brown gravelly silty CLAY.
TP11			1.20	Reddish brown gravelly sandy silty CLAY.
TP12			1.00	Reddish brown gravelly sandy silty CLAY.
TP13			1.50	Dark brown clayey silty sandy GRAVEL.

Note: Results on this table are in summary format and may not meet the requirements of the relevant standards, additional information is held by the laboratory

Checked by Date 6/8/09 Approved by Date 6/08/05

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: 7773/09

Client ref: LE10104/VE059592

Summary of Soil Classification Tests

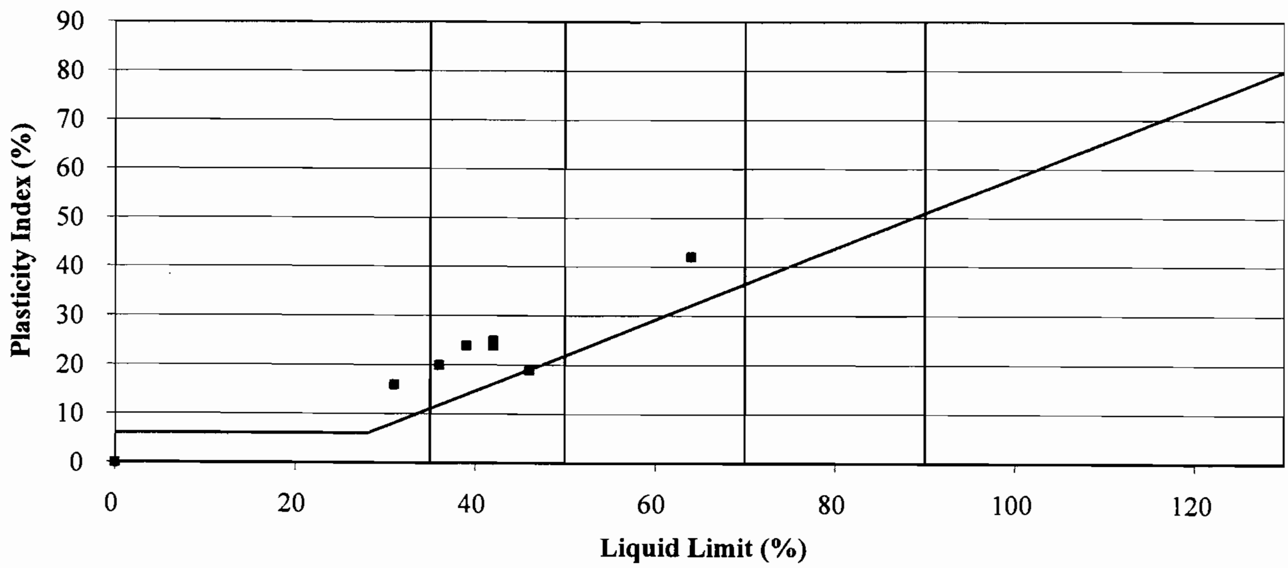
BS 1377:Part 2:1990

Hole/ Sample Number	Sample Type	Depth m	Moisture Content % Cl. 3.2	Liquid Limit % Cl. 4.3/4.4	Plastic Limit % Cl. 5.	Plasticity Index % Cl. 6.	% Passing .425mm	Remarks
BH1/5	U	2.00 - 2.45	25	46	27	19	50	MI Intermediate Plasticity
BH1/10	U	4.80 - 5.25	11					
BH4/14	U	4.40 - 4.85	17	42	17	25	95	CI Intermediate Plasticity
BH4/19	U	7.50 - 7.95	18					
BH5/1+2	B	0.50 - 1.00	14					
BH5/11	U	3.40 - 3.85	18	64	22	42	99	CH High Plasticity
BH5/20	U	8.00 - 8.45	19					
BH6/22	U	8.70 - 9.15	16	42	18	24	90	CI Intermediate Plasticity
BH8/9	U	3.30 - 3.75	21	31	15	16	90	CL Low Plasticity
BH8/25	U	14.00 - 14.45	29					
BH10/5	U	1.80 - 2.25	23	39	15	24	96	CI Intermediate Plasticity
BH14/6	U	3.00 - 3.45	21	36	16	20	95	CI Intermediate Plasticity
BH14/19	U	9.00 - 9.45	16					
BH16/6	U	2.00 - 2.45	17		NP		90	
BH16/25	U	14.00 - 14.45	11					

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

BS 5930:1999



Checked by Date 6/5/09

Approved by Date 6/5/09

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: 7772/09

Client Ref No: VE059592

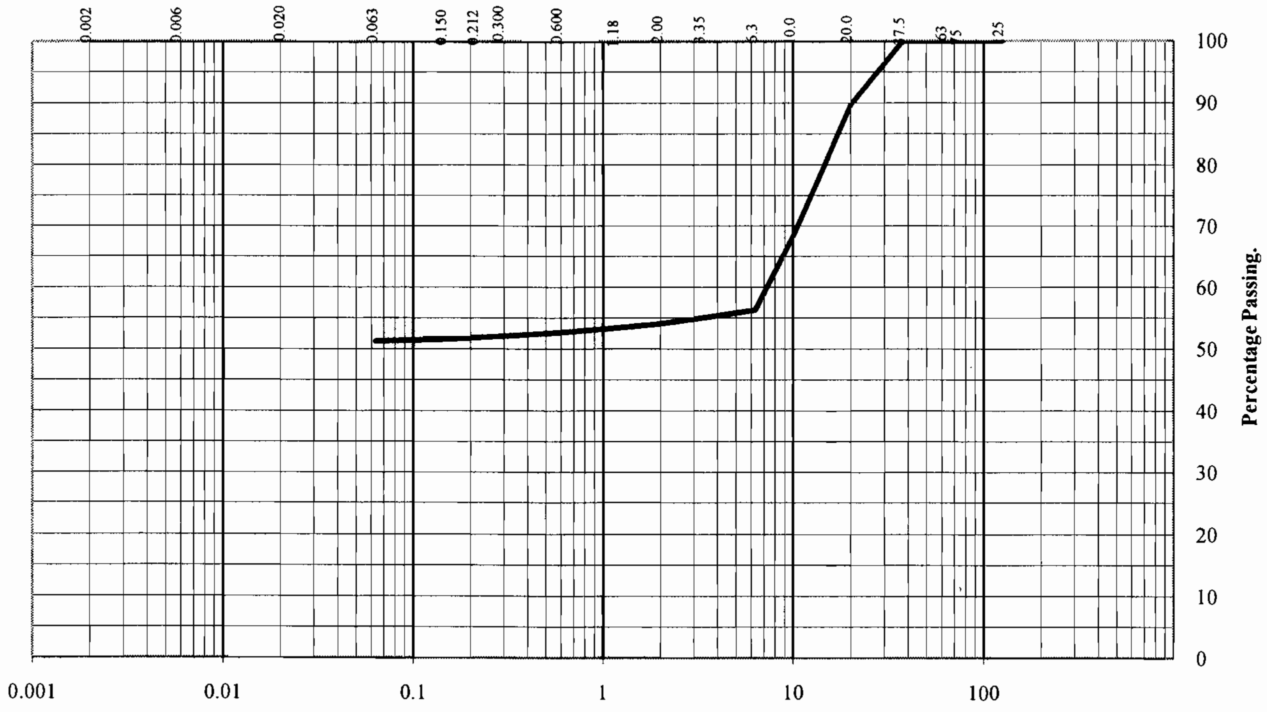
UKAS TESTING 2788

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole/Sample Number: **BH1/2** Type: **B** Depth (m): **0.50** to **1.00**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	100
20	90
10	68
6.3	56
3.35	55
2.00	54
1.18	53
0.60	53
0.30	52
0.21	52
0.15	52
0.06	51

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	46
Sand	3
Silt and Clay	51

Remarks:

#- not determined

Checked by **Date** 6/5/09 **Approved by** **Date** 6/5/09

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: 7772/09

Client Ref No: 10104/VE059:

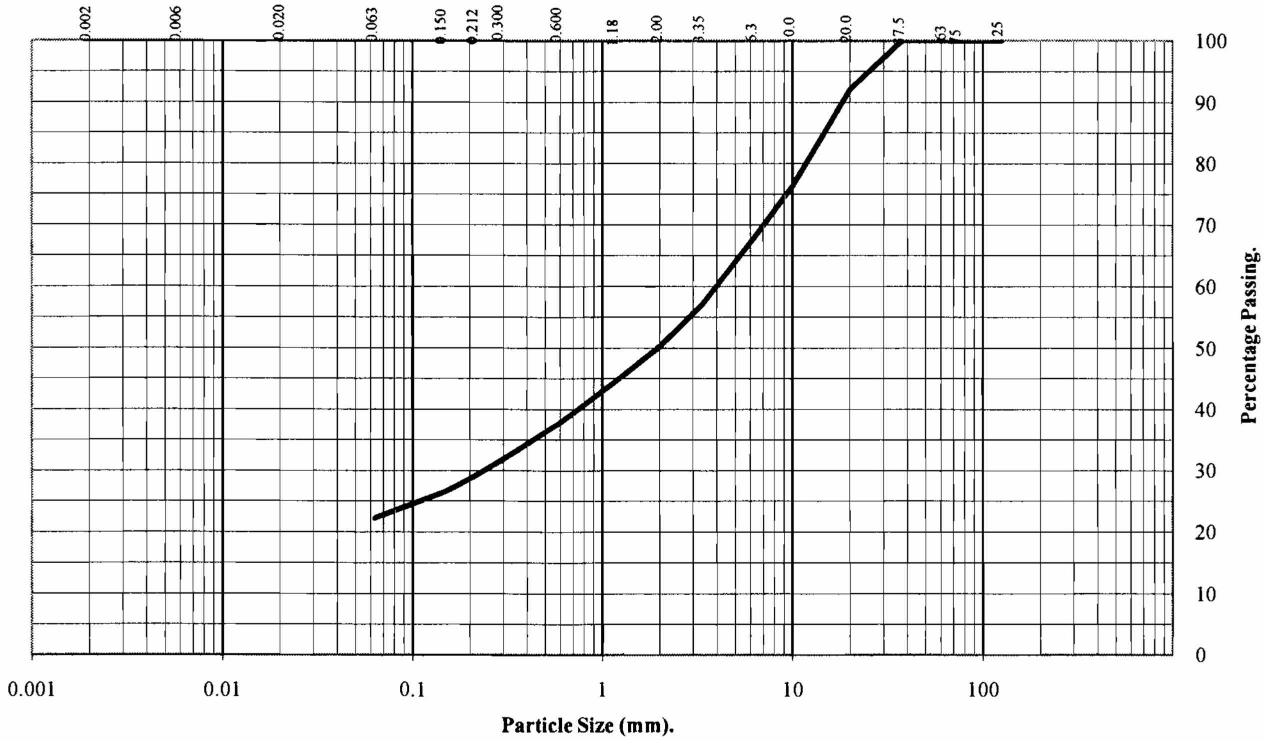
UKAS TESTING 2788

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole/Sample Number: **BH5/1+2** Type: **B** Depth (m): **0.50** to **1.00**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	100
20	92
10	76
6.3	68
3.35	57
2.00	50
1.18	45
0.60	38
0.30	32
0.21	29
0.15	27
0.06	22

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	50
Sand	28
Silt and Clay	22

Remarks:

#- not determined

6/5/09

Checked by **Date**

6/5/09

Approved by **Date**

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: **7772/09**

Client Ref No: **10104/VE059**

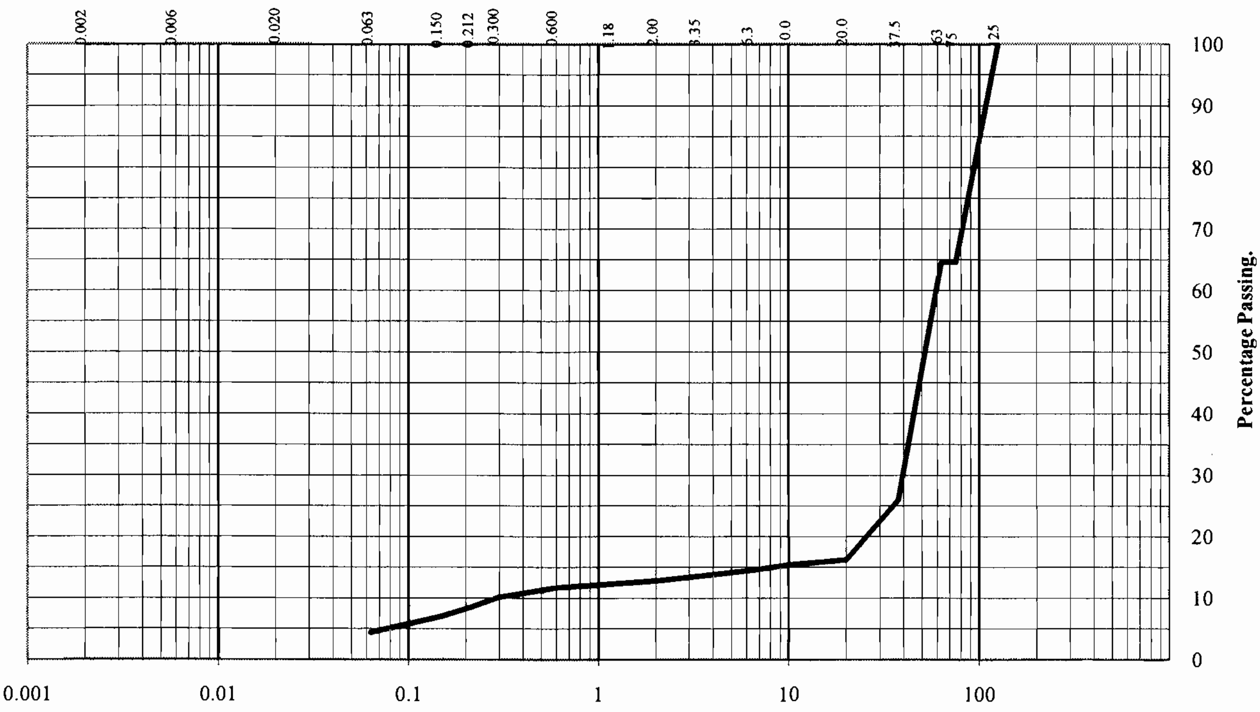
UKAS TESTING 2788

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole/Sample Number: **BH7/1** Type: **B** Depth (m): **0.70** to **1.20**



BS Test Sieve	Percentage Passing
125	100
75	65
63	65
38	26
20	16
10	15
6.3	15
3.35	14
2.00	13
1.18	12
0.60	12
0.30	10
0.21	9
0.15	7
0.06	4

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	35
Gravel	52
Sand	9
Silt and Clay	4

Remarks:

#- not determined

Checked by 6/5/09 Date

Approved by 6/05/05 Date

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: 7772/09

Client Ref No: 10104/VE059:

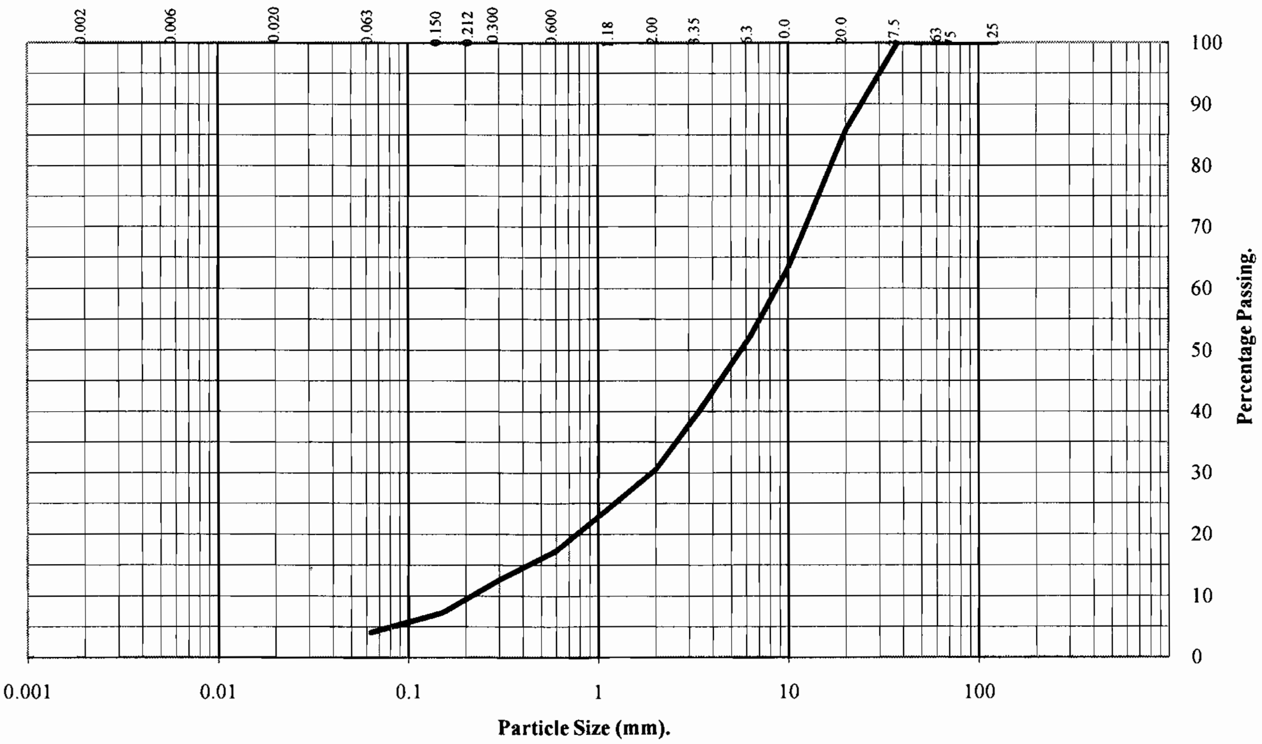
UKAS TESTING 2788

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole/Sample Number: **BH8/2** Type: **B** Depth (m): **0.50** to **1.00**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	100
20	86
10	64
6.3	52
3.35	40
2.00	31
1.18	25
0.60	17
0.30	13
0.21	10
0.15	7
0.06	4

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	69
Sand	27
Silt and Clay	4

Remarks:

#- not determined

Checked by Date 12/5/09

Approved by Date 12/5/09

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: 7772/09

Client Ref No: 10104/VE059!

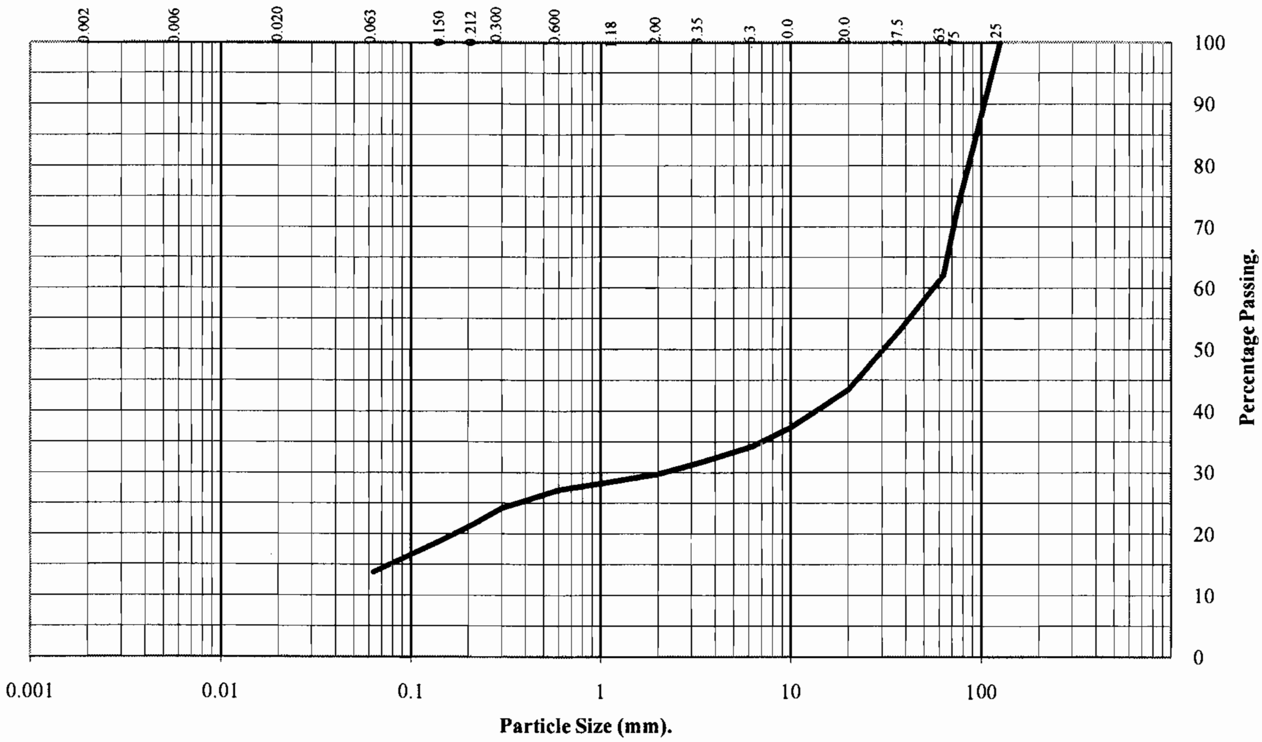
UKAS TESTING 2788

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole/Sample Number: **BH14/1** Type: **B** Depth (m): **0.80** to **1.20**



BS Test Sieve	Percentage Passing
125	100
75	73
63	62
38	53
20	43
10	37
6.3	34
3.35	32
2.00	30
1.18	29
0.60	27
0.30	24
0.21	22
0.15	19
0.06	14

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	38
Gravel	32
Sand	16
Silt and Clay	14

Remarks:

#- not determined

Checked by Date 6/8/09 Approved by Date 6/8/09

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: 7772/09

Client Ref No: 10104/VE059!

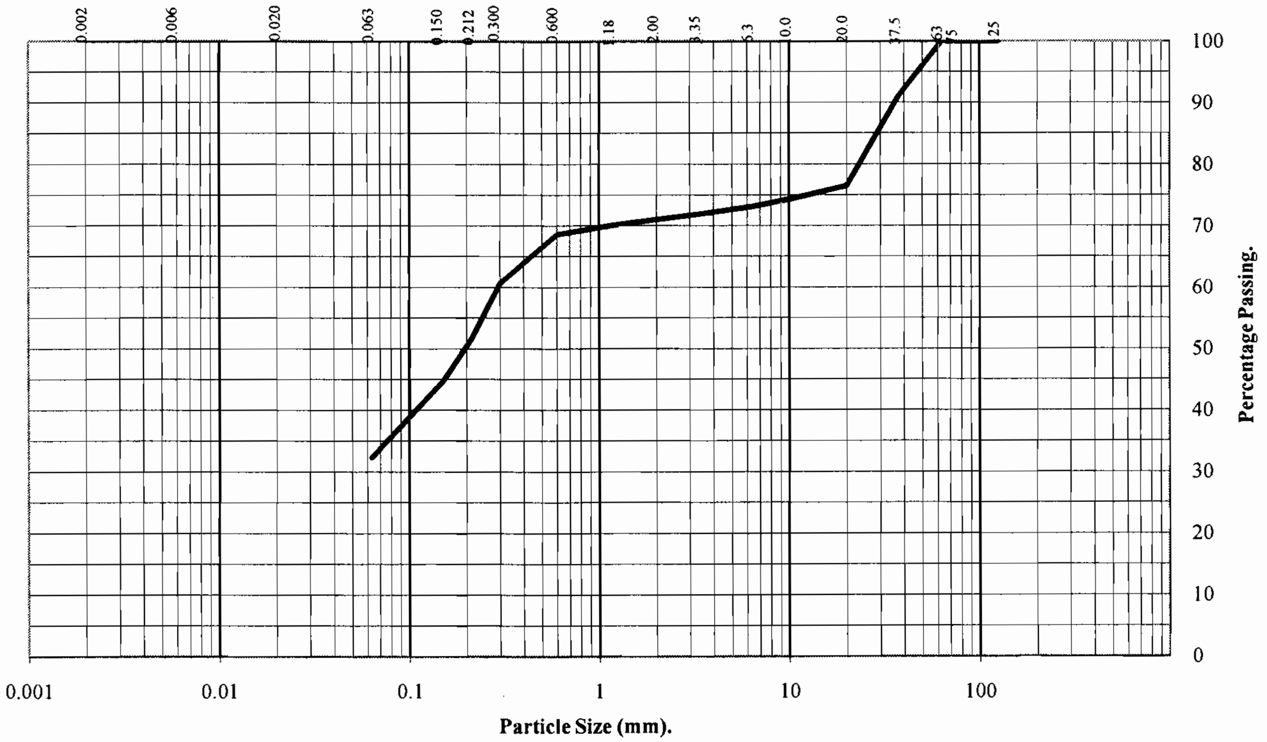
UKAS TESTING 2788

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole/Sample Number: **BH16/4** Type: **B** Depth (m): **1.20** to **1.90**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	91
20	76
10	74
6.3	73
3.35	72
2.00	71
1.18	70
0.60	69
0.30	61
0.21	52
0.15	45
0.06	32

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	29
Sand	39
Silt and Clay	32

Remarks:

#- not determined

6/5/09

Checked by Date

6/5/09

Approved by Date

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.:
7772/09
Client Ref No:
10104/VE059!

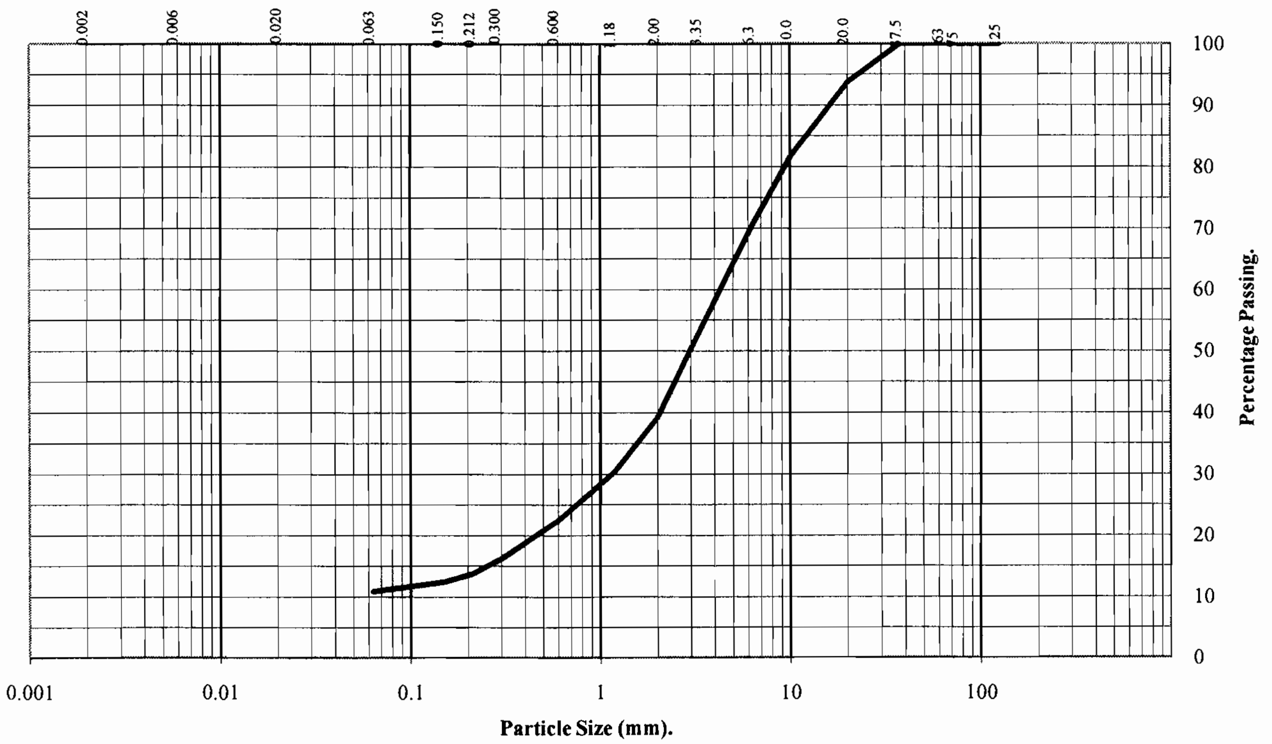
UKAS TESTING 2788

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole Number: **TP2** Depth (m): **0.20**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	100
20	94
10	82
6.3	71
3.35	53
2.00	39
1.18	30
0.60	23
0.30	16
0.21	14
0.15	12
0.06	11

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	61
Sand	28
Silt and Clay	11

Remarks:

#- not determined

Checked by 6/5/09 **Date** **Approved by** 6/5/08 **Date**

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: 7772/09

Client Ref No: 10104/VE059!

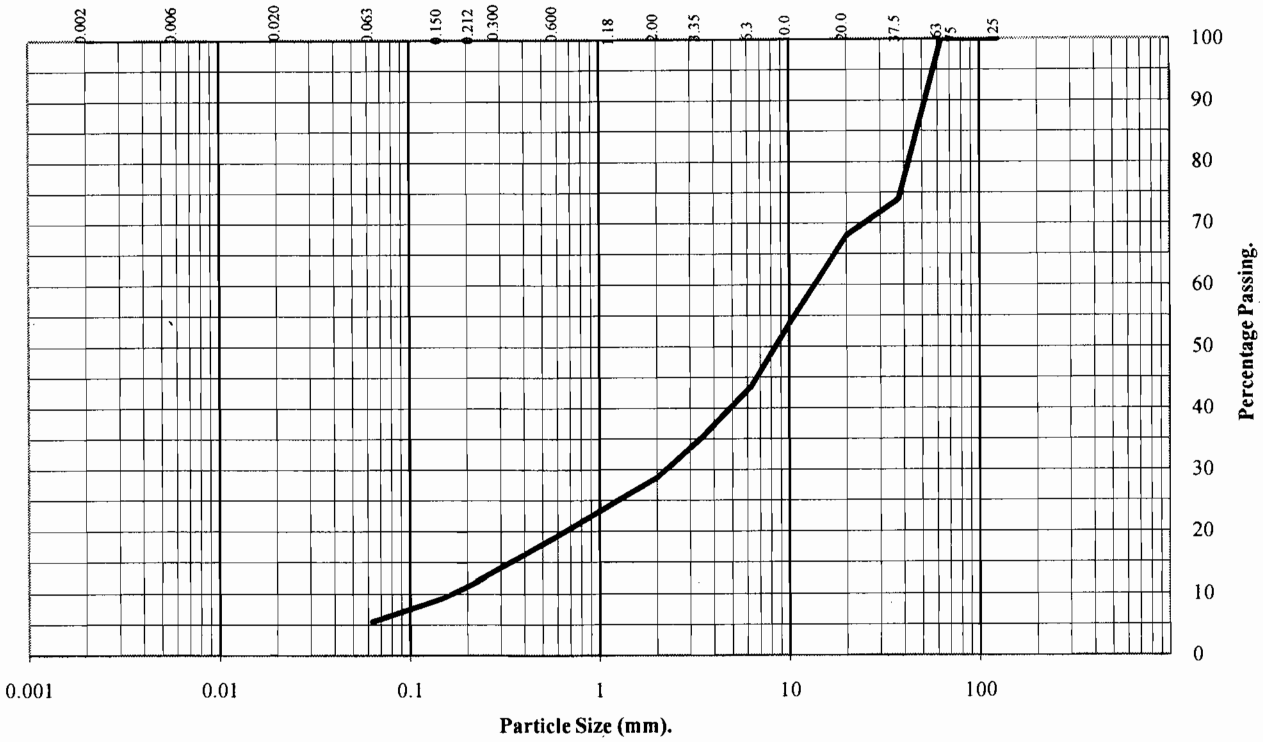
UKAS TESTING 2788

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole Number: **TP3** Depth (m): **0.90** to **1.20**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	74
20	68
10	54
6.3	44
3.35	35
2.00	29
1.18	25
0.60	19
0.30	14
0.21	12
0.15	9
0.06	6

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	71
Sand	23
Silt and Clay	6

Remarks:

#- not determined

Checked by 6/5/05 Date

Approved by 6-8/05 Date

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: 7772/09

Client Ref No: 10104/VE059!

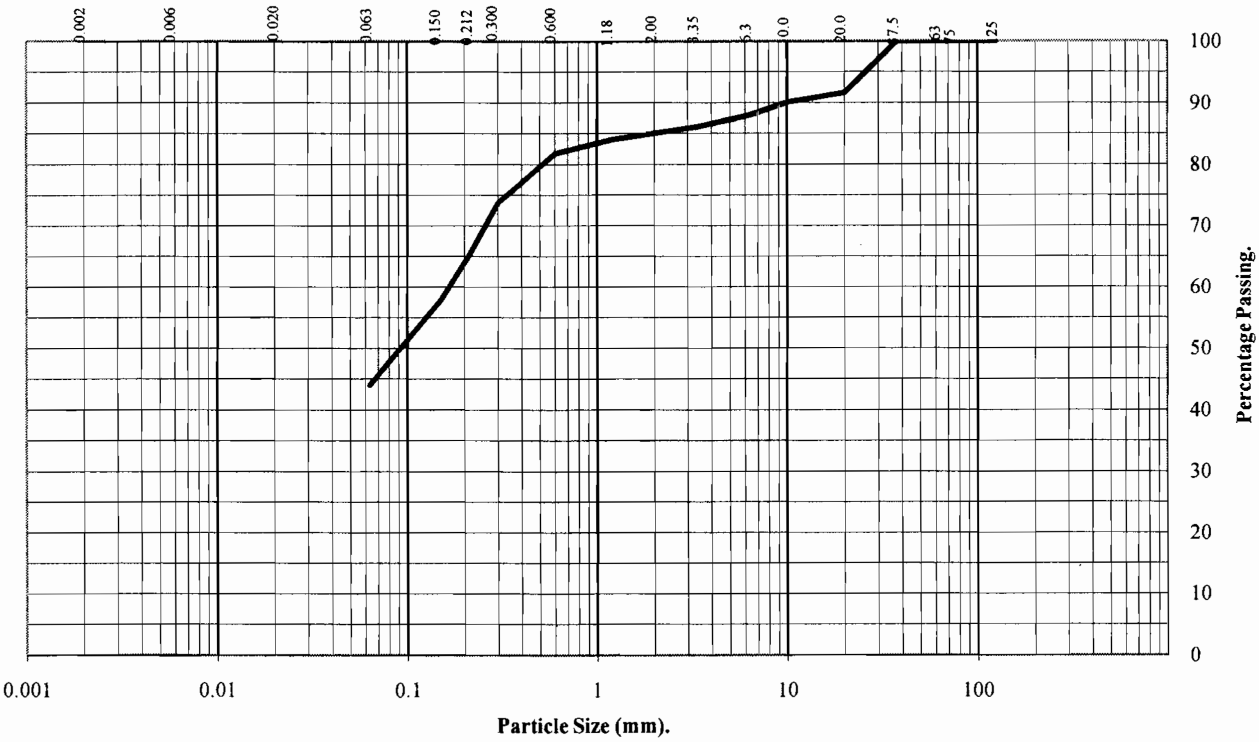
UKAS TESTING 2788

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole Number: **TP5** Depth (m): **0.70** to **1.00**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	100
20	92
10	90
6.3	88
3.35	86
2.00	85
1.18	84
0.60	82
0.30	74
0.21	65
0.15	58
0.06	44

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	15
Sand	41
Silt and Clay	44

Remarks:

#- not determined

Checked by Date 6/5/09 Approved by Date 6/5/-5

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: 7772/09

Client Ref No: 10104/VE059!

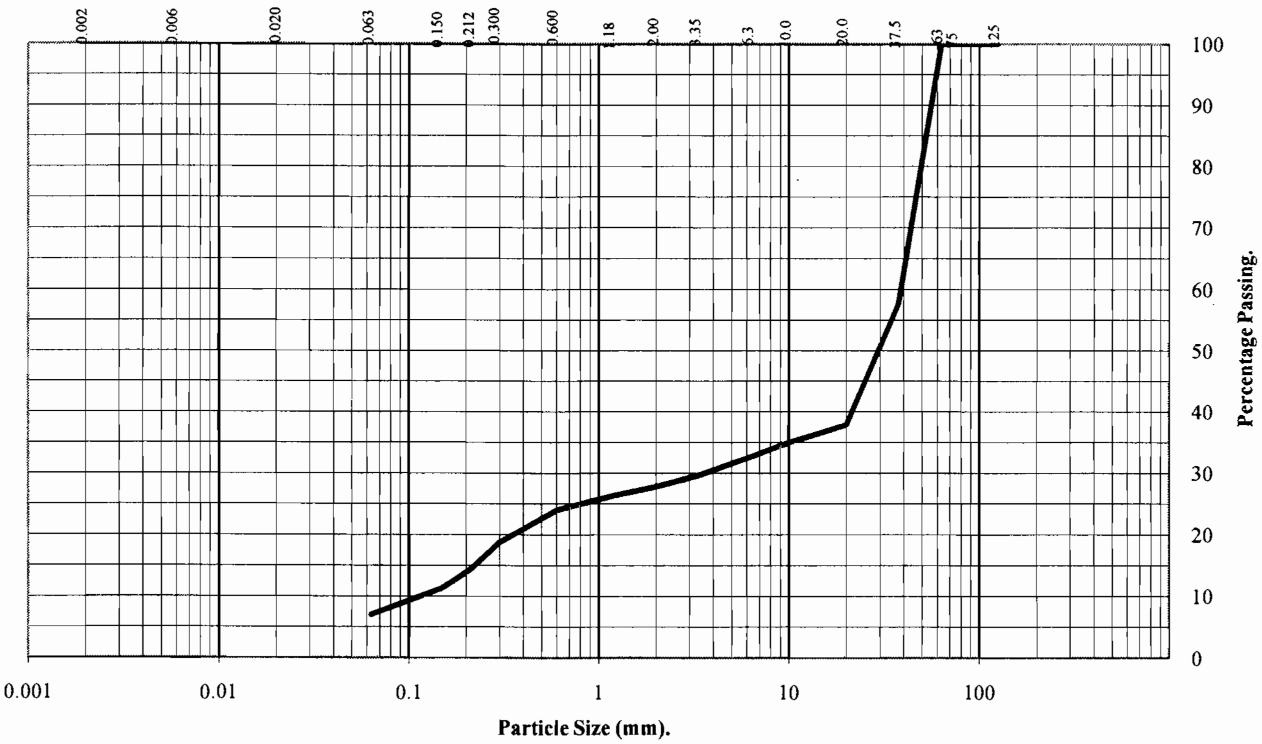
UKAS TESTING 2788

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole Number: **TP6** Depth (m): **3.30**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	58
20	38
10	35
6.3	33
3.35	30
2.00	28
1.18	26
0.60	24
0.30	19
0.21	14
0.15	11
0.06	7

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	72
Sand	21
Silt and Clay	7

Remarks:

#- not determined

Checked by 6/5/09 Date Approved by 6/5/09 Date

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: **7772/09**

Client Ref No: **10104/VE059!**

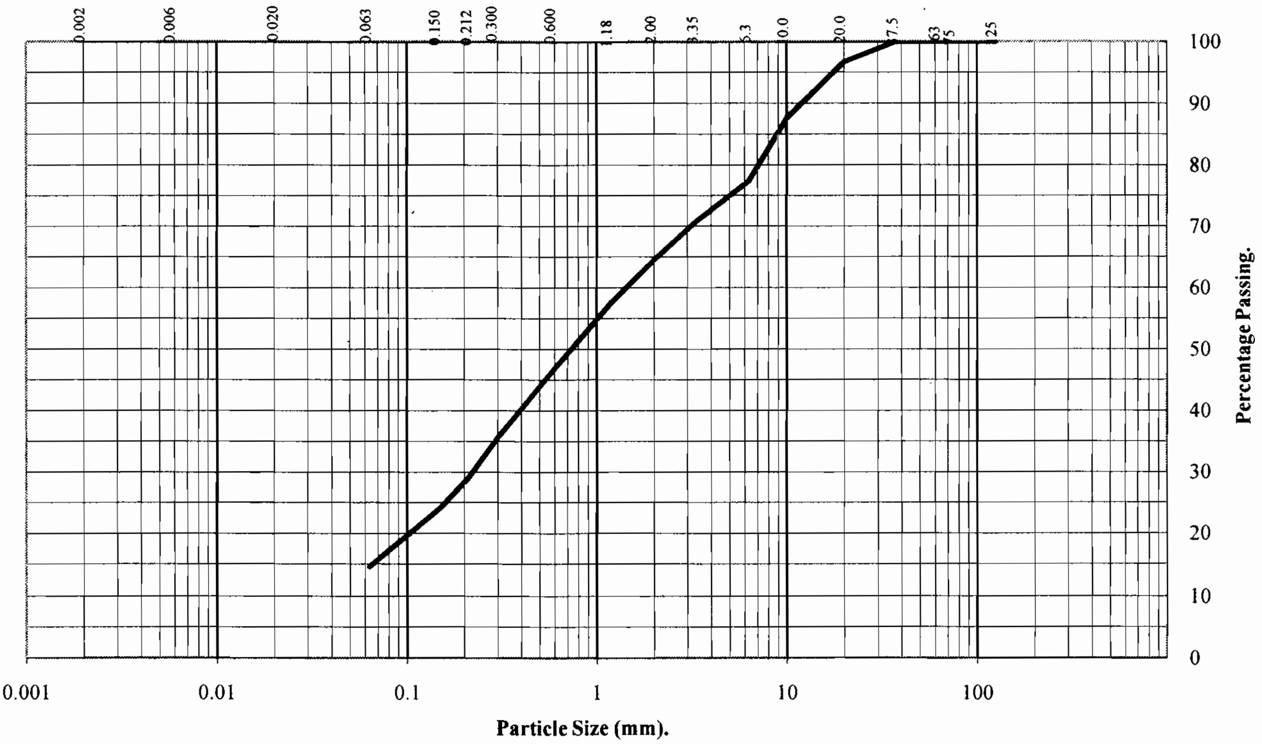
UKAS TESTING 2788

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole Number: **TP8** Depth (m): **0.30** to **1.00**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	100
20	97
10	88
6.3	77
3.35	71
2.00	65
1.18	57
0.60	47
0.30	36
0.21	29
0.15	24
0.06	15

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	35
Sand	50
Silt and Clay	15

Remarks:

#- not determined

Checked by 6/5/09 Date Approved by 6/05/09 Date

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: 7772/09

Client Ref No: 10104/VE059!

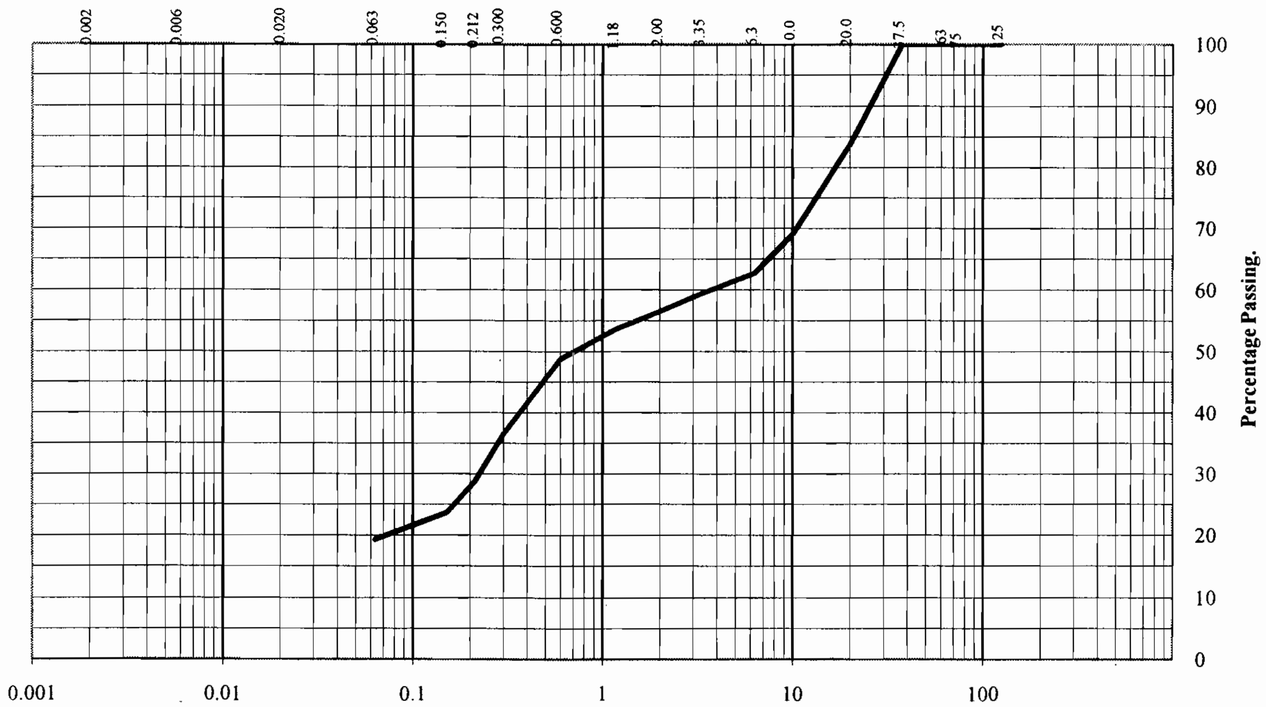
UKAS TESTING 2788

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole Number: **TP10** Depth (m): **0.90**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	100
20	84
10	69
6.3	63
3.35	59
2.00	57
1.18	54
0.60	49
0.30	37
0.21	29
0.15	24
0.06	19

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	43
Sand	38
Silt and Clay	19

Remarks:

#- not determined

Checked by 6/5/09 Date

Approved by 6/5/05 Date

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: 7772/09

Client Ref No: 10104/VE059:

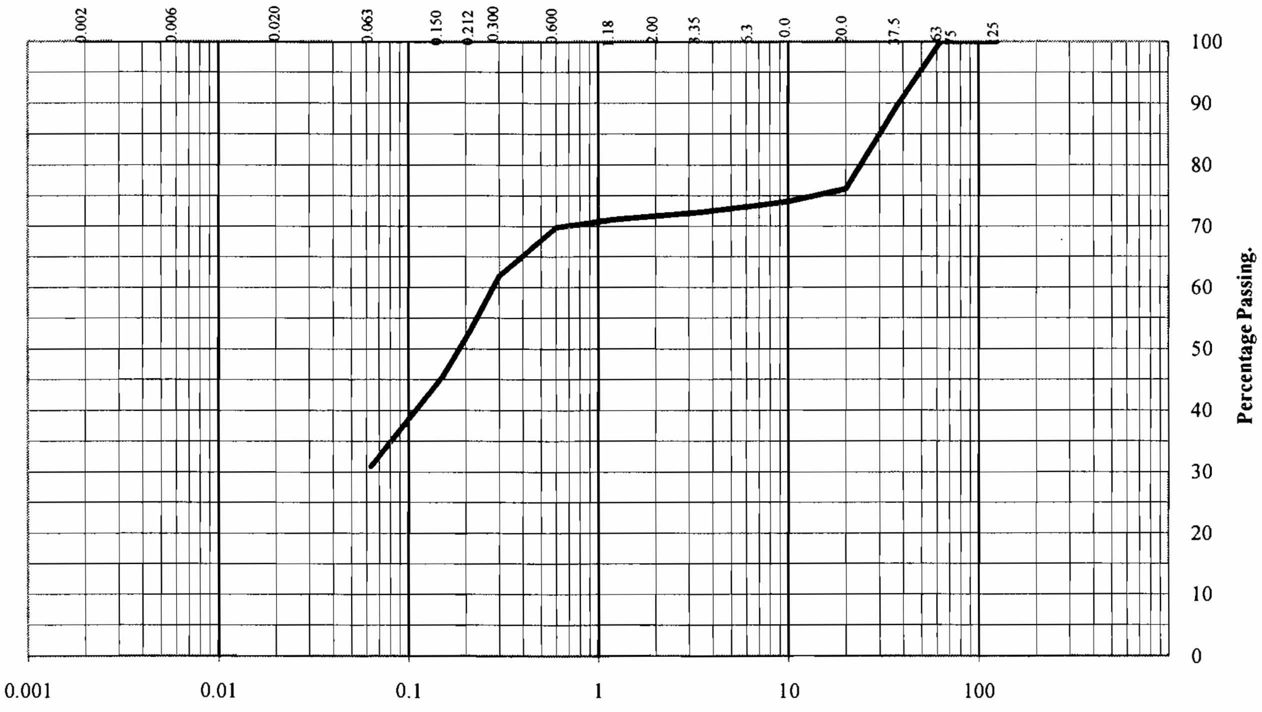
UKAS TESTING 2788

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole Number: **TP11** Depth (m): **1.20**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	90
20	76
10	74
6.3	73
3.35	72
2.00	72
1.18	71
0.60	70
0.30	62
0.21	53
0.15	45
0.06	31

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	28
Sand	41
Silt and Clay	31

Remarks:

#- not determined

6/5/09 6/5/09

Checked by **Date** **Approved by** **Date**

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: 7772/09

Client Ref No: **10104/VE059!**

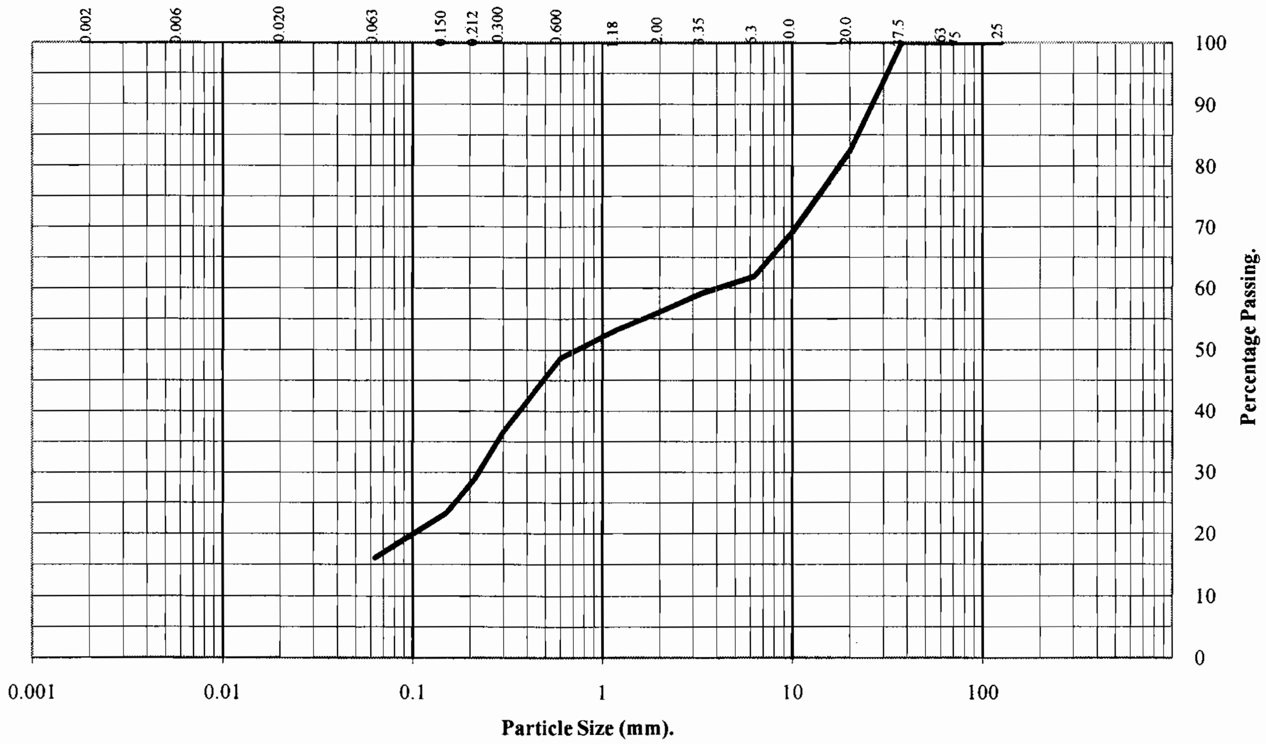
2788

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole Number: **TP12** Depth (m): **1.00**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	100
20	82
10	69
6.3	62
3.35	59
2.00	56
1.18	53
0.60	49
0.30	37
0.21	29
0.15	23
0.06	16

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	44
Sand	40
Silt and Clay	16

Remarks:

#- not determined

Checked by 6/5/09 Date

Approved by 6/5/09 Date

Lostock Works Cheshire

Contract No.: **7772/09**

Client Ref No: **10104/VE059!**

UKAS TESTING 2788

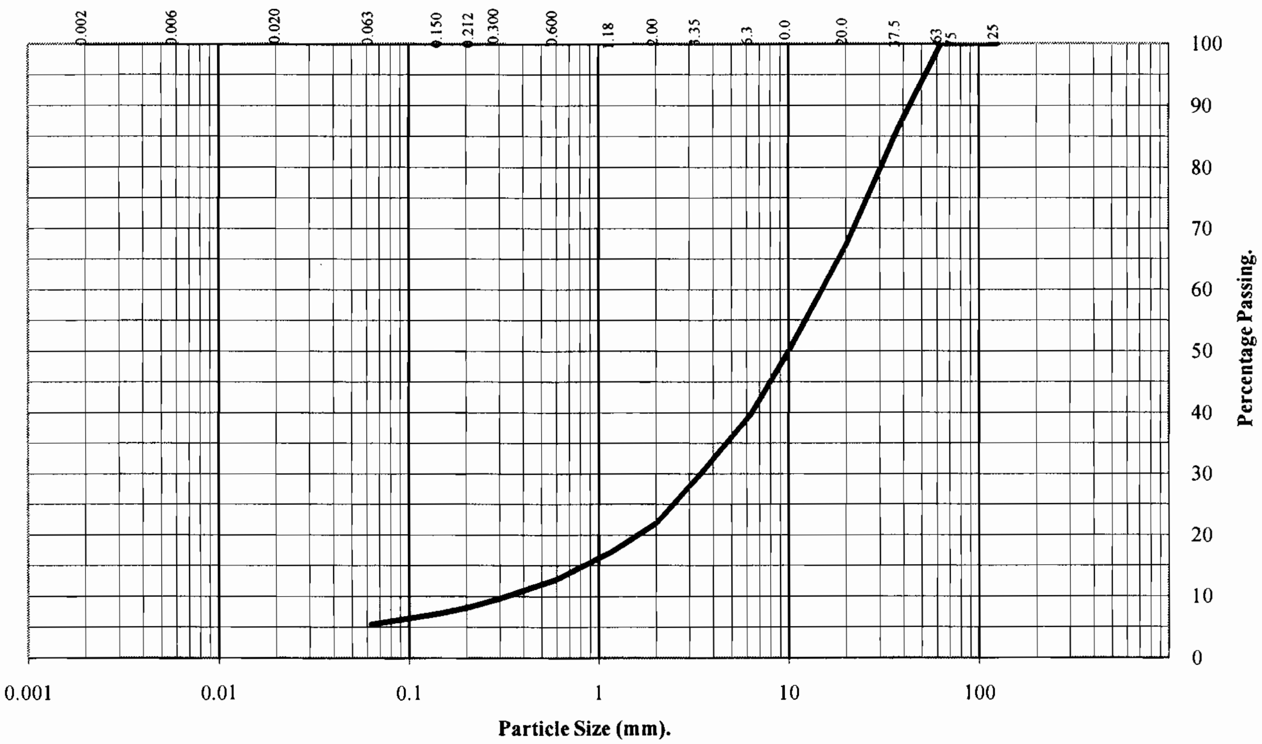
LABORATORY TESTING SERVICES LIMITED

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole Number: **TP13** Depth (m): **1.50**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	86
20	67
10	50
6.3	40
3.35	30
2.00	22
1.18	17
0.60	13
0.30	10
0.21	8
0.15	7
0.06	5

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	78
Sand	17
Silt and Clay	5

Remarks:

#- not determined

Checked by 6/5/09 Date Approved by 6/5/09 Date

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: 7772/09

Client Ref No: **10104/VE059!**

UKAS TESTING 2788

SUMMARY OF CHEMICAL ANALYSES

(B.S. 1377 : PART 3 : 1990 AND BRE CP2/79)

Hole Number	Sample Number	Depth m	Sulphate Content SO3 (as SO_4)			Chloride Content		pH Value @ 25°C	Organic Matter Content %	Loss on Ignition %	Remarks
			Acid Soluble Sulphate as % SO_4 Clause 5.5.	Aqueous Extract Sulphate as g/l SO_4 Clause 5.5.	Ground-water g/l Clause 5.4.	Soluble Chloride as % equiv. NaCl Clause 7.3	Ground-water g/l Clause 7.2	Clause 9.	Clause 3.	Clause 4.	
TP2		0.20		0.01 (0.02)				7.09			
TP3		0.90		0.01 (0.02)				7.17			
TP5		0.70		0.01 (0.02)				6.96			
TP6		3.30		0.03 (0.03)				7.21			
TP8		0.30		0.03 (0.04)				7.39			
TP10		0.90		0.02 (0.02)				7.29			
TP11		1.20		0.03 (0.04)				7.56			
TP12		1.00		0.02 (0.02)				7.49			
TP13		1.50		0.02 (0.02)				7.50			
BH4		7.50		0.02 (0.02)				7.34			
BH5		8.00		<.01 (<.01)				7.20			
BH8		14.00		0.02 (0.02)				7.72			
BH14		9.00		0.02 (0.02)				7.33			
BH16		14.00		0.01 (0.02)				7.36			

NCP -No Chloride present

Checked By — Date 6/5/09 — Approved By — Date 6/5/09

Contract No. GEO/7772/09

Lostock Works, Cheshire

Client Ref No. LE10104

LABORATORY TESTING SERVICES LIMITED

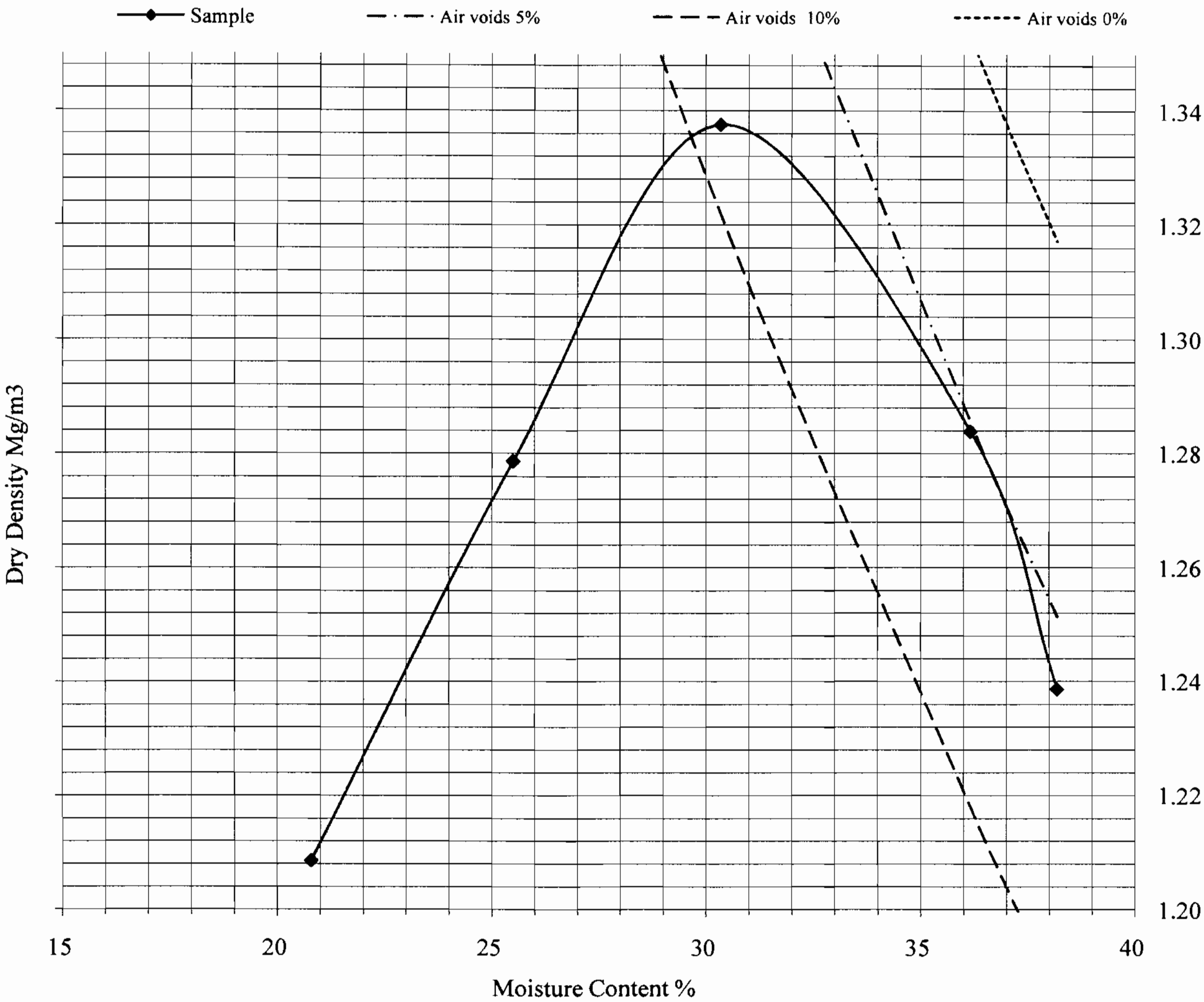
Page of

Bynea, Llanelli, SA14 9SU.

Dry Density/Moisture Content Relationship

BS 1377:Part 4:1990

Hole Number: **BH1** **Sample Number:** **B2** **Depth (m):** **0.50-1.00**



Initial Moisture Content:	36	Method of Compaction	2.5Kg Rammer / Single Sample
Particle Density (Mg/m3):	2.65* Assumed	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (mg/m3):	1.34	Material Retained on 20.0 mm Test Sieve (%):	10
Optimum Moisture Content (%):	30	Sample Preparation Clause :	3.2.4.2

** - not included in laboratory scope of accreditation*

Remarks

Checked by 6/5/09 **Date** **Approved by** 6/5/09 **Date**

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

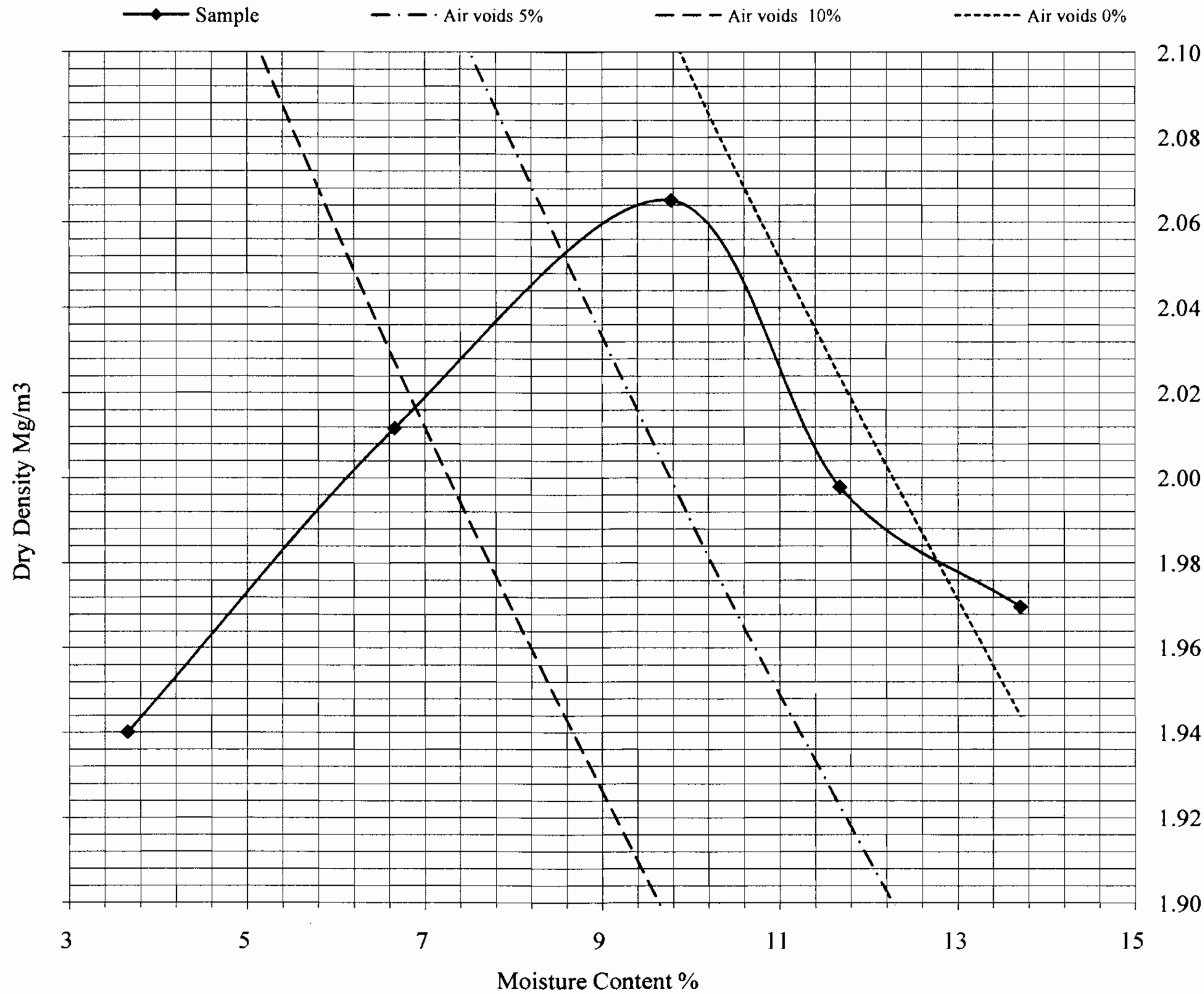
Contract No.: 7772/09
Client Ref No: VE059592/LE10

UKAS TESTING 2788

Dry Density/Moisture Content Relationship

BS 1377:Part 4:1990

Hole Number: **BH5** **Sample Number:** **B1-+B2** **Depth (m):** **0.50-1.00**



Initial Moisture Content:	14	Method of Compaction	2.5Kg Rammer / Single Sample
Particle Density (Mg/m3):	2.65* Assumed	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (mg/m3):	2.07	Material Retained on 20.0 mm Test Sieve (%):	8
Optimum Moisture Content (%):	10	Sample Preparation Clause :	3.2.4.2

** - not included in laboratory scope of accreditation*

Remarks

Checked by Date 6/5/09

Approved by Date 6/5/09

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

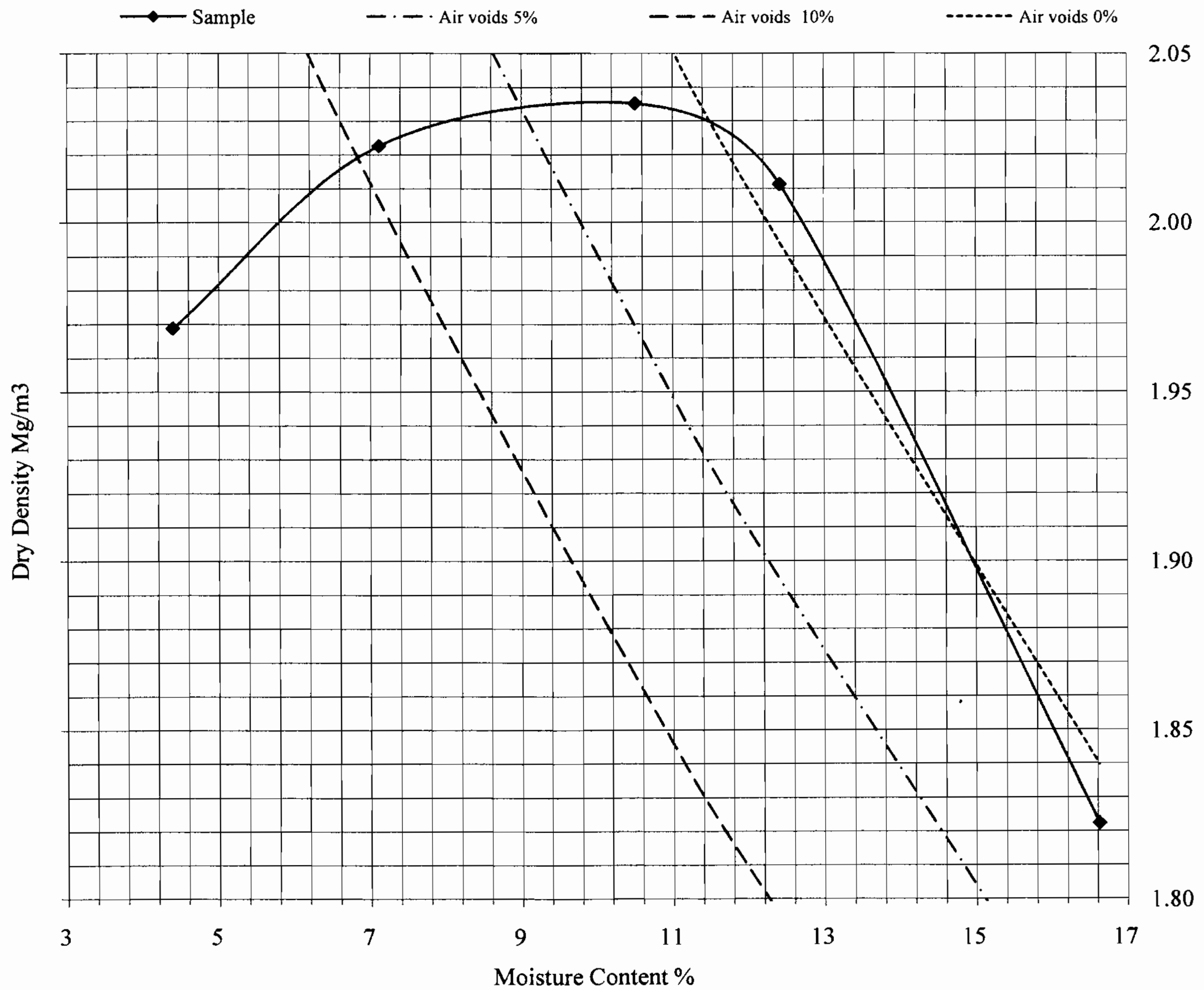
Contract No.:
7772/09
Client Ref No:
VE059592/LE10

UKAS TESTING 2788

Dry Density/Moisture Content Relationship

BS 1377:Part 4:1990

Hole Number: **BH7** **Sample Number:** **B1** **Depth (m):** **0.70-1.20**



Initial Moisture Content:	12	Method of Compaction	2.5Kg Rammer / Single Sample
Particle Density (Mg/m3):	2.65* Assumed	Material Retained on 37.5 mm Test Sieve (%):	74
Maximum Dry Density (mg/m3):	2.04	Material Retained on 20.0 mm Test Sieve (%):	84
Optimum Moisture Content (%):	11	Sample Preparation Clause :	Non-Standard

** - not included in laboratory scope of accreditation*

Remarks

Checked by 6/5/09 Date

Approved by 6/5/09 Date

GEO LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: 7772/09

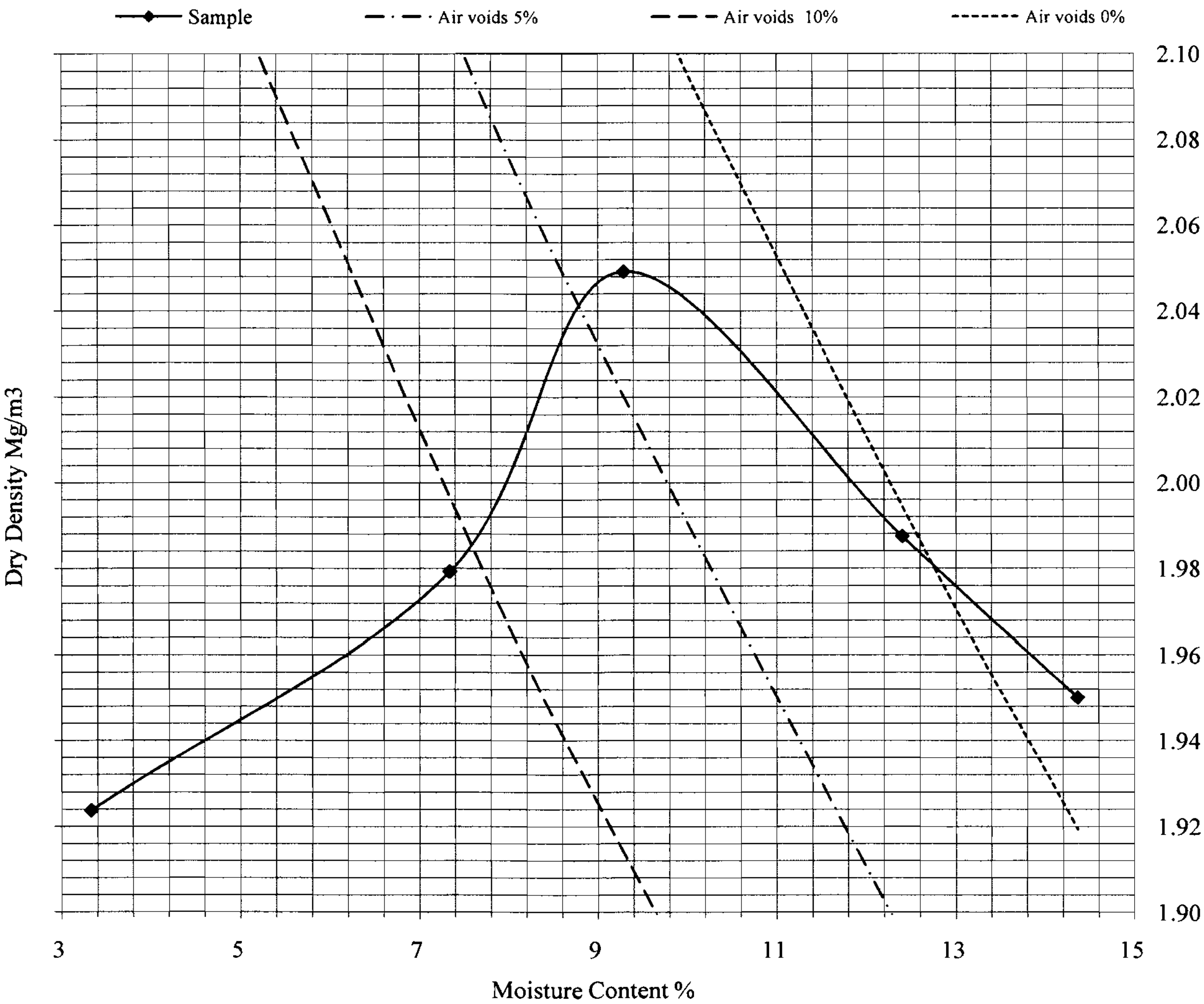
Client Ref No: VE059592/LE10

UKAS TESTING 2788

Dry Density/Moisture Content Relationship

BS 1377:Part 4:1990

Hole Number: **BH8** **Sample Number:** **B2** **Depth (m):** **0.50**



Initial Moisture Content:	14	Method of Compaction	2.5Kg Rammer / Single Sample
Particle Density (Mg/m3):	2.65* Assumed	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (mg/m3):	2.05	Material Retained on 20.0 mm Test Sieve (%):	14
Optimum Moisture Content (%):	9.3	Sample Preparation Clause :	3.2.4.2

** - not included in laboratory scope of accreditation*

Remarks

Checked by **Date** 6/5/09 **Approved by** **Date** 6/5/09

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: 7772/09

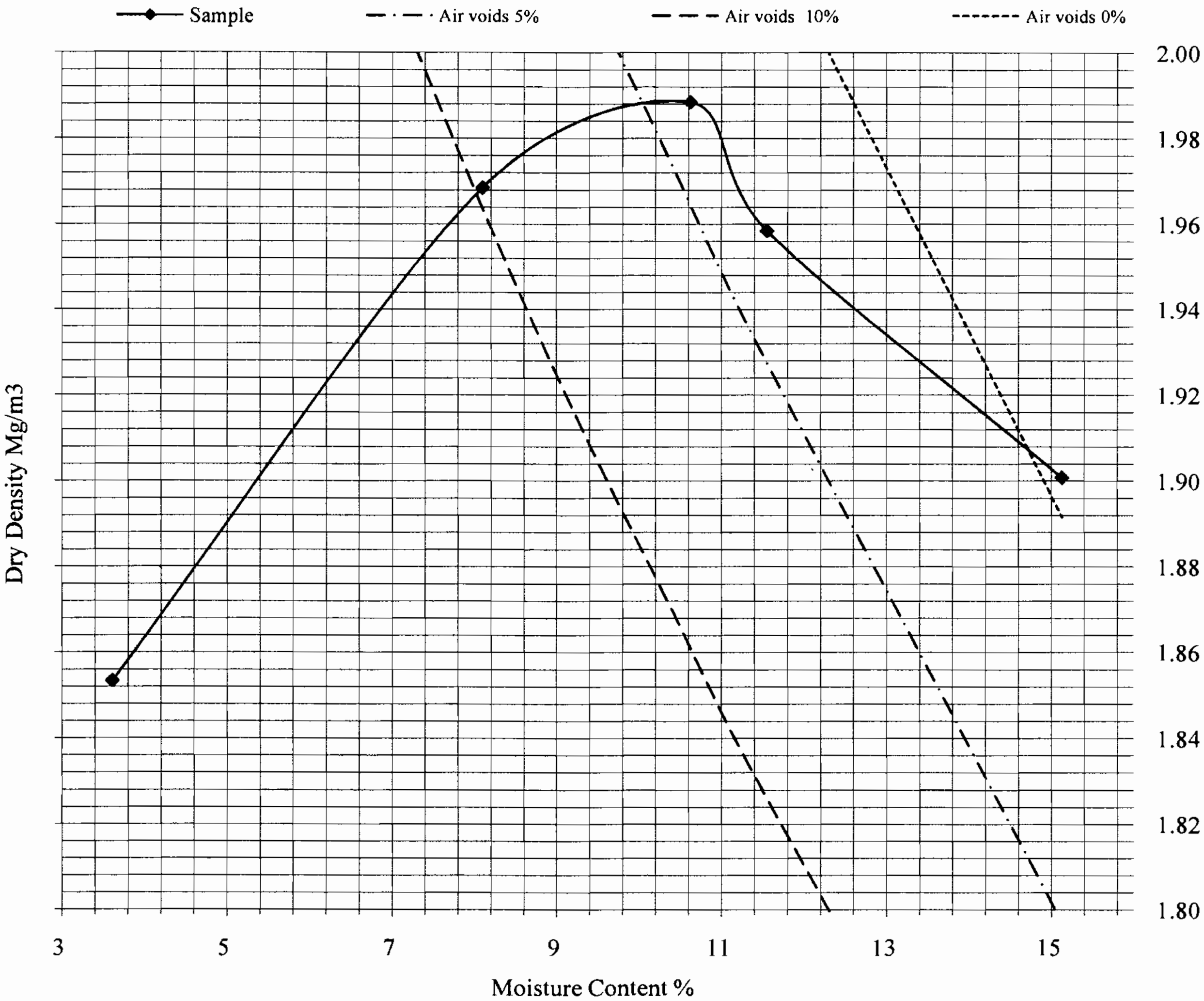
Client Ref No: VE059592/LE10

UKAS TESTING 2788

Dry Density/Moisture Content Relationship

BS 1377:Part 4:1990

Hole Number: **BH10** **Sample Number:** **B2** **Depth (m):** **1.20-1.70**



Initial Moisture Content:	15	Method of Compaction	2.5Kg Rammer / Single Sample
Particle Density (Mg/m3):	2.65* Assumed	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (mg/m3):	1.99	Material Retained on 20.0 mm Test Sieve (%):	0
Optimum Moisture Content (%):	11	Sample Preparation Clause :	3.2.4.1

** - not included in laboratory scope of accreditation*

Remarks

Checked by Date

Approved by Date

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

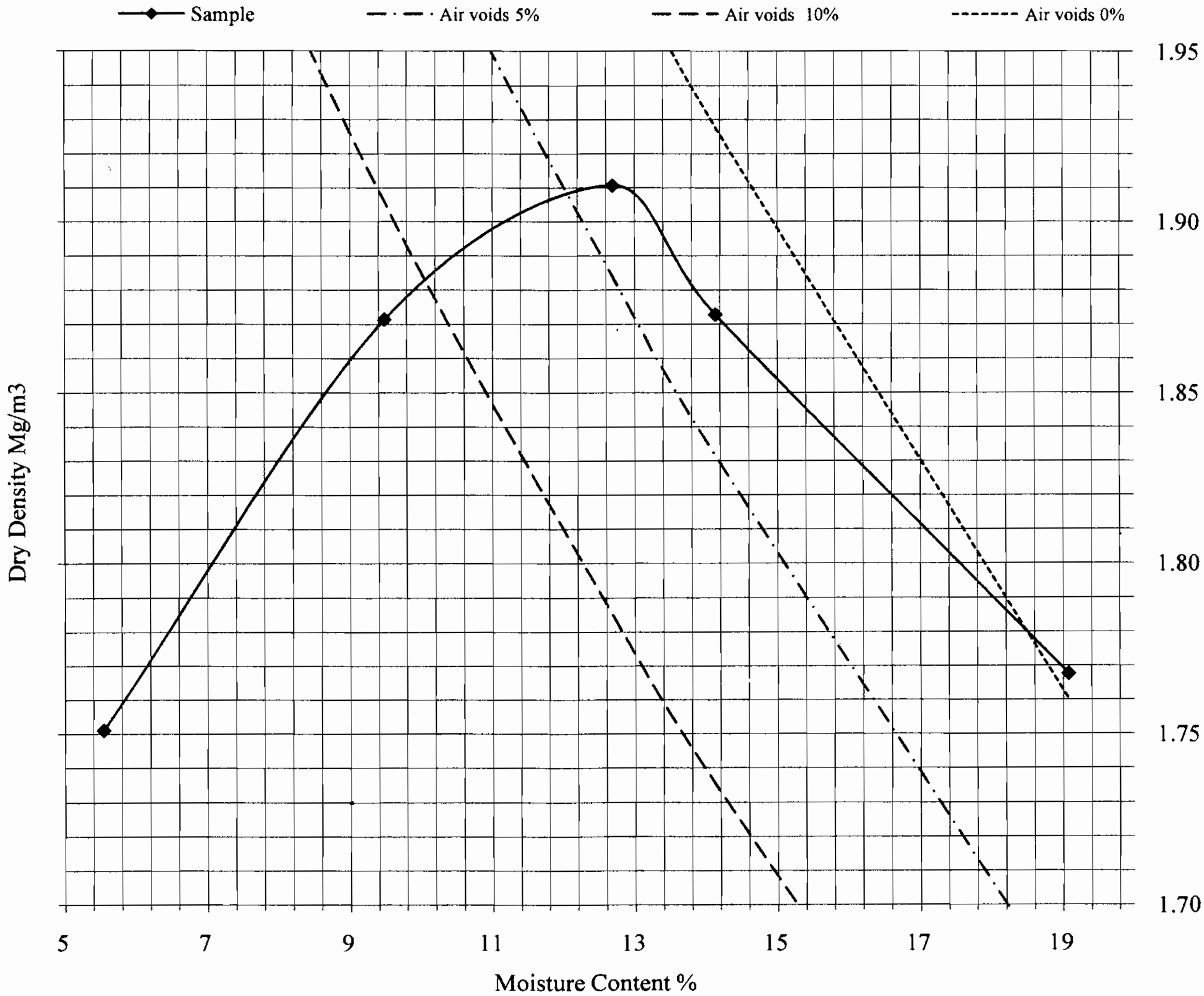
Contract No.:
7772/09
Client Ref No:
VE059592/LE10

UKAS TESTING 2788

Dry Density/Moisture Content Relationship

BS 1377:Part 4:1990

Hole Number: **BH14** **Sample Number:** **B1** **Depth (m):** **0.80-1.20**



Initial Moisture Content:	19	Method of Compaction	2.5Kg Rammer / Single Sample
Particle Density (Mg/m3):	2.65* Assumed	Material Retained on 37.5 mm Test Sieve (%):	47
Maximum Dry Density (mg/m3):	1.91	Material Retained on 20.0 mm Test Sieve (%):	57
Optimum Moisture Content (%):	13	Sample Preparation Clause :	Non-Standard

** - not included in laboratory scope of accreditation*

Remarks

Checked by **Date** 6/8/09

Approved by **Date** 6/8/05

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

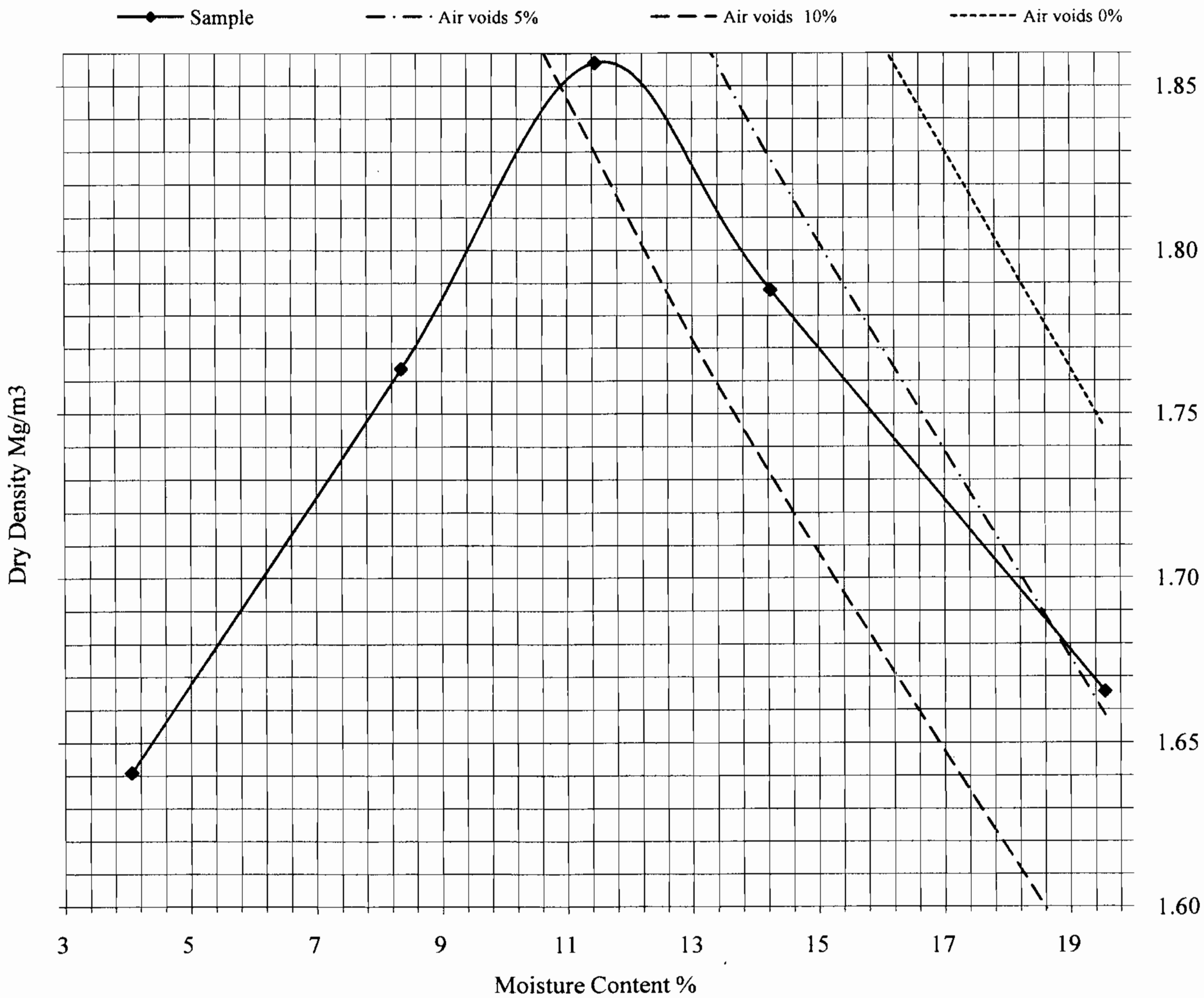
Contract No.:
7772/09
Client Ref No:
VE059592/LE10

UKAS TESTING 2788

Dry Density/Moisture Content Relationship

BS 1377:Part 4:1990

Hole Number: **BH16** **Sample Number:** **B4** **Depth (m):** **1.20-1.90**



Initial Moisture Content:	20	Method of Compaction	2.5Kg Rammer / Single Sample
Particle Density (Mg/m3):	2.65* Assumed	Material Retained on 37.5 mm Test Sieve (%):	9
Maximum Dry Density (mg/m3):	1.86	Material Retained on 20.0 mm Test Sieve (%):	24
Optimum Moisture Content (%):	11	Sample Preparation Clause :	3.2.4.2

** - not included in laboratory scope of accreditation*

Remarks

Checked by 6/8/09 Date

Approved by 6/8/09 Date

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: **7772/09**

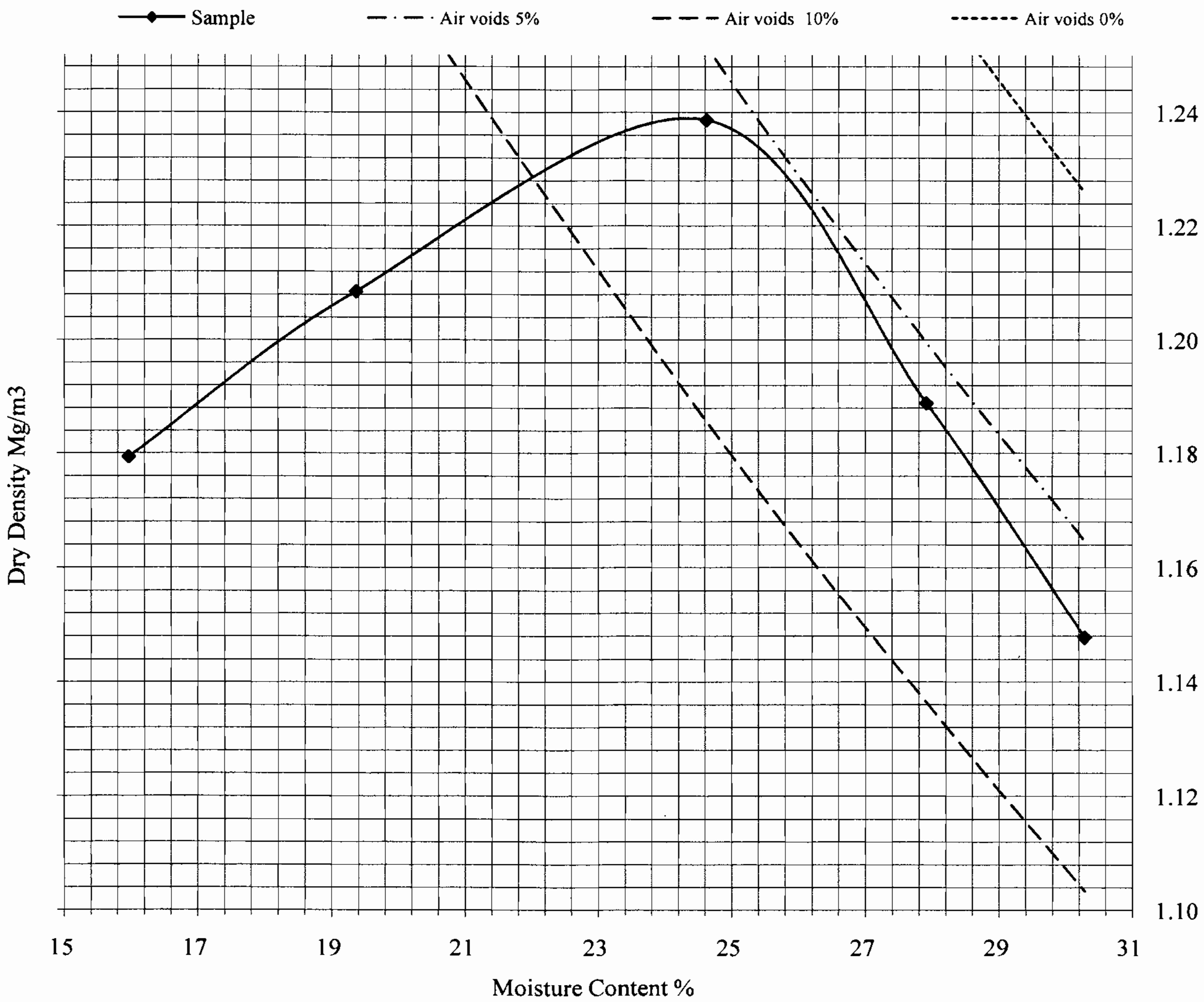
Client Ref No: **VE059592/LE10**

UKAS TESTING 2788

Dry Density/Moisture Content Relationship

BS 1377:Part 4:1990

Hole Number: **TP2** **Sample Number:** **N/A** **Depth (m):** **0.20**



Initial Moisture Content:	22	Method of Compaction	2.5Kg Rammer / Single Sample
Particle Density (Mg/m3):	1.95* Assumed	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (mg/m3):	1.24	Material Retained on 20.0 mm Test Sieve (%):	6
Optimum Moisture Content (%):	25	Sample Preparation Clause :	3.2.4.2

** - not included in laboratory scope of accreditation*

Remarks

Checked by 6/5/09 **Date**

Approved by **Date** 6/5/05

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

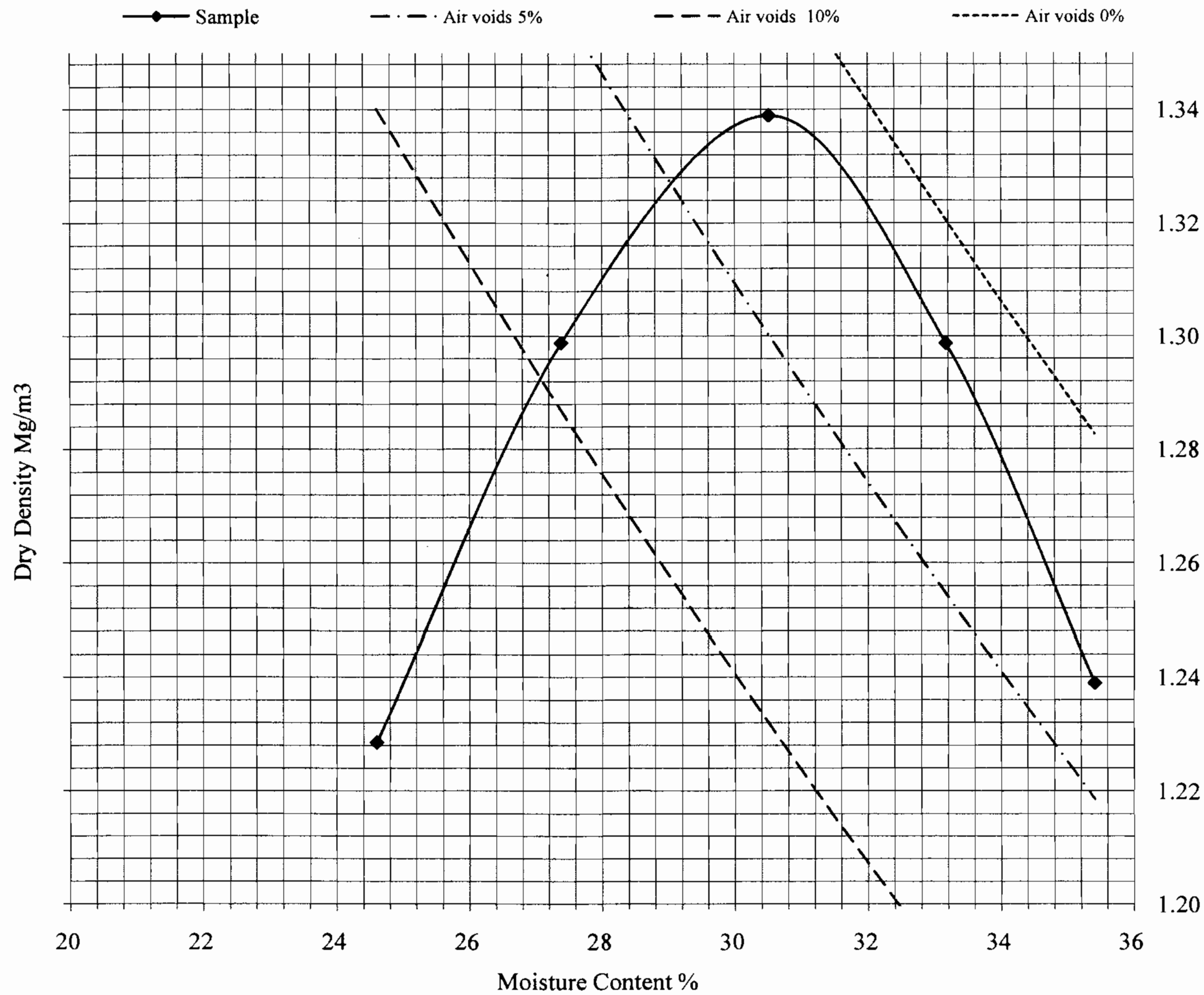
Contract No.:
7772/09
Client Ref No:
VE059592/LE10

UKAS TESTING 2788

Dry Density/Moisture Content Relationship

BS 1377:Part 4:1990

Hole Number: **TP3** **Sample Number:** **N/A** **Depth (m):** **0.90-1.20**



Initial Moisture Content:		27	Method of Compaction	2.5Kg Rammer / Single Sample
Particle Density (Mg/m3):	2.35* Assumed		Material Retained on 37.5 mm Test Sieve (%):	26
Maximum Dry Density (mg/m3):		1.34	Material Retained on 20.0 mm Test Sieve (%):	32
Optimum Moisture Content (%):		31	Sample Preparation Clause :	Non-Standard

** - not included in laboratory scope of accreditation*

Remarks

Checked by **Date** 6/5/09 **Approved by** **Date** 6/5/09

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

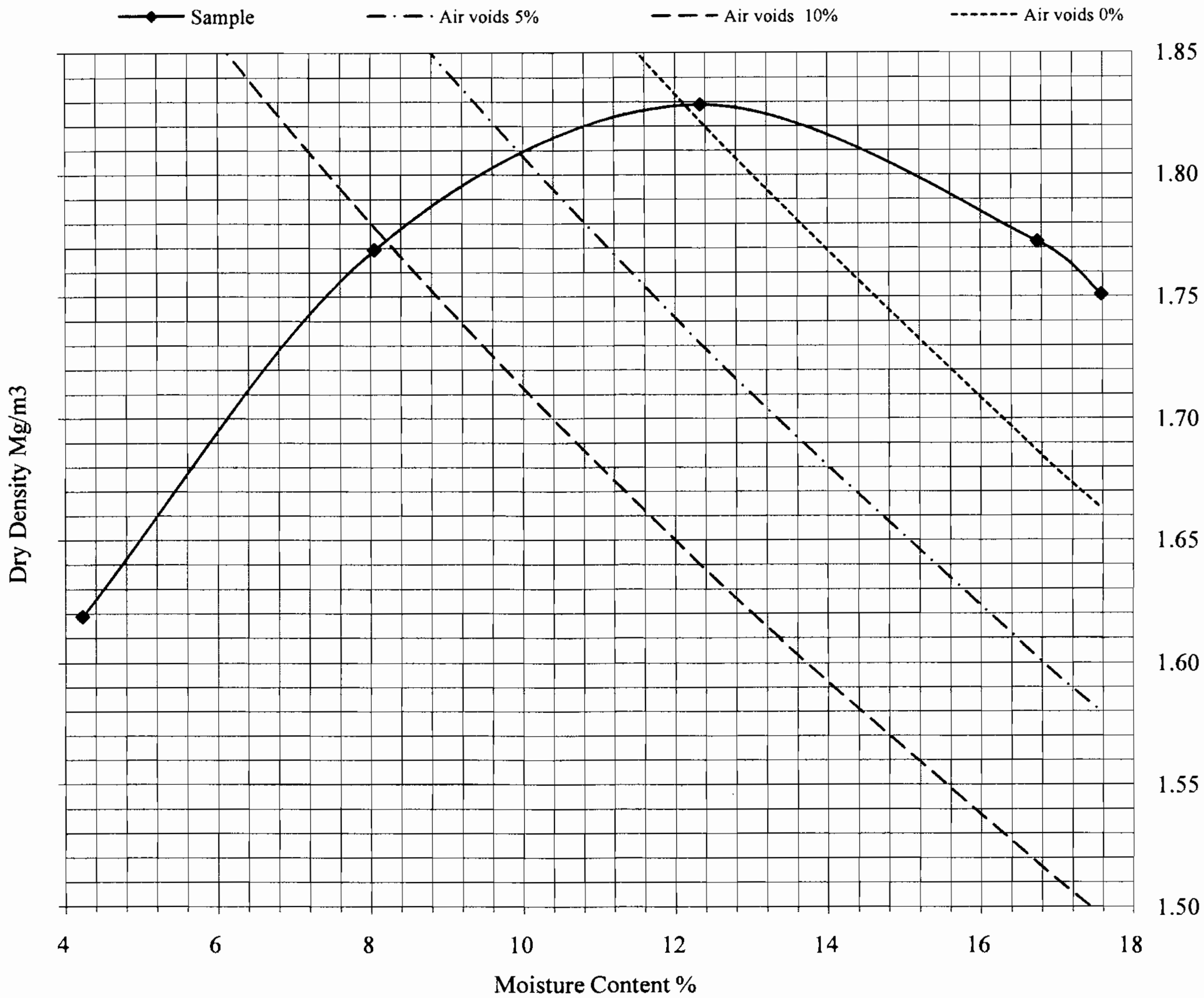
Contract No.: **7772/09**
Client Ref No: **VE059592/LE10**

UKAS TESTING 2788

Dry Density/Moisture Content Relationship

BS 1377:Part 4:1990

Hole Number: **TP5** **Sample Number:** **N/A** **Depth (m):** **0.70-1.00**



Initial Moisture Content:		18	Method of Compaction	2.5Kg Rammer / Single Sample
Particle Density (Mg/m3):	2.35* Assumed		Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (mg/m3):		1.83	Material Retained on 20.0 mm Test Sieve (%):	8
Optimum Moisture Content (%):		12	Sample Preparation Clause :	3.2.4.2

** - not included in laboratory scope of accreditation*

Remarks

6/5/09

Checked by **Date**

6/5/09

Approved by **Date**

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: 7772/09

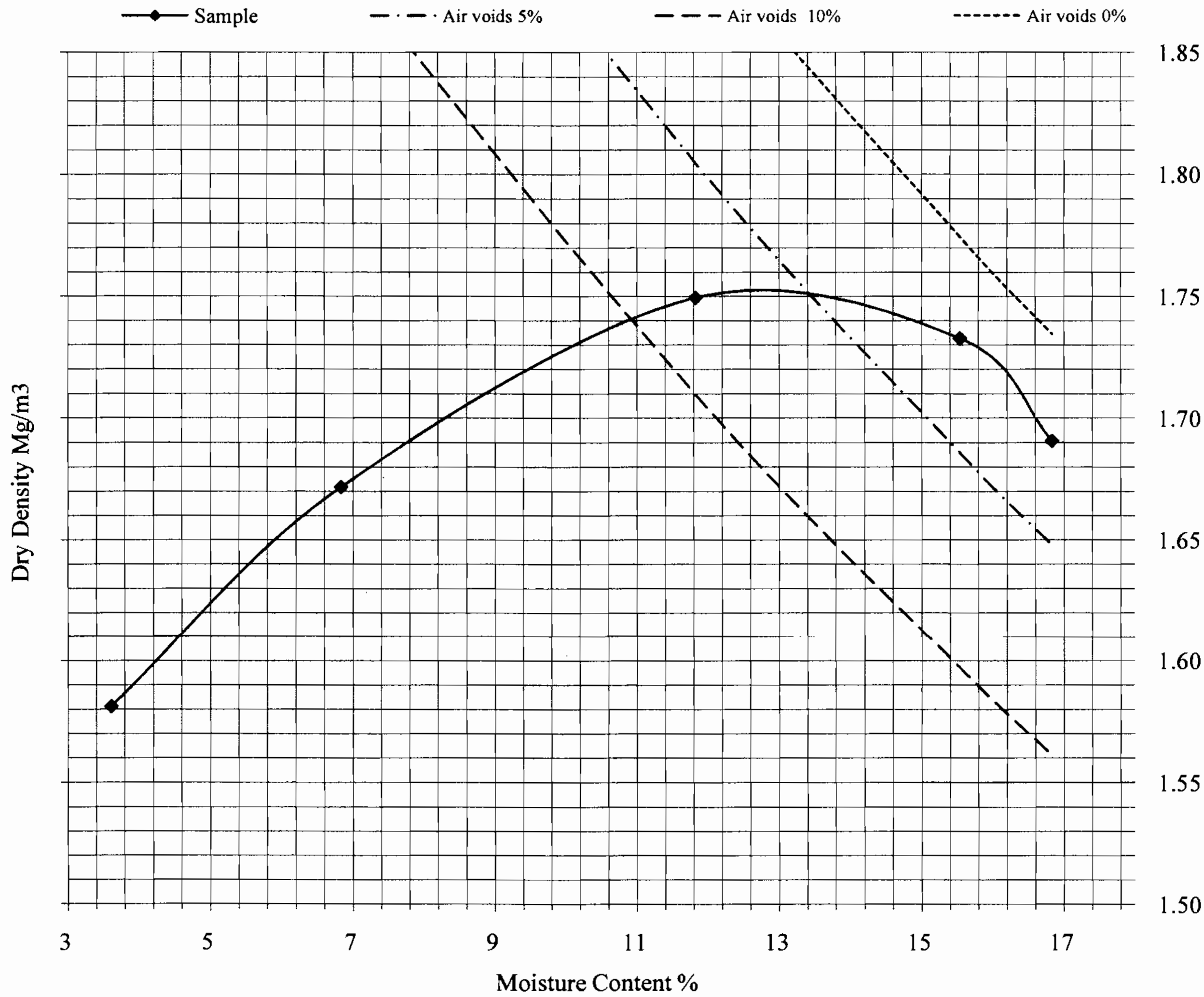
Client Ref No: VE059592/LE10

UKAS TESTING 2788

Dry Density/Moisture Content Relationship

BS 1377:Part 4:1990

Hole Number: **TP6** **Sample Number:** **N/A** **Depth (m):** **3.30**



Initial Moisture Content:	17	Method of Compaction	2.5Kg Rammer / Single Sample
Particle Density (Mg/m3):	2.45* Assumed	Material Retained on 37.5 mm Test Sieve (%):	42
Maximum Dry Density (mg/m3):	1.75	Material Retained on 20.0 mm Test Sieve (%):	62
Optimum Moisture Content (%):	12	Sample Preparation Clause :	Non-Standard

** - not included in laboratory scope of accreditation*

Remarks

Checked by 6/5/09 **Date** **Approved by** 6/5/09 **Date**

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

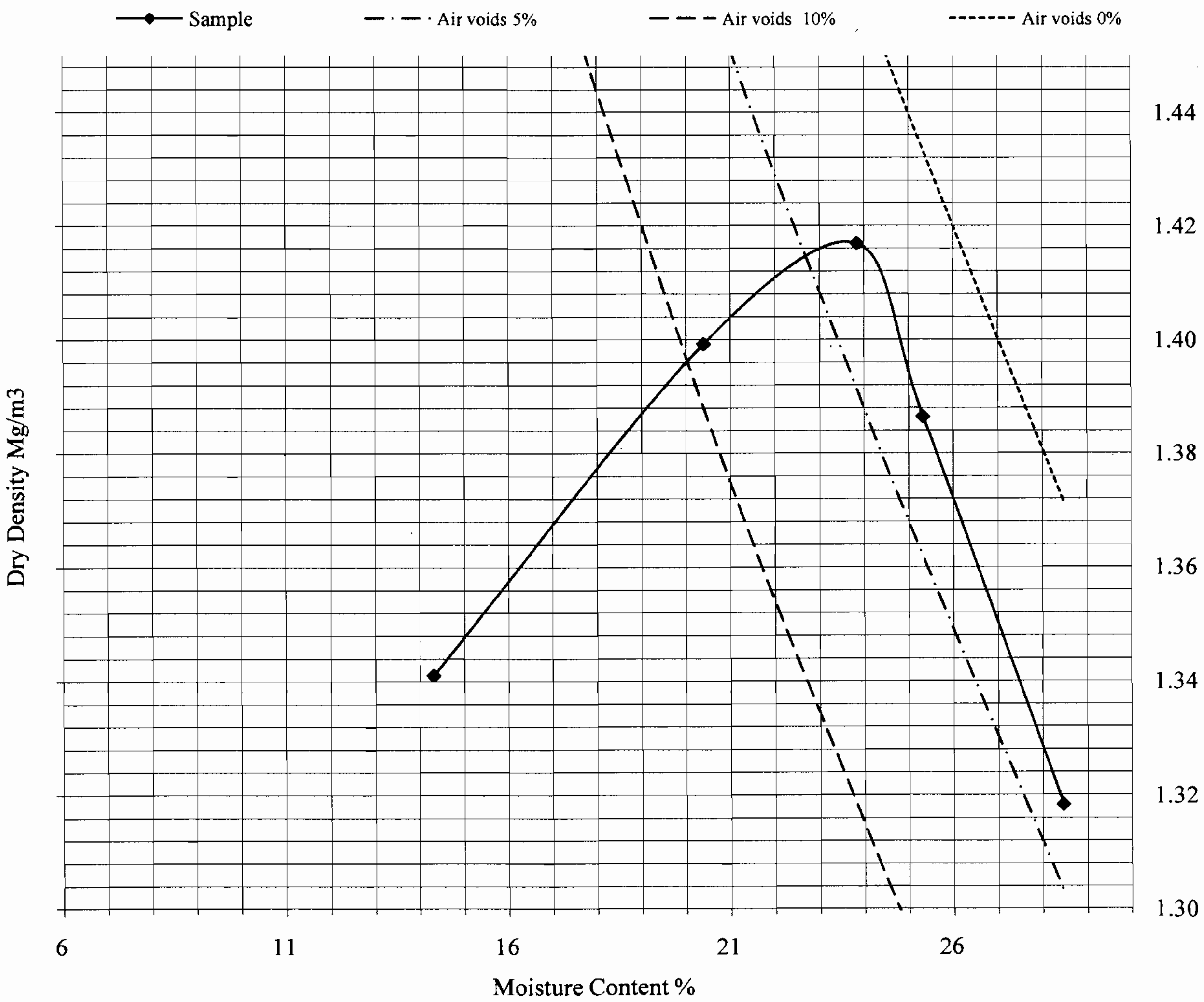
Contract No.: **7772/09**
Client Ref No: **VE059592/LE10**

UKAS TESTING 2788

Dry Density/Moisture Content Relationship

BS 1377:Part 4:1990

Hole Number: **TP8** **Sample Number:** **N/A** **Depth (m):** **0.30-1.00**



Initial Moisture Content:		24	Method of Compaction	2.5Kg Rammer / Single Sample
Particle Density (Mg/m3):	2.25* Assumed		Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (mg/m3):		1.42	Material Retained on 20.0 mm Test Sieve (%):	3
Optimum Moisture Content (%):		24	Sample Preparation Clause :	3.2.4.1

** - not included in laboratory scope of accreditation*

Remarks

Checked by 6/5/09 **Date** **Approved by** 6/5/05 **Date**

GEO LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: **7772/09**

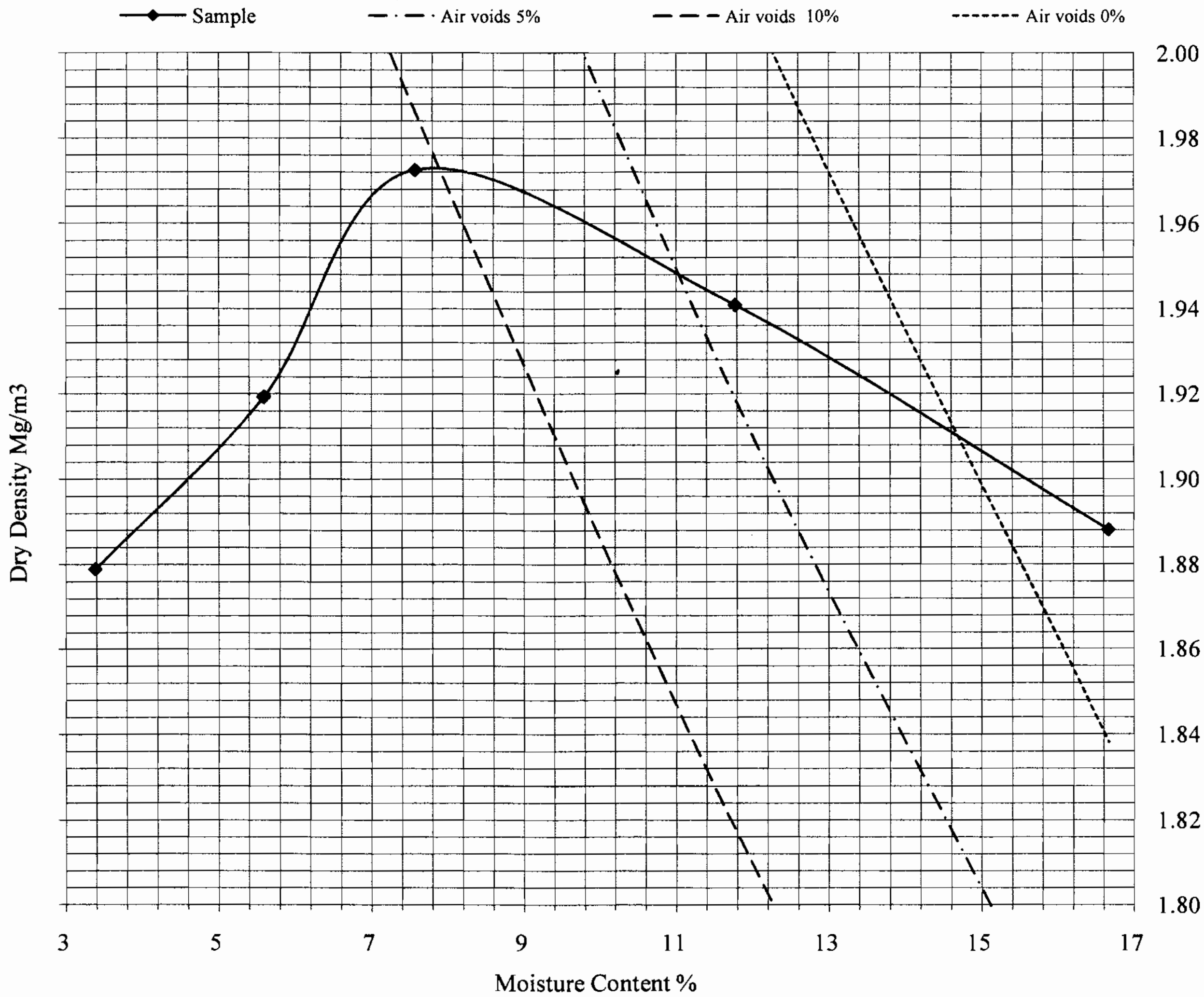
Client Ref No: **VE059592/LE10**

UKAS TESTING 2788

Dry Density/Moisture Content Relationship

BS 1377:Part 4:1990

Hole Number: **TP10** **Sample Number:** **N/A** **Depth (m):** **0.90**



Initial Moisture Content:	17	Method of Compaction	2.5Kg Rammer / Single Sample
Particle Density (Mg/m3):	2.65* Assumed	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (mg/m3):	1.97	Material Retained on 20.0 mm Test Sieve (%):	16
Optimum Moisture Content (%):	7.6	Sample Preparation Clause :	3.2.4.2

** - not included in laboratory scope of accreditation*

Remarks

Checked by 8/5/09 **Date** **Approved by** 6/5/09 **Date**

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

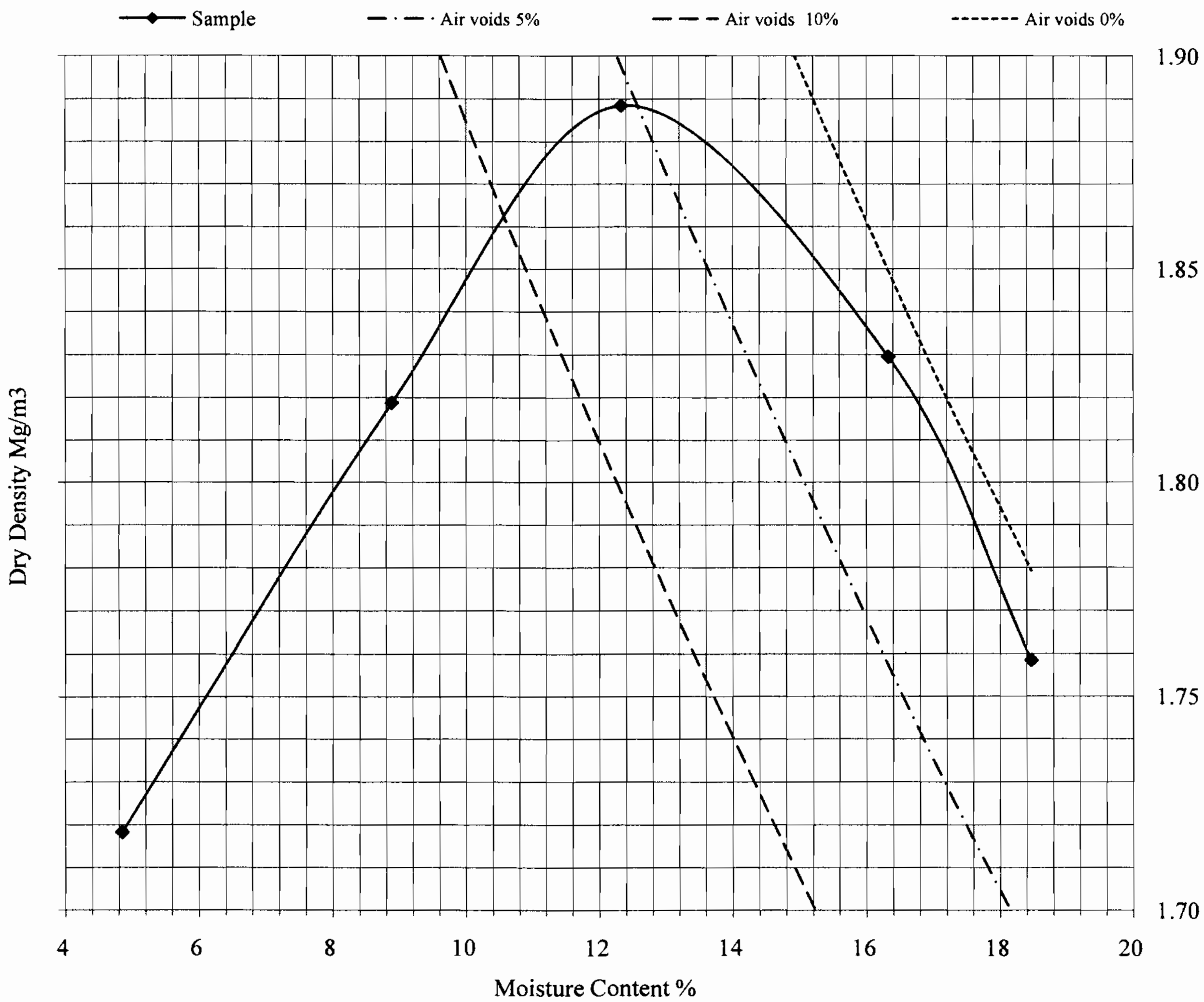
Contract No.: 7772/09
Client Ref No: VE059592/LE10

UKAS TESTING 2788

Dry Density/Moisture Content Relationship

BS 1377:Part 4:1990

Hole Number: **TP11** **Sample Number:** **N/A** **Depth (m):** **1.20**



Initial Moisture Content:		16	Method of Compaction	2.5Kg Rammer / Single Sample
Particle Density (Mg/m3):	2.65* Assumed		Material Retained on 37.5 mm Test Sieve (%):	10
Maximum Dry Density (mg/m3):		1.89	Material Retained on 20.0 mm Test Sieve (%):	24
Optimum Moisture Content (%):		12	Sample Preparation Clause :	3.2.4.2

** - not included in laboratory scope of accreditation*

Remarks

Checked by 6/5/09 **Date**

Approved by 6/5/09 **Date**

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: **7772/09**

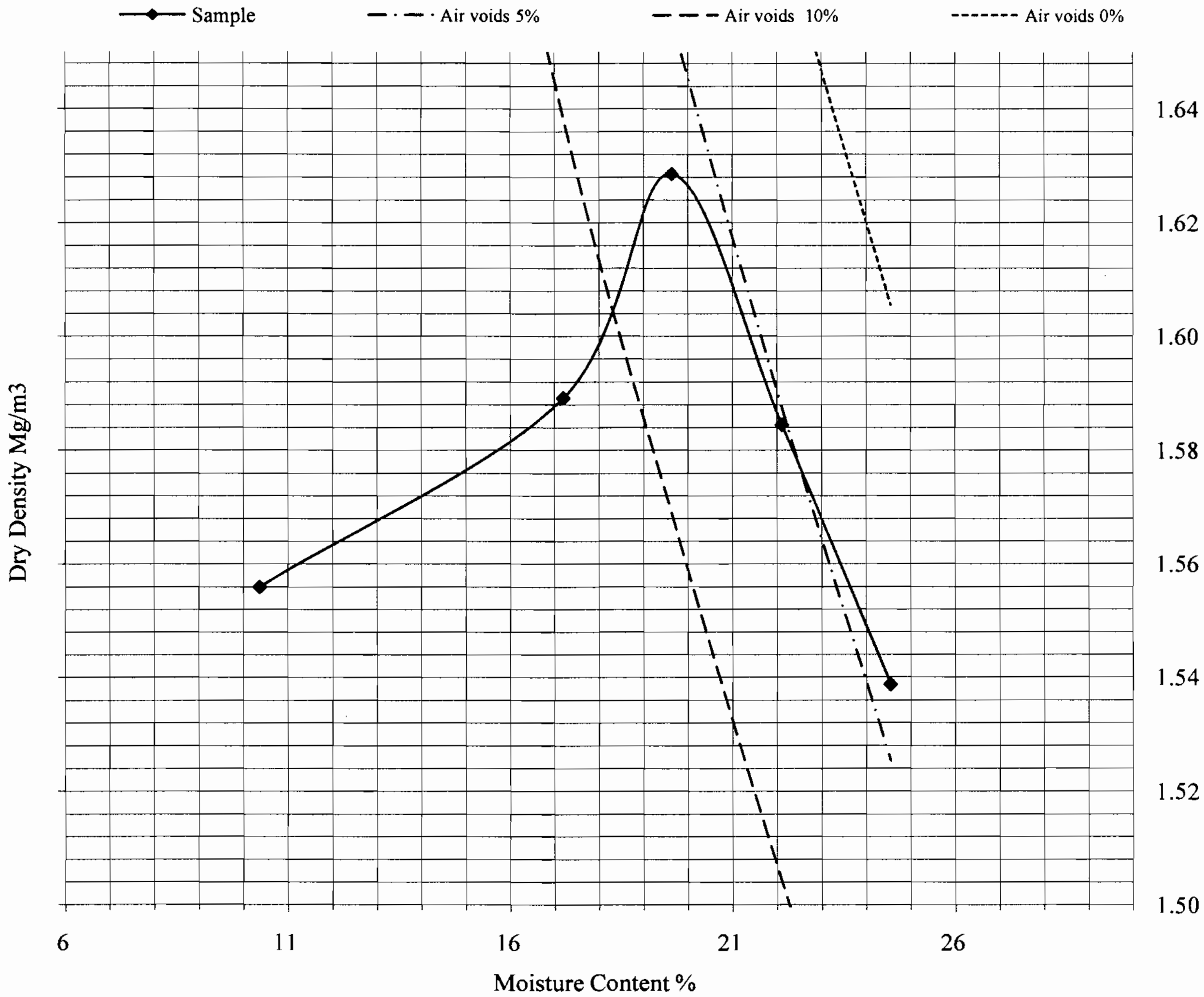
Client Ref No: **VE059592/LE10**

UKAS TESTING 2788

Dry Density/Moisture Content Relationship

BS 1377:Part 4:1990

Hole Number: **TP12** **Sample Number:** **N/A** **Depth (m):** **1.00**



Initial Moisture Content:	22	Method of Compaction	2.5Kg Rammer / Single Sample
Particle Density (Mg/m3):	2.65* Assumed	Material Retained on 37.5 mm Test Sieve (%):	0
Maximum Dry Density (mg/m3):	1.63	Material Retained on 20.0 mm Test Sieve (%):	18
Optimum Moisture Content (%):	20	Sample Preparation Clause :	3.2.4.2

** - not included in laboratory scope of accreditation*

Remarks

Checked by Date 6/5/09

Approved by Date 6/8/05

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

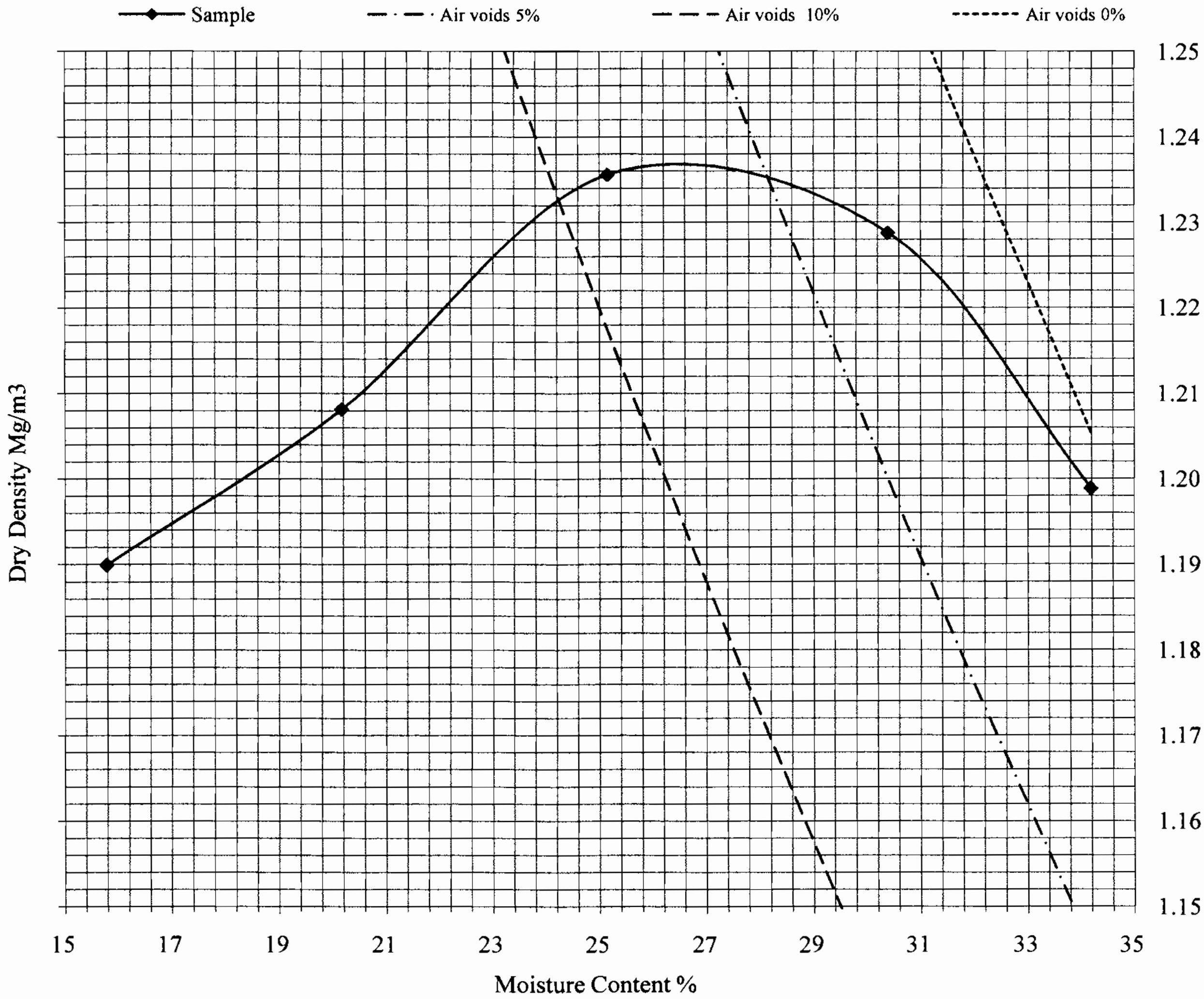
Contract No.:
7772/09
Client Ref No:
VE059592/LE10

UKAS TESTING 2788

Dry Density/Moisture Content Relationship

BS 1377:Part 4:1990

Hole Number: **TP13** **Sample Number:** **N/A** **Depth (m):** **1.50**



Initial Moisture Content:	20	Method of Compaction	2.5Kg Rammer / Single Sample	
Particle Density (Mg/m3):	2.05* Assumed	Material Retained on 37.5 mm Test Sieve (%):		14
Maximum Dry Density (mg/m3):	1.24	Material Retained on 20.0 mm Test Sieve (%):		33
Optimum Moisture Content (%):	25	Sample Preparation Clause :		Non-Standard

** - not included in laboratory scope of accreditation*

Remarks

Checked by Date 4/8/09 Approved by Date 6/25/09

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: 7772/09
Client Ref No: VE059592/LE10

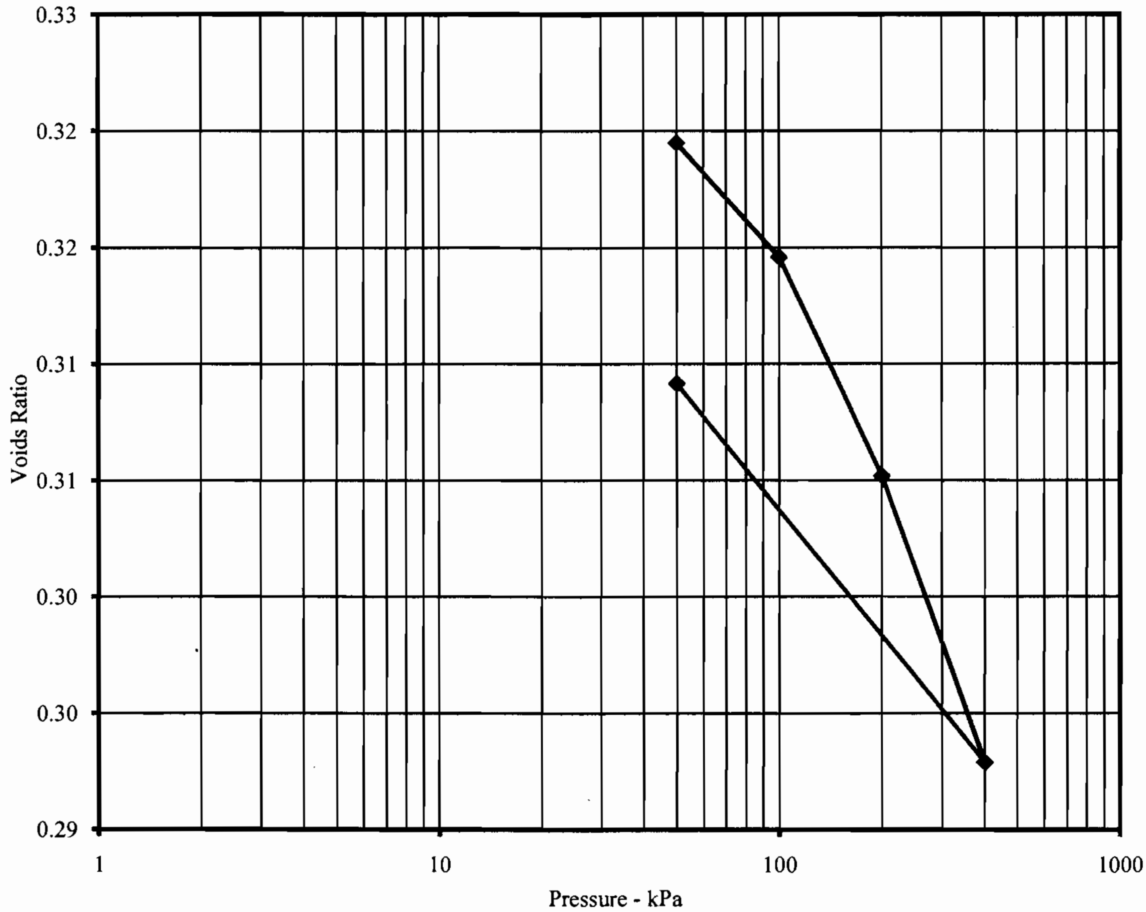
UKAS TESTING 2788

ONE DIMENSIONAL CONSOLIDATION

BS1377: Part 5: 1990

Hole Number: **BH1** Depth (m): **4.80-5.25**

Initial Conditions		Pressure Range			Mv	Cv	Method of time fitting used
Moisture Content (%):	11	kPa			m2/MN	m2/yr	Cv Calculated using t90
Bulk Density (Mg/m3):	2.21	0	-	50	0.256	3.960	Nominal Laboratory Temperature
Dry Density (Mg/m3):	1.98	50	-	100	0.074	2.426	20'C
Voids Ratio:	0.3366	100	-	200	0.071	2.674	Location of specimen with sample
Degree of saturation:	90.4	200	-	400	0.047	4.398	Top
Height (mm):	19.92	400	-	50	0.036	5.171	Remarks:
Diameter (mm)	75.03						
Particle Density (Mg/m3):	2.65						
Assumed							



Checked By | 6/8/09 Date | Approved By | 6/25/09 Date

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.
7772/09
Client Ref No.
LE10104/VE05

UKAS TESTING 2788

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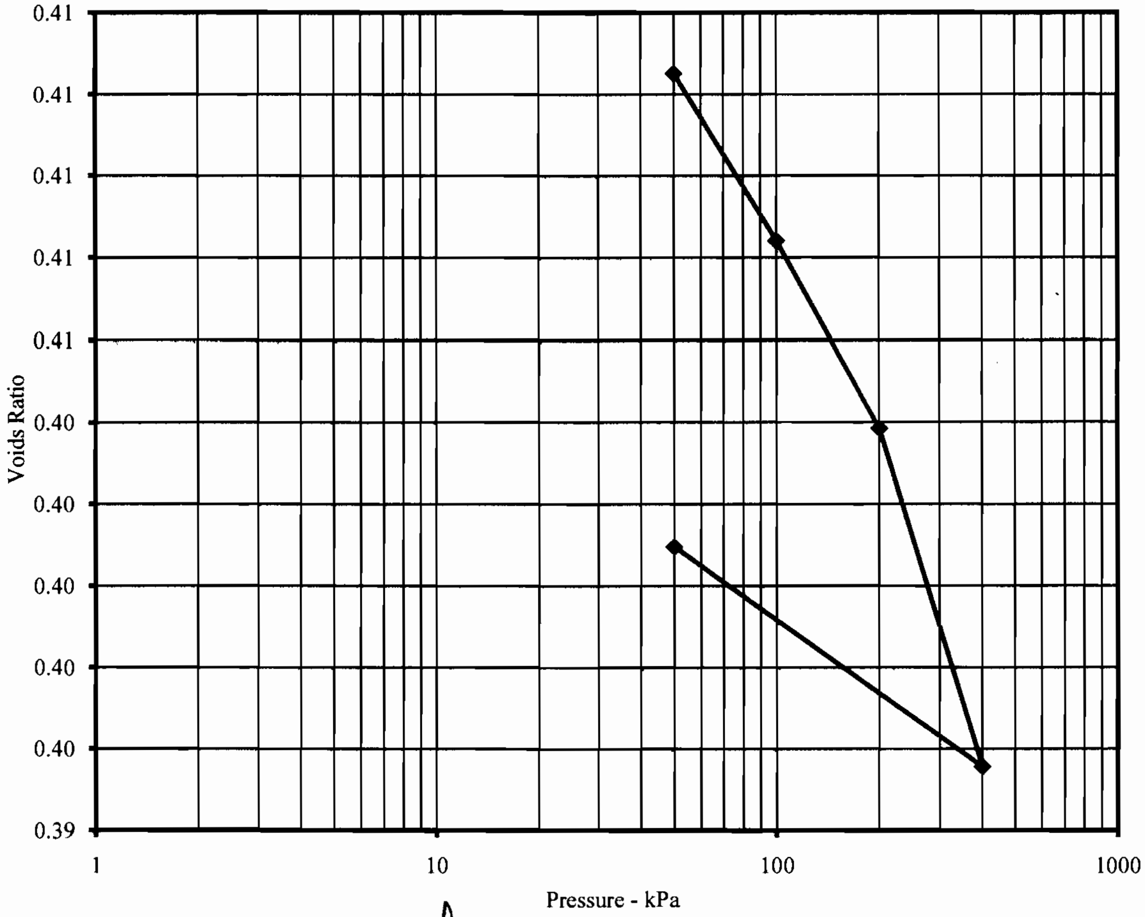
ONE DIMENSIONAL CONSOLIDATION

BS1377: Part 5: 1990

Hole Number: **BH4** Sample Number: 14 Depth (m): **4.40-4.85**

Initial Conditions		Pressure Range kPa			Mv m2/MN	Cv m2/yr	Method of time fitting used Cv Calculated using t90
Moisture Content (%):	12						
Bulk Density (Mg/m3):	2.08	0	-	50	0.108	7.984	Nominal Laboratory Temperature 20'C
Dry Density (Mg/m3):	1.87	50	-	100	0.058	6.769	
Voids Ratio:	0.4202	100	-	200	0.032	1.301	Location of specimen with sample Top
Degree of saturation:	73.9	200	-	400	0.029	5.358	
Height (mm):	18.69	400	-	50	0.011	7.963	Remarks:
Diameter (mm)	75.16						
Particle Density (Mg/m3): Assumed	2.65						



Checked By Date 6/5/09 Approved By Date 6/5/-5

Lostock Works Cheshire

LABORATORY TESTING SERVICES LIMITED

Contract No. 7772/09
Client Ref No. LE10104/VE05

UKAS TESTING 2788

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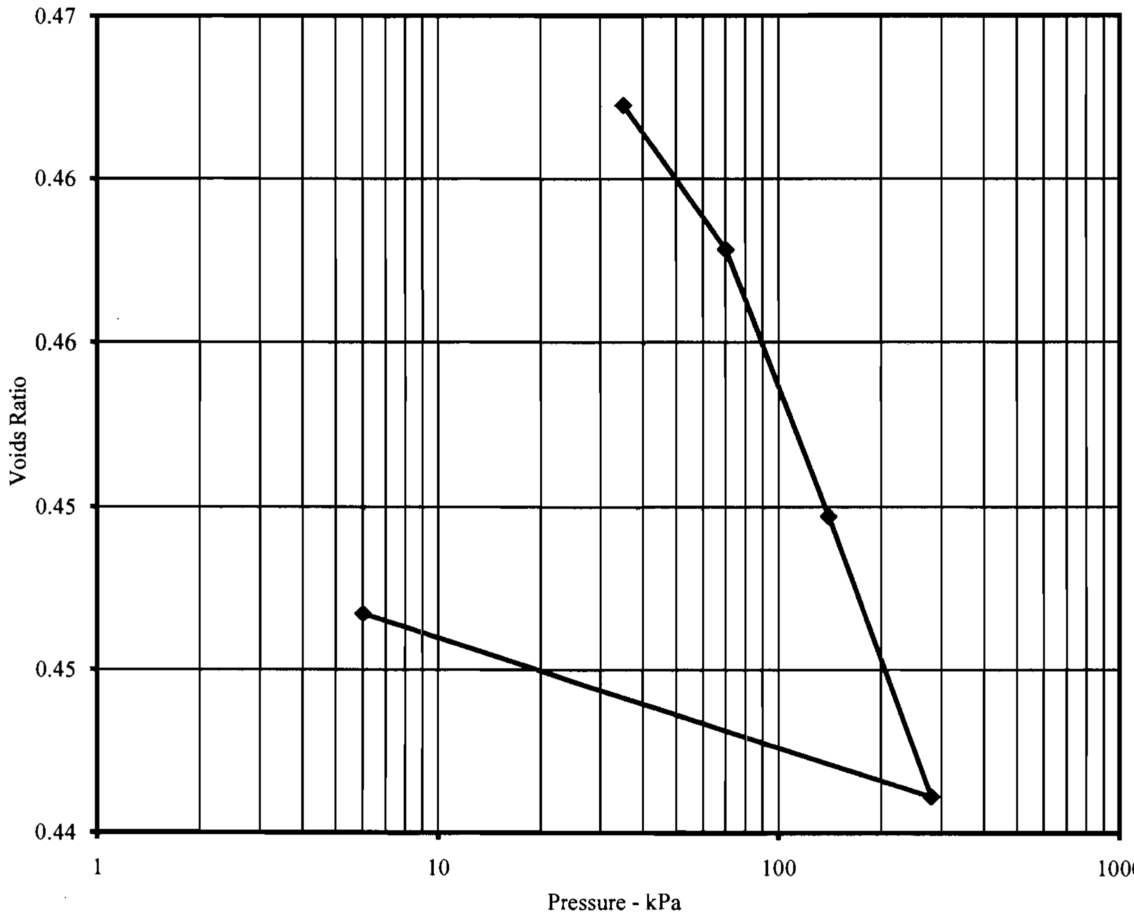
ONE DIMENSIONAL CONSOLIDATION

BS1377: Part 5: 1990

Hole Number: **BH5** Sample Number: 11 Depth (m): **3.40-3.85**

Initial Conditions		Pressure Range			Mv	Cv	Method of time fitting used
Moisture Content (%):	16	kPa			m2/MN	m2/yr	Cv Calculated using t90
Bulk Density (Mg/m3):	2.08	0	-	35	0.407	2.248	Nominal Laboratory Temperature
Dry Density (Mg/m3):	1.79	35	-	70	0.086	2.258	20'C
Voids Ratio:	0.4834	70	-	140	0.080	0.638	Location of specimen with sample
Degree of saturation:	89.2	140	-	280	0.042	3.020	Top
Height (mm):	18.82	280	-	6	0.014	5.478	Remarks:
Diameter (mm)	75.14						
Particle Density (Mg/m3):	2.65						
Assumed							



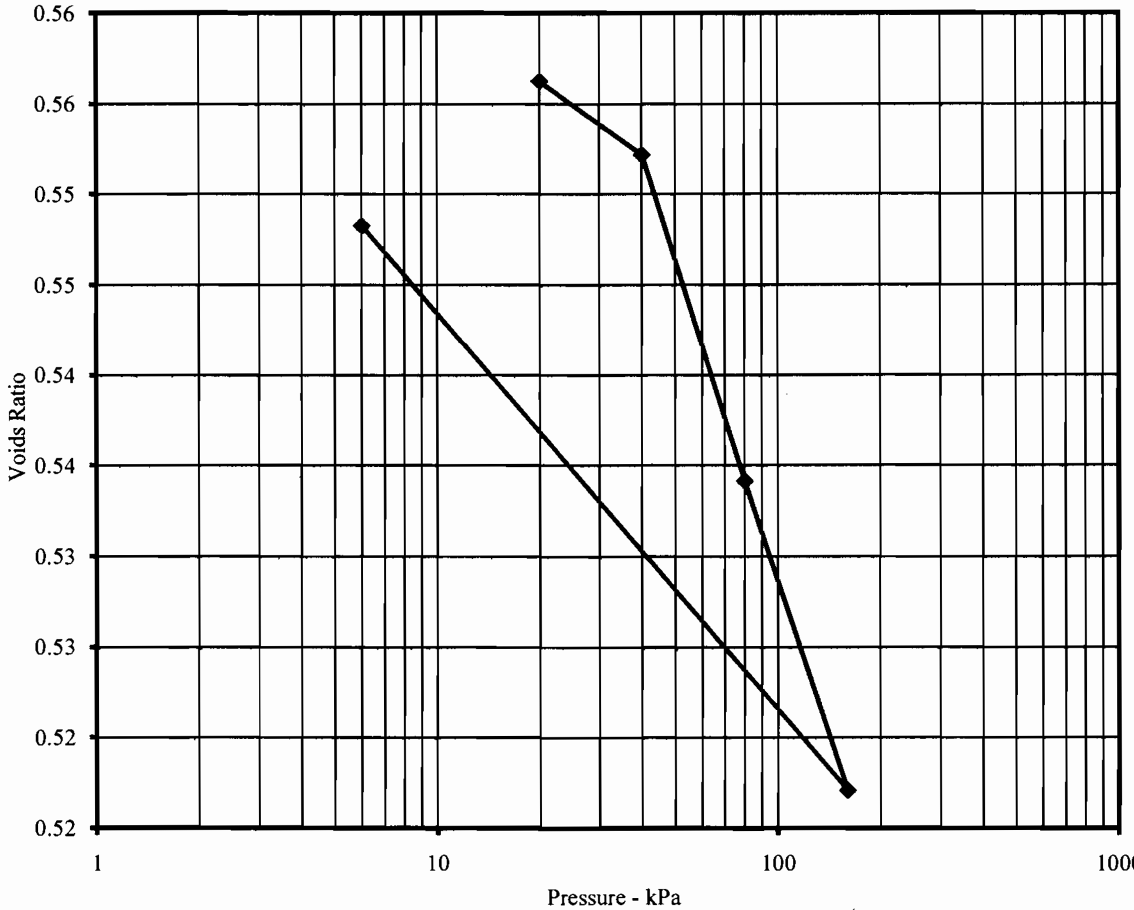
Checked By Date 4/5/09 Approved By Date 6/5/05

ONE DIMENSIONAL CONSOLIDATION

BS1377: Part 5: 1990

Hole Number: **BH10** Sample Number: 5 Depth (m): **1.80-2.25**

Initial Conditions		Pressure Range kPa			Mv m2/MN	Cv m2/yr	Method of time fitting used Cv Calculated using t90
Moisture Content (%):	19						
Bulk Density (Mg/m3):	2.03	0	-	20	Swelling	Stage	Nominal Laboratory Temperature
Dry Density (Mg/m3):	1.70	20	-	40	0.131	5.711	20'C
Voids Ratio:	0.5577	40	-	80	0.291	0.679	Location of specimen with sample
Degree of saturation:	90.9	80	-	160	0.139	0.749	Top
Height (mm):	18.65	160	-	6	0.133	4.037	Remarks:
Diameter (mm)	75.12						
Particle Density (Mg/m3):	2.65						
Assumed							



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LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No. 7772/09
Client Ref No. LE10104/VE05

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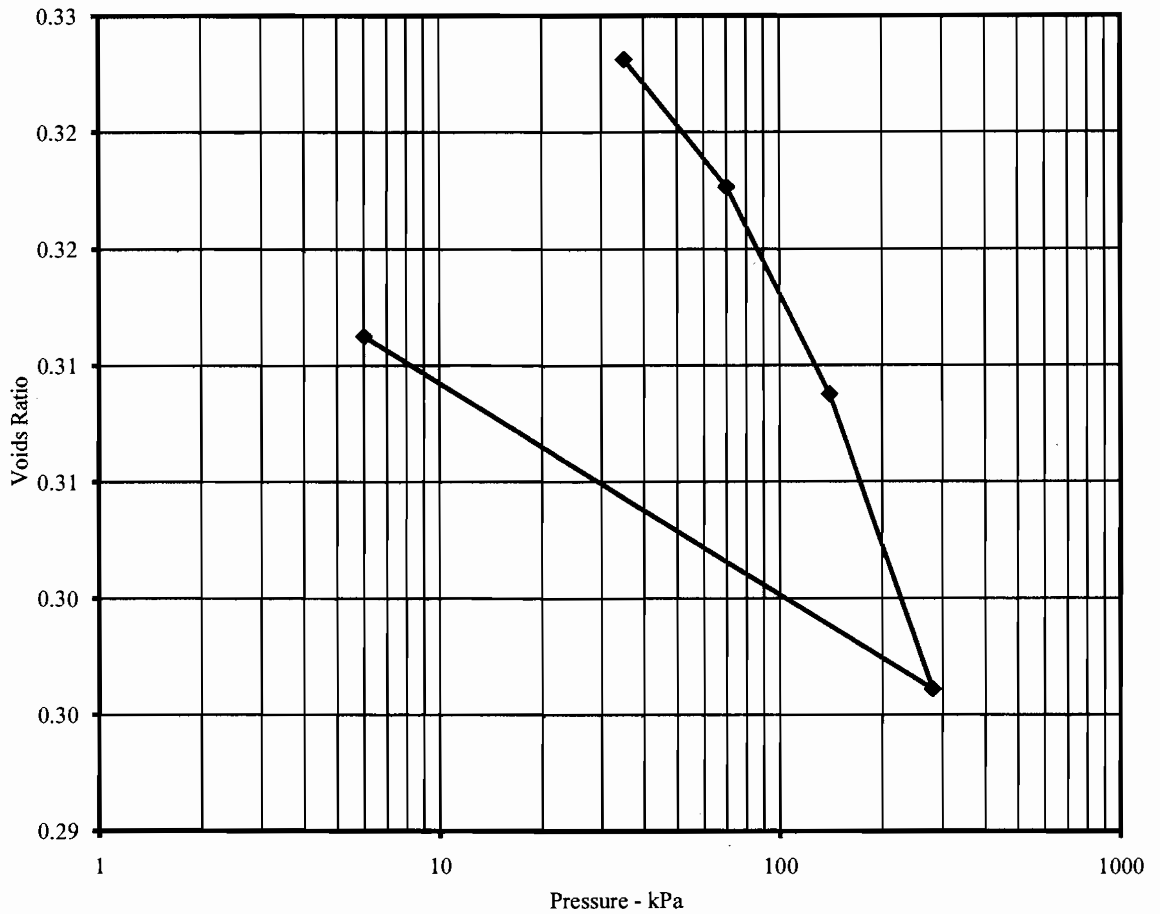
ONE DIMENSIONAL CONSOLIDATION

BS1377: Part 5: 1990

Hole Number: **BH14** Depth (m): **3.00-3.45**

Initial Conditions		Pressure Range kPa			Mv m2/MN	Cv m2/yr	Method of time fitting used
Moisture Content (%):	21						Cv Calculated using t90
Bulk Density (Mg/m3):	2.22	0	-	35	0.153	3.092	Nominal Laboratory Temperature
Dry Density (Mg/m3):	1.99	35	-	70	0.118	2.172	20'C
Voids Ratio:	0.3302	70	-	140	0.096	2.394	Location of specimen with sample
Degree of saturation:	93.3	140	-	280	0.069	3.892	Top
Height (mm):	18.71	280	-	6	0.043	2.188	Remarks:
Diameter (mm)	75.11						
Particle Density (Mg/m3):	2.65						
Assumed							



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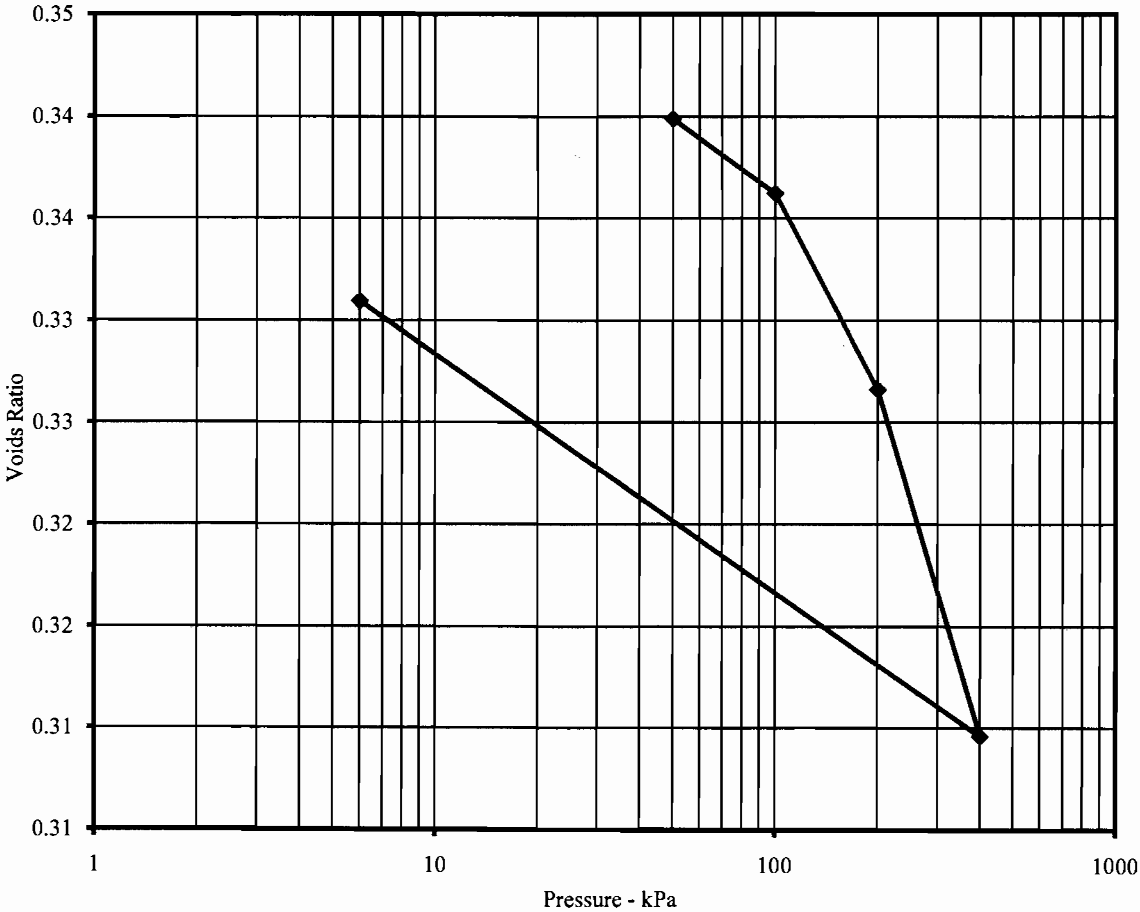
BS1377: Part 5: 1990

Hole Number: **BH16** Depth (m): **14.00-14.45**

Initial Conditions		Pressure Range kPa	Mv m2/MN	Cv m2/yr	Method of time fitting used Cv Calculated using t90
Moisture Content (%):	11				
Bulk Density (Mg/m3):	2.20	0 - 50	Swelling	Stage	Nominal Laboratory Temperature 20'C
Dry Density (Mg/m3):	1.99	50 - 100	0.055	3.304	
Voids Ratio:	0.3346	100 - 200	0.072	4.671	Location of specimen with sample Top
Degree of saturation:	86.8	200 - 400	0.064	4.578	
Height (mm):	20	400 - 6	0.041	2.521	Remarks:
Diameter (mm)	75				
Particle Density (Mg/m3): Assumed	2.65				



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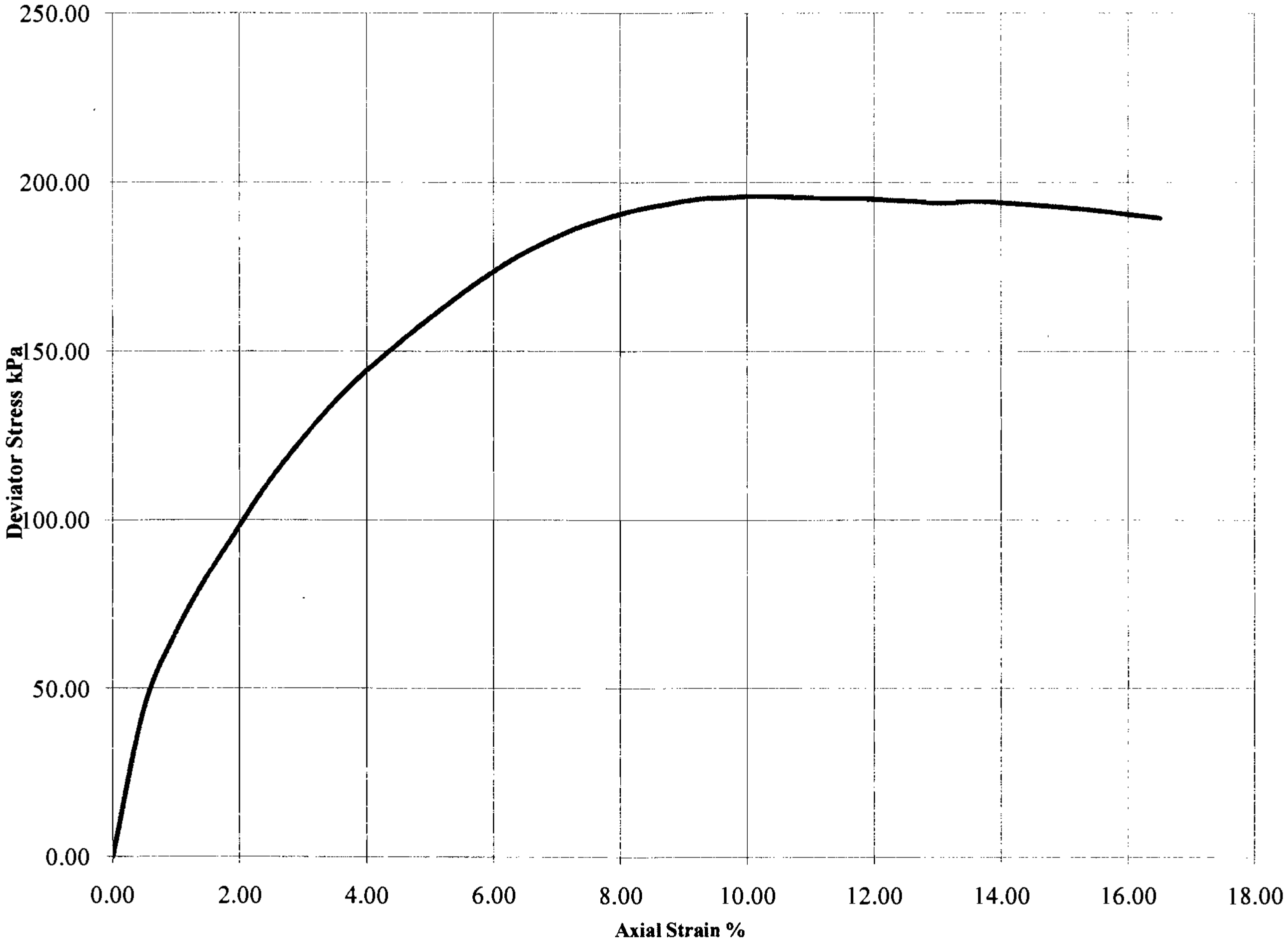
Undrained Shear Strength in Triaxial Compression

without measurement of Pore Pressure

B.S. 1377 : Part7 : Clause 8 : 1991

Hole Number: **BH1** Sample Number: **5** Depth (m): **2.00-2.45**



Diameter (mm):	102	Height (mm):		206	Test:	100mm Multistage			
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	35	2.04	1.51	22	196	98	9.7	compound	
				44	196	98	10.2		
				88	195	97	13.6		

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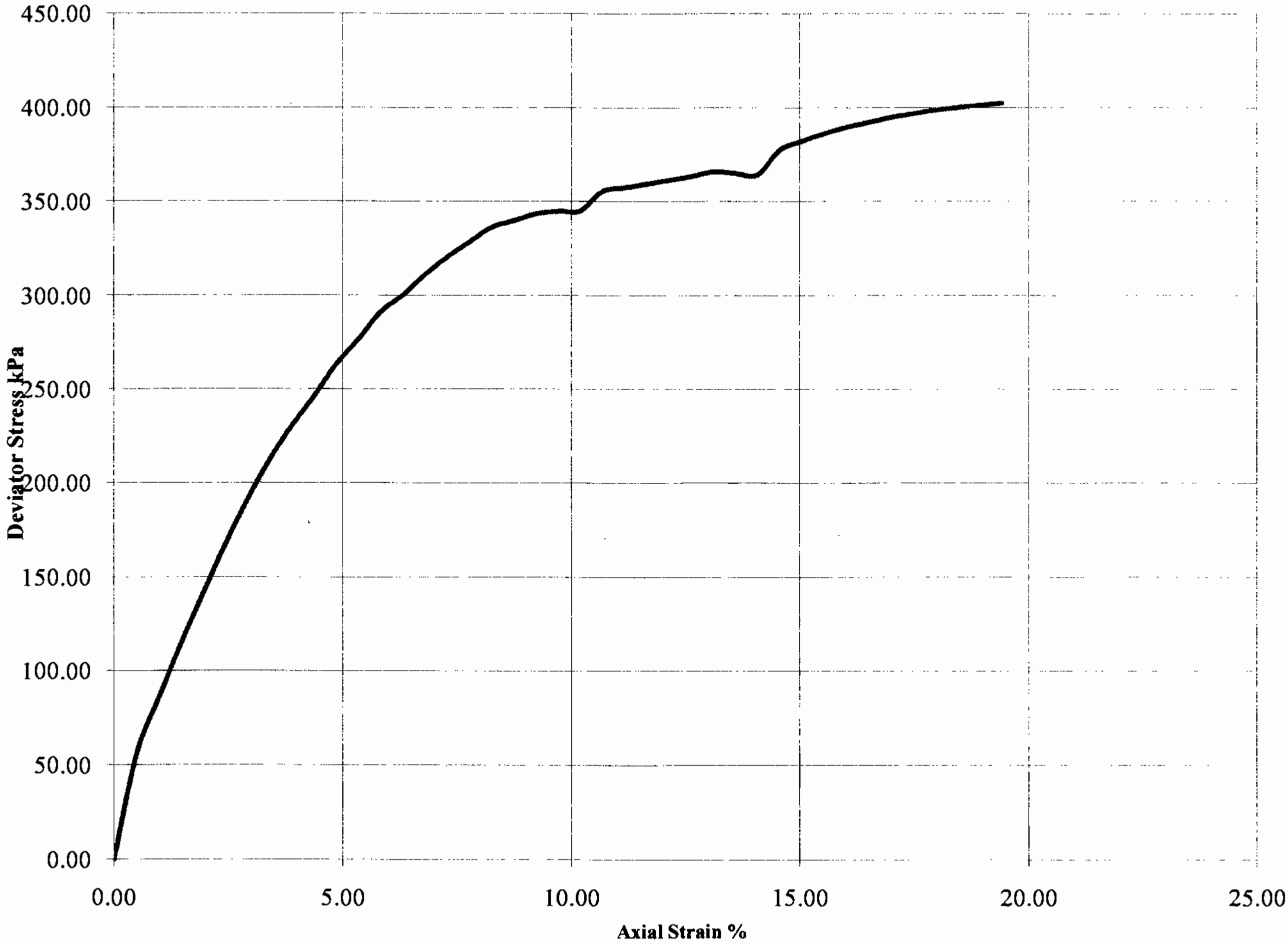
Undrained Shear Strength in Triaxial Compression

without measurement of Pore Pressure
B.S. 1377 : Part7 : Clause 8 : 1991

Hole Number: **BH4** Sample Number: **14** Depth (m): **4.40-4.85**



Diameter (mm):	105	Height (mm):		206	Test:	100mm Multistage			
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	12	2.15	1.91	500	345	173	10.2	compound	
				100	366	183	13.1		
				200	403	201	19.4		

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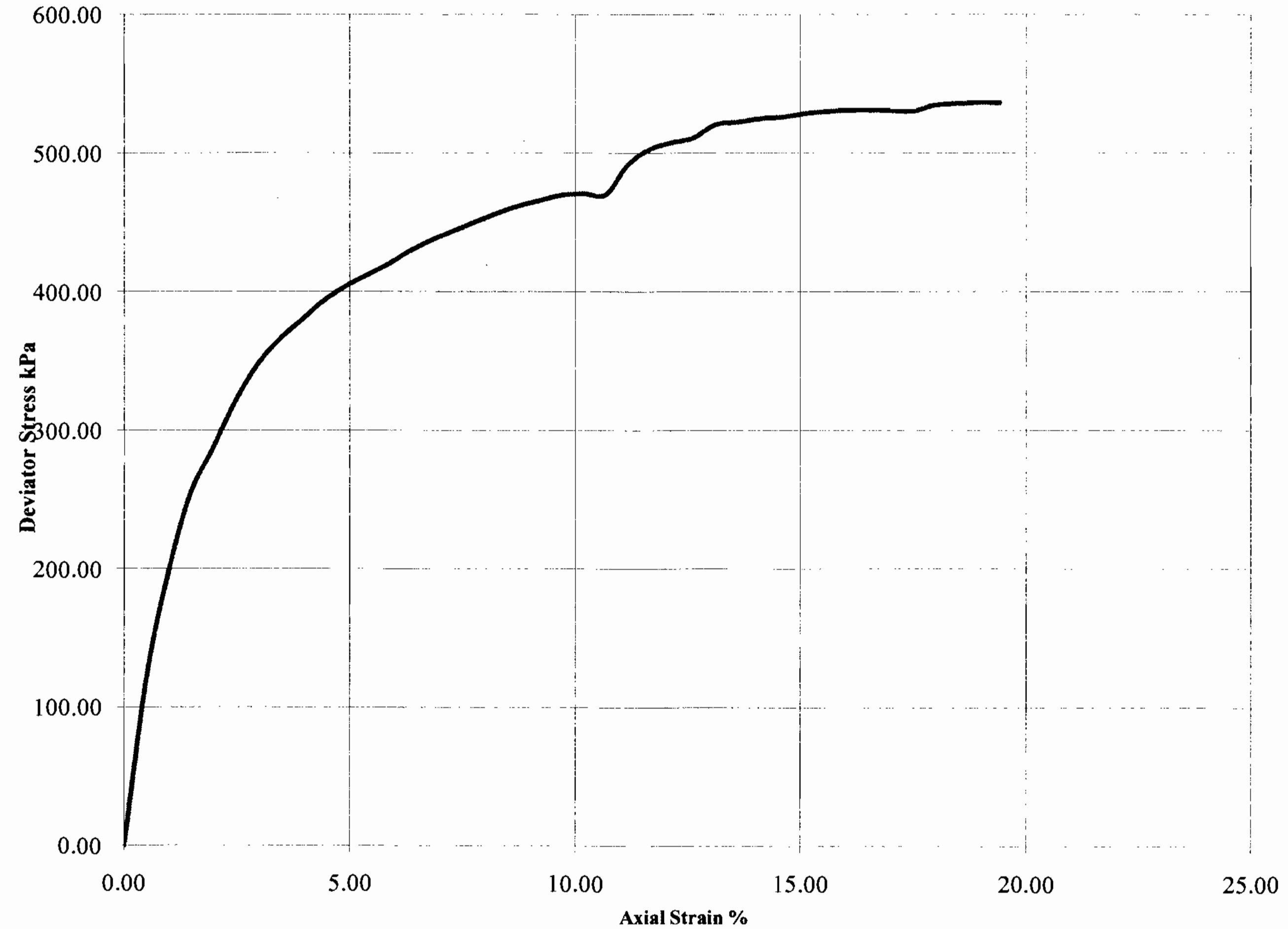
Undrained Shear Strength in Triaxial Compression

without measurement of Pore Pressure

B.S. 1377 : Part7 : Clause 8 : 1991

Hole Number: **BH4** Sample Number: **9** Depth (m): **7.50-7.95**



Diameter (mm):		102	Height (mm):		206	Test:	100mm Multistage		
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	18	2.15	1.82	80	471	235	10.2	compound	
				160	531	266	16.5		
				320	536	268	18.9		

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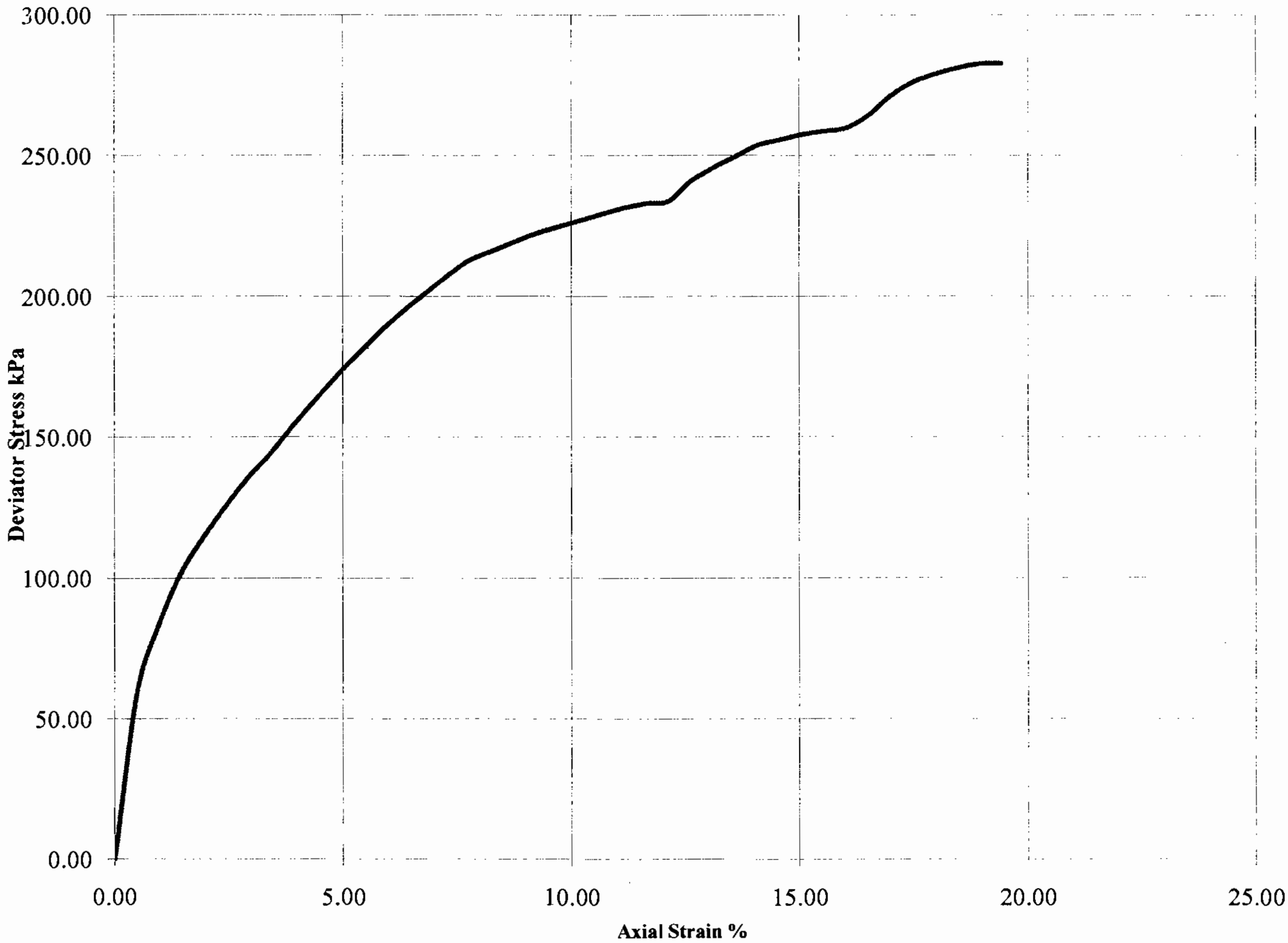
without measurement of Pore Pressure

B.S. 1377 : Part7 : Clause 8 : 1991

Hole Number: **BH5** Sample Number: **11** Depth (m): **3.40-3.85**



Diameter (mm):		102	Height (mm):		206	Test:	100mm Multistage		
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	18	2.09	1.77	40	234	117	12.1	compound	
				80	260	130	16.0		
				160	283	141	19.4		

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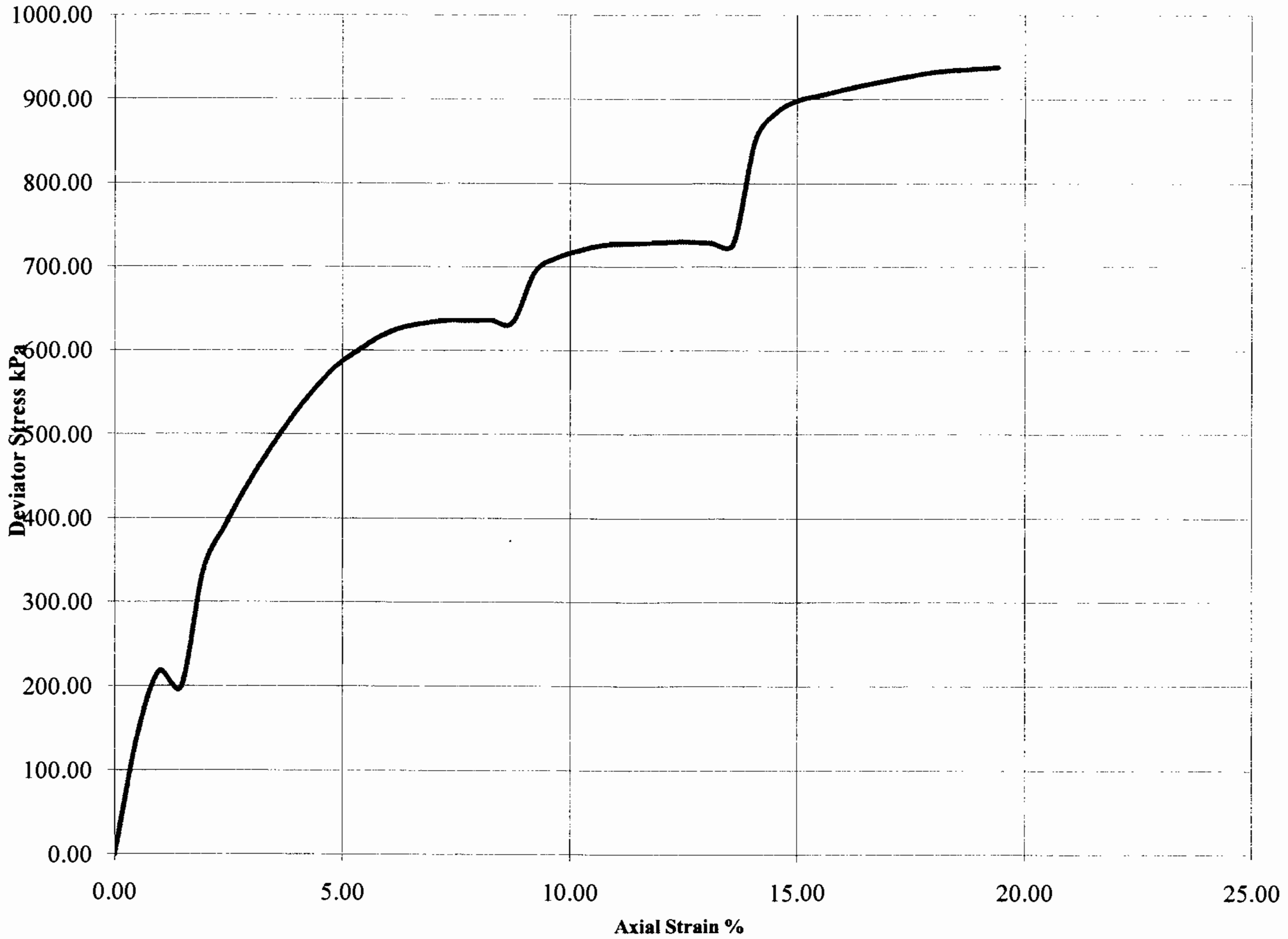
without measurement of Pore Pressure

B.S. 1377 : Part7 : Clause 8 : 1991

Hole Number: **BH5** Sample Number: **20** Depth (m): **8.00-8.45**



Diameter (mm):	100	Height (mm):		206	Test:	100mm Multistage			
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	19	2.11	1.78	100	636	318	8.3	compound	
				200	730	365	12.6		
				400	938	469	19.4		

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without measurement of Pore Pressure

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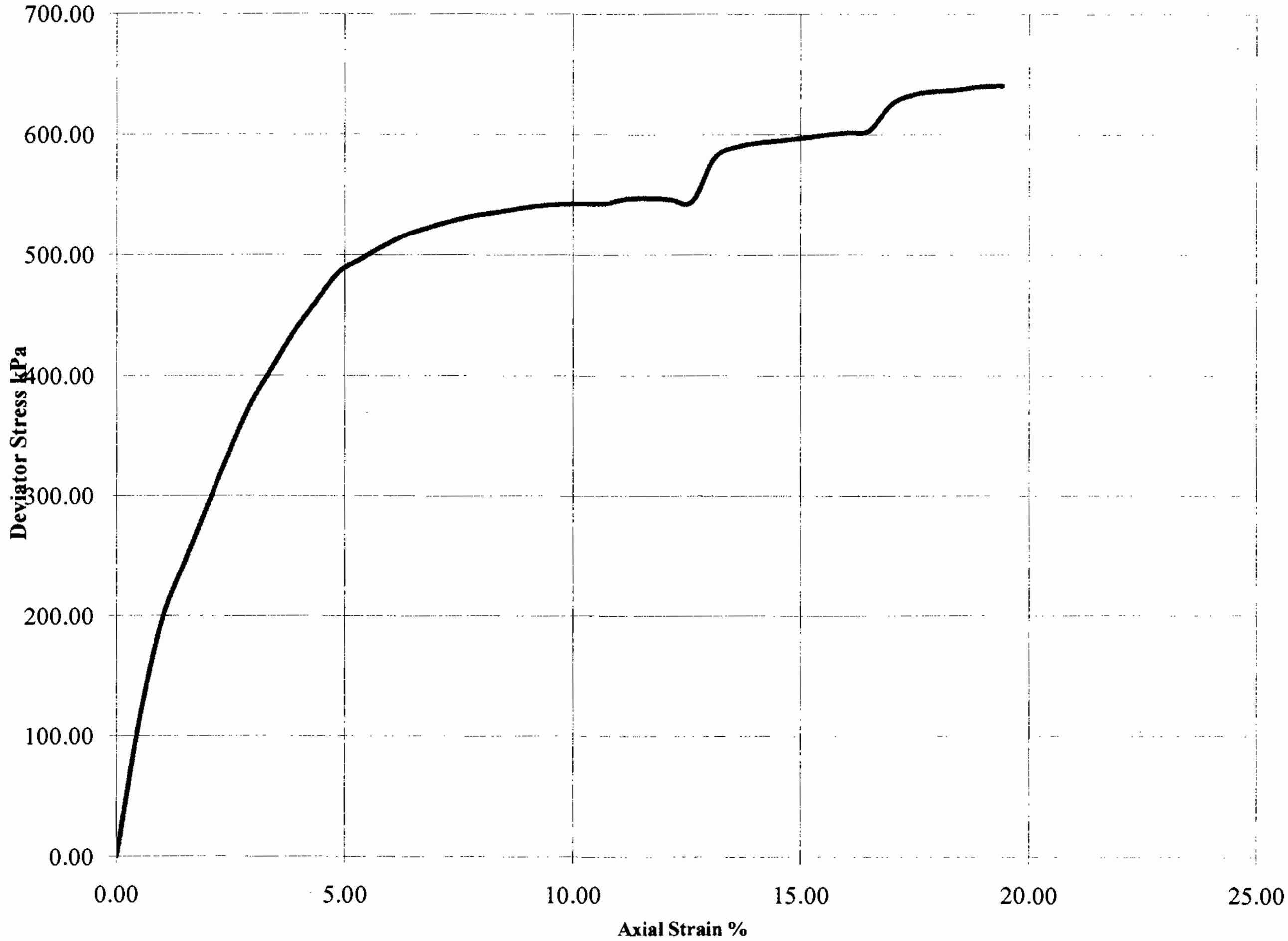
Hole Number: **BH6** Sample Number: **22** Depth (m): **8.70-9.15**



Diameter (mm):		102	Height (mm):		206	Test:	100mm Multistage		
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	16	2.07	1.79	90	547	274	11.7	compound	
				180	604	302	16.5		
				360	641	320	19.4		

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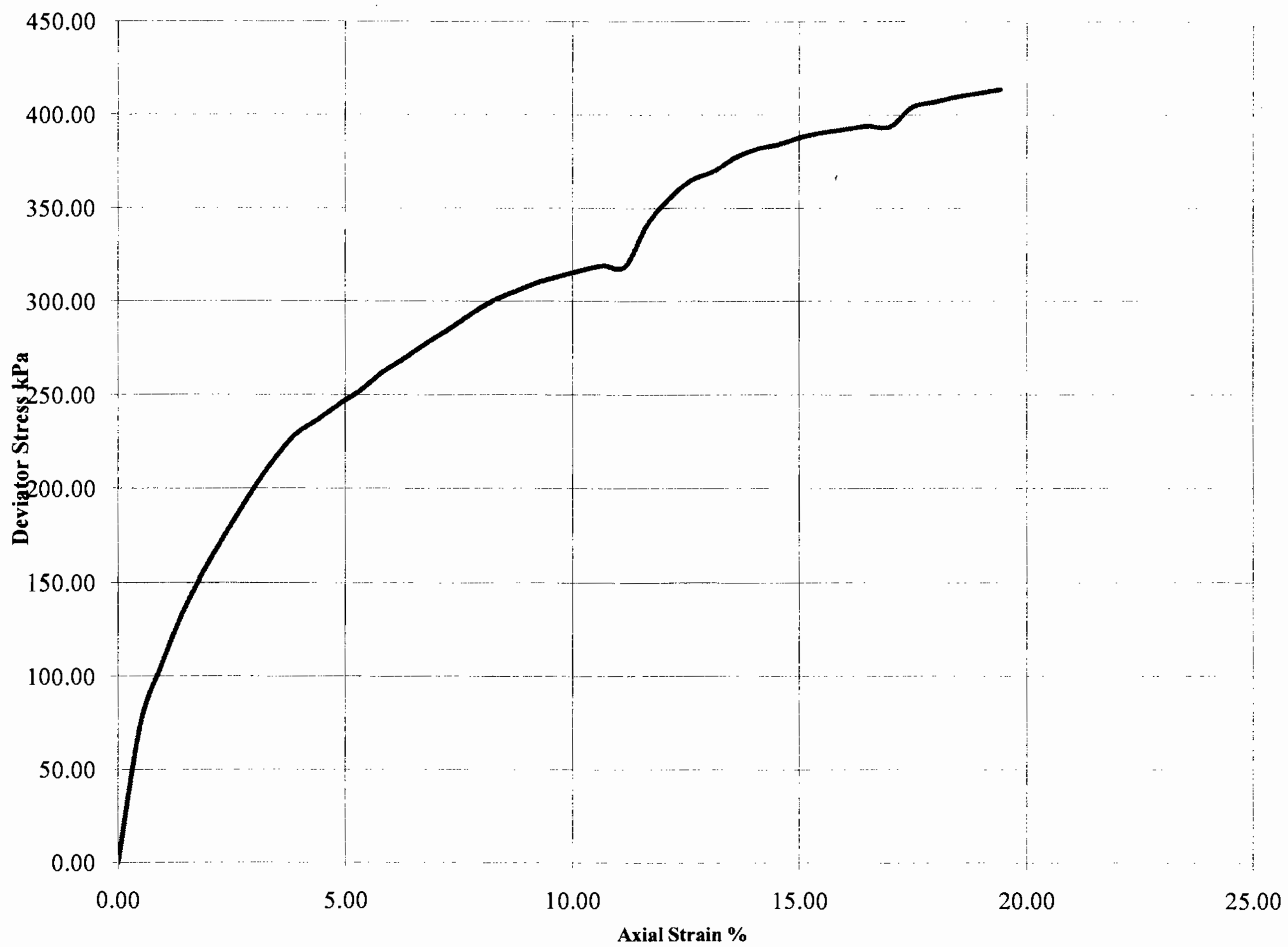
without measurement of Pore Pressure

B.S. 1377 : Part7 : Clause 8 : 1991

Hole Number: **BH8** Sample Number: **9** Depth (m): **3.30-3.75**



Diameter (mm):		102	Height (mm):		206	Test:	100mm Multistage		
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	21	2.09	1.74	35	319	160	10.7	compound	
				70	394	197	16.5		
				140	414	207	19.4		

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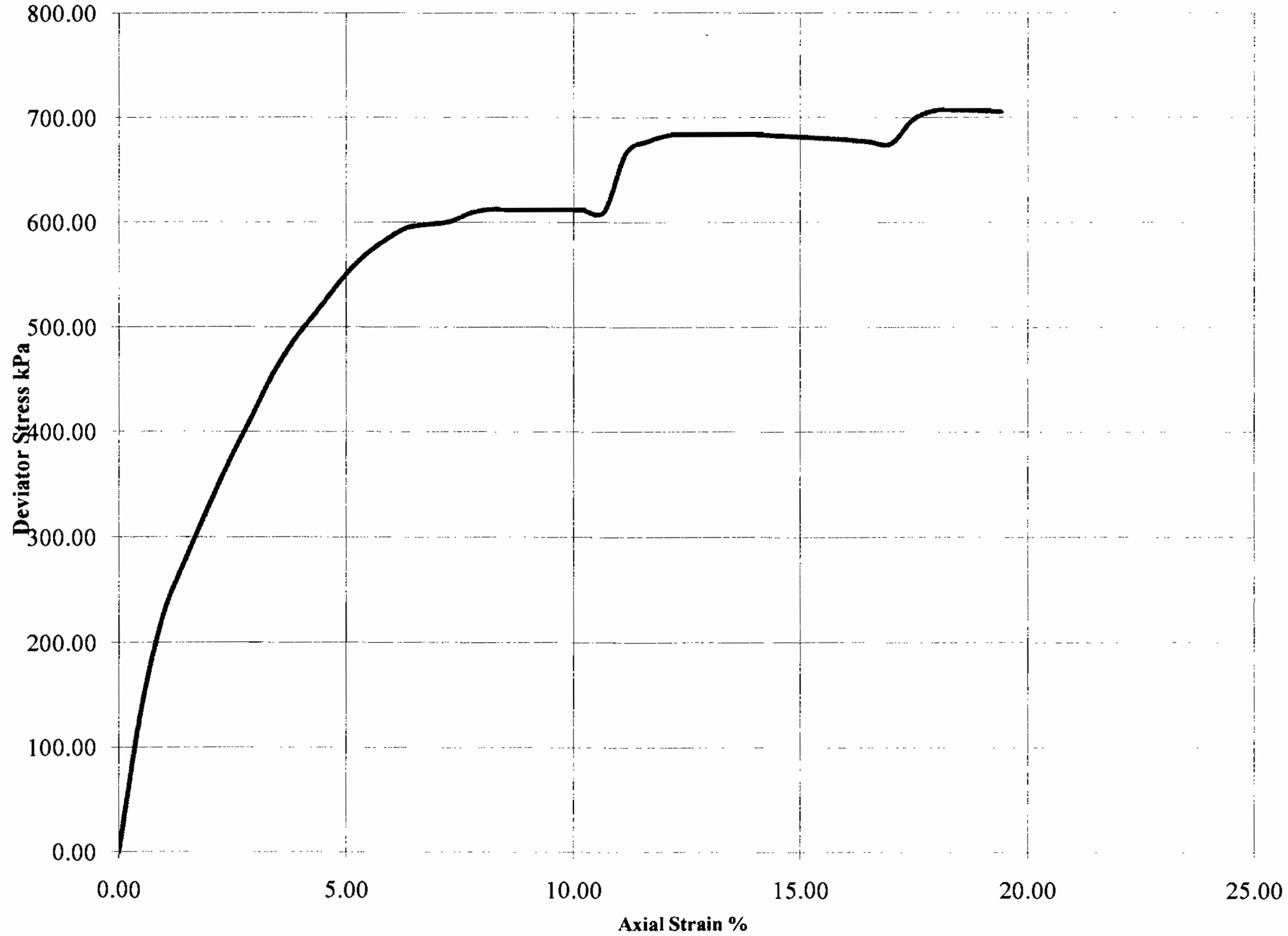
Undrained Shear Strength in Triaxial Compression

without measurement of Pore Pressure

B.S. 1377 : Part7 : Clause 8 : 1991

Hole Number: **BH8** Sample Number: **25** Depth (m): **14.00-14.45**



Diameter (mm):		102	Height (mm):		206	Test:	100mm Multistage		
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	29	2.15	1.66	142	613	306	8.3	compound	
				284	684	342	13.6		
				568	707	354	18.4		

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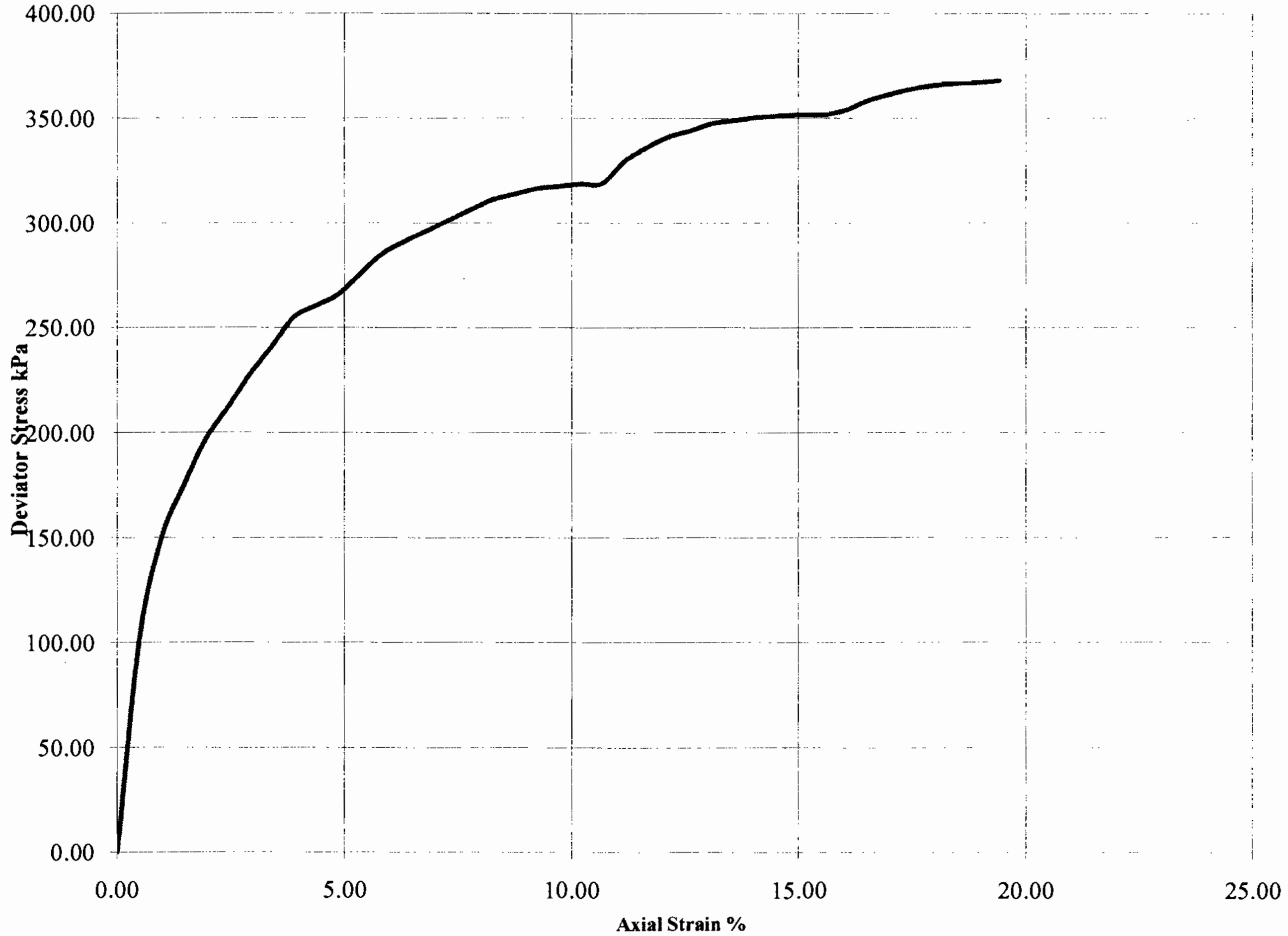
Undrained Shear Strength in Triaxial Compression

without measurement of Pore Pressure

B.S. 1377 : Part7 : Clause 8 : 1991

Hole Number: **BH10** Sample Number: **5** Depth (m): **1.80-2.25**



Diameter (mm):		102	Height (mm):		206	Test:	100mm Multistage		
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	23	2.16	1.76	20	319	160	10.7	compound	
				40	352	176	15.0		
				80	368	184	19.4		

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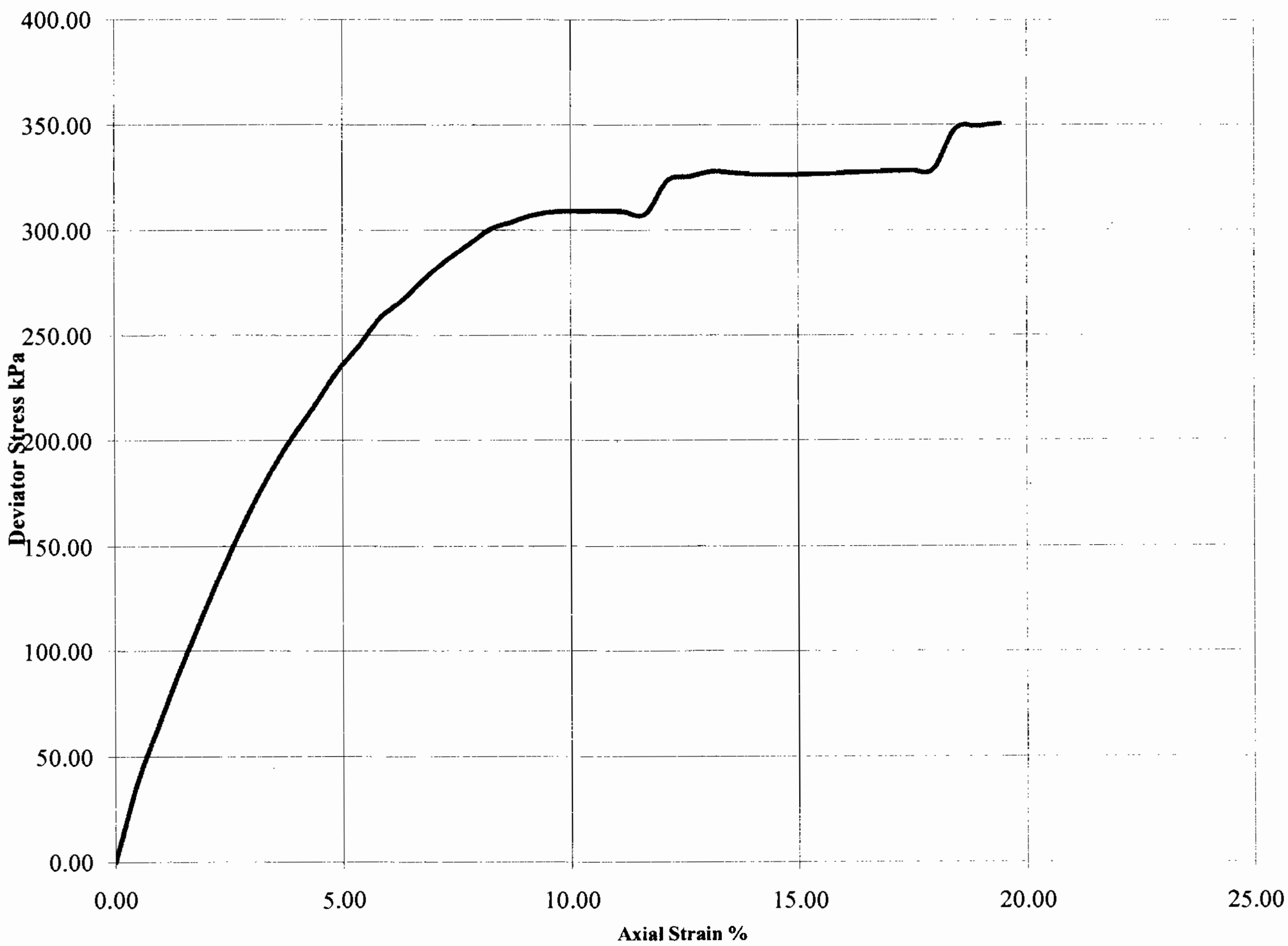
without measurement of Pore Pressure

B.S. 1377 : Part7 : Clause 8 : 1991

Hole Number: **BH10** Sample Number: **9** Depth (m): **4.00-4.45**



Diameter (mm):		102	Height (mm):		206	Test:	100mm Multistage		
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	14	2.27	1.99	50	309	155	10.7	compound	
				100	329	164	18.0		
				200	351	175	19.4		

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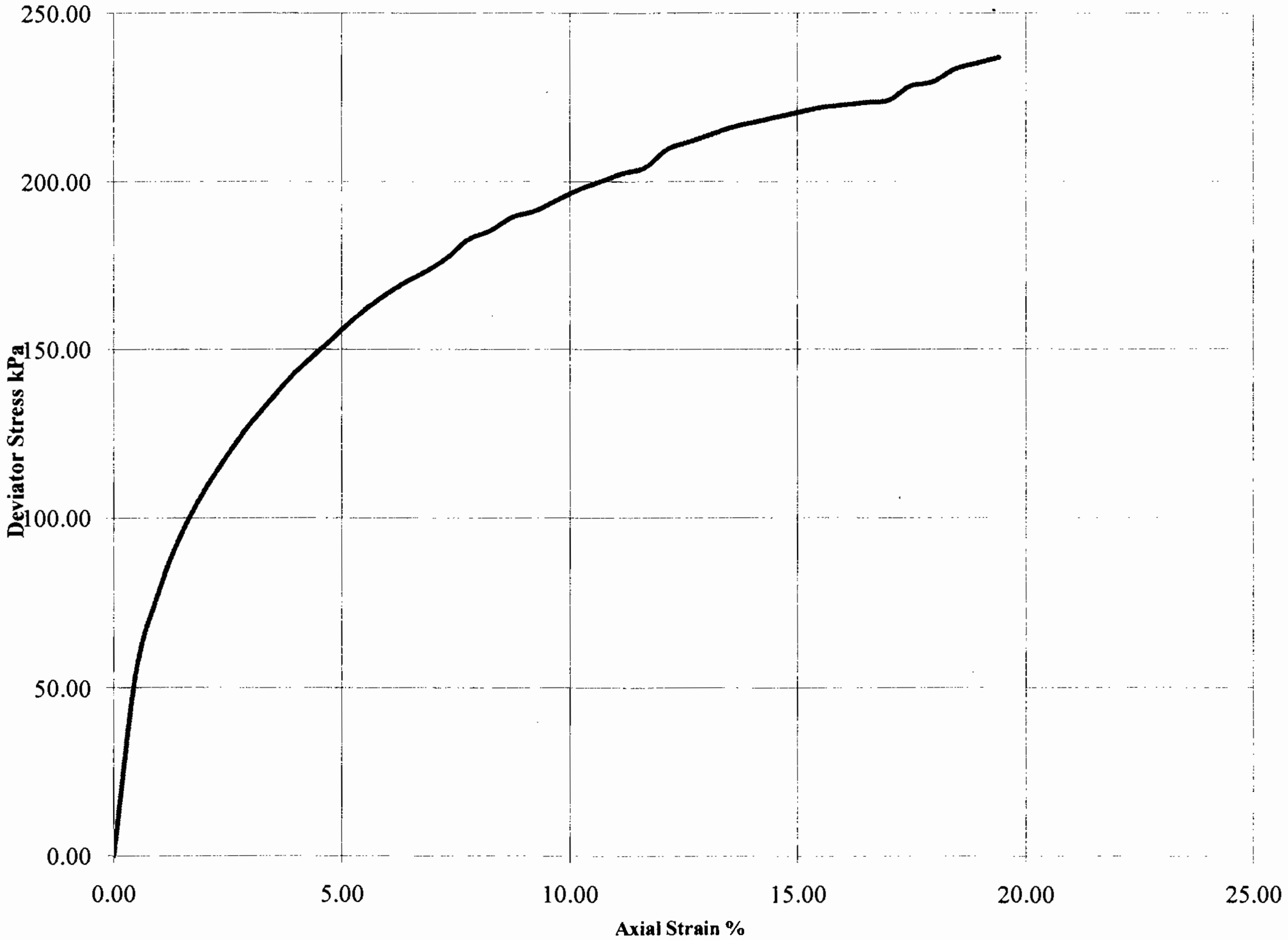
Undrained Shear Strength in Triaxial Compression

without measurement of Pore Pressure

B.S. 1377 : Part7 : Clause 8 : 1991

Hole Number: **BH14** Sample Number: **6** Depth (m): **3.00-3.45**



Diameter (mm):		102	Height (mm):		206	Test:	100mm Multistage		
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	21	2.23	1.84	40	204	102	11.7	compound	
				80	224	112	17.0		
				160	237	118	19.4		

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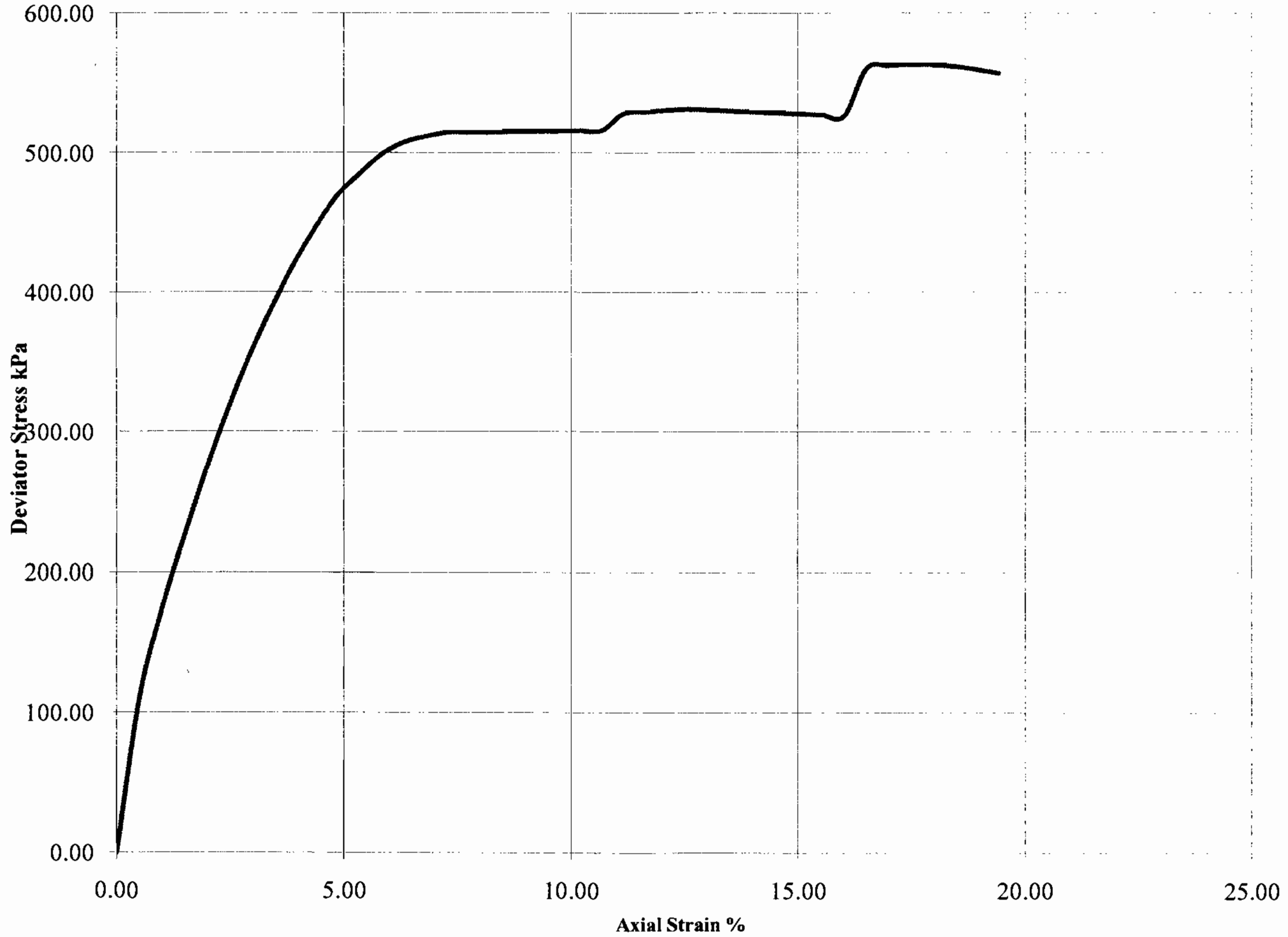
Undrained Shear Strength in Triaxial Compression

without measurement of Pore Pressure
B.S. 1377 : Part7 : Clause 8 : 1991

Hole Number: **BH14** Sample Number: **19** Depth (m): **9.00-9.45**



Diameter (mm):	100	Height (mm):	206	Test:	100mm Multistage			
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	16	2.05	1.76	100	516	258	10.7	compound	
				200	531	266	12.6		
				400	563	282	17.5		

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Lostock Works, Cheshire

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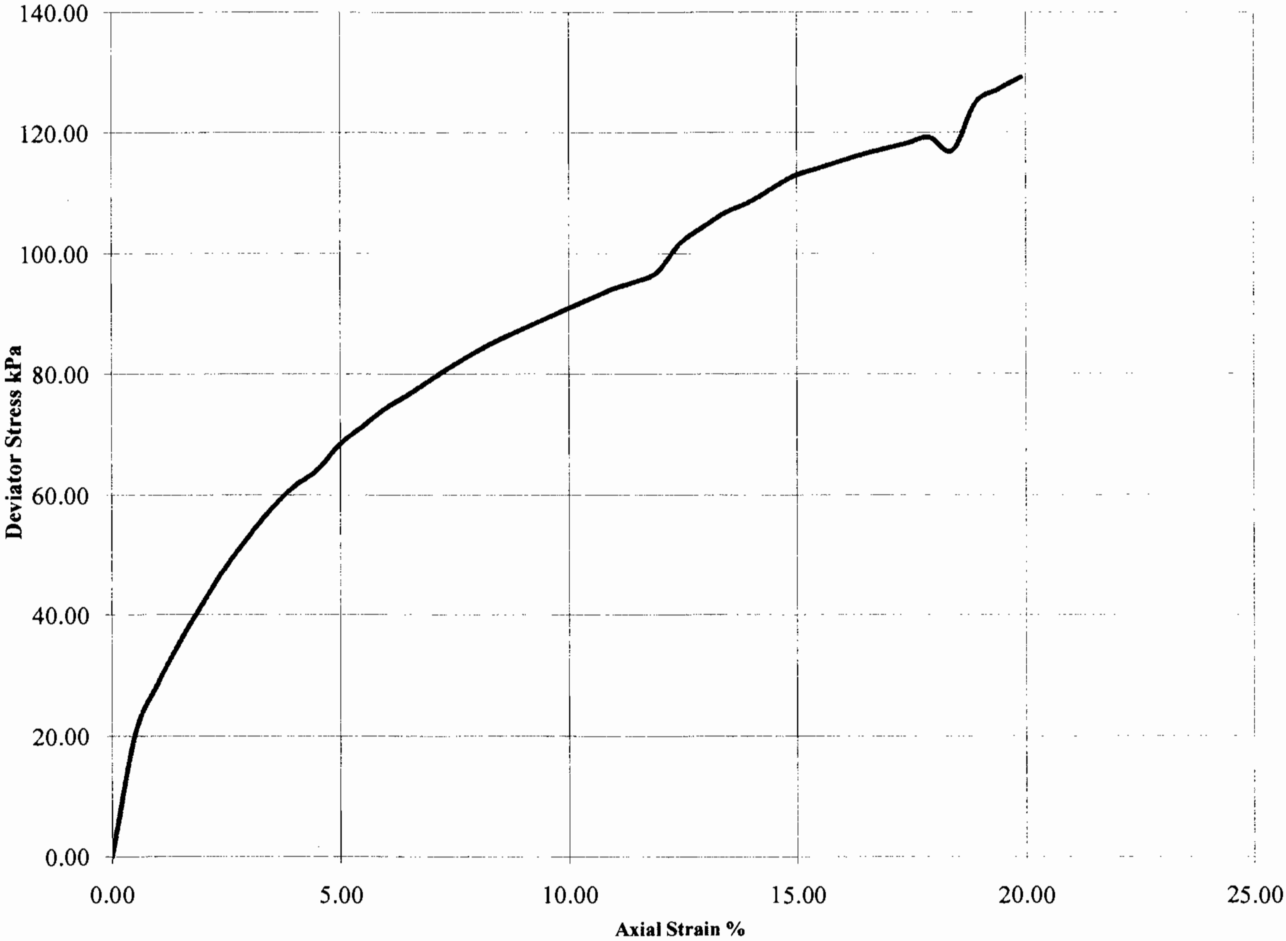
Undrained Shear Strength in Triaxial Compression

without measurement of Pore Pressure
B.S. 1377 : Part7 : Clause 8 : 1991

Hole Number: **BH16** Sample Number: **6** Depth (m): **2.00-2.45**



Diameter (mm):	100	Height (mm):		201	Test:	100mm Multistage			
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	17	2.28	1.94	25	97	48	11.9	compound	
				50	119	60	17.9		
				100	129	65	19.9		

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Summary of Laboratory Sample Descriptions

Hole Number	Sample Number	Type	Depth (m)	Description of Sample*
BH1	14	B	6.20-6.70	Brown slightly gravelly sandy (fine to coarse) silty CLAY.
BH2	8	U	2.00-2.45	Brown silty CLAY.
BH3	3	B	0.90-1.20	Brown gravelly sandy (fine to coarse) silty CLAY.
BH3	8	U	2.90-3.35	Brown gravelly silty CLAY.
BH3	10	B	3.50-4.00	Brown slightly gravelly silty clayey (fine to coarse) SAND.
BH6	13	B	4.60-5.10	Brown slightly gravelly sandy (fine to coarse) silty CLAY.
BH7B	1	U	0.50-1.00	Brown silty clayey gravelly (fine to coarse) SAND.
BH7B	16	U	5.00-5.75	Brown silty CLAY.
BH7B	21	B	7.50-8.00	Brown slightly gravelly sandy (fine to coarse) silty CLAY.
BH7B	23	U	9.00-9.45	Brown silty clayey gravelly (fine to coarse) SAND.
BH8	17	B	8.00-8.50	Brown gravelly silty CLAY.
BH9	2+3	B	0.60-1.10	Brown gravelly silty clayey (fine to coarse) SAND.
BH9	18	U	6.00-6.45	Brown gravelly silty CLAY.
BH9	34	U	15.00-15.45	Brown silty clayey gravelly (fine to coarse) SAND.
BH11/WS6	17	B	3.10-3.55	Brown gravelly silty CLAY.
BH11/WS6	17	U	5.60-6.20	Brown slightly gravelly sandy (fine to coarse) silty CLAY.
BH12	10	U	3.10-3.55	Brown gravelly silty CLAY.
BH12	13	B	4.00-4.50	Brown slightly gravelly silty clayey (fine to coarse) SAND.
BH12	15	U	5.10-5.55	Brown silty CLAY.
BH13	6	B	1.90-2.30	Brown silty clayey sandy (fine to coarse) GRAVEL.
BH13	9	U	2.60-3.05	Brown gravelly silty CLAY.
BH13	16	U	5.00-5.45	Brown gravelly silty CLAY.
BH13	20	B	6.50-7.00	Brown slightly gravelly sandy (fine to coarse) silty CLAY.
BH13	22	U	8.00-8.45	Brown gravelly silty CLAY.
BH15	11	B	3.50-4.00	Brown slightly gravelly sandy (fine to coarse) silty CLAY.
BH15	14	U	5.00-5.45	Brown gravelly silty CLAY.
BH17	1+2	B	0.50-1.00	Brown silty clayey sandy (fine to coarse) GRAVEL with few cobbles.
BH17	9	U	3.00-3.45	Brown silty CLAY.
BH17	12	B	4.50-5.00	Brown slightly gravelly sandy (fine to coarse) silty CLAY.
BH18A	8	U	2.80-3.25	Brown gravelly silty CLAY.
BH19	8	U	3.10-3.55	Brown gravelly silty CLAY.
BH19	11	B	4.50-5.00	Brown slightly gravelly sandy (fine to coarse) silty CLAY.
BH20	7	U	3.20-3.65	Brown silty CLAY.
TP1		B	0.50-1.00	Brown silty clayey sandy (fine to coarse) GRAVEL.

Note: Results on this table are in summary format and may not meet the requirements of the relevant standards, additional information is held by the laboratory

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LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: 7773/09

Client ref: LE10104/VE059592

Summary of Soil Classification Tests

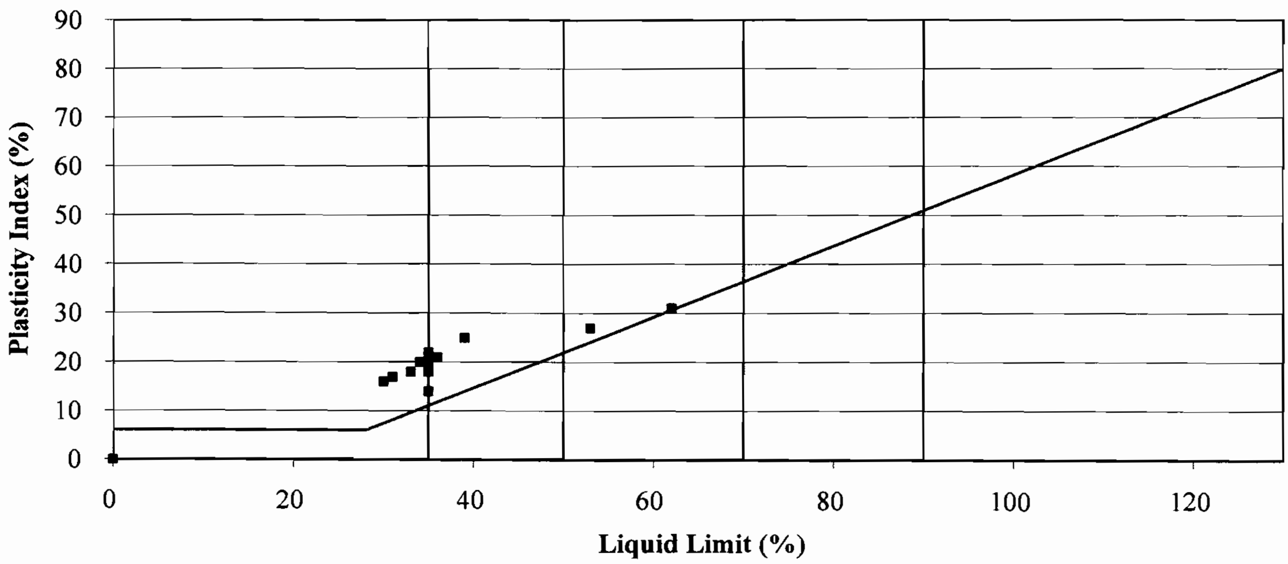
BS 1377:Part 2:1990

Hole/ Sample Number	Sample Type	Depth m	Moisture Content % Cl. 3.2	Liquid Limit % Cl. 4.3/4.4	Plastic Limit % Cl. 5.	Plasticity Index % Cl. 6.	% Passing .425mm	Remarks
BH2/8	U	2.00 - 2.45	22	62	31	31	100	CH High Plasticity
BH3/8	U	2.90 - 3.35	16	53	26	27	94	CH High Plasticity
BH7B/16	U	5.00 - 5.75	11	30	14	16	100	CL Low Plasticity
BH7B/23	U	9.00 - 9.45	11					
BH9/18	U	6.00 - 6.45	13	35	13	22	97	CL/I Low/Inter. Plasticity
BH9/34	U	15.00 - 15.45	12	31	14	17	90	CL Low Plasticity
BH11A/WS6/18	U	3.10 - 3.55	18	34	14	20	95	CL Low Plasticity
BH12/10	U	3.10 - 3.55	11	35	14	21	95	CL/I Low/Inter. Plasticity
BH12/15	U	5.10 - 5.55	12					
BH13/9	U	2.60 - 3.05	13	35	15	20	93	CL/I Low/Inter. Plasticity
BH13/16	U	5.00 - 5.45	14	36	15	21	91	CI Intermediate Plasticity
BH13/22	U	8.00 - 8.45	16	35	21	14	96	CL/I Low/Inter. Plasticity
BH15/14	U	5.00 - 5.45	11	35	17	18	90	CL Low Plasticity
BH17/9	U	3.00 - 3.45	7.8	39	14	25	96	CI Intermediate Plasticity
BH18A/8	U	2.80 - 3.25	10	35	17	18	96	CL Low Plasticity
BH19/8	U	3.10 - 3.55	14	33	15	18	95	CL Low Plasticity

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

BS 5930:1999



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LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: 7772/09

Client Ref No: LE10104/VE05959?

UKAS TESTING 2788

Summary of Soil Classification Tests

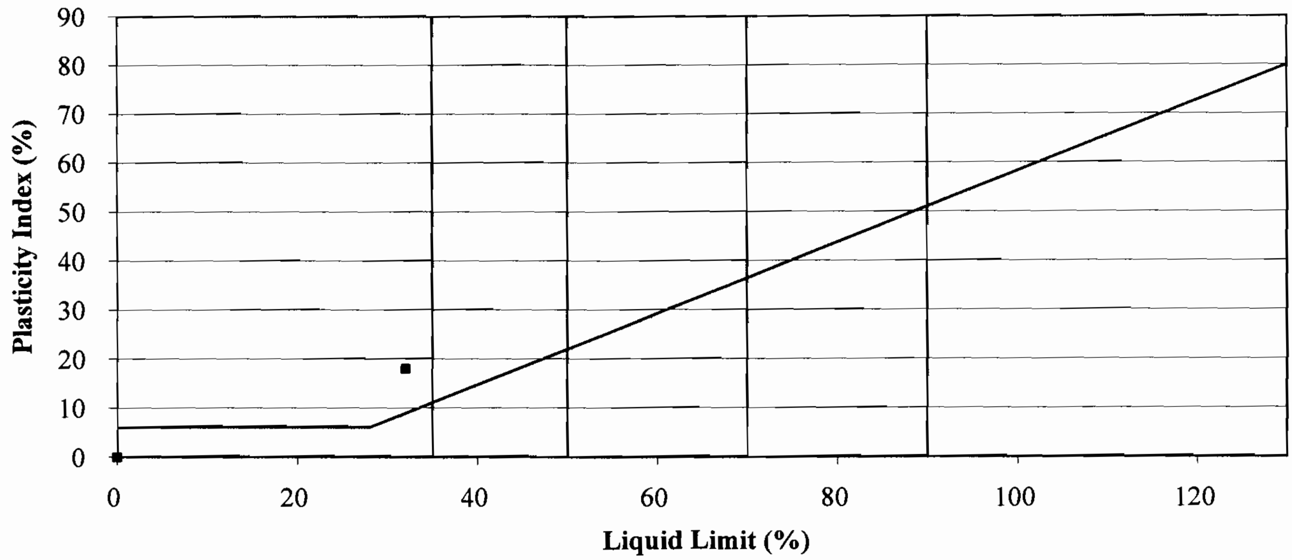
BS 1377:Part 2:1990

Hole/ Sample Number	Sample Type	Depth m	Moisture Content % Cl. 3.2	Liquid Limit % Cl. 4.3/4.4	Plastic Limit % Cl. 5.	Plasticity Index % Cl. 6.	% Passing .425mm	Remarks
BH20/7	U	3.20 - 3.65	15	32	14	18	94	CL Low Plasticity

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

BS 5930:1999



Checked by 19/05/09 Date

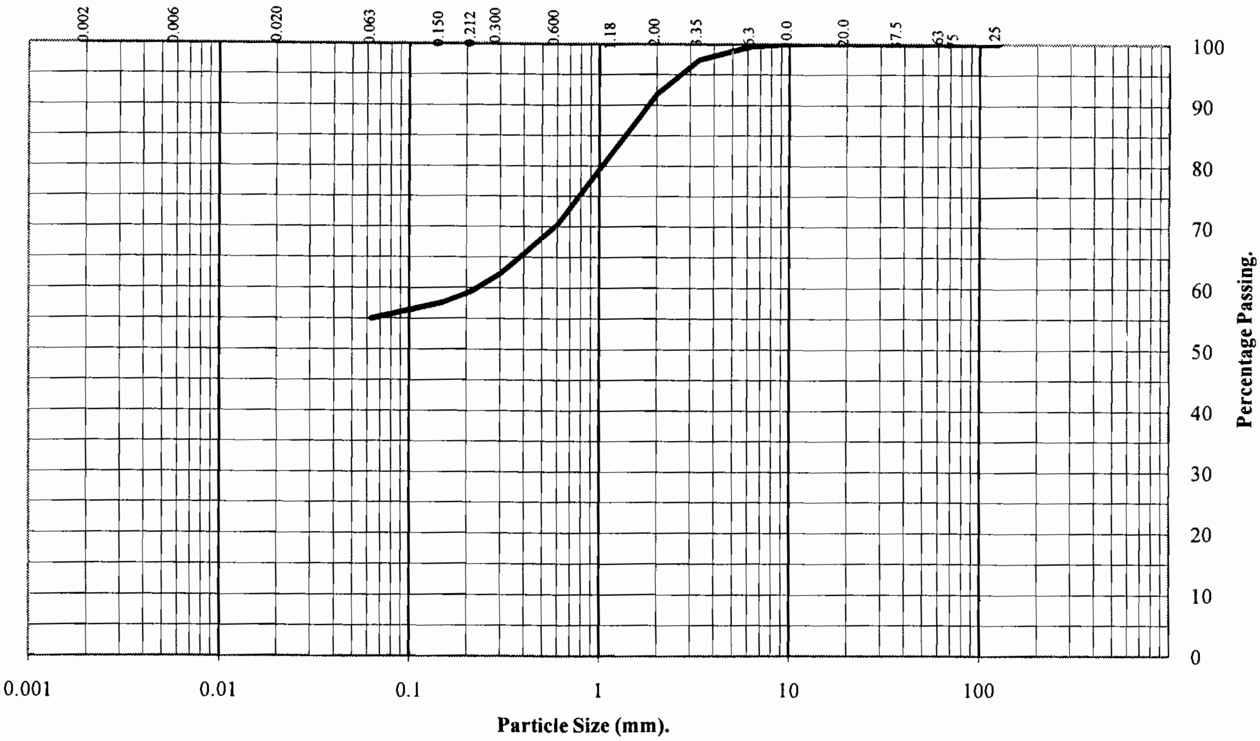
Approved by 19/5/09 Date

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole/Sample Number: **BH1/14** Type: **B** Depth (m): **6.20** to **6.70**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	100
20	100
10	100
6.3	100
3.35	97
2.00	92
1.18	82
0.60	70
0.30	62
0.21	59
0.15	58
0.06	55

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	8
Sand	37
Silt and Clay	55

Remarks:

#- not determined

Checked by Date 19/05/09 Approved by Date 19/05/09

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: 7772/09

Client Ref No: 10104/VE059!

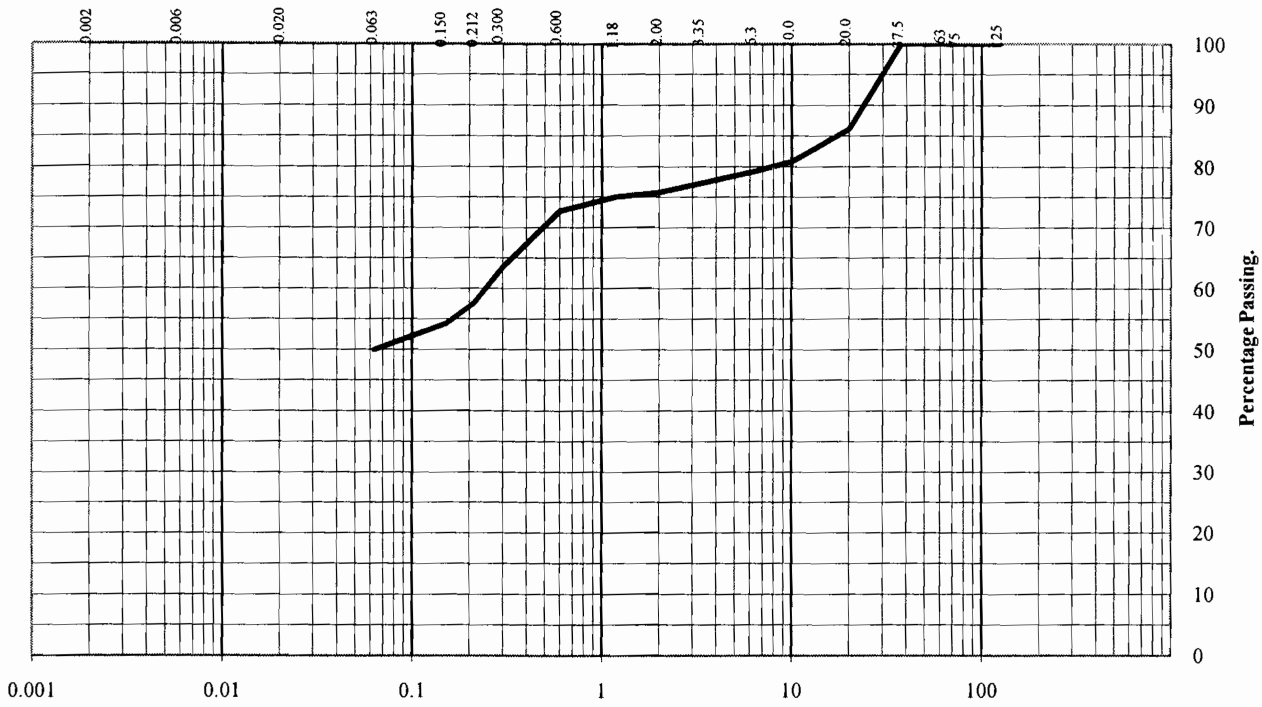
UKAS TESTING 2788

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole/Sample Number: **BH3/3** Type: **B** Depth (m): **0.90** to **1.20**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	100
20	86
10	81
6.3	79
3.35	77
2.00	76
1.18	75
0.60	73
0.30	64
0.21	58
0.15	54
0.06	50

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	24
Sand	26
Silt and Clay	50

Remarks:

#- not determined

Checked by 19/05/09 **Date** **Approved by** 19/5/09 **Date**

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: 7772/09

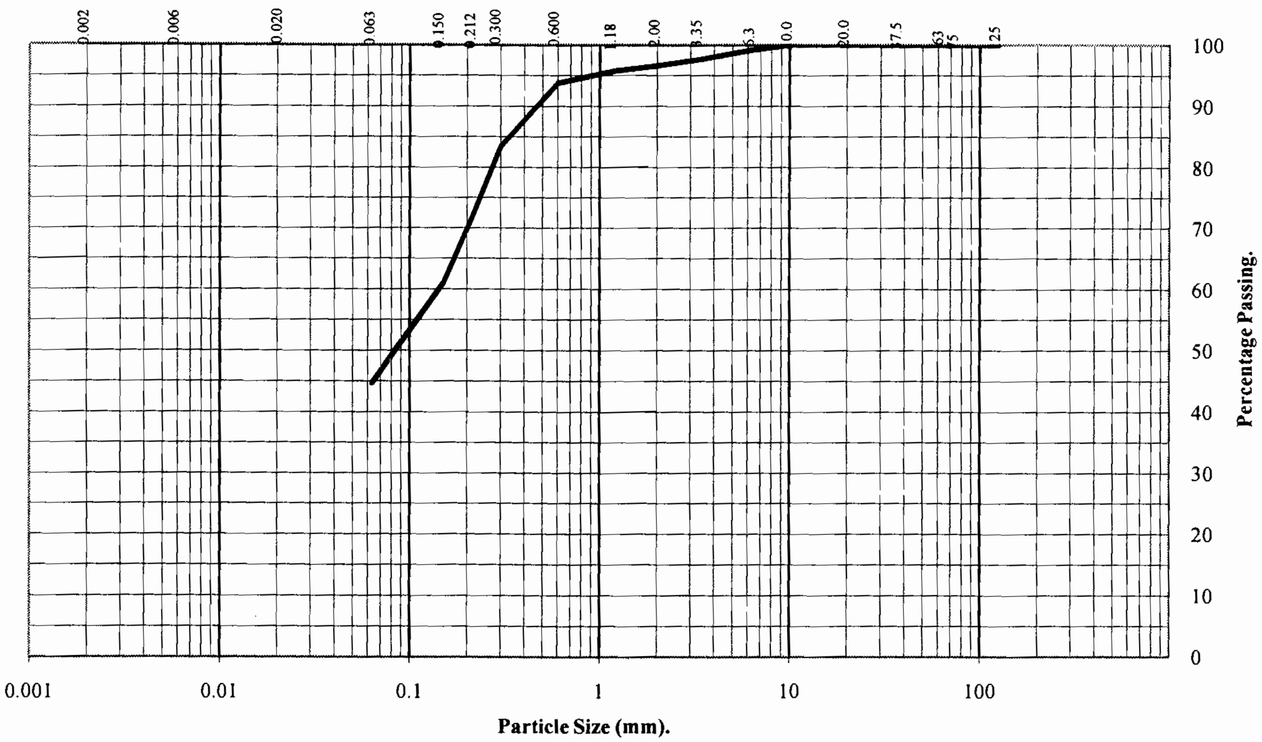
Client Ref No: 10104/VE059!

UKAS TESTING 2788

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.
Wet Sieve, Clause 9.2

Hole/Sample Number: **BH3/10** Type: **B** Depth (m): **3.50** to **4.00**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	100
20	100
10	100
6.3	99
3.35	98
2.00	97
1.18	96
0.60	94
0.30	83
0.21	72
0.15	61
0.06	45

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	3
Sand	52
Silt and Clay	45

Remarks:
#- not determined

19/05/09 19/5/09

Checked by **Date** **Approved by** **Date**

Lostock Works Cheshire

Contract No.:
7772/09
Client Ref No:
10104/VE059!

LABORATORY TESTING SERVICES LIMITED

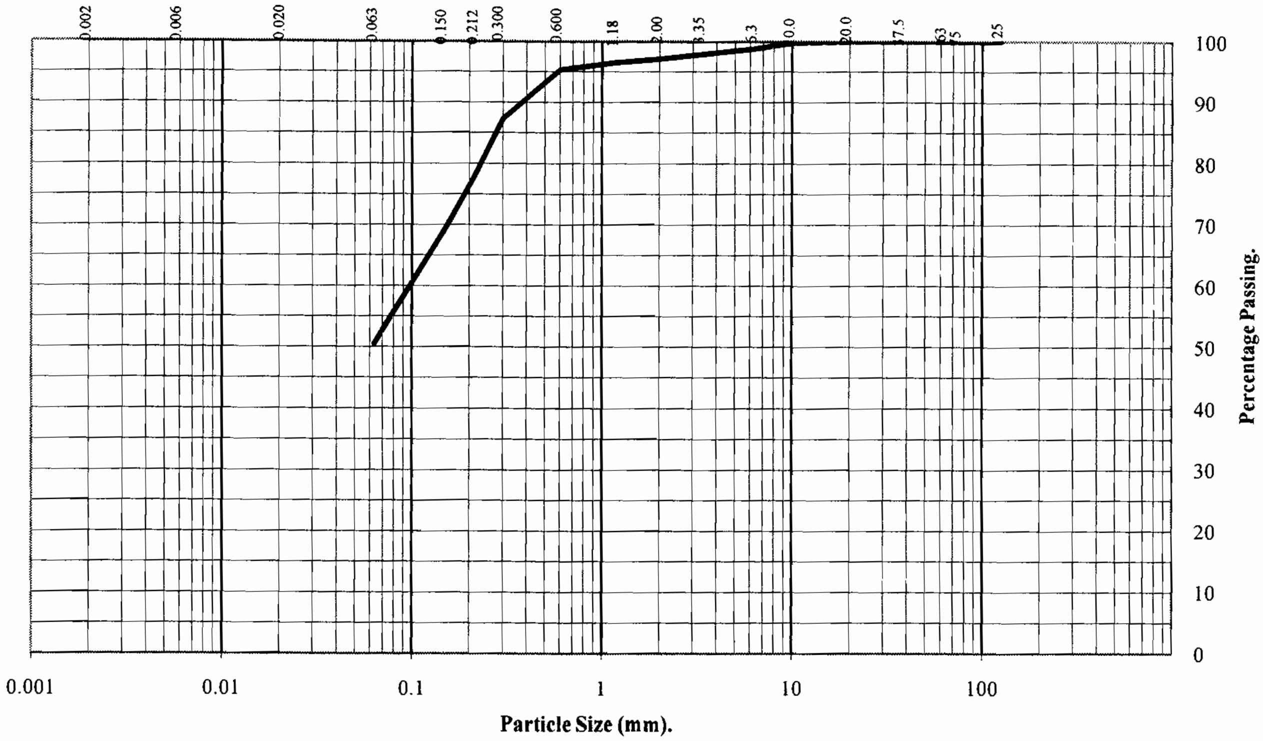
UKAS TESTING 2788

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole/Sample Number: **BH6/13** Type: **B** Depth (m): **4.60** to **5.10**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	100
20	100
10	100
6.3	99
3.35	98
2.00	97
1.18	97
0.60	95
0.30	87
0.21	78
0.15	69
0.06	51

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	3
Sand	46
Silt and Clay	51

Remarks:

#- not determined

19/08/09 19/05/09

Checked by **Date** **Approved by** **Date**

Lostock Works Cheshire

Contract No.: 7772/09

Client Ref No: 10104/VE059!

UKAS TESTING 2788

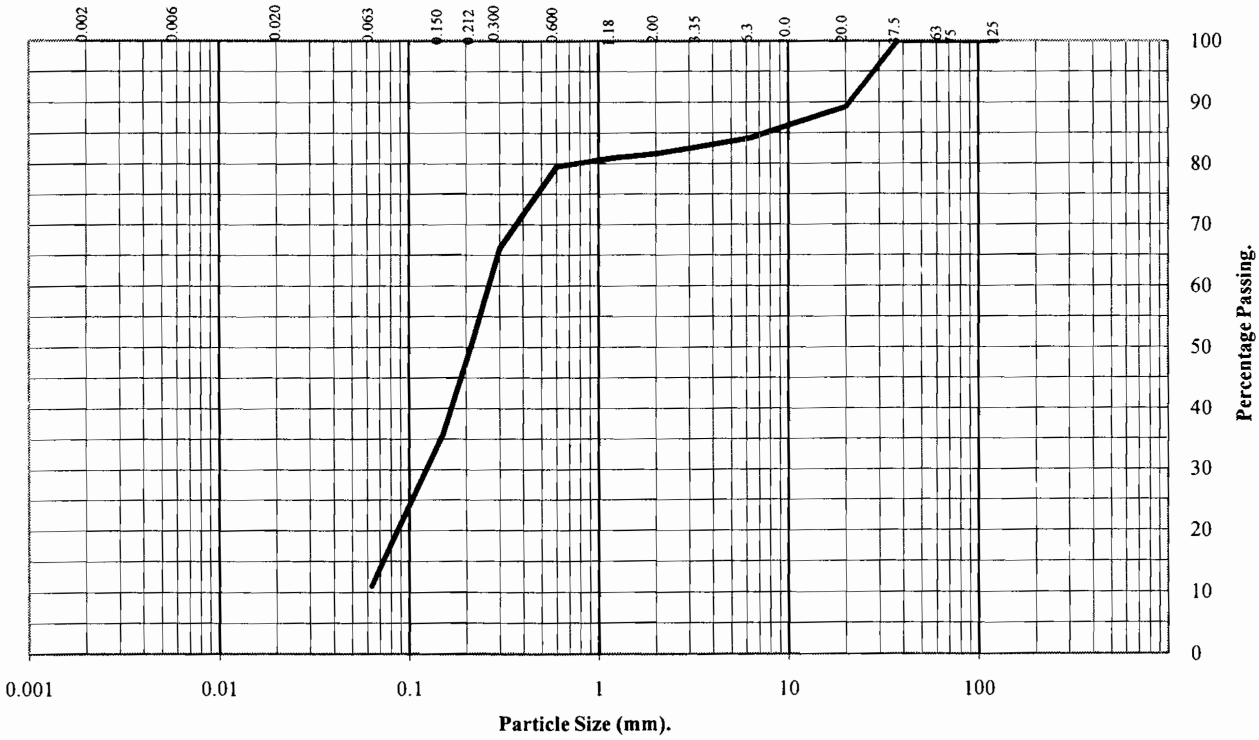
LABORATORY TESTING SERVICES LIMITED

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole/Sample Number: **BH7B/1** Type: **B** Depth (m): **0.50** to **1.00**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	100
20	89
10	86
6.3	84
3.35	83
2.00	82
1.18	81
0.60	80
0.30	66
0.21	50
0.15	36
0.06	11

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	18
Sand	71
Silt and Clay	11

Remarks:

#- not determined

Checked by 19/08/09 Date Approved by 19/05/09 Date

Lostock Works Cheshire

Contract No.: 7772/09

Client Ref No: 10104/VE059!

LABORATORY TESTING SERVICES LIMITED

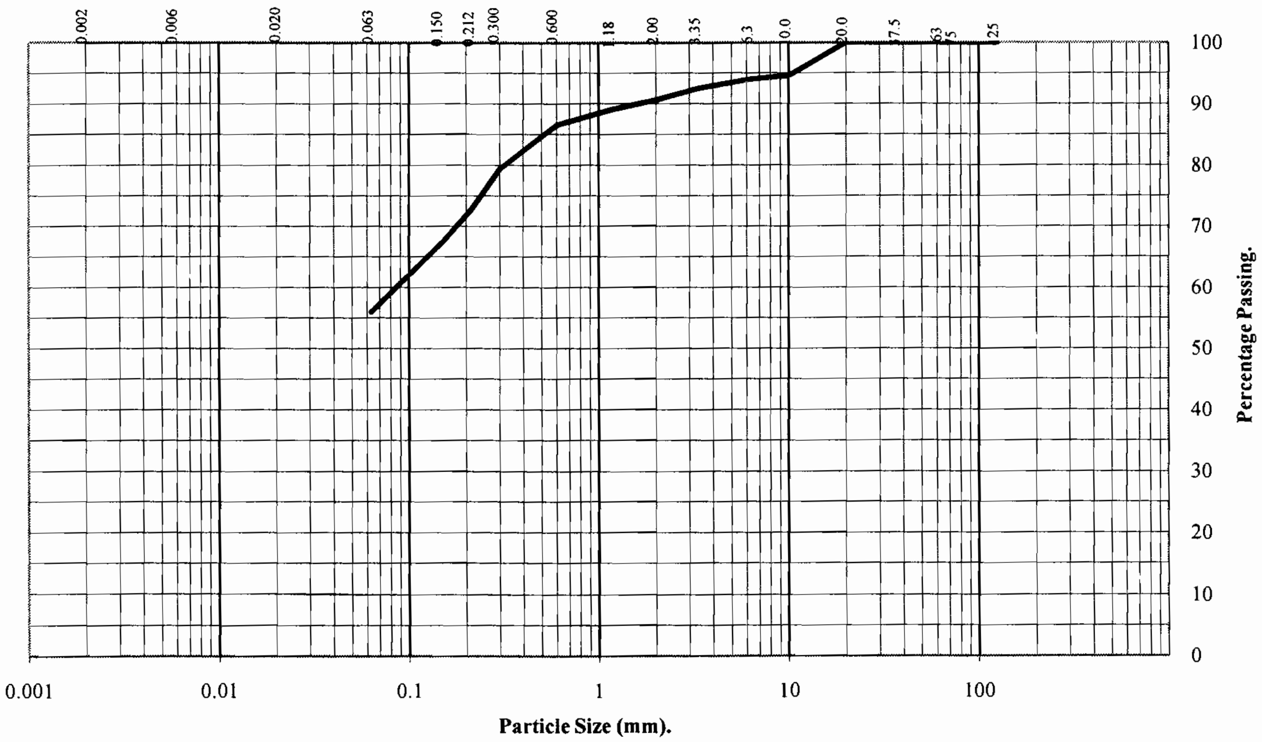
UKAS TESTING 2788

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole/Sample Number: **BH7b/21** Type: **B** Depth (m): **7.50** to **8.00**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	100
20	100
10	95
6.3	94
3.35	92
2.00	91
1.18	89
0.60	87
0.30	79
0.21	73
0.15	67
0.06	56

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	9
Sand	35
Silt and Clay	56

Remarks:

#- not determined

Checked by 19/05/09 Date

Approved by 19/05/09 Date

Lostock Works Cheshire

Contract No.: 7772/09

Client Ref No: 10104/VE059!

UKAS TESTING 2788

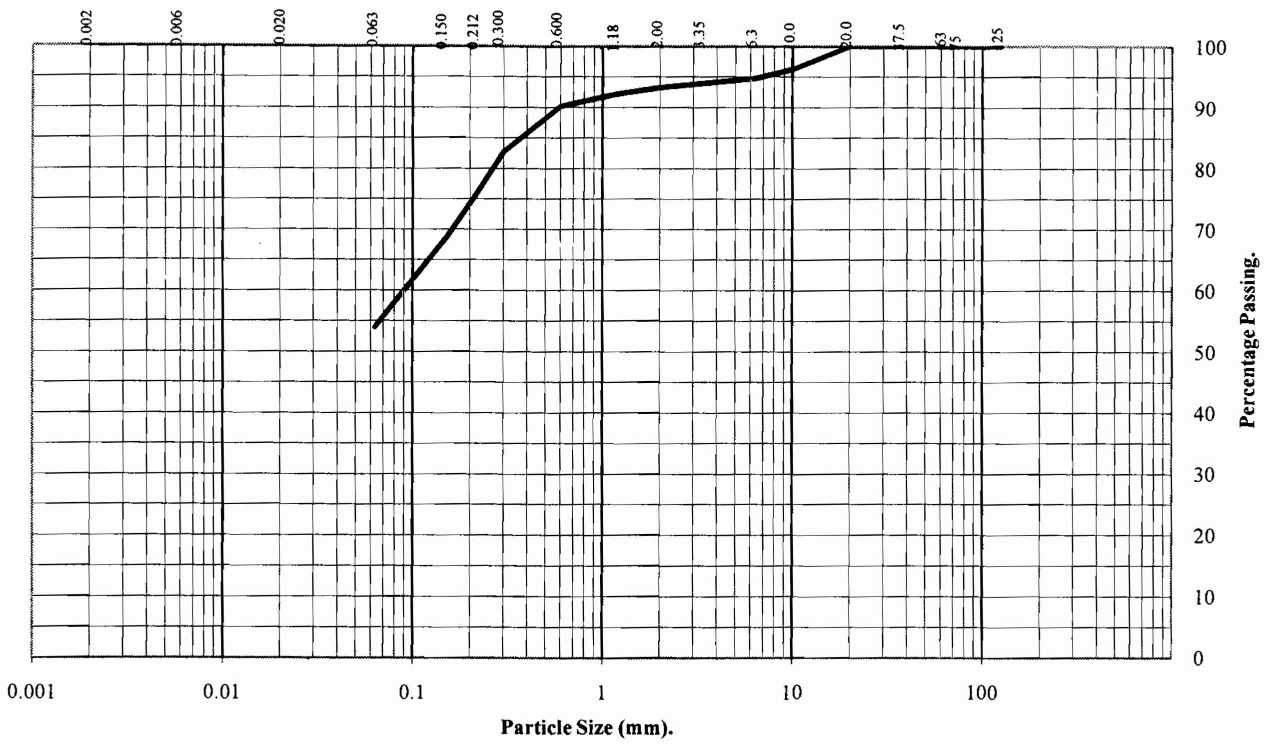
LABORATORY TESTING SERVICES LIMITED

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole/Sample Number: **BH8/17** Type: **B** Depth (m): **8.00** to **8.50**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	100
20	100
10	96
6.3	95
3.35	94
2.00	93
1.18	92
0.60	90
0.30	83
0.21	75
0.15	69
0.06	54

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	7
Sand	39
Silt and Clay	54

Remarks:

#- not determined

Checked by 19/05/09 Date Approved by 19/05/09 Date

Lostock Works Cheshire

Contract No.: 7772/09

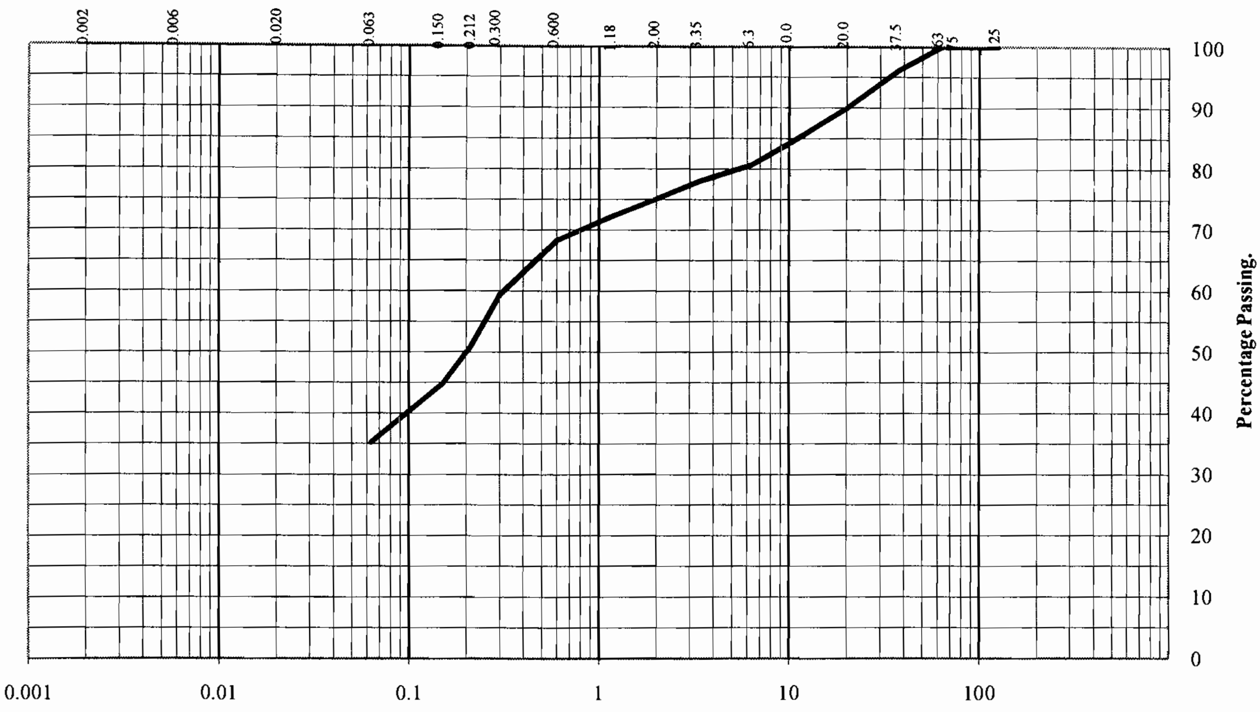
Client Ref No: 10104/VE059!

LABORATORY TESTING SERVICES LIMITED

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.
Wet Sieve, Clause 9.2

Hole/Sample Number: **BH9/2+3** Type: **B** Depth (m): **0.60** to **1.10**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	96
20	90
10	84
6.3	81
3.35	78
2.00	75
1.18	72
0.60	68
0.30	59
0.21	51
0.15	45
0.06	35

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	25
Sand	40
Silt and Clay	35

Remarks:

#- not determined

Checked by 19/05/09 Date Approved by 19/05/09 Date

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: **7772/09**
Client Ref No: **10104/VE059!**

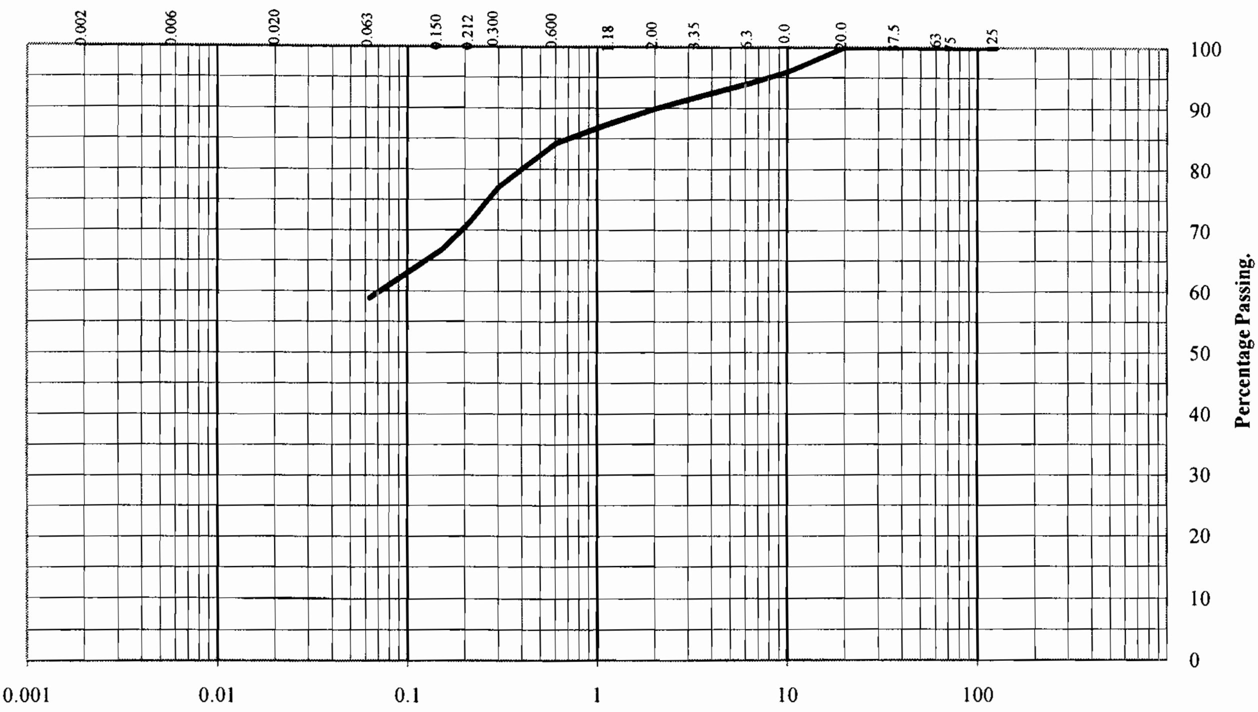
UKAS TESTING 2788

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole/Sample Number: **BH11A/WS6/17** Type: **B** Depth (m): **5.60** to **6.20**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	100
20	100
10	96
6.3	94
3.35	92
2.00	90
1.18	88
0.60	84
0.30	77
0.21	71
0.15	67
0.06	59

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	10
Sand	31
Silt and Clay	59

Remarks:

#- not determined

Checked by 19/05/09 Date — Approved by 19/05/09 Date

Lostock Works Cheshire

Contract No.: **7772/09**

Client Ref No: **10104/VE059!**

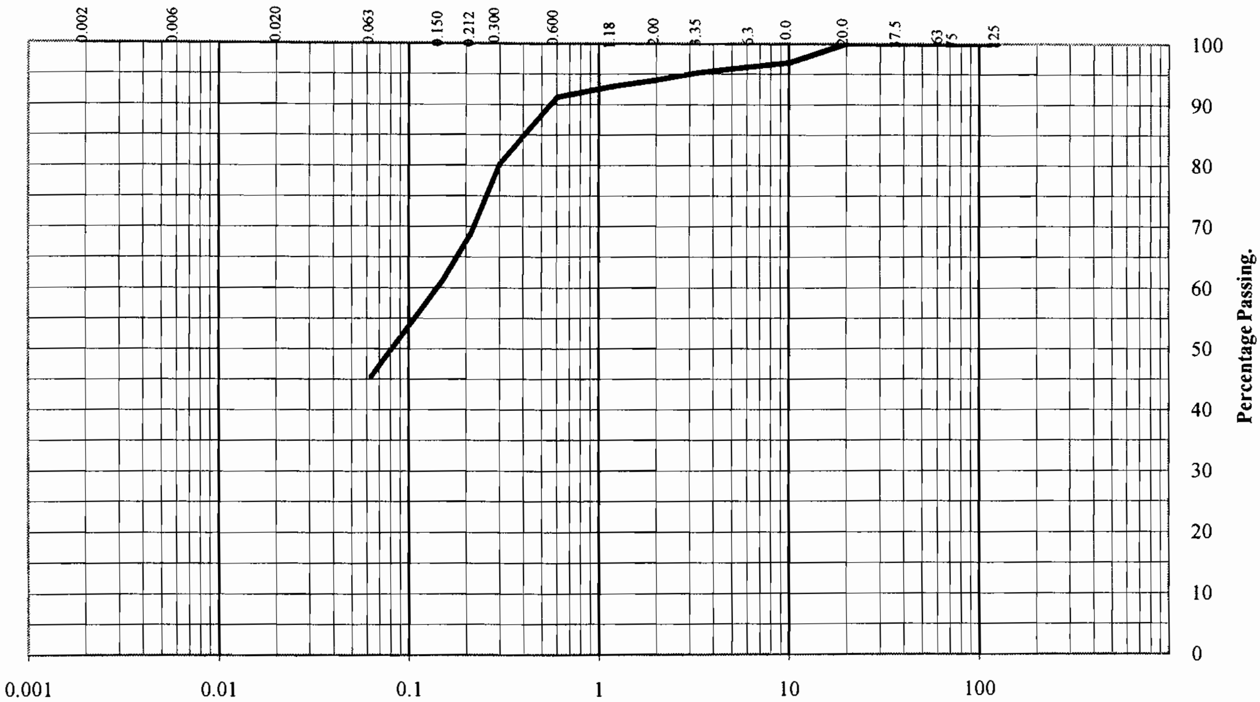
UKAS TESTING 2788

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole/Sample Number: **BH12/13** Type: **B** Depth (m): **4.00** to **4.50**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	100
20	100
10	97
6.3	96
3.35	95
2.00	94
1.18	93
0.60	91
0.30	80
0.21	69
0.15	61
0.06	45

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	6
Sand	49
Silt and Clay	45

Remarks:

#- not determined

Checked by 19/08/09 Date

Approved by 19/08/09 Date

Lostock Works Cheshire

Contract No.: **7772/09**

Client Ref No: **10104/VE059!**

UKAS TESTING 2788

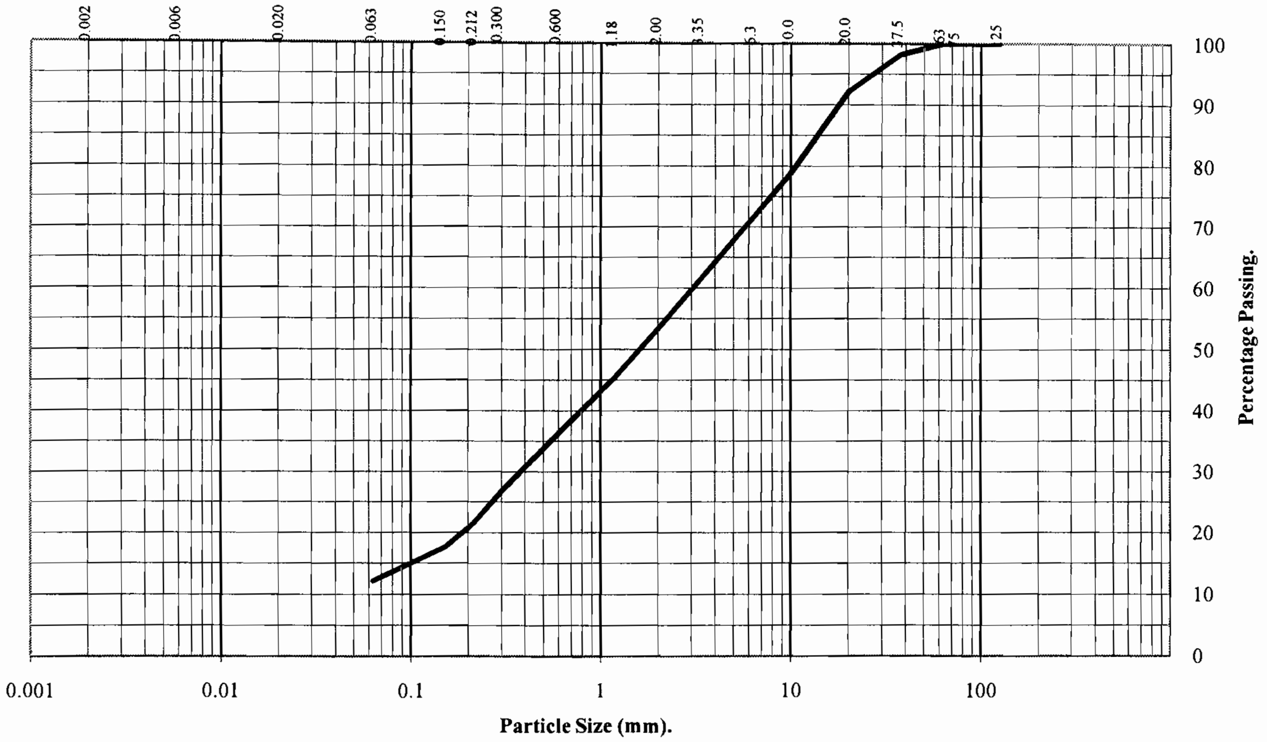
LABORATORY TESTING SERVICES LIMITED

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole/Sample Number: **BH13/6** Type: **B** Depth (m): **1.90** to **2.30**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	98
20	92
10	79
6.3	71
3.35	61
2.00	53
1.18	45
0.60	36
0.30	27
0.21	21
0.15	18
0.06	12

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	47
Sand	41
Silt and Clay	12

Remarks:

#- not determined

Checked by: 19/05/09 Date

Approved by: 19/05/09 Date

Lostock Works Cheshire

Contract No.: 7772/09

Client Ref No: 10104/VE059!

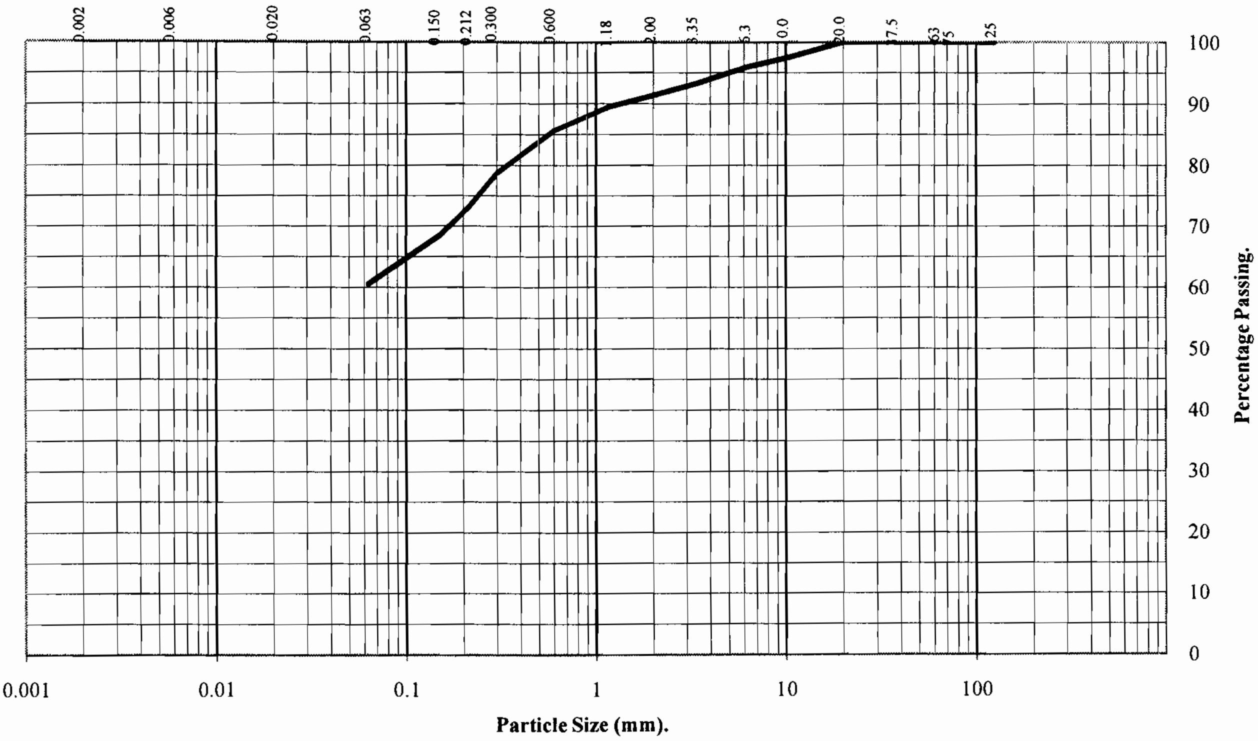
UKAS TESTING 2788

LABORATORY TESTING SERVICES LIMITED

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.
Wet Sieve, Clause 9.2

Hole/Sample Number: **BH13/20** Type: **B** Depth (m): **6.50** to **7.00**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	100
20	100
10	97
6.3	96
3.35	93
2.00	91
1.18	90
0.60	86
0.30	79
0.21	73
0.15	68
0.06	61

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	9
Sand	30
Silt and Clay	61

Remarks:
#- not determined

Checked by 19/05/09 Date Approved by 19/05/09 Date

Lostock Works Cheshire

Contract No.:
7772/09
Client Ref No:
10104/VE059!

UKAS TESTING 2788

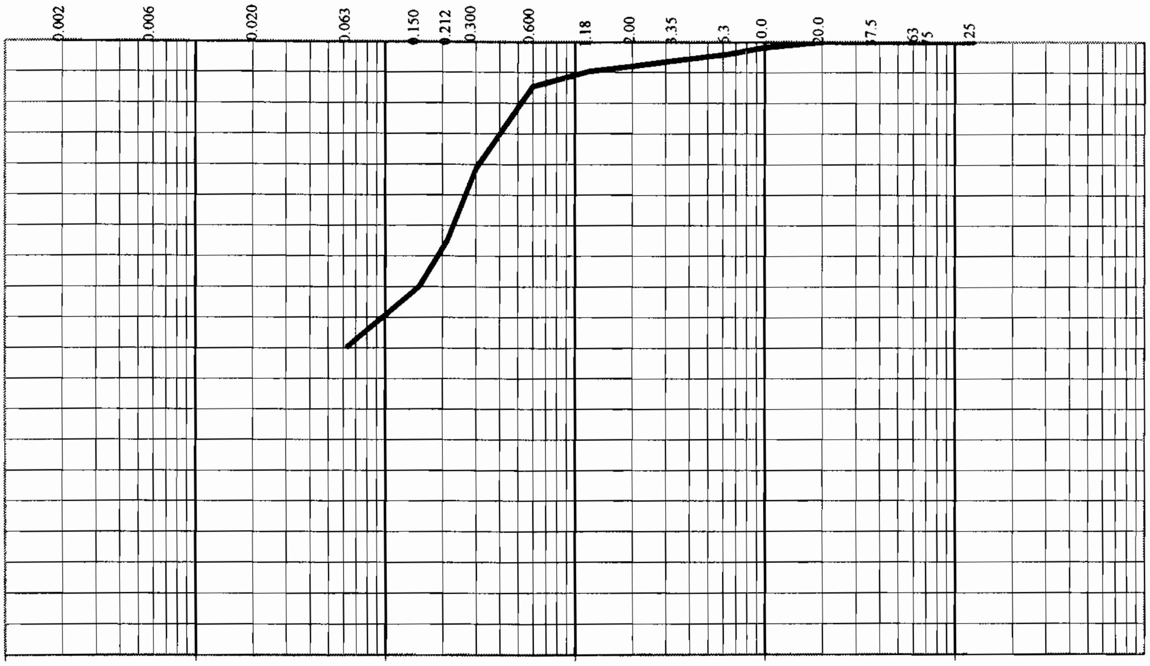
LABORATORY TESTING SERVICES LIMITED

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole/Sample Number: **BH15/11** Type: **B** Depth (m): **3.50** to **4.00**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	100
20	100
10	99
6.3	98
3.35	97
2.00	96
1.18	95
0.60	93
0.30	79
0.21	68
0.15	60
0.06	50

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	46
Silt and Clay	50

Remarks:

#- not determined

Checked by 19/08/09 Date Approved by 19/08/09 Date

Lostock Works Cheshire

Contract No.: 7772/09

Client Ref No: 10104/VE059!

LABORATORY TESTING SERVICES LIMITED

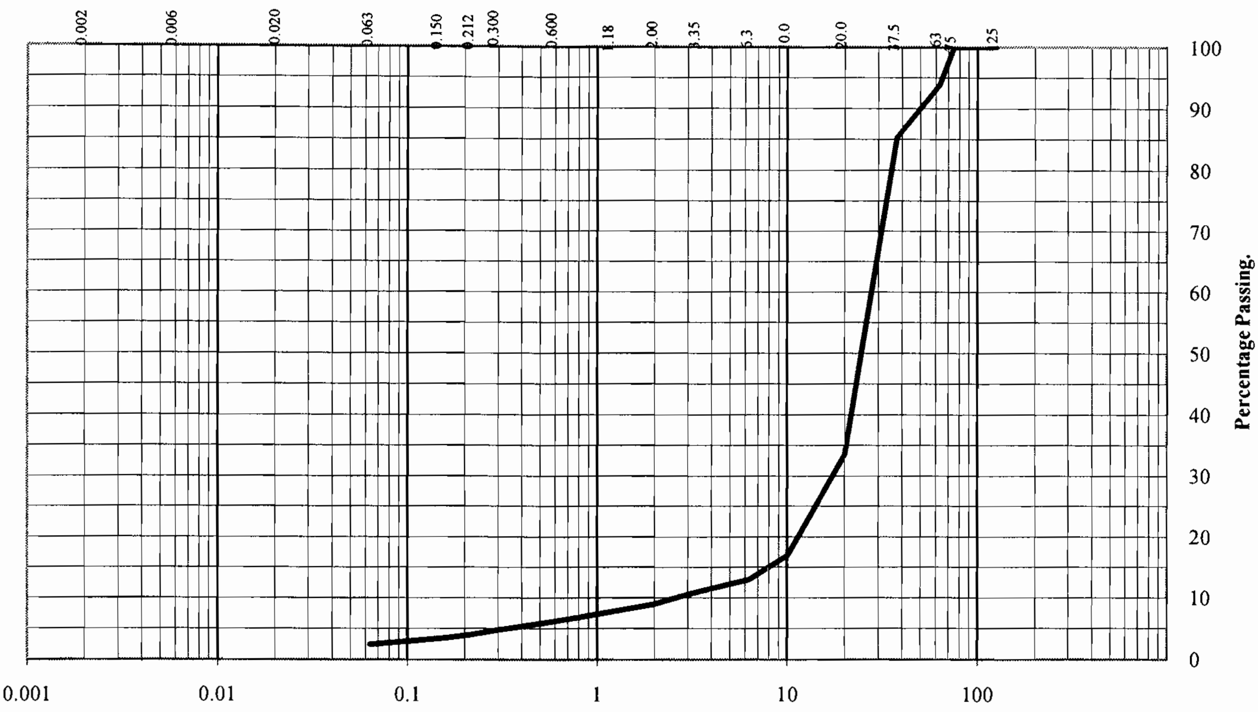
UKAS TESTING 2788

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole/Sample Number: **BH17/1+2** Type: **B** Depth (m): **0.50** to **1.00**



BS Test Sieve	Percentage Passing
125	100
75	100
63	94
38	85
20	33
10	17
6.3	13
3.35	11
2.00	9
1.18	8
0.60	6
0.30	5
0.21	4
0.15	3
0.06	2

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	6
Gravel	85
Sand	7
Silt and Clay	2

Remarks:

#- not determined

19/08/09

Checked by Date

17/8/09

Approved by Date

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.:
7772/09
Client Ref No:
10104/VE059!

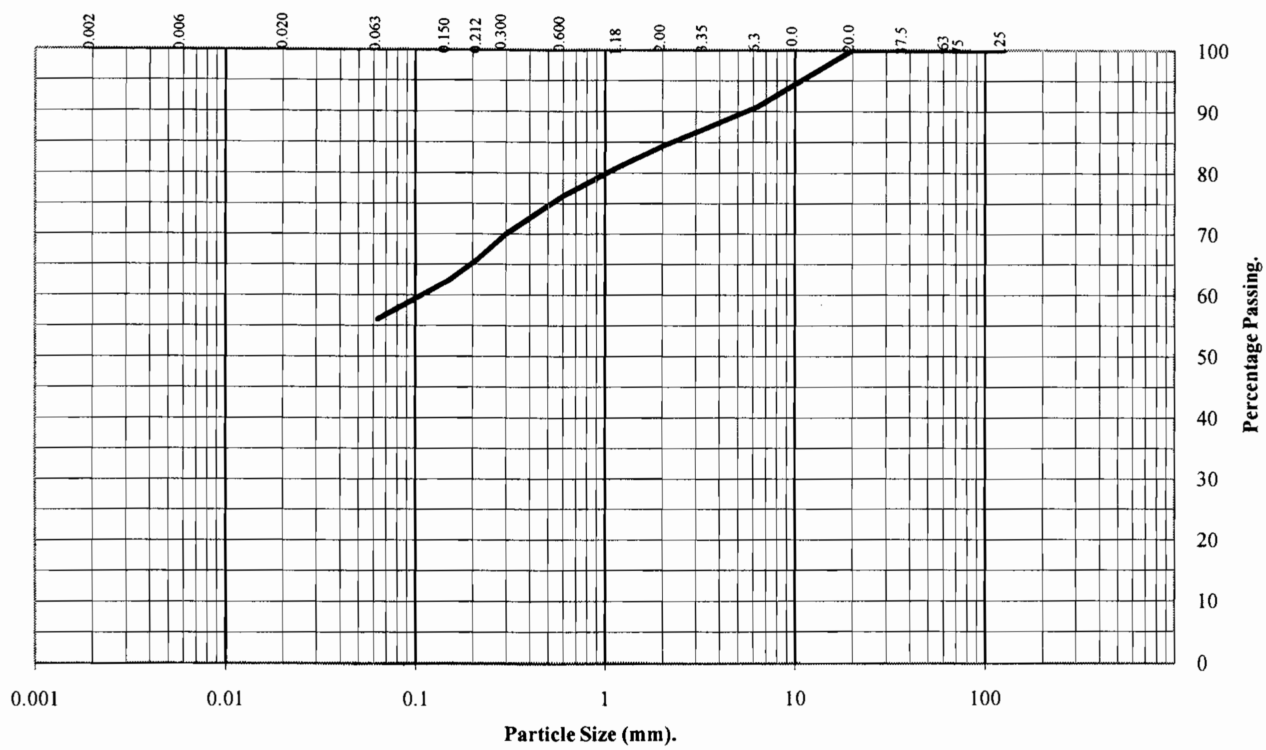
UKAS TESTING 2788

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole/Sample Number: **BH17/12** Type: **B** Depth (m): **4.50** to **5.00**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	100
20	100
10	95
6.3	91
3.35	87
2.00	84
1.18	81
0.60	76
0.30	70
0.21	66
0.15	62
0.06	56

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	16
Sand	28
Silt and Clay	56

Remarks:

#- not determined

Checked by 12/05/09 Date Approved by 19/05/09 Date

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: 7772/09

Client Ref No: 10104/VE059

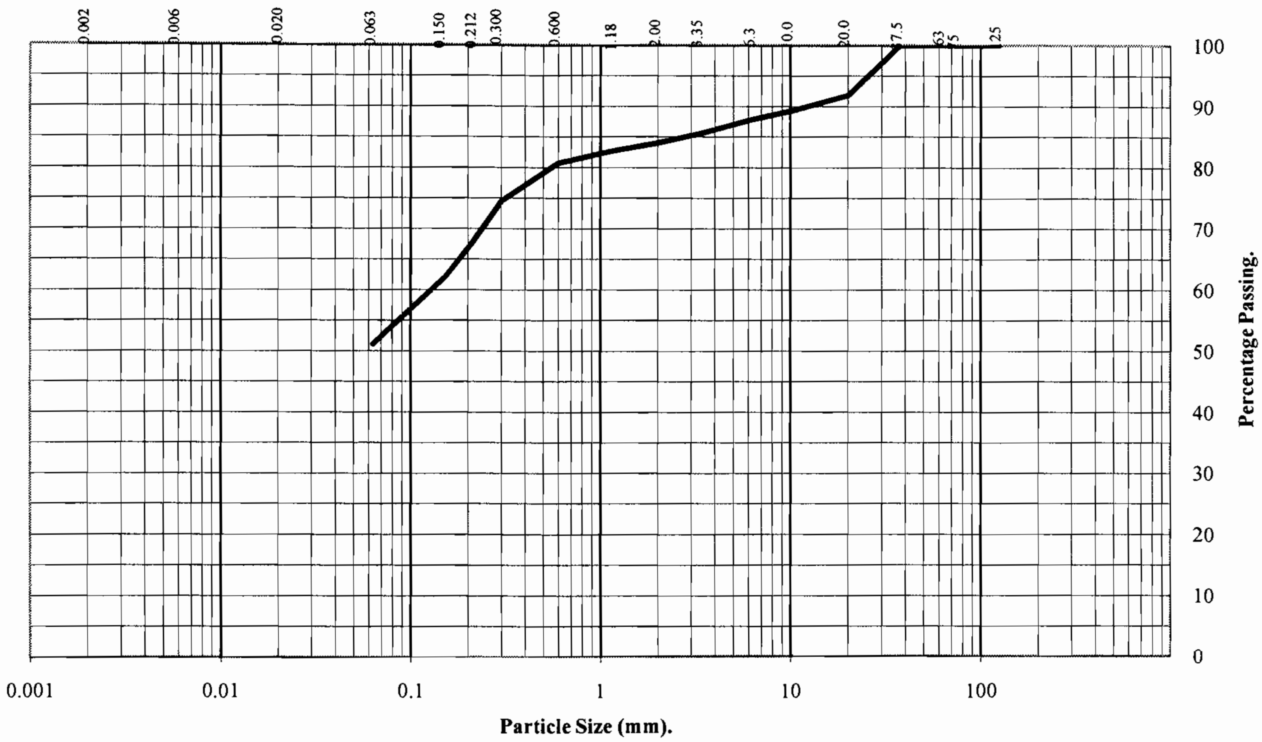
UKAS TESTING 2788

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole/Sample Number: **BH19/11** Type: **B** Depth (m): **4.50** to **5.00**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	100
20	92
10	89
6.3	88
3.35	86
2.00	84
1.18	83
0.60	81
0.30	75
0.21	68
0.15	62
0.06	51

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	16
Sand	33
Silt and Clay	51

Remarks:

#- not determined

19/05/09

Checked by **Date** **Approved by** **Date**

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: 7772/09

Client Ref No: 10104/VE059

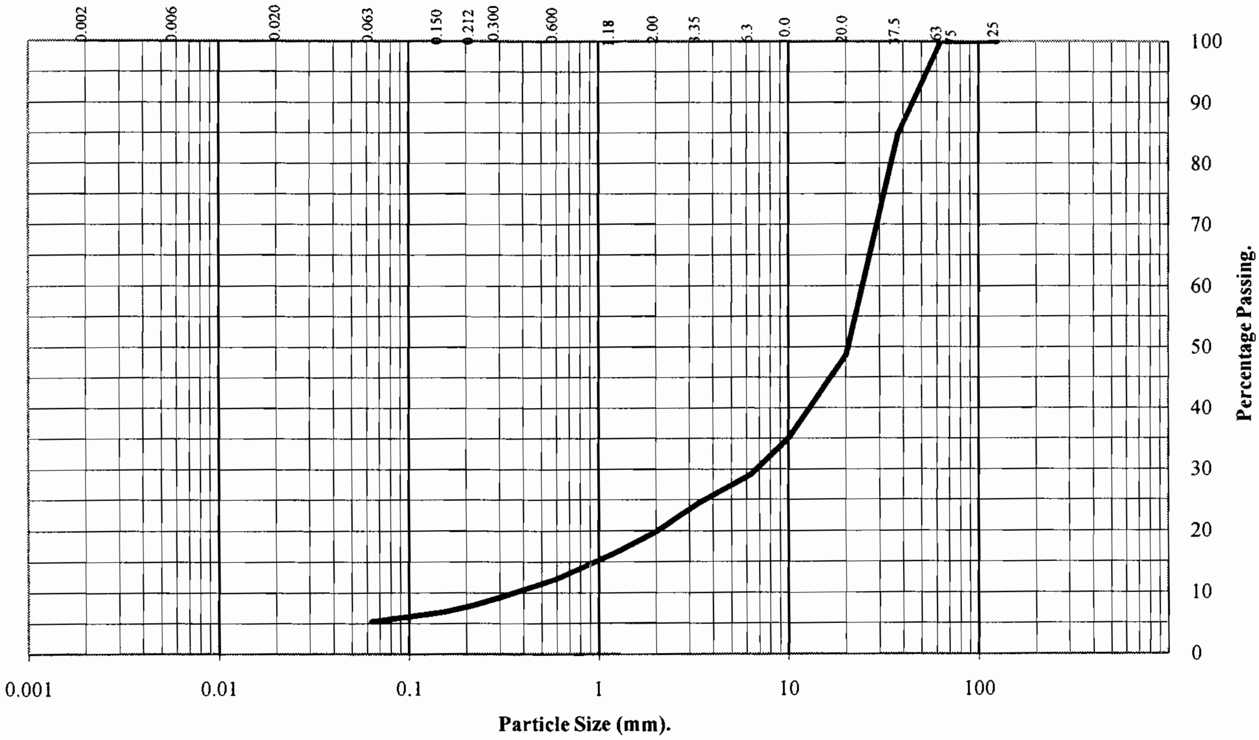
UKAS TESTING 2788

PARTICLE SIZE DISTRIBUTION TEST

BS 1377 Part 2:1990.

Wet Sieve, Clause 9.2

Hole Number: **TP1** Type: **B** Depth (m): **0.50** to **1.00**



BS Test Sieve	Percentage Passing
125	100
75	100
63	100
38	85
20	49
10	35
6.3	29
3.35	24
2.00	20
1.18	16
0.60	12
0.30	9
0.21	8
0.15	7
0.06	5

Particle Diameter	Percentage Passing
0.02	#
0.006	#
0.002	#

Soil Fraction	Total Percentage
Cobbles	0
Gravel	80
Sand	15
Silt and Clay	5

Remarks:

#- not determined

Checked by Date 19/05/09 Approved by Date 19/5/09

LABORATORY TESTING SERVICES LIMITED

Lostock Works Cheshire

Contract No.: 7772/09

Client Ref No: 10104/VE059

UKAS TESTING 2788

SUMMARY OF CHEMICAL ANALYSES

(B.S. 1377 : PART 3 : 1990 AND BRE CP2/79)

Hole Number	Sample Number	Depth m	Sulphate Content SO3 (as SO_4) Acid Soluble Sulphate as % SO_4 Clause 5.5.	Aqueous Extract Sulphate as g/l SO_4 Clause 5.5.	Ground-water g/l Clause 5.4.	Chloride Content Soluble Chloride as % equiv. NaCl Clause 7.3	Ground-water g/l Clause 7.2	pH Value @ 25°C Clause 9.	Organic Matter Content % Clause 3.	Loss on Ignition % Clause 4.	Remarks
BH2		2.00		0.03 (0.04)				6.41			
BH7B		5.00		0.03 (0.04)				6.62			
BH7B		9.00		0.03 (0.03)				6.82			
BH9		15.00		0.04 (0.05)				6.75			
BH11A/WS6		3.10		0.04 (0.05)				6.91			
BH13		2.60		0.05 (0.06)				6.93			
BH13		8.00		0.03 (0.03)				6.98			
BH19		3.10		0.07 (0.08)				6.95			
BH20		3.20		0.05 (0.06)				6.92			
BH20		5.00		0.34 (0.41)				7.12			
BH12		3.10		0.03 (0.03)				7.46			
BH15		5.00		0.03 (0.03)				7.52			
BH17		3.00		0.02 (0.02)				7.65			
BH18A		2.80		0.04 (0.05)				7.47			
BH13		5.00		0.03 (0.03)				7.68			

NCP -No Chloride present

Checked By   19/08/09 Date   Approved By   20/08/09 Date

Lostock Works, Cheshire

Contract No. GEO/7772/09

Client Ref No. LE10104

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LABORATORY TESTING SERVICES LIMITED

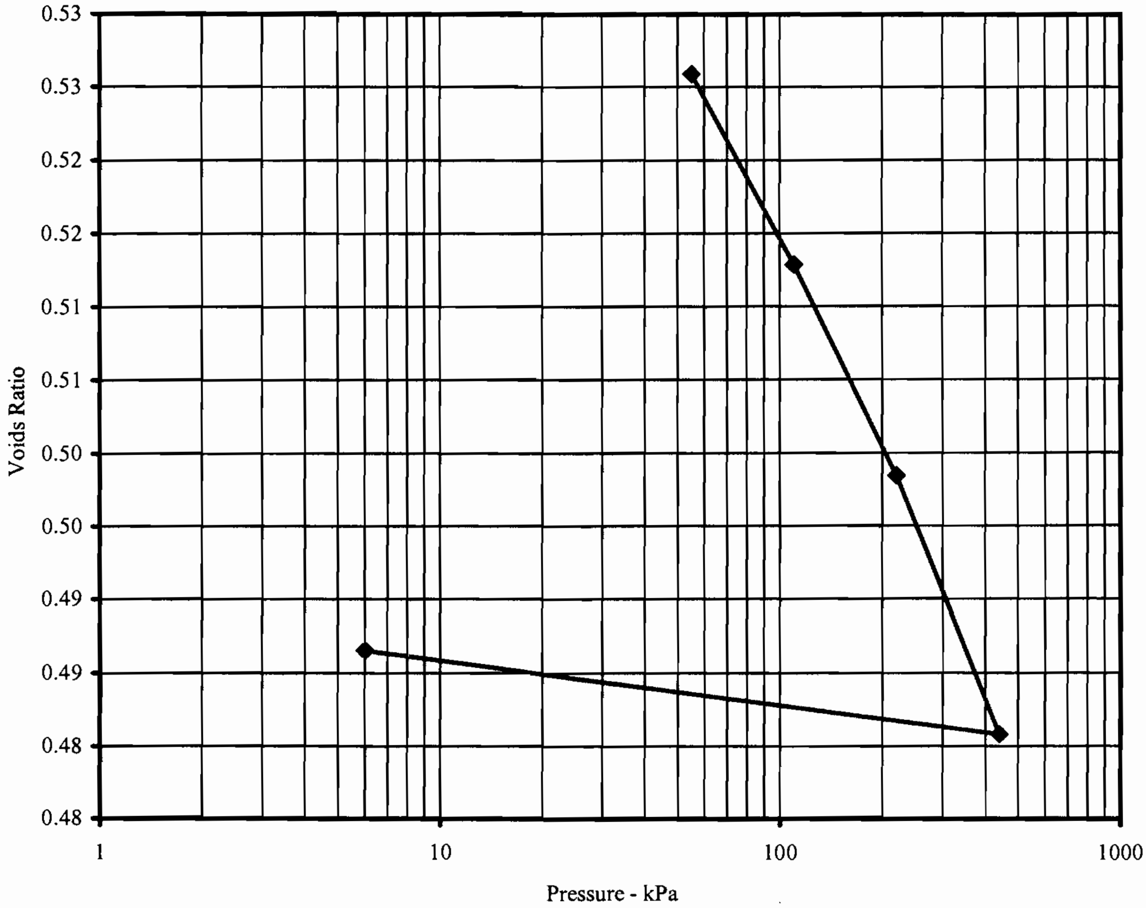
Bynea, Llanelli, SA14 9SU.

ONE DIMENSIONAL CONSOLIDATION

BS1377: Part 5: 1990

Hole Number: **BH7** Sample Numbe **16** Depth (m): **5.00-5.75**

Initial Conditions		Pressure Range			Mv	Cv	Method of time fitting used
Moisture Content (%):	11	kPa			m2/MN	m2/yr	Cv Calculated using t90
Bulk Density (Mg/m3):	1.91	0	-	55	0.273	0.939	Nominal Laboratory Temperature
Dry Density (Mg/m3):	1.71	55	-	110	0.155	1.124	20'C
Voids Ratio:	0.5492	110	-	220	0.087	1.186	Location of specimen with sample
Degree of saturation:	55.3	220	-	440	0.053	2.346	Top
Height (mm):	19.96	440	-	6	0.009	1.095	Remarks:
Diameter (mm)	75						
Particle Density (Mg/m3):	2.65						
Assumed							



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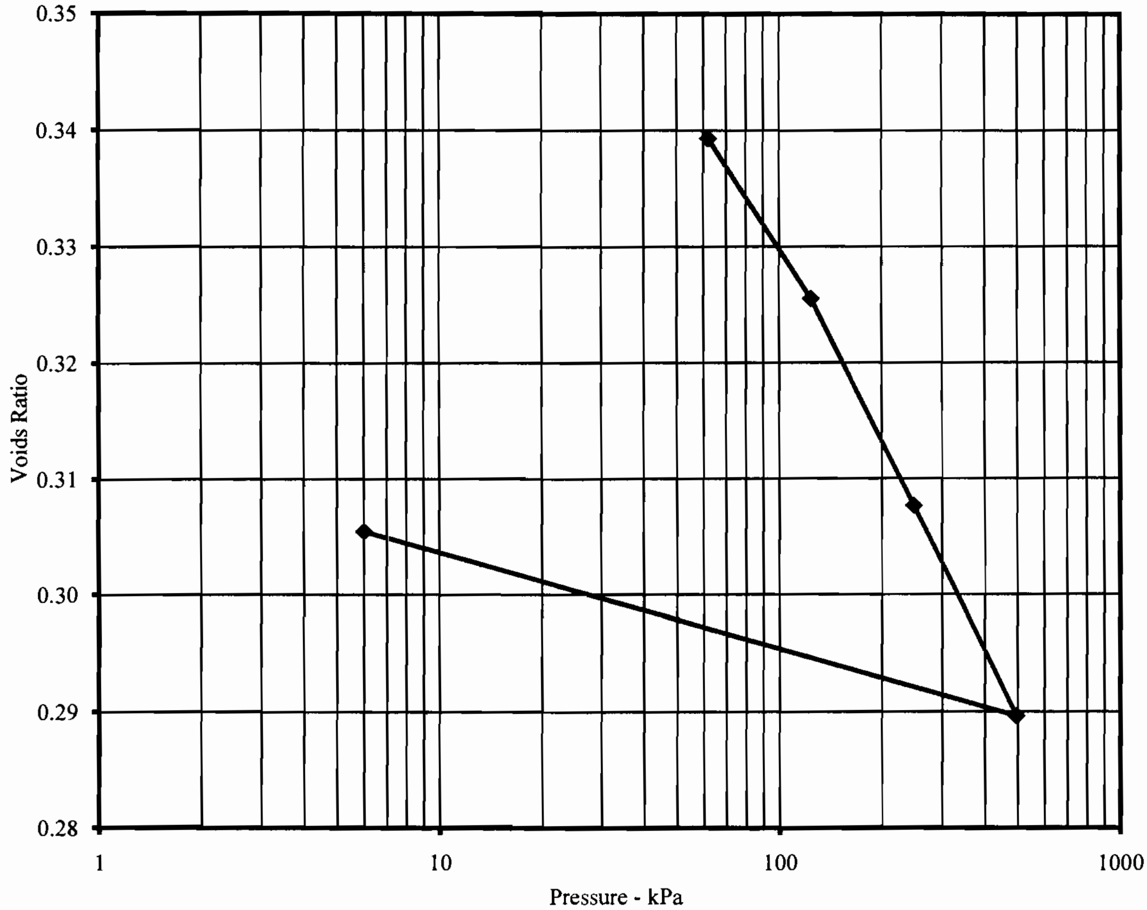
ONE DIMENSIONAL CONSOLIDATION

BS1377: Part 5: 1990

Hole Number: **BH9** Sample Numbe1 **18** Depth (m): **6.00-6.45**

Initial Conditions		Pressure Range kPa			Mv m2/MN	Cv m2/yr	Method of time fitting used Cv Calculated using t90
Moisture Content (%):	13						
Bulk Density (Mg/m3):	2.19	0	-	62	0.267	0.818	Nominal Laboratory Temperature 20'C
Dry Density (Mg/m3):	1.95	62	-	124	0.166	0.976	
Voids Ratio:	0.3619	124	-	248	0.108	1.025	Location of specimen with sample Top
Degree of saturation:	91.7	248	-	496	0.056	2.014	
Height (mm):	18.65	496	-	6	0.025	0.946	Remarks:
Diameter (mm)	75.12						
Particle Density (Mg/m3): Assumed	2.65						



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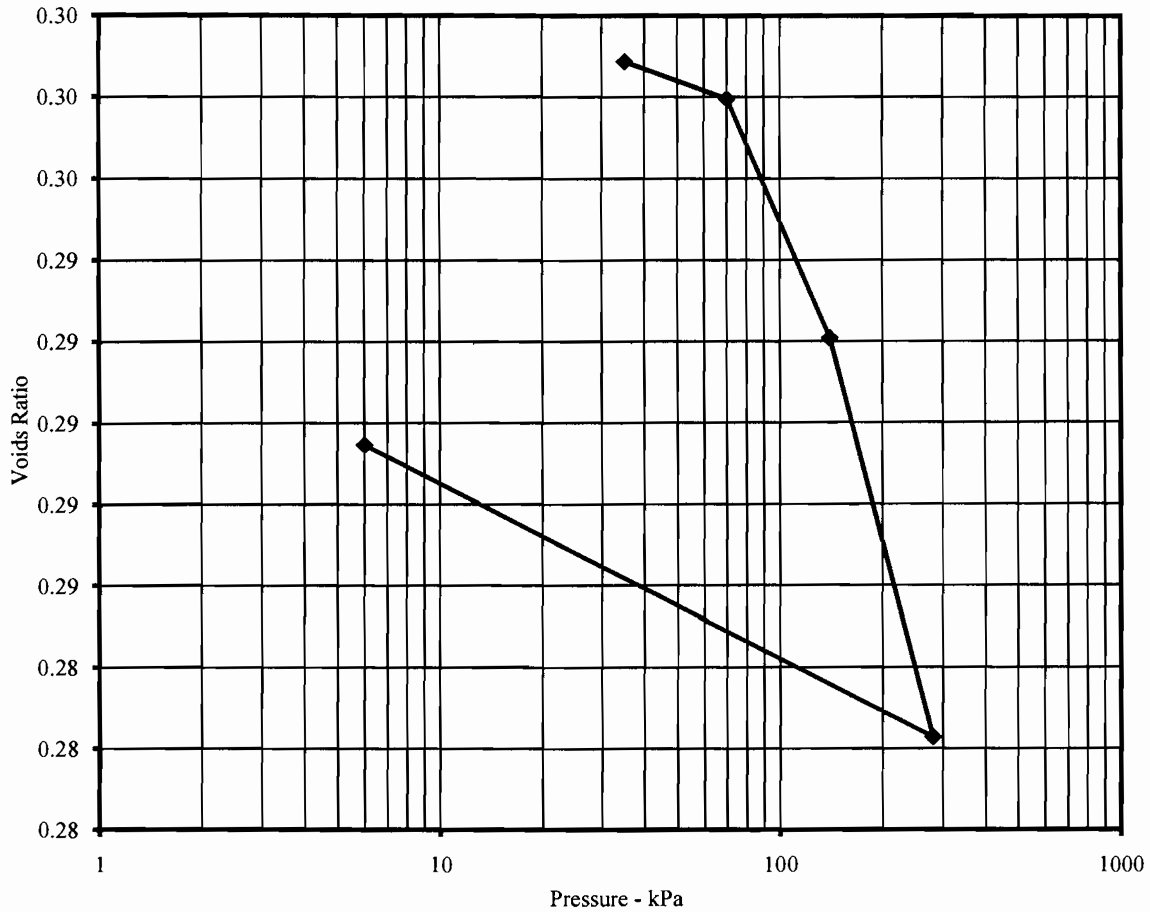
BS1377: Part 5: 1990

Hole Number: **BH17** Sample Numbe**9** Depth (m): **3.00-3.45**

Initial Conditions		Pressure Range kPa			Mv m2/MN	Cv m2/yr	Method of time fitting used Cv Calculated using t90
Moisture Content (%):	10						
Bulk Density (Mg/m3):	2.25	0	-	35	0.040	9.418	Nominal Laboratory Temperature 20'C
Dry Density (Mg/m3):	2.04	35	-	70	0.020	3.249	
Voids Ratio:	0.3007	70	-	140	0.065	1.709	Location of specimen with sample Top
Degree of saturation:	91.6	140	-	280	0.054	2.475	
Height (mm):	19.92	280	-	6	0.020	1.703	Remarks:
Diameter (mm)	75.03						
Particle Density (Mg/m3): Assumed	2.65						



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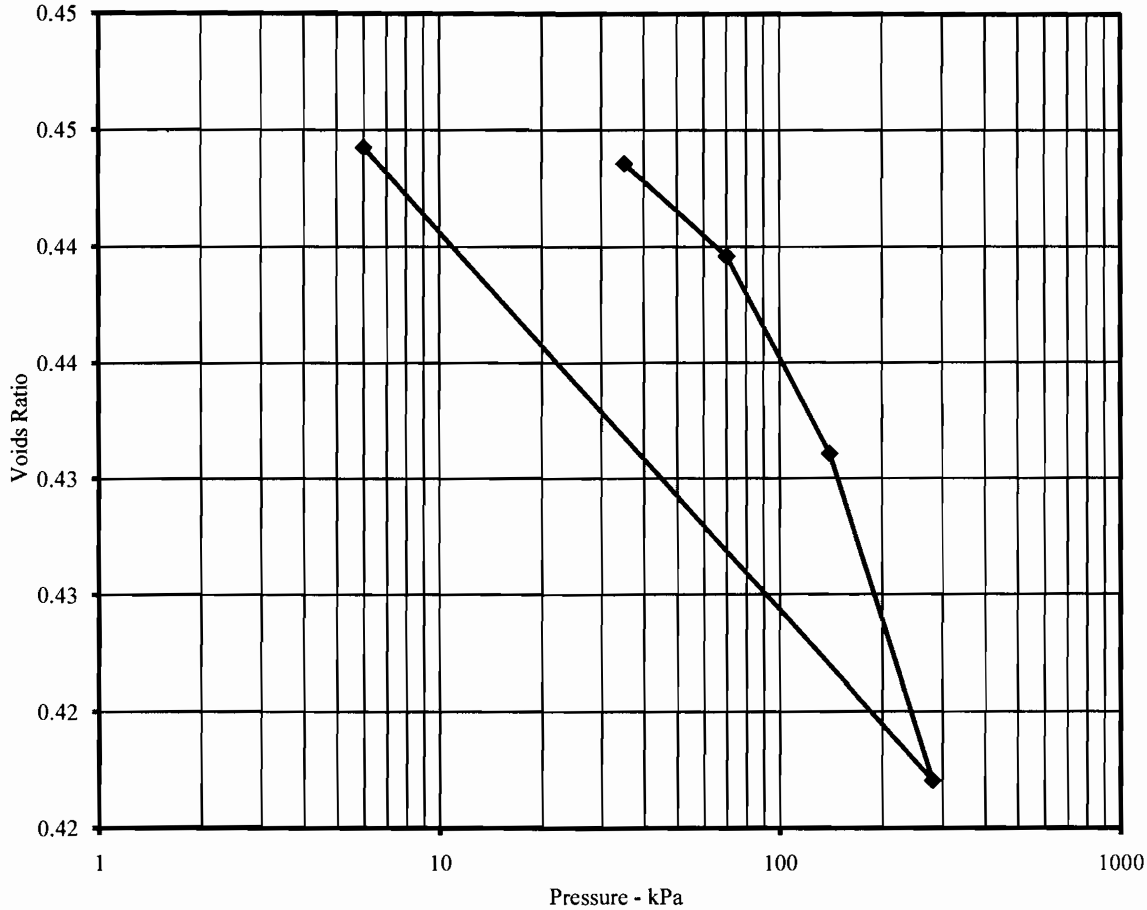
ONE DIMENSIONAL CONSOLIDATION

BS1377: Part 5: 1990

Hole Number: **BH20** Sample Numbei **7** Depth (m): **3.20-3.65**

Initial Conditions		Pressure Range kPa			Mv m2/MN	Cv m2/yr	Method of time fitting used Cv Calculated using t90
Moisture Content (%):	13						
Bulk Density (Mg/m3):	2.06	0	-	35	Swelling	Stage	Nominal Laboratory Temperature 20'C
Dry Density (Mg/m3):	1.82	35	-	70	0.078	2.540	
Voids Ratio:	0.4534	70	-	140	0.085	3.295	Location of specimen with sample Top
Degree of saturation:	77.1	140	-	280	0.070	1.518	
Height (mm):	19.08	280	-	6	0.070	1.566	Remarks:
Diameter (mm)	75.16						
Particle Density (Mg/m3):	2.65						
Assumed							



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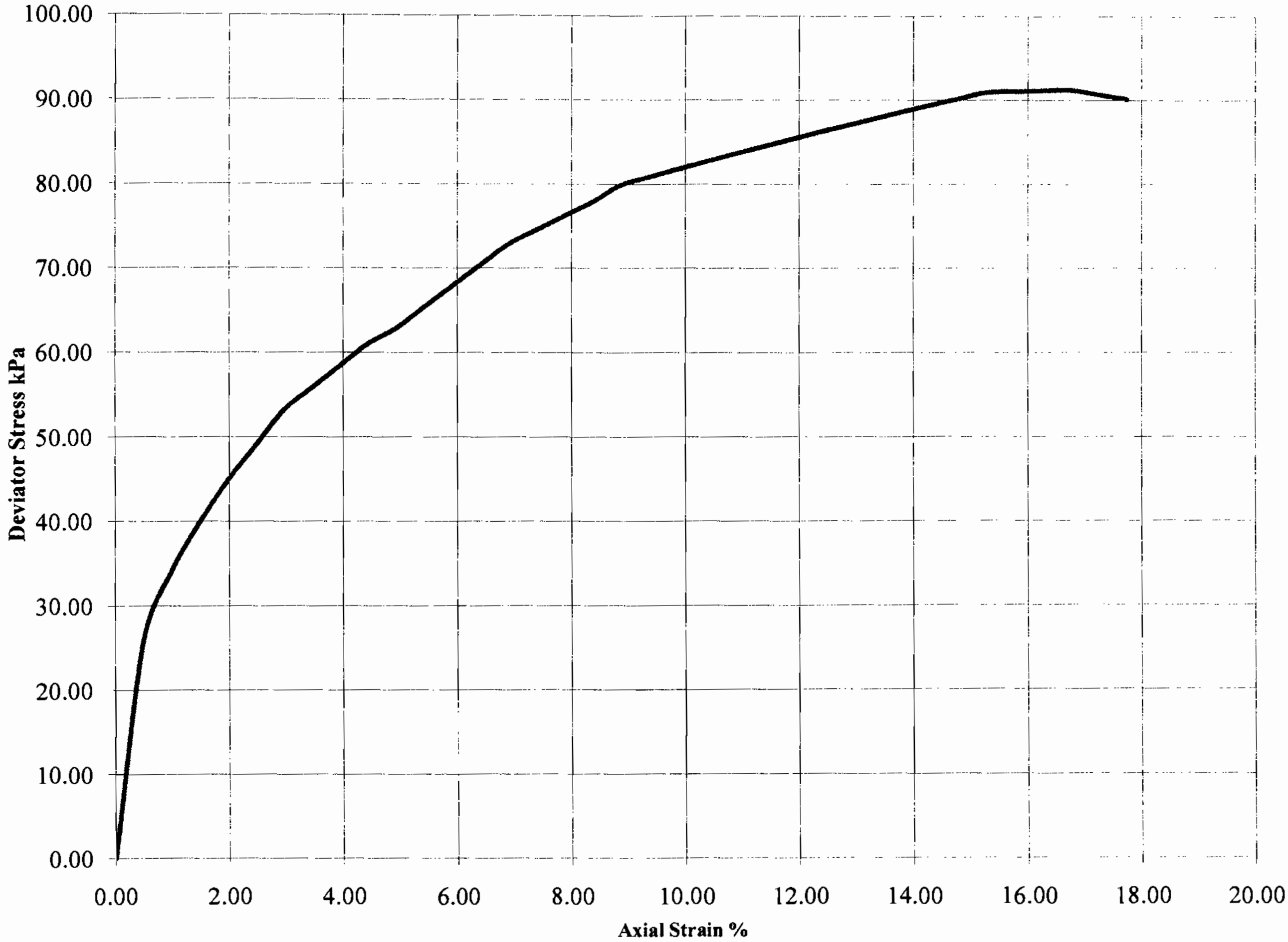
B.S. 1377 : Part7 : Clause 8 : 1991

Hole Number: **BH2** Sample Number: **8** Depth (m): **2.00-2.45**



Diameter (mm):		104	Height (mm):		203	Test:	100mm Multistage		
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	22	1.91	1.57	25	63	31	4.9	Plastic	
				50	78	39	8.4		
				100	91	46	16.7		

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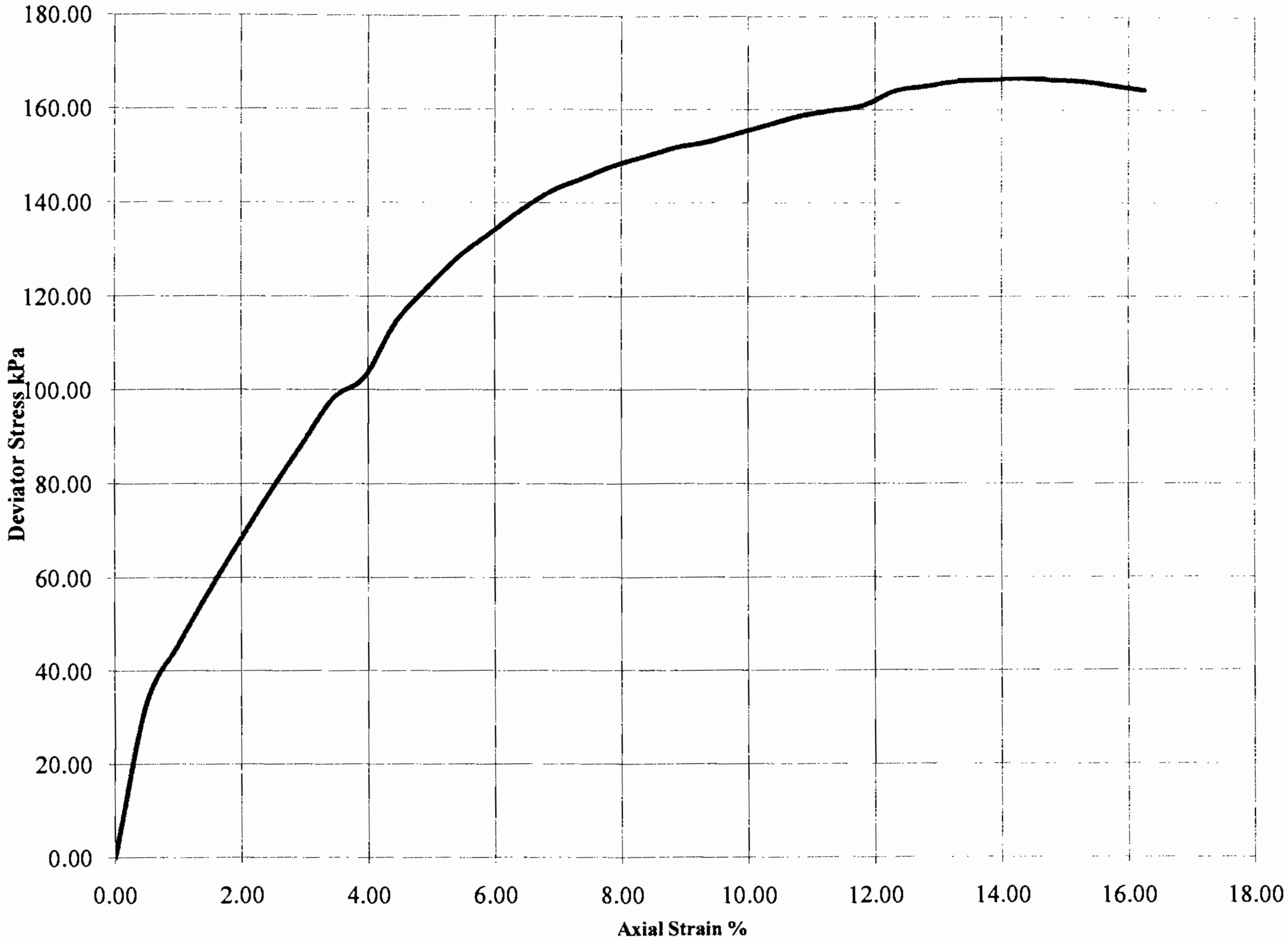
B.S. 1377 : Part7 : Clause 8 : 1991

Hole Number: **BH3** Sample Number: **8** Depth (m): **2.90-3.35**



Diameter (mm):		104	Height (mm):		203	Test:	100mm Multistage		
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	16	2.01	1.73	31	153	77	9.4	Brittle	
				62	161	81	11.8		
				124	167	83	14.3		

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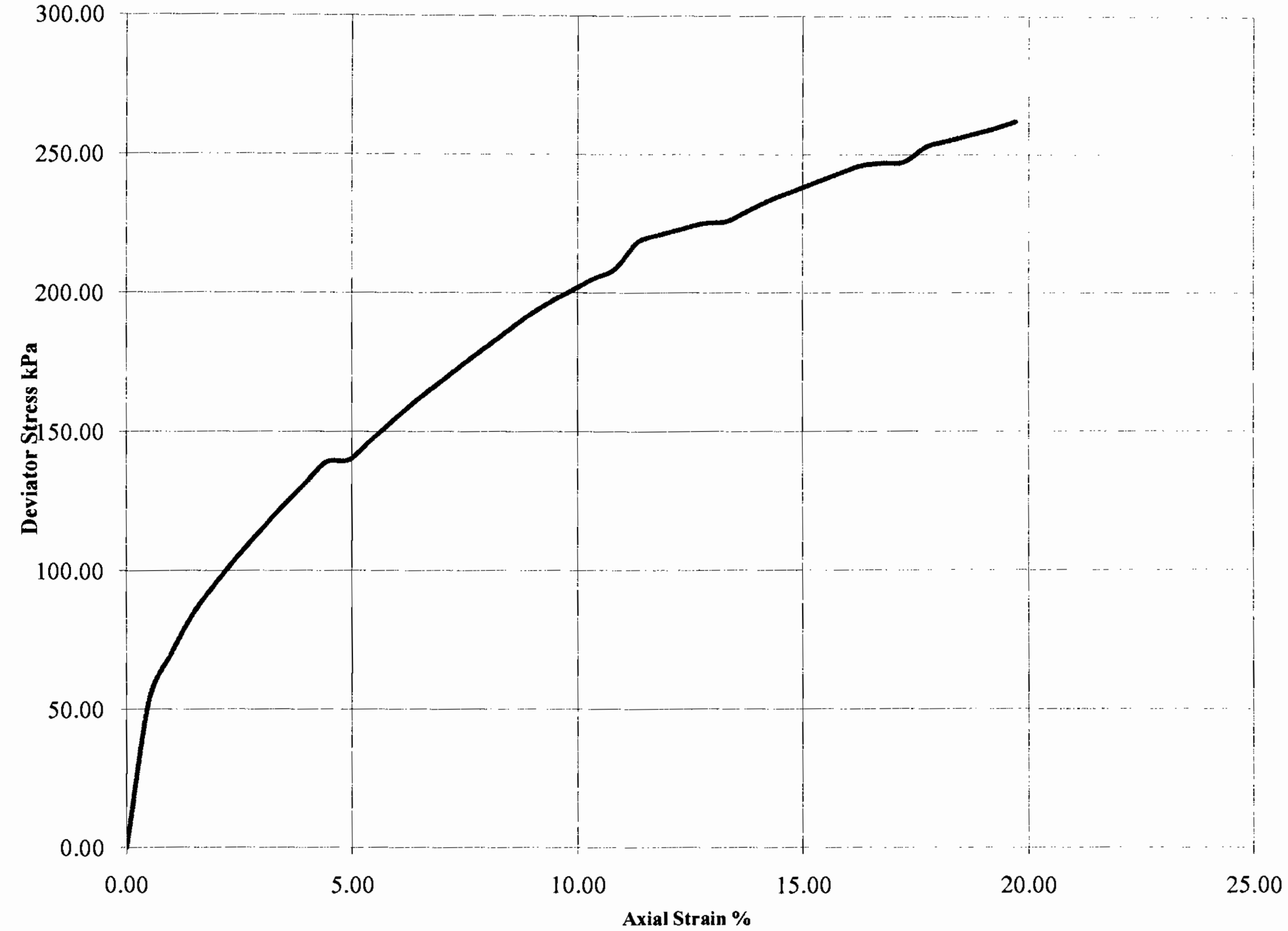
Hole Number: **BH7b** Sample Number: **16** Depth (m): **5.00-5.75**



Diameter (mm):		104	Height (mm):		203	Test:	100mm Multistage		
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	11	1.91	1.73	55	226	113	13.3	Compound	
				110	247	124	17.2		
				220	262	131	19.7		

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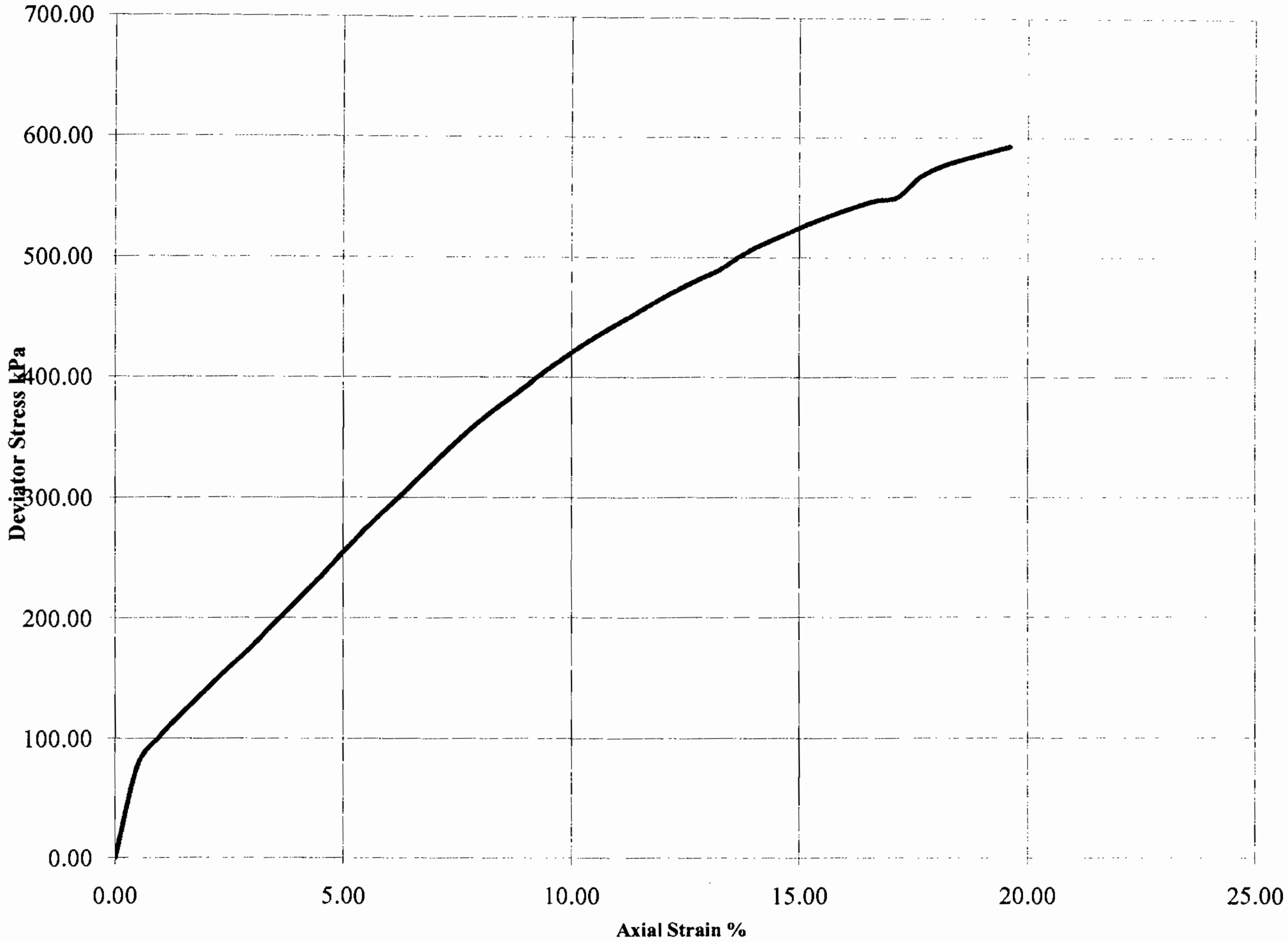
B.S. 1377 : Part7 : Clause 8 : 1991

Hole Number: **BH7b** Sample Number: **23** Depth (m): **9.00-9.45**



Diameter (mm):		103	Height (mm):		204	Test:	100mm Multistage		
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	11	2.14	1.93	90	490	245	13.2	Compound	
				180	551	275	17.2		
				360	593	297	19.6		

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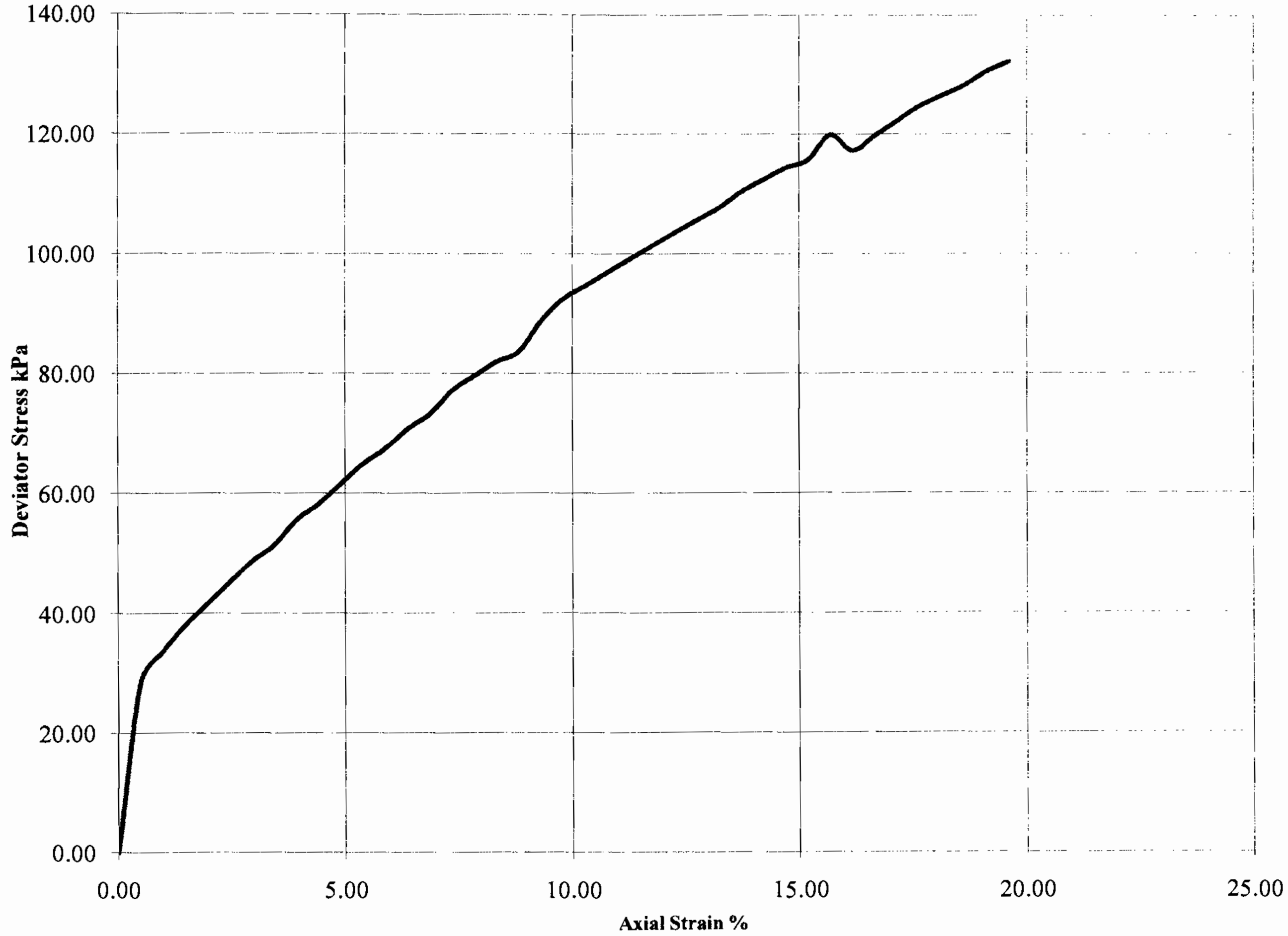
Hole Number: **BH9** Sample Number: **18** Depth (m): **6.00-6.45**



Diameter (mm):		103	Height (mm):		204	Test:	100mm Multistage		
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	12	2.08	1.86	62	84	42	8.8	Compound	
				124	116	58	15.2		
				248	132	66	19.6		

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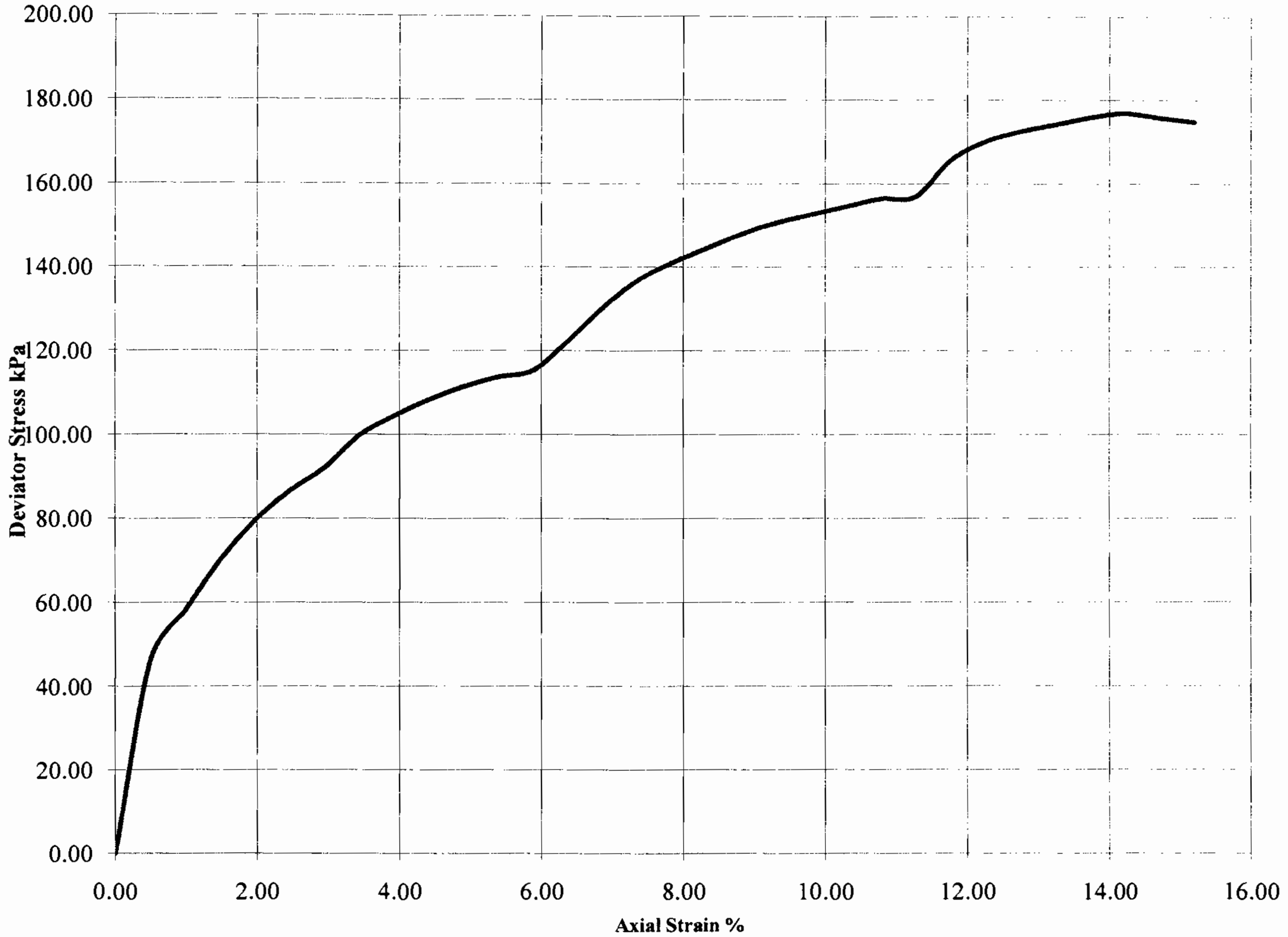
Hole Number: **BH9** Sample Number: **34** Depth (m): **15.00-15.45**



Diameter (mm):	103	Height (mm):		204	Test:	100mm Multistage			
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	12	1.97	1.77	150	115	58	5.9	Compound	
				300	157	78	11.3		
				600	177	88	14.2		

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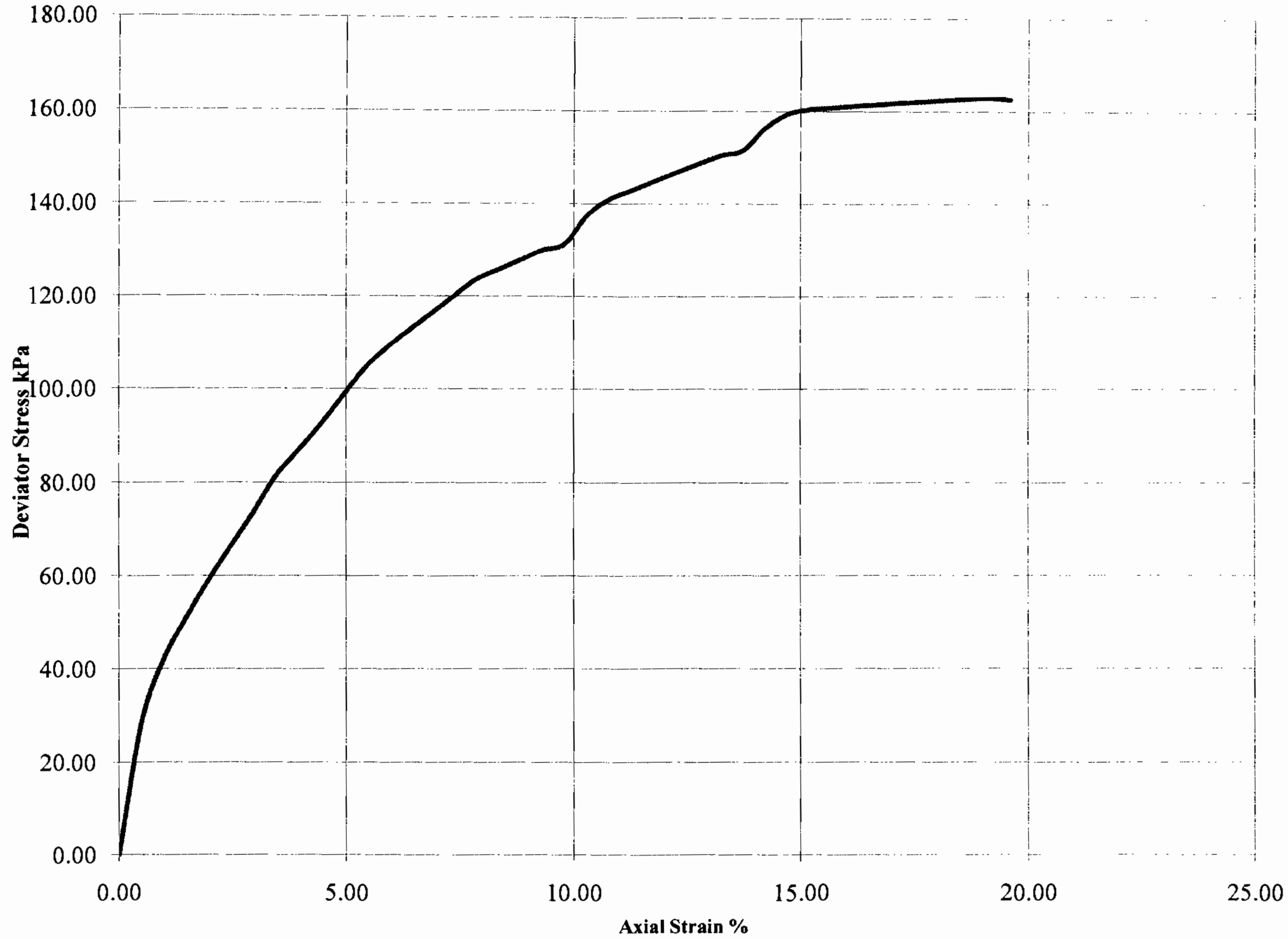
Hole Number: **BH11a/WS6** Sample Number: **18** Depth (m): **3.10-3.55**



Diameter (mm):	103	Height (mm):	204	Test:	100mm Multistage				
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	16	2.04	1.75	35	131	66	9.8	Compound	
				70	152	76	13.7		
				140	163	82	19.1		

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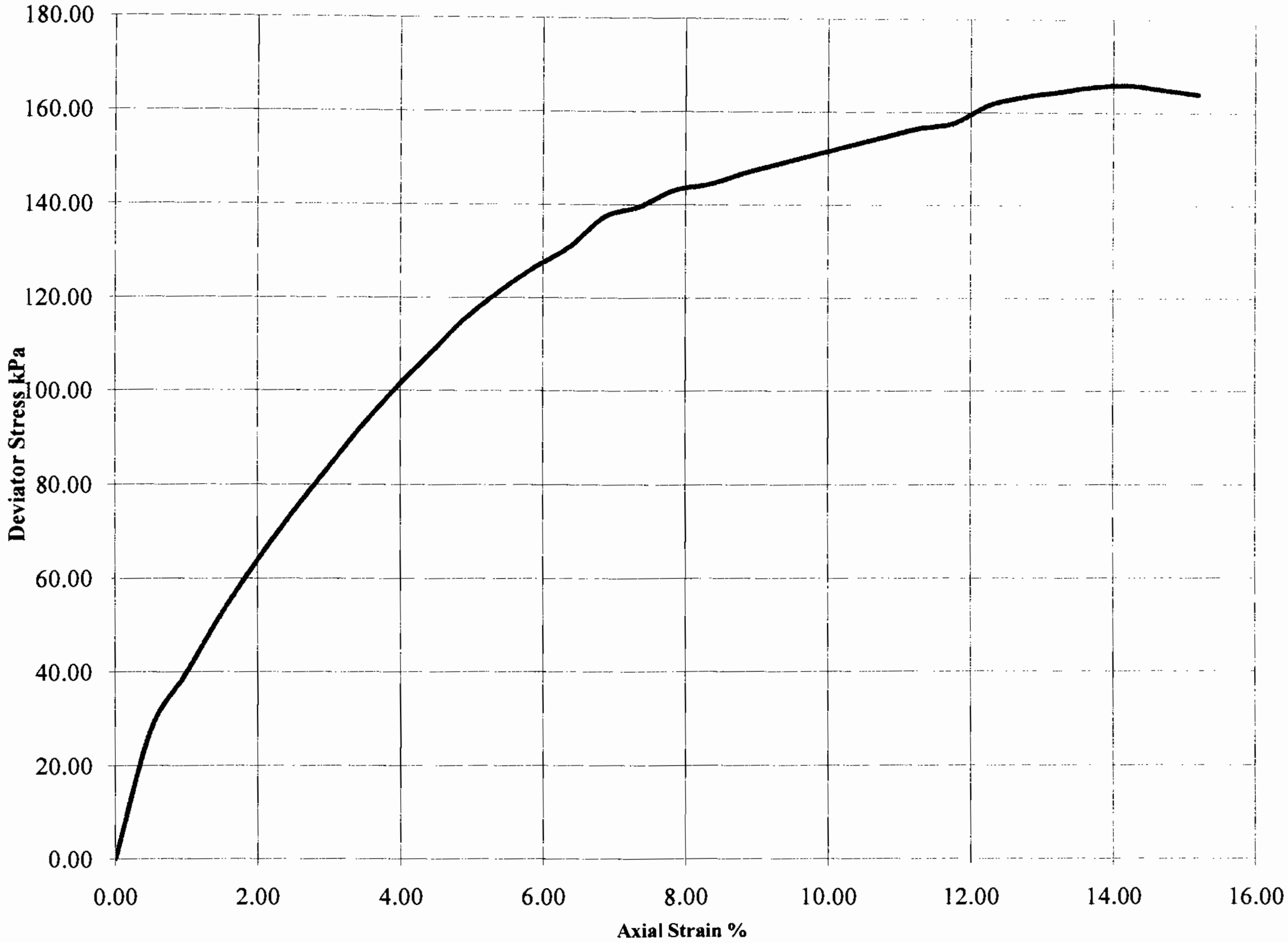
Hole Number: **BH12** Sample Number: **10** Depth (m): **3.10-3.55**



Diameter (mm):		103	Height (mm):		204	Test:	100mm Multistage		
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	10	1.97	1.79	35	145	72	8.3	Brittle	
				70	158	79	11.8		
				140	166	83	14.2		

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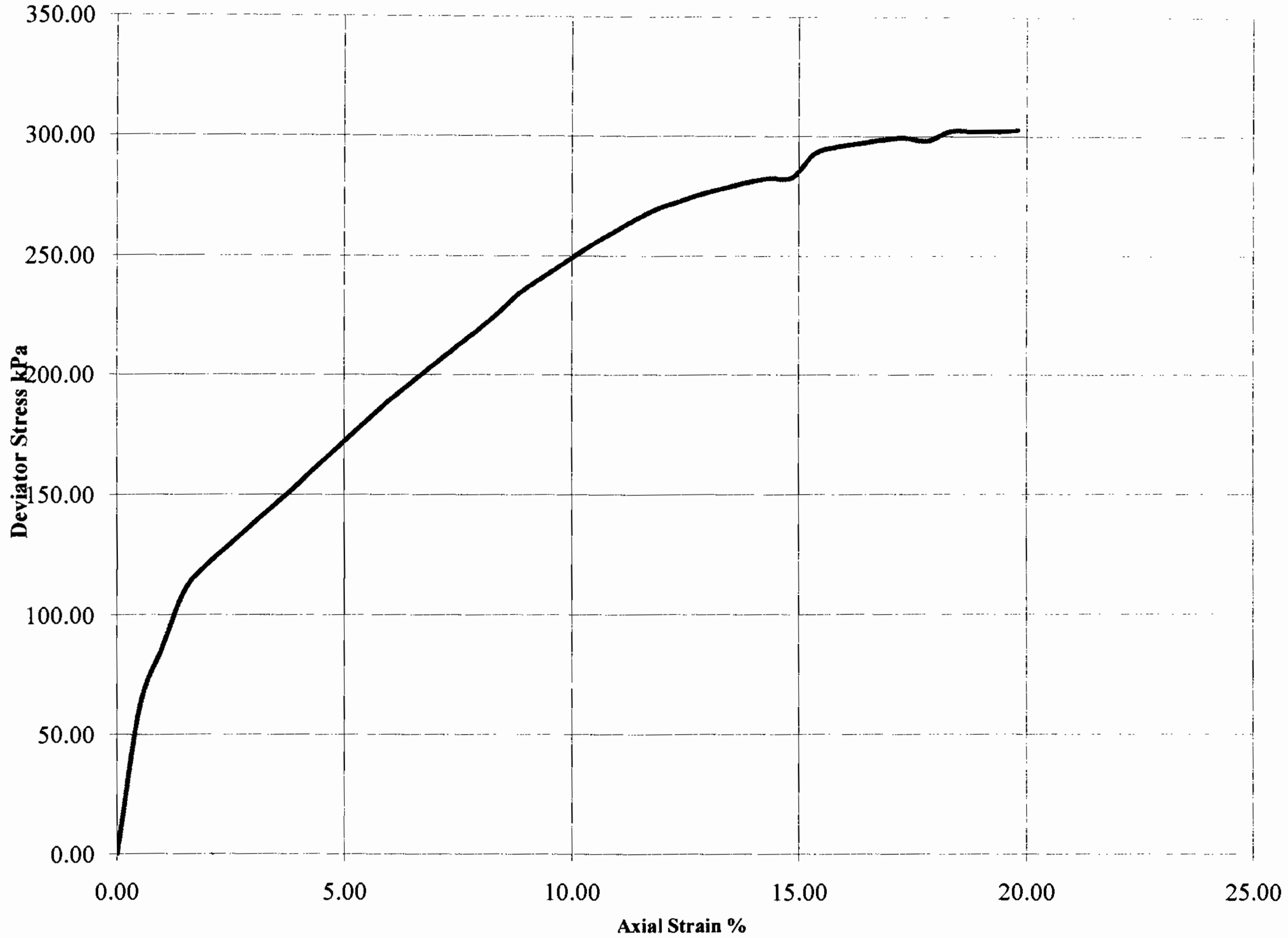
Hole Number: **BH12** Sample Number: **15** Depth (m): **5.10-5.55**



Diameter (mm):		103	Height (mm):		202	Test:	100mm Multistage		
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	12	2.14	1.90	50	283	141	14.9	Compound	
				100	300	150	17.3		
				200	303	151	19.8		

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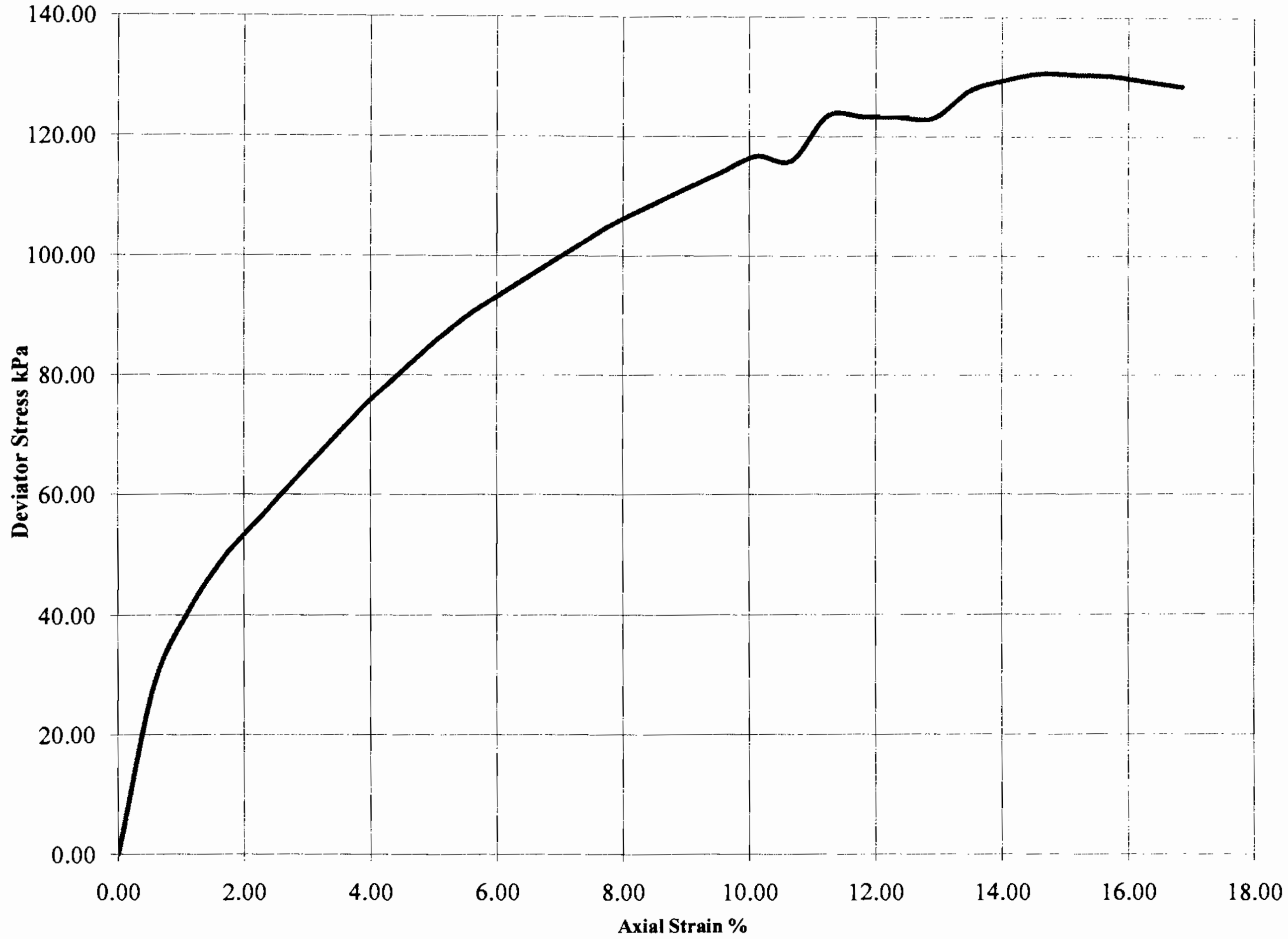
B.S. 1377 : Part7 : Clause 8 : 1991

Hole Number: **BH13** Sample Number: **9** Depth (m): **2.60-3.02**



Diameter (mm):		103	Height (mm):		178	Test:	100mm Multistage		
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	13	2.05	1.82	30	117	58	10.1	Compound	
				60	124	62	11.2		
				120	131	65	14.6		

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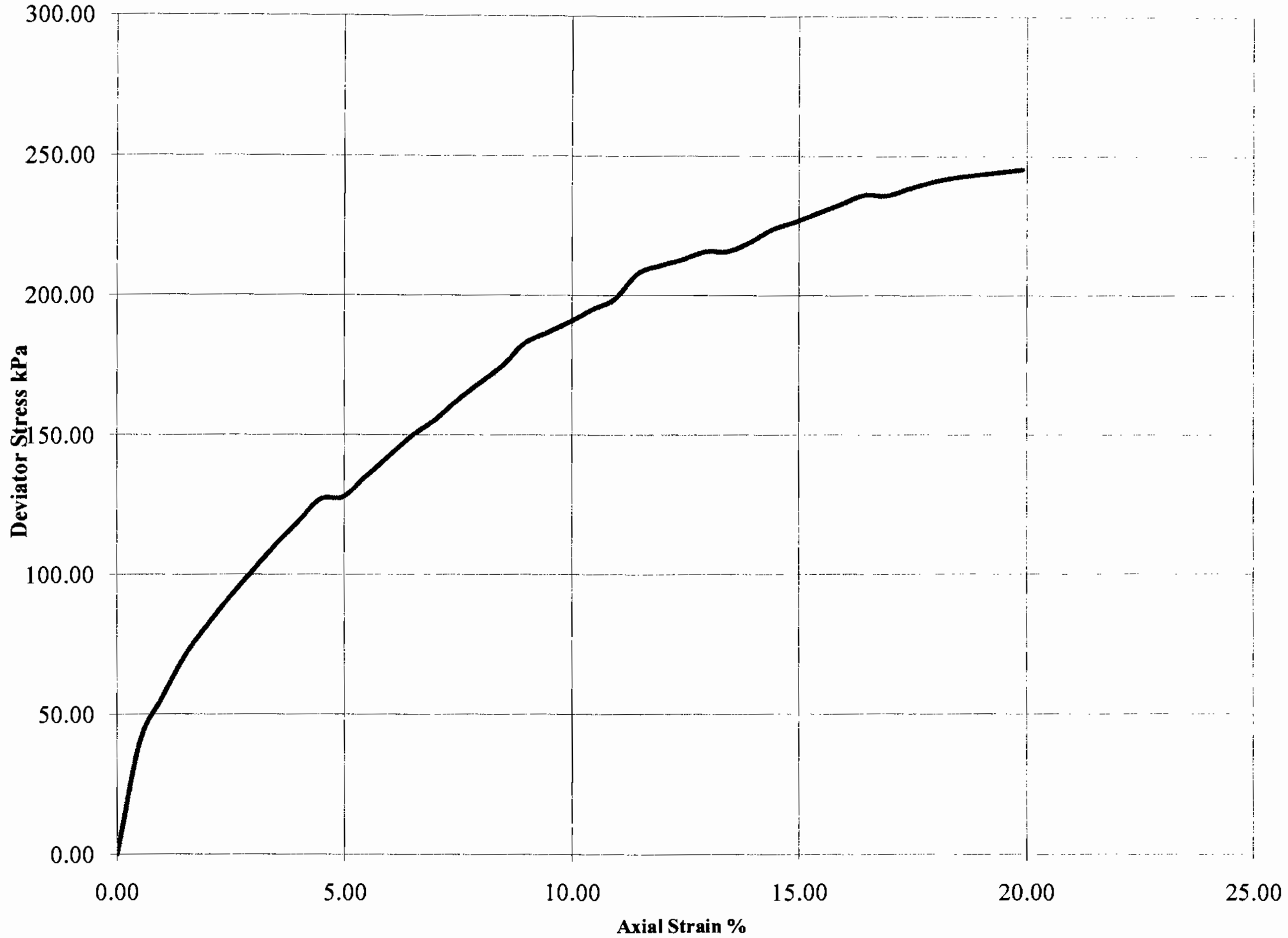
Hole Number: **BH13** Sample Number: **16** Depth (m): **5.00-5.45**



Diameter (mm):		103	Height (mm):		201	Test:	100mm Multistage		
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	16	2.03	1.76	50	216	108	13.4	compound	
				100	236	118	16.4		
				200	245	123	19.9		

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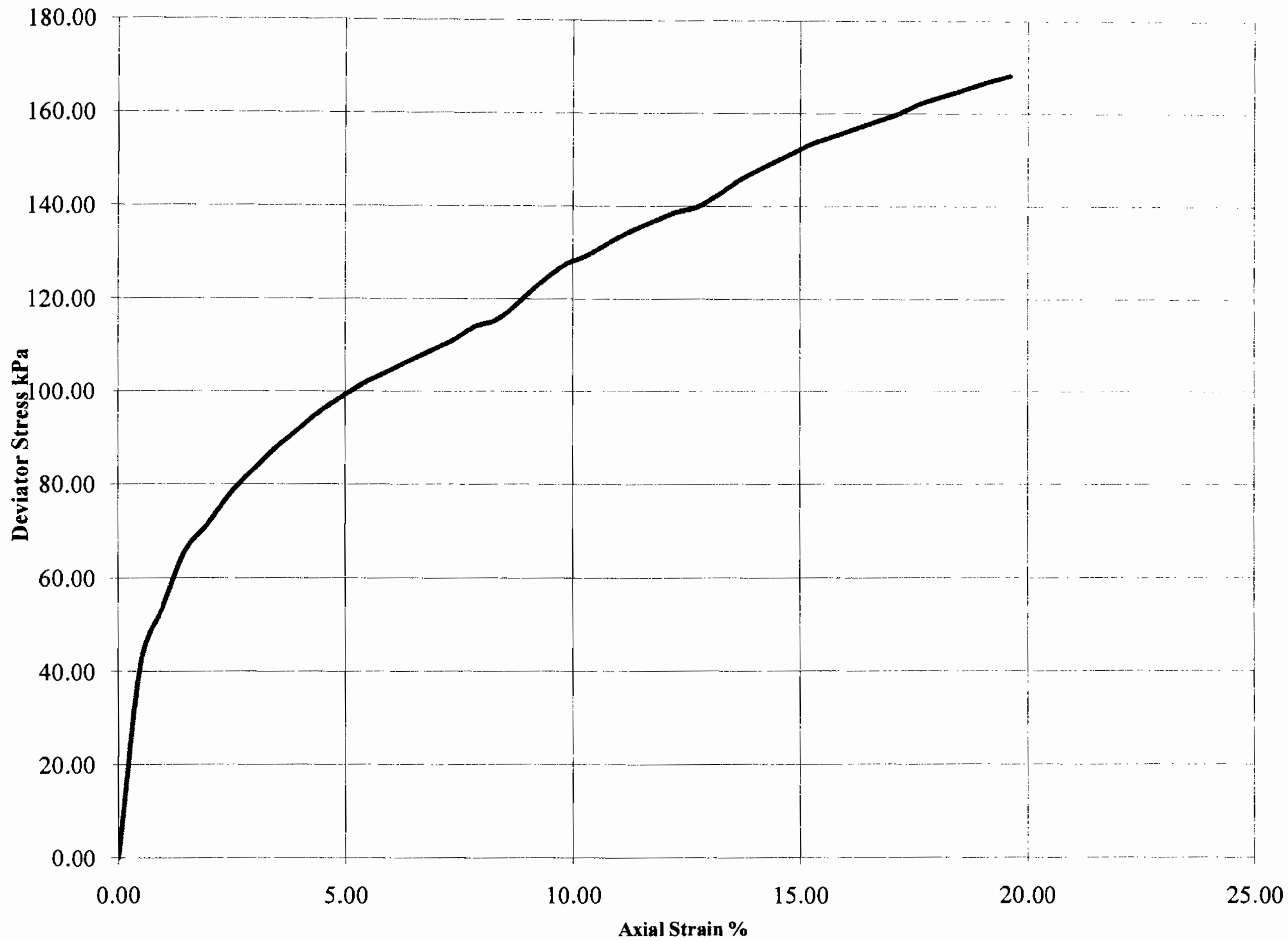
Hole Number: **BH15** Sample Number: **14** Depth (m): **5.00-5.45**



Diameter (mm):	103	Height (mm):	204	Test:	100mm Multistage				
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	12	1.79	1.60	50	116	58	8.3	Compound	
				100	140	70	12.7		
				200	168	84	19.6		

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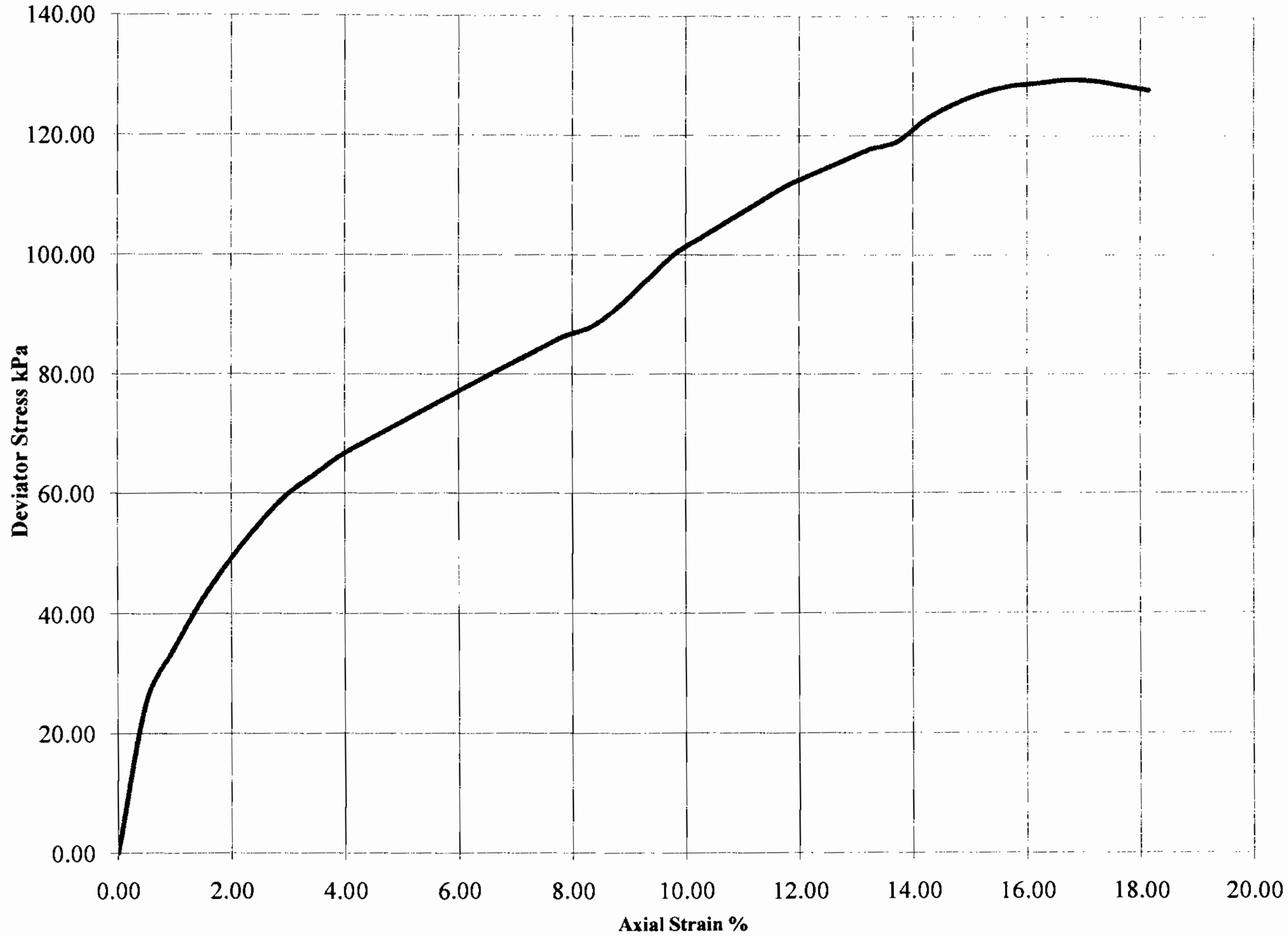
Hole Number: **BH17** Sample Number: **9** Depth (m): **3.00-3.45**



Diameter (mm):	103	Height (mm):		204	Test:	100mm Multistage			
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	7.5	1.79	1.66	35	88	44	8.3	Compound	
				70	119	60	13.7		
				140	129	65	16.7		

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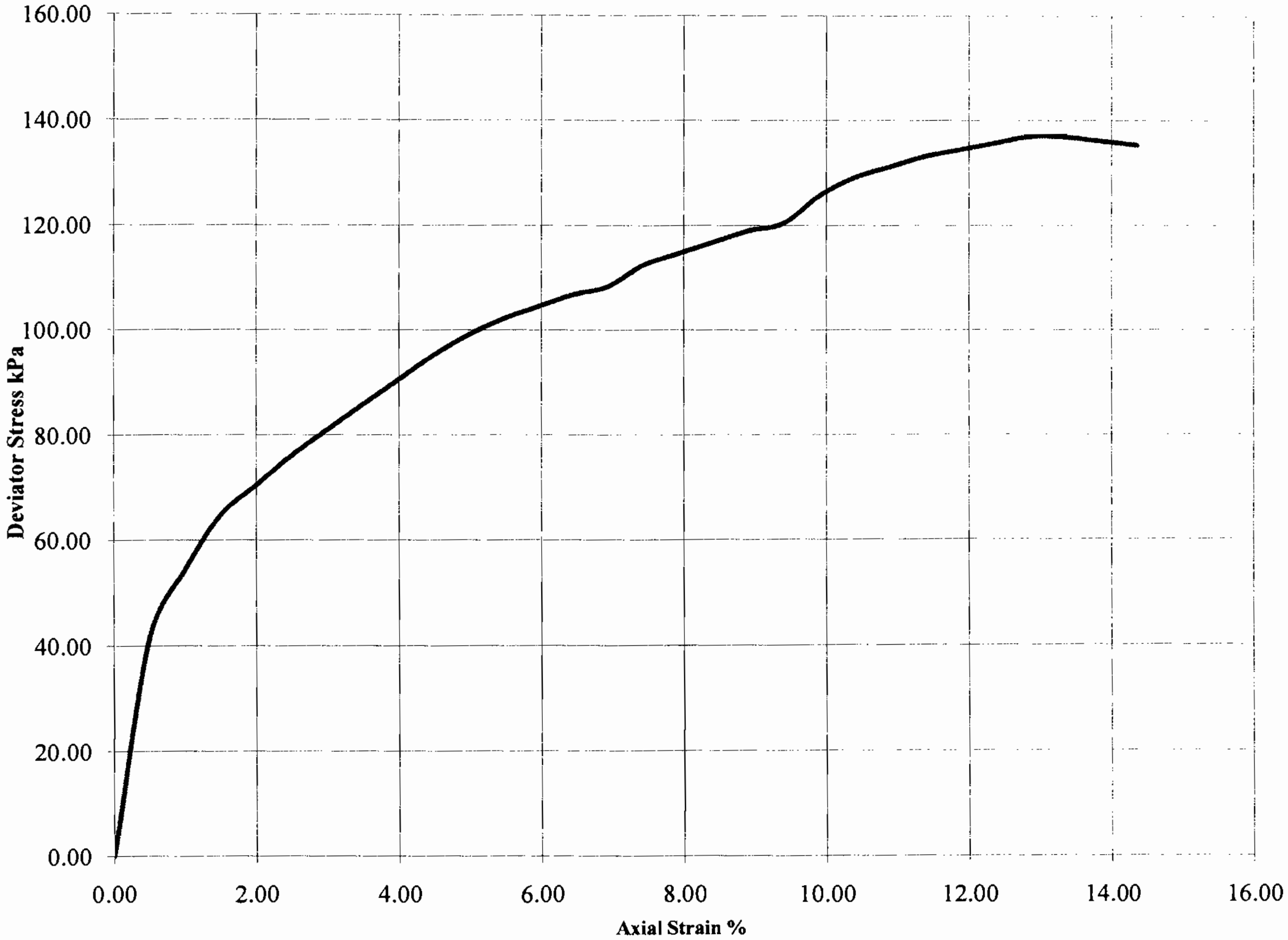
Hole Number: **BH18a** Sample Number: **8** Depth (m): **2.80-3.25**



Diameter (mm):	103	Height (mm):		202	Test:	100mm Multistage			
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	9.1	1.90	1.74	30	108	54	6.9	Plastic	
				60	120	60	9.4		
				120	137	69	12.9		

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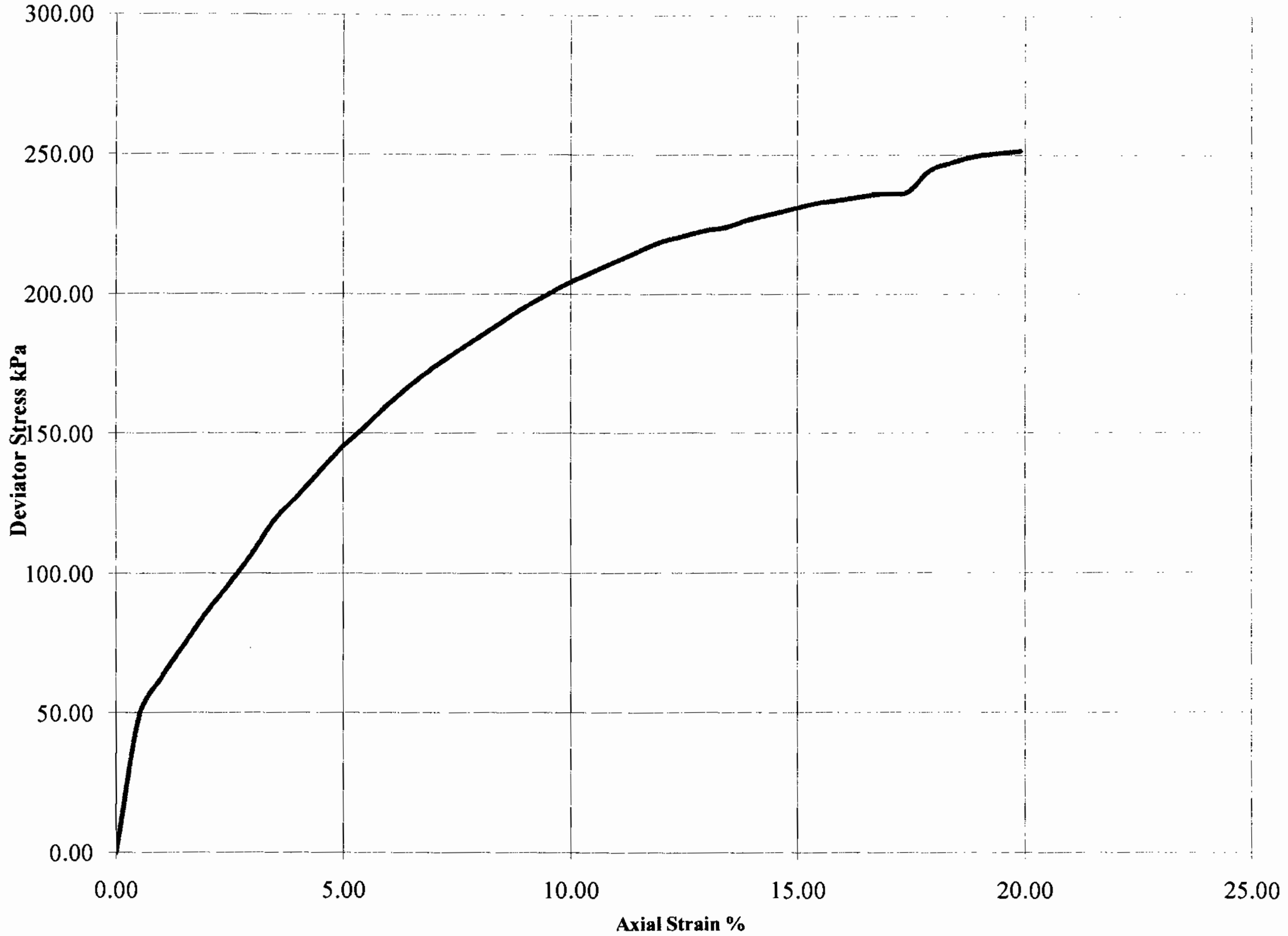
Hole Number: **BH19** Sample Number: **8** Depth (m): **3.10-3.55**



Diameter (mm):	103	Height (mm):		201	Test:	100mm Multistage			
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	15	2.09	1.81	35	224	112	13.4	Compound	
				70	237	118	17.4		
				140	252	126	19.9		

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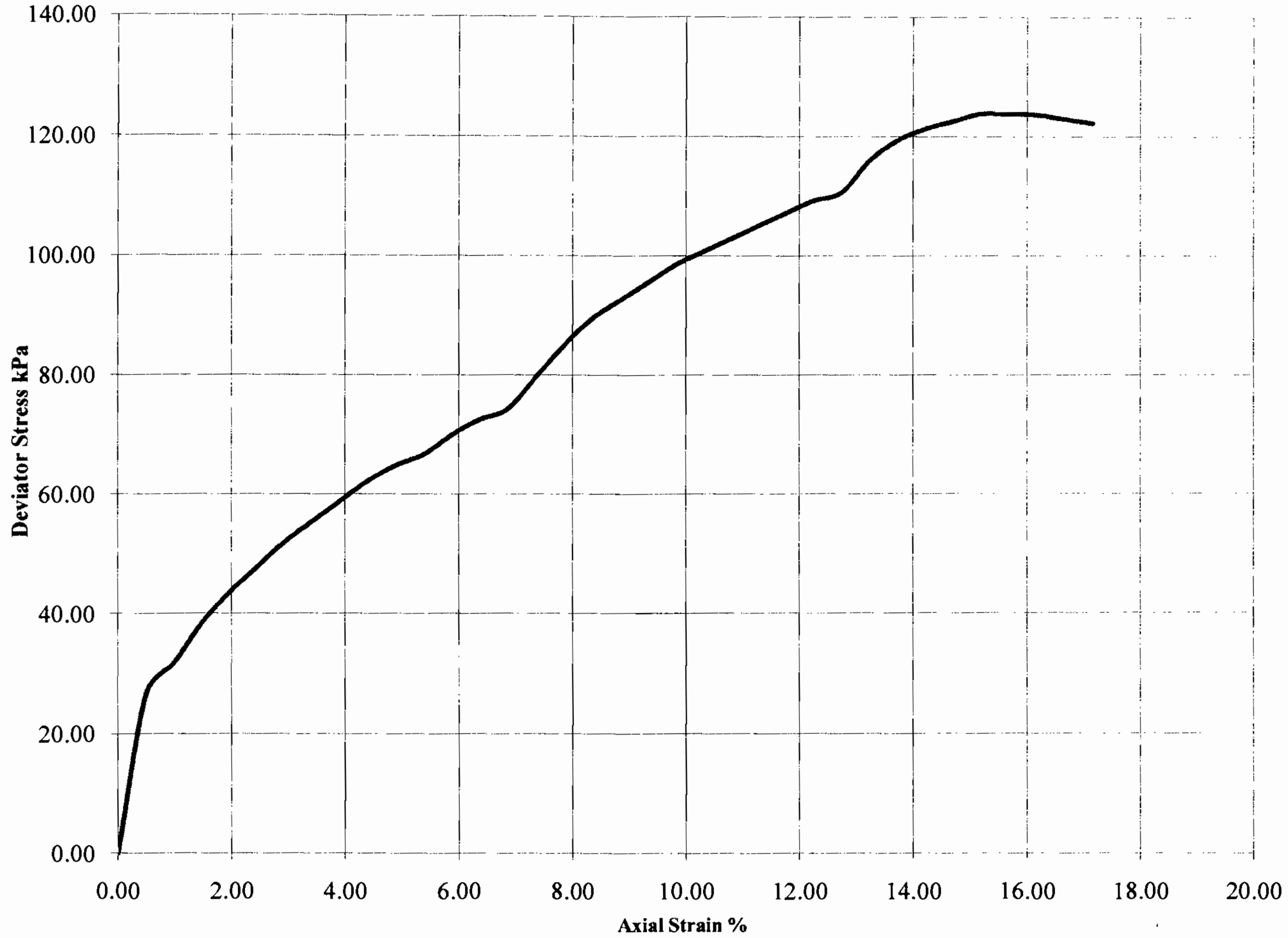
Hole Number: **BH20** Sample Number: **7** Depth (m): **3.20-3.65**



Diameter (mm):		103	Height (mm):		204	Test:	100mm Multistage		
Specimen	Moisture Content (%)	Bulk Density (Mg/m3)	Dry Density (Mg/m3)	Cell Pressure (kPa)	Deviator Stress (kPa)	Cohesion (kPa)	Failure Strain (%)	Mode of Failure	Remarks
A	17	1.93	1.64	35	74	37	6.9	Plastic	
				70	111	55	12.7		
				140	124	62	15.2		

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LABORATORY TESTING SERVICES LIMITED

Lostock Works, Cheshire

Client Ref No.
LE10104/VE059

UKAS TESTING 2788

page of

GEO/012 June-04 Issue No.1

Phase II Factual Report

Contract: Lostock Works, Cheshire

Ref: G900000

Appendix F

Environmental Laboratory Testing

VAN ELLE
TOTAL FOUNDATION SOLUTIONS

The right chemistry to deliver results

Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070

Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

FAO Robert Serjeant
06 May 2009

Dear Robert Serjeant

Test Report Number **76255**
Your Project Reference **LE10104 - Lostock Works, Cheshire**

Please find enclosed the results of analysis for the samples received 29 April 2009.

All soil samples will be retained for a period of one month and all water samples will be retained for 7 days following the date of the test report. Should you require an extended retention period then please detail your requirements in an email to customerservices@chemtest.co.uk. Please be aware that charges may be applicable for extended sample storage.

If you require any further assistance, please do not hesitate to contact the Customer Services team.

Yours sincerely

Authorised Signatory

☐ Darrell Hall	Laboratory Manager
☐ Phil Hellier	Operations Director
☐ Keith Jones	Technical Development Manager
☐ John Crawford	Quality Manager
☐ Malcolm Avis	Technical Director

UKAS TESTING
2183

Notes to accompany report:

- *The sign < means 'less than'*
- *Tests marked 'U' hold UKAS accreditation*
- *Tests marked 'M' hold MCertS (and UKAS) accreditation*
- *Tests marked 'N' do not currently hold UKAS accreditation*
- *Tests marked 'S' were subcontracted to an approved laboratory*
- *n/e means 'not evaluated'*
- *i/s means 'insufficient sample'*
- *u/s means 'unsuitable sample'*
- *Comments or interpretations are outside of the scope of UKAS accreditation*
- *The results relate only to the items tested*
- *Stones represent the quantity of material removed prior to analysis*
- *All results are expressed on a dry weight basis*
- *The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, phenols*
- *For all other tests the samples were dried at < 37°C prior to analysis*
- *Uncertainties of measurement for the determinands tested are available upon request*
- *Soil descriptions, including colour and texture, are beyond the scope of MCertS accreditation*

Test Report 76255 Cover Sheet

Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

LABORATORY TEST REPORT

Chemtest

Report Date
06 May 2009

Results of analysis of 13 samples
received 29 April 2009

FAO Robert Serjeant

LE10104 - Lostock Works, Cheshire

Login Batch No					**76255**			
Chemtest LIMS ID					AE00024	AE00025	AE00026	AE00027
Sample ID					BH19	WS8	WS1	BH3
Sample No								
Depth					1.6	0.6	1.2	0.3
Matrix					*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*
SOP↓	Determinand↓	CAS No↓	Units↓	*				
1010	pH	PH	-	U	7.0	7.60	9.8	7.7
1450	Arsenic	7440382	µg l-¹	U	5.3	190	930	440
	Cadmium	7440439	µg l-¹	U	<0.5	<0.5	<0.5	<0.5
	Chromium	7440473	µg l-¹	U	5.0	4.8	10	5.5
	Copper	7440508	µg l-¹	U	11	5.6	72	36
	Lead	7439921	µg l-¹	U	4.3	59	14	51
	Mercury	7439976	µg l-¹	U	<0.5	<0.5	<0.5	<0.5
	Nickel	7440020	µg l-¹	U	13	6.4	24	3.9
	Selenium	7782492	µg l-¹	U	3.9	15	170	8.8
	Zinc	7440666	µg l-¹	U	110	20	45	19
1675	TPH aliphatic >C5-C6		µg l-¹	N	<0.1		<0.1	
	TPH aliphatic >C6-C8		µg l-¹	N	<0.1		<0.1	
	TPH aliphatic >C8-C10		µg l-¹	N	<0.1		<0.1	
	TPH aliphatic >C10-C12		µg l-¹	N	<0.1		<0.1	
	TPH aliphatic >C12-C16		µg l-¹	N	<0.1		<0.1	
	TPH aliphatic >C16-C21		µg l-¹	N	<0.1		<0.1	
	TPH aliphatic >C21-C35		µg l-¹	N	<0.1		<0.1	
	TPH aromatic >C5-C7		µg l-¹	N	<0.1		<0.1	
	TPH aromatic >C7-C8		µg l-¹	N	<0.1		<0.1	
	TPH aromatic >C8-C10		µg l-¹	N	<0.1		<0.1	
	TPH aromatic >C10-C12		µg l-¹	N	<0.1		<0.1	
	TPH aromatic >C12-C16		µg l-¹	N	<0.1		<0.1	
	TPH aromatic >C16-C21		µg l-¹	N	<0.1		<0.1	
	TPH aromatic >C21-C35		µg l-¹	N	<0.1		<0.1	
	Total Petroleum Hydrocarbons		µg l-¹	N	<10		<10	
1700	Naphthalene	91203	µg l-¹	N	<0.01	<0.01	<0.01	<0.01
	Acenaphthylene	208968	µg l-¹	N	<0.01	<0.01	<0.01	<0.01
	Acenaphthene	83329	µg l-¹	N	<0.01	<0.01	<0.01	<0.01
	Fluorene	86737	µg l-¹	N	<0.01	<0.01	<0.01	<0.01
	Phenanthrene	85018	µg l-¹	N	<0.01	<0.01	<0.01	<0.01

All tests undertaken between 29-Apr-2009 and 6-May-2009

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

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Chemtest

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06 May 2009

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received 29 April 2009

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LE10104 - Lostock Works, Cheshire

					76255			
					AE00024	AE00025	AE00026	AE00027
					BH19	WS8	WS1	BH3
					1.6	0.6	1.2	0.3
					LEACHATE	*LEACHATE*	*LEACHATE*	*LEACHATE*
1700	Anthracene	120127	µg l-¹	N	<0.01	<0.01	<0.01	<0.01
	Fluoranthene	206440	µg l-¹	N	<0.01	<0.01	<0.01	<0.01
	Pyrene	129000	µg l-¹	N	<0.01	<0.01	<0.01	<0.01
	Benzo[a]anthracene	56553	µg l-¹	N	<0.01	<0.01	<0.01	<0.01
	Chrysene	218019	µg l-¹	N	<0.01	<0.01	<0.01	<0.01
	Benzo[b]fluoranthene	205992	µg l-¹	N	<0.01	<0.01	<0.01	<0.01
	Benzo[k]fluoranthene	207089	µg l-¹	N	<0.01	<0.01	<0.01	<0.01
	Benzo[a]pyrene	50328	µg l-¹	N	<0.01	<0.01	<0.01	<0.01
	Dibenzo[a,h]anthracene	53703	µg l-¹	N	<0.01	<0.01	<0.01	<0.01
	Indeno[1,2,3-cd]pyrene	193395	µg l-¹	N	<0.01	<0.01	<0.01	<0.01
	Benzo[g,h,i]perylene	191242	µg l-¹	N	<0.01	<0.01	<0.01	<0.01
	Total (of 16) PAHs		µg l-¹	N	<0.2	<0.2	<0.2	<0.2
1760	Dichlorodifluoromethane	75718	µg l-¹	U	<1		<1	
	Chloromethane	74873	µg l-¹	U	<1		<1	
	Vinyl chloride	75014	µg l-¹	U	<1		<1	
	Bromomethane	74839	µg l-¹	U	<20		<20	
	Chloroethane	75003	µg l-¹	U	<2		<2	
	Trichlorofluoromethane	75694	µg l-¹	U	<1		<1	
	1,1-Dichloroethene	75354	µg l-¹	U	<1		<1	
	Dichloromethane	75092	µg l-¹	U	ne		ne	
	trans-1,2-Dichloroethene	156605	µg l-¹	U	<1		<1	
	1,1-Dichloroethane	75343	µg l-¹	U	<1		2.4	
	cis-1,2-Dichloroethene	156592	µg l-¹	U	<1		<1	
	Bromochloromethane	74975	µg l-¹	U	<1		<1	
	Trichloromethane	67663	µg l-¹	U	<1		1.4	
	1,1,1-Trichloroethane	71556	µg l-¹	U	<1		<1	
	Tetrachloromethane	56235	µg l-¹	U	<1		<1	
	1,1-Dichloropropene	563586	µg l-¹	U	<1		<1	
	Benzene	71432	µg l-¹	U	<1		<1	
	1,2-Dichloroethane	107062	µg l-¹	U	<2		<2	
	Trichloroethene	79016	µg l-¹	U	<1		<1	

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					76255			
					AE00024	AE00025	AE00026	AE00027
					BH19	WS8	WS1	BH3
					1.6	0.6	1.2	0.3
					LEACHATE	*LEACHATE*	*LEACHATE*	*LEACHATE*
1760	1,2-Dichloropropane	78875	µg l-¹	U	<1		<1	
	Dibromomethane	74953	µg l-¹	U	<10		<10	
	Bromodichloromethane	75274	µg l-¹	U	<5		<5	
	cis-1,3-Dichloropropene	10061015	µg l-¹	U	<10		<10	
	Toluene	108883	µg l-¹	U	<1		<1	
	trans-1,3-Dichloropropene	10061026	µg l-¹	U	<10		<10	
	1,1,2-Trichloroethane	79005	µg l-¹	U	<10		<10	
	Tetrachloroethene	127184	µg l-¹	U	<1		<1	
	1,3-Dichloropropane	142289	µg l-¹	U	<2		<2	
	Dibromochloromethane	124481	µg l-¹	U	<10		<10	
	1,2-Dibromoethane	106934	µg l-¹	U	<5		<5	
	Chlorobenzene	108907	µg l-¹	U	<1		<1	
	1,1,1,2-Tetrachloroethane	630206	µg l-¹	U	<2		<2	
	Ethylbenzene	100414	µg l-¹	U	<1		<1	
	m- & p-Xylene	1330207	µg l-¹	U	<1		<1	
	o-Xylene	95476	µg l-¹	U	<1		<1	
	Styrene	100425	µg l-¹	U	<1		<1	
	Tribromomethane	75252	µg l-¹	U	<10		<10	
	Isopropylbenzene	98828	µg l-¹	U	<1		<1	
	Bromobenzene	108861	µg l-¹	U	<1		<1	
	1,1,2,2-Tetrachloroethane	79345	µg l-¹	U	<10		<10	
	1,2,3-Trichloropropane	96184	µg l-¹	U	<50		<50	
	n-Propylbenzene	103651	µg l-¹	U	<1		<1	
	2-Chlorotoluene	95498	µg l-¹	U	<1		<1	
	1,3,5-Trimethylbenzene	108678	µg l-¹	U	<1		<1	
	4-Chlorotoluene	106434	µg l-¹	U	<1		<1	
	tert-Butylbenzene	98066	µg l-¹	U	<1		<1	
	1,2,4-Trimethylbenzene	95636	µg l-¹	U	<1		<1	
	sec-Butylbenzene	135988	µg l-¹	U	<1		<1	
	1,3-Dichlorobenzene	541731	µg l-¹	U	<1		<1	
	4-Isopropyltoluene	99876	µg l-¹	U	<1		<1	

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LABORATORY TEST REPORT

Chemtest

Results of analysis of 13 samples received 29 April 2009

Report Date 06 May 2009

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LE10104 - Lostock Works, Cheshire

					76255			
					AE00024	AE00025	AE00026	AE00027
					BH19	WS8	WS1	BH3
					1.6	0.6	1.2	0.3
					LEACHATE	*LEACHATE*	*LEACHATE*	*LEACHATE*
1760	1,4-Dichlorobenzene	106467	µg l-¹	U	<1		<1	
	n-Butylbenzene	104518	µg l-¹	U	<1		<1	
	1,2-Dichlorobenzene	95501	µg l-¹	U	<1		<1	
	1,2-Dibromo-3-chloropropane	96128	µg l-¹	U	<50		<50	
	1,2,4-Trichlorobenzene	120821	µg l-¹	U	<1		<1	
	Hexachlorobutadiene	87683	µg l-¹	U	<1		<1	
	1,2,3-Trichlorobenzene	87616	µg l-¹	U	<2		<2	
1762	Tentatively Identified Compounds		µg l-¹		None Detected			
1790	N-Nitrosodimethylamine	62759	µg l-¹	N	<0.05		<0.05	
	Phenol	108952	µg l-¹	N	<0.05		<0.05	
	bis(2-Chloroethyl)ether	111444	µg l-¹	N	<0.05		<0.05	
	2-Chlorophenol	95578	µg l-¹	N	<0.05		<0.05	
	1,3-Dichlorobenzene	541731	µg l-¹	N	<0.05		<0.05	
	1,4-Dichlorobenzene	106467	µg l-¹	N	<0.05		<0.05	
	1,2-Dichlorobenzene	95501	µg l-¹	N	<0.05		<0.05	
	2-Methylphenol	95487	µg l-¹	N	<0.05		<0.05	
	bis(2-Chloroisopropyl)ether	108601	µg l-¹	N	<0.05		<0.05	
	4-Methylphenol	106445	µg l-¹	N	<0.05		<0.05	
	N-Nitrosodi-n-propylamine	621647	µg l-¹	N	<0.05		<0.05	
	Hexachloroethane	67721	µg l-¹	N	<0.05		<0.05	
	Nitrobenzene	98953	µg l-¹	N	<0.05		<0.05	
	Isophorone	78591	µg l-¹	N	<0.05		<0.05	
	2-Nitrophenol	88755	µg l-¹	N	<0.05		<0.05	
	2,4-Dimethylphenol	105679	µg l-¹	N	<0.05		<0.05	
	bis(2-Chloroethoxy)methane	111911	µg l-¹	N	<0.05		<0.05	
	2,4-Dichlorophenol	120832	µg l-¹	N	<0.05		<0.05	
	1,2,4-Trichlorobenzene	120821	µg l-¹	N	<0.05		<0.05	
	Naphthalene	91203	µg l-¹	N	<0.05		<0.05	
	4-Chloroaniline	106478	µg l-¹	N	<0.05		<0.05	
	Hexachlorobutadiene	87683	µg l-¹	N	<0.05		<0.05	
	4-Chloro-3-methylphenol	59507	µg l-¹	N	<0.05		<0.05	

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FAO Robert Serjeant

LABORATORY TEST REPORT

Results of analysis of 13 samples received 29 April 2009

LE10104 - Lostock Works, Cheshire

Report Date 06 May 2009

					76255			
					AE00024	AE00025	AE00026	AE00027
					BH19	WS8	WS1	BH3
					1.6	0.6	1.2	0.3
					LEACHATE	*LEACHATE*	*LEACHATE*	*LEACHATE*
1790	2-Methylnaphthalene	91576	µg l-¹	N	<0.05		<0.05	
	Hexachlorocyclopentadiene	77474	µg l-¹	N	<0.05		<0.05	
	2,4,6-Trichlorophenol	88062	µg l-¹	N	<0.05		<0.05	
	2,4,5-Trichlorophenol	95954	µg l-¹	N	<0.05		<0.05	
	2-Chloronaphthalene	91587	µg l-¹	N	<0.05		<0.05	
	2-Nitroaniline	88744	µg l-¹	N	<0.05		<0.05	
	Dimethylphthalate	131113	µg l-¹	N	<0.05		<0.05	
	2,6-Dinitrotoluene	606202	µg l-¹	N	<0.05		<0.05	
	Acenaphthylene	208968	µg l-¹	N	<0.05		<0.05	
	3-Nitroaniline	99092	µg l-¹	N	<0.05		<0.05	
	Acenaphthene	83329	µg l-¹	N	<0.05		<0.05	
	Dibenzofuran	132649	µg l-¹	N	<0.05		<0.05	
	2,4-Dinitrotoluene	121142	µg l-¹	N	<0.05		<0.05	
	Diethylphthalate	84662	µg l-¹	N	<0.05		<0.05	
	Fluorene	86737	µg l-¹	N	<0.05		<0.05	
	4-Chlorophenylether	7005723	µg l-¹	N	<0.05		<0.05	
	4-Nitroaniline	100016	µg l-¹	N	<0.05		<0.05	
	2-Methyl-4,6-dinitrophenol	534521	µg l-¹	N	<0.05		<0.05	
	Azobenzene	103333	µg l-¹	N	<0.05		<0.05	
	4-Bromophenylphenylether	101553	µg l-¹	N	<0.05		<0.05	
	Hexachlorobenzene	118741	µg l-¹	N	<0.05		<0.05	
	Pentachlorophenol	87865	µg l-¹	N	<0.05		<0.05	
	Phenanthrene	85018	µg l-¹	N	<0.05		<0.05	
	Anthracene	120127	µg l-¹	N	<0.05		<0.05	
	Carbazole	86748	µg l-¹	N	<0.05		<0.05	
	Di-n-butylphthalate	84742	µg l-¹	N	<0.05		<0.05	
	Fluoranthene	206440	µg l-¹	N	<0.05		<0.05	
	Pyrene	129000	µg l-¹	N	<0.05		<0.05	
	Butylbenzylphthalate	85687	µg l-¹	N	<0.05		<0.05	
	Benzo[a]anthracene	56553	µg l-¹	N	<0.05		<0.05	
	Chrysene	218019	µg l-¹	N	<0.05		<0.05	

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LE10104 - Lostock Works, Cheshire

Chemtest

Report Date 06 May 2009

					76255			
					AE00024	AE00025	AE00026	AE00027
					BH19	WS8	WS1	BH3
					1.6	0.6	1.2	0.3
					LEACHATE	*LEACHATE*	*LEACHATE*	*LEACHATE*
1790	bis(2-Ethylhexyl)phthalate	117817	µg l-¹	N	<0.05		<0.05	
	Di-n-octylphthalate	117840	µg l-¹	N	<0.05		<0.05	
	Benzo[b]fluoranthene	205992	µg l-¹	N	<0.05		<0.05	
	Benzo[k]fluoranthene	207089	µg l-¹	N	<0.05		<0.05	
	Benzo[a]pyrene	50328	µg l-¹	N	<0.05		<0.05	
	Indeno[1,2,3-cd]pyrene	193395	µg l-¹	N	<0.05		<0.05	
	Dibenzo[a,h]anthracene	53703	µg l-¹	N	<0.05		<0.05	
	Benzo[g,h,i]perylene	191242	µg l-¹	N	<0.05		<0.05	
1792	Tentatively identified compounds		mg l-¹		None detected		None detected	

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LE10104 - Lostock Works, Cheshire

Login Batch No					**76255**							
Chemtest LIMS ID					AE00015	AE00016	AE00017	AE00018	AE00019	AE00020	AE00021	AE00022
Sample ID					BH19	BH19	WS8	WS8	WS1	WS1	BH3	BH3
Sample No												
Depth					1.6	4.2	0.6	2.1	1.2	4.6	0.3	3.6
Matrix					*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
SOP↓	Determinand↓	CAS No↓	Units↓	*								
2450	Arsenic	7440382	mg kg-¹	M	20	7.2	350	11	8700	110	2300	49
	Cadmium	7440439	mg kg-¹	M	0.72	<0.1	0.36	<0.1	14	0.25	2.5	0.17
	Chromium	7440473	mg kg-¹	M	39	29	29	35	31	27	27	28
	Copper	7440508	mg kg-¹	M	26	25	110	20	110	23	420	60
	Mercury	7439976	mg kg-¹	M	0.16	<0.1	17	0.29	8.1	0.36	3.5	0.11
	Nickel	7440020	mg kg-¹	M	40	31	77	37	50	28	20	31
	Lead	7439921	mg kg-¹	M	32	9.2	700	15	630	21	750	16
	Selenium	7782492	mg kg-¹	M	<0.2	<0.2	6.7	<0.2	20	1.4	5.0	<0.2
	Zinc	7440666	mg kg-¹	M	260	48	64	49	390	46	230	92
2625	Fraction of Organic Carbon			M	0.0031	< 0.0020	0.17	< 0.0020	0.073	0.0030	0.032	0.0023
2675	TPH aliphatic >C5-C6		mg kg-¹	N	< 0.1	< 0.1			< 0.1	< 0.1		
	TPH aliphatic >C6-C8		mg kg-¹	N	< 0.1	< 0.1			< 0.1	< 0.1		
	TPH aliphatic >C8-C10		mg kg-¹	N	< 0.1	< 0.1			< 0.1	< 0.1		
	TPH aliphatic >C10-C12		mg kg-¹	N	2.1	< 0.1			< 0.1	< 0.1		
	TPH aliphatic >C12-C16		mg kg-¹	N	11	< 0.1			< 0.1	< 0.1		
	TPH aliphatic >C16-C21		mg kg-¹	N	< 0.1	< 0.1			< 0.1	< 0.1		
	TPH aliphatic >C21-C35		mg kg-¹	N	< 0.1	< 0.1			< 0.1	< 0.1		
	TPH aromatic >C5-C7		mg kg-¹	N	< 0.1	< 0.1			< 0.1	< 0.1		
	TPH aromatic >C7-C8		mg kg-¹	N	< 0.1	< 0.1			< 0.1	< 0.1		
	TPH aromatic >C8-C10		mg kg-¹	N	< 0.1	< 0.1			< 0.1	< 0.1		
	TPH aromatic >C10-C12		mg kg-¹	N	5.1	< 0.1			1.5	< 0.1		
	TPH aromatic >C12-C16		mg kg-¹	N	73	6.7			44	< 0.1		
	TPH aromatic >C16-C21		mg kg-¹	N	280	10			150	< 0.1		
	TPH aromatic >C21-C35		mg kg-¹	N	370	10			280	< 0.1		
	Total Petroleum Hydrocarbons		mg kg-¹	N	740	27			480	< 10		
2760	Dichlorodifluoromethane	75718	µg kg-¹	U	<1	<1			<1	<1		
	Chloromethane	74873	µg kg-¹	M	<1	<1			<1	<1		
	Vinyl chloride	75014	µg kg-¹	M	<1	<1			<1	<1		
	Bromomethane	74839	µg kg-¹	U	<20	<20			<20	<20		
	Chloroethane	75003	µg kg-¹	U	<2	<2			<2	<2		

All tests undertaken between 29-Apr-2009 and 6-May-2009

* Accreditation status

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Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

FAO Robert Serjeant

LABORATORY TEST REPORT

Chemtest

Results of analysis of 13 samples received 29 April 2009

Report Date 06 May 2009

LE10104 - Lostock Works, Cheshire

SOP↓	Determinand↓	CAS No↓	Units↓		
Login Batch No					**76255**
Chemtest LIMS ID					AE00023
Sample ID					WS11
Sample No					
Depth					0.2
Matrix					*SOIL*
2450	Arsenic	7440382	mg kg-1	M	89
	Cadmium	7440439	mg kg-1	M	0.23
	Chromium	7440473	mg kg-1	M	44
	Copper	7440508	mg kg-1	M	22
	Mercury	7439976	mg kg-1	M	0.41
	Nickel	7440020	mg kg-1	M	54
	Lead	7439921	mg kg-1	M	44
	Selenium	7782492	mg kg-1	M	<0.2
	Zinc	7440666	mg kg-1	M	69
2625	Fraction of Organic Carbon			M	0.0058
2675	TPH aliphatic >C5-C6		mg kg-1	N	
	TPH aliphatic >C6-C8		mg kg-1	N	
	TPH aliphatic >C8-C10		mg kg-1	N	
	TPH aliphatic >C10-C12		mg kg-1	N	
	TPH aliphatic >C12-C16		mg kg-1	N	
	TPH aliphatic >C16-C21		mg kg-1	N	
	TPH aliphatic >C21-C35		mg kg-1	N	
	TPH aromatic >C5-C7		mg kg-1	N	
	TPH aromatic >C7-C8		mg kg-1	N	
	TPH aromatic >C8-C10		mg kg-1	N	
	TPH aromatic >C10-C12		mg kg-1	N	
	TPH aromatic >C12-C16		mg kg-1	N	
	TPH aromatic >C16-C21		mg kg-1	N	
	TPH aromatic >C21-C35		mg kg-1	N	
	Total Petroleum Hydrocarbons		mg kg-1	N	
2760	Dichlorodifluoromethane	75718	µg kg-1	U	
	Chloromethane	74873	µg kg-1	M	
	Vinyl chloride	75014	µg kg-1	M	
	Bromomethane	74839	µg kg-1	U	
	Chloroethane	75003	µg kg-1	U	

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LABORATORY TEST REPORT

Chemtest

Report Date
06 May 2009

Results of analysis of 13 samples
received 29 April 2009

LE10104 - Lostock Works, Cheshire

					76255							
					AE00015	AE00016	AE00017	AE00018	AE00019	AE00020	AE00021	AE00022
					BH19	BH19	WS8	WS8	WS1	WS1	BH3	BH3
					1.6	4.2	0.6	2.1	1.2	4.6	0.3	3.6
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2760	Trichlorofluoromethane	75694	µg kg-¹	U	<1	<1			<1	<1		
	1,1-Dichloroethene	75354	µg kg-¹	U	<1	<1			<1	5.8		
	Dichloromethane	75092	µg kg-¹	U	ne	ne			ne	ne		
	trans-1,2-Dichloroethene	156605	µg kg-¹	M	<1	<1			<1	<1		
	1,1-Dichloroethane	75343	µg kg-¹	M	<1	<1			15	9.7		
	cis-1,2-Dichloroethene	156592	µg kg-¹	M	<1	<1			<1	<1		
	Bromochloromethane	74975	µg kg-¹	U	<1	<1			<1	<1		
	Trichloromethane	67663	µg kg-¹	M	<1	<1			9.9	30		
	1,1,1-Trichloroethane	71556	µg kg-¹	M	<1	<1			<1	26		
	Tetrachloromethane	56235	µg kg-¹	M	<1	<1			<1	<1		
	1,1-Dichloropropene	563586	µg kg-¹	U	<1	<1			<1	<1		
	Benzene	71432	µg kg-¹	M	<1	<1			3.3	<1		
	1,2-Dichloroethane	107062	µg kg-¹	M	<2	<2			<2	<2		
	Trichloroethene	79016	µg kg-¹	N	<1	<1			<1	<1		
	1,2-Dichloropropane	78875	µg kg-¹	U	<1	<1			<1	<1		
	Dibromomethane	74953	µg kg-¹	U	<10	<10			<10	<10		
	Bromodichloromethane	75274	µg kg-¹	U	<5	<5			<5	<5		
	cis-1,3-Dichloropropene	10061015	µg kg-¹	U	<10	<10			<10	<10		
	Toluene	108883	µg kg-¹	M	<1	<1			3.2	<1		
	trans-1,3-Dichloropropene	10061026	µg kg-¹	U	<10	<10			<10	<10		
	1,1,2-Trichloroethane	79005	µg kg-¹	M	<10	<10			<10	<10		
	Tetrachloroethene	127184	µg kg-¹	M	<1	<1			<1	<1		
	1,3-Dichloropropane	142289	µg kg-¹	U	<2	<2			<2	<2		
	Dibromochloromethane	124481	µg kg-¹	U	<10	<10			<10	<10		
	1,2-Dibromoethane	106934	µg kg-¹	U	<5	<5			<5	<5		
	Chlorobenzene	108907	µg kg-¹	M	<1	<1			<1	<1		
	1,1,1,2-Tetrachloroethane	630206	µg kg-¹	M	<2	<2			<2	<2		
	Ethylbenzene	100414	µg kg-¹	M	<1	<1			<1	<1		
	m- & p-Xylene	1330207	µg kg-¹	M	<1	<1			<1	<1		
	o-Xylene	95476	µg kg-¹	M	<1	<1			<1	<1		
	Styrene	100425	µg kg-¹	U	<1	<1			<1	<1		

All tests undertaken between 29-Apr-2009 and 6-May-2009

* Accreditation status

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Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

FAO Robert Serjeant

LABORATORY TEST REPORT

Chemtest

Results of analysis of 13 samples received 29 April 2009

Report Date 06 May 2009

LE10104 - Lostock Works, Cheshire

					76255
					AE00023
					WS11
					0.2
					SOIL
2760	Trichlorofluoromethane	75694	µg kg-¹	U	
	1,1-Dichloroethene	75354	µg kg-¹	U	
	Dichloromethane	75092	µg kg-¹	U	
	trans-1,2-Dichloroethene	156605	µg kg-¹	M	
	1,1-Dichloroethane	75343	µg kg-¹	M	
	cis-1,2-Dichloroethene	156592	µg kg-¹	M	
	Bromochloromethane	74975	µg kg-¹	U	
	Trichloromethane	67663	µg kg-¹	M	
	1,1,1-Trichloroethane	71556	µg kg-¹	M	
	Tetrachloromethane	56235	µg kg-¹	M	
	1,1-Dichloropropene	563586	µg kg-¹	U	
	Benzene	71432	µg kg-¹	M	
	1,2-Dichloroethane	107062	µg kg-¹	M	
	Trichloroethene	79016	µg kg-¹	N	
	1,2-Dichloropropane	78875	µg kg-¹	U	
	Dibromomethane	74953	µg kg-¹	U	
	Bromodichloromethane	75274	µg kg-¹	U	
	cis-1,3-Dichloropropene	10061015	µg kg-¹	U	
	Toluene	108883	µg kg-¹	M	
	trans-1,3-Dichloropropene	10061026	µg kg-¹	U	
	1,1,2-Trichloroethane	79005	µg kg-¹	M	
	Tetrachloroethene	127184	µg kg-¹	M	
	1,3-Dichloropropane	142289	µg kg-¹	U	
	Dibromochloromethane	124481	µg kg-¹	U	
	1,2-Dibromoethane	106934	µg kg-¹	U	
	Chlorobenzene	108907	µg kg-¹	M	
	1,1,1,2-Tetrachloroethane	630206	µg kg-¹	M	
	Ethylbenzene	100414	µg kg-¹	M	
	m- & p-Xylene	1330207	µg kg-¹	M	
	o-Xylene	95476	µg kg-¹	M	
	Styrene	100425	µg kg-¹	U	

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LABORATORY TEST REPORT

Chemtest

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06 May 2009

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received 29 April 2009

FAO Robert Serjeant

LE10104 - Lostock Works, Cheshire

					76255							
					AE00015	AE00016	AE00017	AE00018	AE00019	AE00020	AE00021	AE00022
					BH19	BH19	WS8	WS8	WS1	WS1	BH3	BH3
					1.6	4.2	0.6	2.1	1.2	4.6	0.3	3.6
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2760	Tribromomethane	75252	µg kg-¹	U	<10	<10			<10	<10		
	Isopropylbenzene	98828	µg kg-¹	U	<1	<1			<1	<1		
	Bromobenzene	108861	µg kg-¹	U	<1	<1			<1	<1		
	1,1,2,2-Tetrachloroethane	79345	µg kg-¹	M	<10	<10			<10	<10		
	1,2,3-Trichloropropane	96184	µg kg-¹	U	<50	<50			<50	<50		
	n-Propylbenzene	103651	µg kg-¹	U	<1	<1			<1	<1		
	2-Chlorotoluene	95498	µg kg-¹	U	<1	<1			<1	<1		
	1,3,5-Trimethylbenzene	108678	µg kg-¹	U	2.1	<1			<1	<1		
	4-Chlorotoluene	106434	µg kg-¹	U	<1	<1			<1	<1		
	tert-Butylbenzene	98066	µg kg-¹	U	<1	<1			<1	<1		
	1,2,4-Trimethylbenzene	95636	µg kg-¹	U	<1	<1			<1	<1		
	sec-Butylbenzene	135988	µg kg-¹	U	<1	<1			<1	<1		
	1,3-Dichlorobenzene	541731	µg kg-¹	U	<1	<1			<1	<1		
	4-Isopropyltoluene	99876	µg kg-¹	U	<1	<1			<1	<1		
	1,4-Dichlorobenzene	106467	µg kg-¹	U	<1	<1			<1	<1		
	n-Butylbenzene	104518	µg kg-¹	U	<1	<1			<1	<1		
	1,2-Dichlorobenzene	95501	µg kg-¹	U	<1	<1			<1	<1		
	1,2-Dibromo-3-chloropropane	96128	µg kg-¹	U	<50	<50			<50	<50		
	1,2,4-Trichlorobenzene	120821	µg kg-¹	U	<1	<1			<1	<1		
	Hexachlorobutadiene	87683	µg kg-¹	U	<1	<1			<1	<1		
	1,2,3-Trichlorobenzene	87616	µg kg-¹	U	<2	<2			<2	<2		
2762	Tentatively Identified Compounds		µg kg-¹		None Detected	None Detected			None Detected	None Detected		
2790	N-Nitrosodimethylamine	62759	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	Phenol	108952	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	bis(2-Chloroethyl)ether	111444	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	2-Chlorophenol	95578	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	1,3-Dichlorobenzene	541731	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	1,4-Dichlorobenzene	106467	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	1,2-Dichlorobenzene	95501	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	2-Methylphenol	95487	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	bis(2-Chloroisopropyl)ether	108601	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		

All tests undertaken between 29-Apr-2009 and 6-May-2009

* Accreditation status

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Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

FAO Robert Serjeant

LABORATORY TEST REPORT

Chemtest

Results of analysis of 13 samples received 29 April 2009

Report Date 06 May 2009

LE10104 - Lostock Works, Cheshire

					76255
					AE00023
					WS11
					0.2
					SOIL
2760	Tribromomethane	75252	µg kg-1	U	
	Isopropylbenzene	98828	µg kg-1	U	
	Bromobenzene	108861	µg kg-1	U	
	1,1,2,2-Tetrachloroethane	79345	µg kg-1	M	
	1,2,3-Trichloropropane	96184	µg kg-1	U	
	n-Propylbenzene	103651	µg kg-1	U	
	2-Chlorotoluene	95498	µg kg-1	U	
	1,3,5-Trimethylbenzene	108678	µg kg-1	U	
	4-Chlorotoluene	106434	µg kg-1	U	
	tert-Butylbenzene	98066	µg kg-1	U	
	1,2,4-Trimethylbenzene	95636	µg kg-1	U	
	sec-Butylbenzene	135988	µg kg-1	U	
	1,3-Dichlorobenzene	541731	µg kg-1	U	
	4-Isopropyltoluene	99876	µg kg-1	U	
	1,4-Dichlorobenzene	106467	µg kg-1	U	
	n-Butylbenzene	104518	µg kg-1	U	
	1,2-Dichlorobenzene	95501	µg kg-1	U	
	1,2-Dibromo-3-chloropropane	96128	µg kg-1	U	
	1,2,4-Trichlorobenzene	120821	µg kg-1	U	
	Hexachlorobutadiene	87683	µg kg-1	U	
	1,2,3-Trichlorobenzene	87616	µg kg-1	U	
2762	Tentatively Identified Compounds		µg kg-1		
2790	N-Nitrosodimethylamine	62759	mg kg-1	N	
	Phenol	108952	mg kg-1	N	
	bis(2-Chloroethyl)ether	111444	mg kg-1	N	
	2-Chlorophenol	95578	mg kg-1	N	
	1,3-Dichlorobenzene	541731	mg kg-1	N	
	1,4-Dichlorobenzene	106467	mg kg-1	N	
	1,2-Dichlorobenzene	95501	mg kg-1	N	
	2-Methylphenol	95487	mg kg-1	N	
	bis(2-Chloroisopropyl)ether	108601	mg kg-1	N	

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					76255							
					AE00015	AE00016	AE00017	AE00018	AE00019	AE00020	AE00021	AE00022
					BH19	BH19	WS8	WS8	WS1	WS1	BH3	BH3
					1.6	4.2	0.6	2.1	1.2	4.6	0.3	3.6
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2790	4-Methylphenol	106445	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	N-Nitrosodi-n-propylamine	621647	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	Hexachloroethane	67721	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	Nitrobenzene	98953	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	Isophorone	78591	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	2-Nitrophenol	88755	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	2,4-Dimethylphenol	105679	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	bis(2-Chloroethoxy)methane	111911	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	2,4-Dichlorophenol	120832	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	1,2,4-Trichlorobenzene	120821	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	Naphthalene	91203	mg kg-¹	N	0.95	<0.5			1.2	<0.5		
	4-Chloroaniline	106478	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	Hexachlorobutadiene	87683	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	4-Chloro-3-methylphenol	59507	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	2-Methylnaphthalene	91576	mg kg-¹	N	0.60	<0.5			<0.5	<0.5		
	Hexachlorocyclopentadiene	77474	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	2,4,6-Trichlorophenol	88062	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	2,4,5-Trichlorophenol	95954	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	2-Chloronaphthalene	91587	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	2-Nitroaniline	88744	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	Dimethylphthalate	131113	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	2,6-Dinitrotoluene	606202	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	Acenaphthylene	208968	mg kg-¹	N	1.8	<0.5			1.5	<0.5		
	3-Nitroaniline	99092	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	Acenaphthene	83329	mg kg-¹	N	0.67	<0.5			<0.5	<0.5		
	Dibenzofuran	132649	mg kg-¹	N	1.7	<0.5			0.75	<0.5		
	2,4-Dinitrotoluene	121142	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	Diethylphthalate	84662	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	Fluorene	86737	mg kg-¹	N	3.0	<0.5			0.78	<0.5		
	4-Chlorophenylether	7005723	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	4-Nitroaniline	100016	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		

All tests undertaken between 29-Apr-2009 and 6-May-2009

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NG16 6JA

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LABORATORY TEST REPORT

Chemtest

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Report Date 06 May 2009

LE10104 - Lostock Works, Cheshire

					76255
					AE00023
					WS11
					0.2
					SOIL
2790	4-Methylphenol	106445	mg kg-¹	N	
	N-Nitrosodi-n-propylamine	621647	mg kg-¹	N	
	Hexachloroethane	67721	mg kg-¹	N	
	Nitrobenzene	98953	mg kg-¹	N	
	Isophorone	78591	mg kg-¹	N	
	2-Nitrophenol	88755	mg kg-¹	N	
	2,4-Dimethylphenol	105679	mg kg-¹	N	
	bis(2-Chloroethoxy)methane	111911	mg kg-¹	N	
	2,4-Dichlorophenol	120832	mg kg-¹	N	
	1,2,4-Trichlorobenzene	120821	mg kg-¹	N	
	Naphthalene	91203	mg kg-¹	N	
	4-Chloroaniline	106478	mg kg-¹	N	
	Hexachlorobutadiene	87683	mg kg-¹	N	
	4-Chloro-3-methylphenol	59507	mg kg-¹	N	
	2-Methylnaphthalene	91576	mg kg-¹	N	
	Hexachlorocyclopentadiene	77474	mg kg-¹	N	
	2,4,6-Trichlorophenol	88062	mg kg-¹	N	
	2,4,5-Trichlorophenol	95954	mg kg-¹	N	
	2-Chloronaphthalene	91587	mg kg-¹	N	
	2-Nitroaniline	88744	mg kg-¹	N	
	Dimethylphthalate	131113	mg kg-¹	N	
	2,6-Dinitrotoluene	606202	mg kg-¹	N	
	Acenaphthylene	208968	mg kg-¹	N	
	3-Nitroaniline	99092	mg kg-¹	N	
	Acenaphthene	83329	mg kg-¹	N	
	Dibenzofuran	132649	mg kg-¹	N	
	2,4-Dinitrotoluene	121142	mg kg-¹	N	
	Diethylphthalate	84662	mg kg-¹	N	
	Fluorene	86737	mg kg-¹	N	
	4-Chlorophenylether	7005723	mg kg-¹	N	
	4-Nitroaniline	100016	mg kg-¹	N	

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Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

FAO Robert Serjeant

LABORATORY TEST REPORT

Chemtest

Report Date
06 May 2009

Results of analysis of 13 samples
received 29 April 2009

LE10104 - Lostock Works, Cheshire

					76255							
					AE00015	AE00016	AE00017	AE00018	AE00019	AE00020	AE00021	AE00022
					BH19	BH19	WS8	WS8	WS1	WS1	BH3	BH3
					1.6	4.2	0.6	2.1	1.2	4.6	0.3	3.6
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2790	2-Methyl-4,6-dinitrophenol	534521	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	Azobenzene	103333	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	4-Bromophenylphenylether	101553	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	Hexachlorobenzene	118741	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	Pentachlorophenol	87865	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	Phenanthrene	85018	mg kg-¹	N	23	<0.5			18	<0.5		
	Anthracene	120127	mg kg-¹	N	5.2	<0.5			5.4	<0.5		
	Carbazole	86748	mg kg-¹	N	1.3	<0.5			1.4	<0.5		
	Di-n-butylphthalate	84742	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	Fluoranthene	206440	mg kg-¹	N	27	<0.5			29	<0.5		
	Pyrene	129000	mg kg-¹	N	21	<0.5			23	<0.5		
	Butylbenzylphthalate	85687	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	Benzo[a]anthracene	56553	mg kg-¹	N	11	<0.5			15	<0.5		
	Chrysene	218019	mg kg-¹	N	9.2	<0.5			10	<0.5		
	bis(2-Ethylhexyl)phthalate	117817	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	Di-n-octylphthalate	117840	mg kg-¹	N	<0.5	<0.5			<0.5	<0.5		
	Benzo[b]fluoranthene	205992	mg kg-¹	N	11	<0.5			12	<0.5		
	Benzo[k]fluoranthene	207089	mg kg-¹	N	3.7	<0.5			3.7	<0.5		
	Benzo[a]pyrene	50328	mg kg-¹	N	8.7	<0.5			9.6	<0.5		
	Indeno[1,2,3-cd]pyrene	193395	mg kg-¹	N	3.9	<0.5			3.5	<0.5		
	Dibenzo[a,h]anthracene	53703	mg kg-¹	N	0.98	<0.5			1.2	<0.5		
	Benzo[g,h,i]perylene	191242	mg kg-¹	N	4.2	<0.5			3.5	<0.5		
2792	Tentatively Identified Compounds		mg kg-¹		none detected	none detected			none detected	none detected		
2800	Naphthalene	91203	mg kg-¹	M	0.8	<0.1	52	<0.1	1.6	<0.1	0.5	<0.1
	Acenaphthylene	208968	mg kg-¹	N	1.4	<0.1	1.8	<0.1	0.9	<0.1	0.3	<0.1
	Acenaphthene	83329	mg kg-¹	M	0.4	<0.1	8.5	<0.1	0.2	<0.1	0.3	<0.1
	Fluorene	86737	mg kg-¹	M	2.2	<0.1	8.4	<0.1	0.7	<0.1	0.4	<0.1
	Phenanthrene	85018	mg kg-¹	M	18	1.5	70	0.1	12	0.1	5.5	<0.1
	Anthracene	120127	mg kg-¹	M	4.3	0.3	14	<0.1	3.2	<0.1	1.2	<0.1
	Fluoranthene	206440	mg kg-¹	M	23	2.3	70	0.2	21	0.4	8.5	0.3
	Pyrene	129000	mg kg-¹	M	18	1.7	67	0.2	18	0.3	7.3	0.2

All tests undertaken between 29-Apr-2009 and 6-May-2009

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

LABORATORY TEST REPORT

Chemtest

Report Date
06 May 2009

Results of analysis of 13 samples
received 29 April 2009

FAO Robert Serjeant

LE10104 - Lostock Works, Cheshire

					76255
					AE00023
					WS11
					0.2
					SOIL
2790	2-Methyl-4,6-dinitrophenol	534521	mg kg-¹	N	
	Azobenzene	103333	mg kg-¹	N	
	4-Bromophenylphenylether	101553	mg kg-¹	N	
	Hexachlorobenzene	118741	mg kg-¹	N	
	Pentachlorophenol	87865	mg kg-¹	N	
	Phenanthrene	85018	mg kg-¹	N	
	Anthracene	120127	mg kg-¹	N	
	Carbazole	86748	mg kg-¹	N	
	Di-n-butylphthalate	84742	mg kg-¹	N	
	Fluoranthene	206440	mg kg-¹	N	
	Pyrene	129000	mg kg-¹	N	
	Butylbenzylphthalate	85687	mg kg-¹	N	
	Benzo[a]anthracene	56553	mg kg-¹	N	
	Chrysene	218019	mg kg-¹	N	
	bis(2-Ethylhexyl)phthalate	117817	mg kg-¹	N	
	Di-n-octylphthalate	117840	mg kg-¹	N	
	Benzo[b]fluoranthene	205992	mg kg-¹	N	
	Benzo[k]fluoranthene	207089	mg kg-¹	N	
	Benzo[a]pyrene	50328	mg kg-¹	N	
	Indeno[1,2,3-cd]pyrene	193395	mg kg-¹	N	
	Dibenzo[a,h]anthracene	53703	mg kg-¹	N	
	Benzo[g,h,i]perylene	191242	mg kg-¹	N	
2792	Tentatively Identified Compounds		mg kg-¹		
2800	Naphthalene	91203	mg kg-¹	M	<0.1
	Acenaphthylene	208968	mg kg-¹	N	<0.1
	Acenaphthene	83329	mg kg-¹	M	<0.1
	Fluorene	86737	mg kg-¹	M	<0.1
	Phenanthrene	85018	mg kg-¹	M	<0.1
	Anthracene	120127	mg kg-¹	M	<0.1
	Fluoranthene	206440	mg kg-¹	M	0.2
	Pyrene	129000	mg kg-¹	M	0.2

All tests undertaken between 29-Apr-2009 and 6-May-2009

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					76255							
					AE00015	AE00016	AE00017	AE00018	AE00019	AE00020	AE00021	AE00022
					BH19	BH19	WS8	WS8	WS1	WS1	BH3	BH3
					1.6	4.2	0.6	2.1	1.2	4.6	0.3	3.6
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2800	Benzo[a]anthracene	56553	mg kg-¹	M	9.7	0.8	39	0.2	12	0.2	4.1	<0.1
	Chrysene	218019	mg kg-¹	M	8.9	1	38	0.3	11	0.2	4.5	0.1
	Benzo[b]fluoranthene	205992	mg kg-¹	M	11	1.1	43	0.3	13	0.2	5.6	0.1
	Benzo[k]fluoranthene	207089	mg kg-¹	N	2.9	0.3	11	<0.1	3.7	<0.1	1.6	<0.1
	Benzo[a]pyrene	50328	mg kg-¹	M	7.4	0.7	33	0.1	9.7	0.1	3.9	<0.1
	Dibenzo[a,h]anthracene	53703	mg kg-¹	N	0.7	<0.1	5.6	<0.1	1.2	<0.1	0.3	<0.1
	Indeno[1,2,3-cd]pyrene	193395	mg kg-¹	M	3.7	0.2	15	<0.1	4.7	<0.1	2	<0.1
	Benzo[g,h,i]perylene	191242	mg kg-¹	M	4.5	0.2	19	<0.1	5.2	<0.1	2.2	<0.1
	Total (of 16) PAHs		mg kg-¹	N	120	10	500	<2	120	<2	48	<2
2010	pH		-	M	7.6	8.2	7.7	8.4	8.1	8.0	7.6	7.9
2030	Moisture		%	n/a	13.6	11.7	17.6	12.5	18.1	10.6	9.88	19.3
	Stone content (as received)		%	n/a	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2140	Soil colour			n/a	brown	brown	brown	brown	brown	brown	brown	brown
	Soil texture			n/a	clay	clay	sand	clay	sand	clay	sand	clay
	Other material			n/a	none	none	stones	none	stones	none	stones	none
2186	Asbestos Containing Material		-	N	not found	not found			not found	not found		

All tests undertaken between 29-Apr-2009 and 6-May-2009
* Accreditation status
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Pinxton
Nottinghamshire
NG16 6JA

FAO Robert Serjeant

LABORATORY TEST REPORT

Chemtest

Report Date
06 May 2009

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received 29 April 2009

LE10104 - Lostock Works, Cheshire

					76255
					AE00023
					WS11
					0.2
					SOIL
2800	Benzo[a]anthracene	56553	mg kg-¹	M	<0.1
	Chrysene	218019	mg kg-¹	M	<0.1
	Benzo[b]fluoranthene	205992	mg kg-¹	M	<0.1
	Benzo[k]fluoranthene	207089	mg kg-¹	N	<0.1
	Benzo[a]pyrene	50328	mg kg-¹	M	<0.1
	Dibenzo[a,h]anthracene	53703	mg kg-¹	N	<0.1
	Indeno[1,2,3-cd]pyrene	193395	mg kg-¹	M	<0.1
	Benzo[g,h,i]perylene	191242	mg kg-¹	M	<0.1
	Total (of 16) PAHs		mg kg-¹	N	<2
2010	pH		-	M	9.0
2030	Moisture		%	n/a	7.34
	Stone content (as received)		%	n/a	<0.02
2140	Soil colour			n/a	brown
	Soil texture			n/a	sand
	Other material			n/a	stones
2186	Asbestos Containing Material		-	N	

All tests undertaken between 29-Apr-2009 and 6-May-2009

This report should be interpreted in conjunction with the notes on the accompanying cover page

Chemtest
The right chemistry to deliver results

Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070

Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

FAO Andy Johnston
30 April 2009

Dear Andy Johnston

Test Report Number **94530**
Your Project Reference **LE10104 - Lostock Works, Cheshire**

Please find enclosed the results of analysis for the samples received 22 April 2009.

All soil samples will be retained for a period of one month and all water samples will be retained for 7 days following the date of the test report. Should you require an extended retention period then please detail your requirements in an email to customerservices@chemtest.co.uk. Please be aware that charges may be applicable for extended sample storage.

If you require any further assistance, please do not hesitate to contact the Customer Services team.

Yours sincerely

K T Jones

Authorised Signatory

☐ Darrell Hall	Laboratory Manager
☐ Phil Hellier	Operations Director
☑ Keith Jones	Technical Development Manager
☐ John Crawford	Quality Manager
☐ Malcolm Avis	Technical Director

UKAS TESTING
2183

MCERTS

Notes to accompany report:
- *The sign < means 'less than'*
- *Tests marked 'U' hold UKAS accreditation*
- *Tests marked 'M' hold MCertS (and UKAS) accreditation*
- *Tests marked 'N' do not currently hold UKAS accreditation*
- *Tests marked 'S' were subcontracted to an approved laboratory*
- *n/e means 'not evaluated'*
- *i/s means 'insufficient sample'*
- *u/s means 'unsuitable sample'*
- *Comments or interpretations are outside of the scope of UKAS accreditation*
- *The results relate only to the items tested*
- *Stones represent the quantity of material removed prior to analysis*
- *All results are expressed on a dry weight basis*
- *The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, phenols*
- *For all other tests the samples were dried at < 37°C prior to analysis*
- *Uncertainties of measurement for the determinands tested are available upon request*
- *Soil descriptions, including colour and texture, are beyond the scope of MCertS accreditation*

Test Report 94530 Cover Sheet

Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

FAO Andy Johnston

LABORATORY TEST REPORT

Chemtest

Results of analysis of 39 samples received 22 April 2009

Report Date 30 April 2009

LE10104 - Lostock Works, Cheshire

Login Batch No					**94530**							
Chemtest LIMS ID					AD98221	AD98222	AD98223	AD98224	AD98225	AD98226	AD98227	AD98228
Sample ID					TP3	TP1	TP4	BH5	WS2	WS9	BH19	TP12
Sample No												
Depth					0.5	0.4	0.4	2.1	0.7	0.3	0.5	1.6
Matrix					*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*
SOP↓	Determinand↓	CAS No↓	Units↓	*								
1010	pH	PH	-	U	7.1	7.5	5.1	7.4	7.9	7.6	7.7	11.5
1450	Arsenic	7440382	µg l-¹	U	670	260	26000	210	280	420	67	2.7
	Cadmium	7440439	µg l-¹	U	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chromium	7440473	µg l-¹	U	4.5	1.4	8.2	2.1	3.2	2.5	5.0	23
	Copper	7440508	µg l-¹	U	4.9	6.3	5.9	5.3	4.6	6.0	15	15
	Lead	7439921	µg l-¹	U	4.7	9.2	1.7	6.8	<1	4.0	130	1.0
	Mercury	7439976	µg l-¹	U	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Nickel	7440020	µg l-¹	U	72	20	43	11	4.0	5.3	5.2	16
	Selenium	7782492	µg l-¹	U	11	59	400	9.8	7.9	27	6.7	4.1
	Zinc	7440666	µg l-¹	U	17	58	60	27	17	20	26	3.6
1675	TPH aliphatic >C5-C6		µg l-¹	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	TPH aliphatic >C6-C8		µg l-¹	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	TPH aliphatic >C8-C10		µg l-¹	N	<0.1	<0.1	22	<0.1	<0.1	<0.1	2.2	<0.1
	TPH aliphatic >C10-C12		µg l-¹	N	<0.1	<0.1	27	<0.1	<0.1	<0.1	370	<0.1
	TPH aliphatic >C12-C16		µg l-¹	N	<0.1	<0.1	95	<0.1	<0.1	<0.1	190	<0.1
	TPH aliphatic >C16-C21		µg l-¹	N	<0.1	<0.1	46	<0.1	<0.1	<0.1	120	<0.1
	TPH aliphatic >C21-C35		µg l-¹	N	<0.1	<0.1	4.9	<0.1	<0.1	<0.1	37	<0.1
	TPH aromatic >C5-C7		µg l-¹	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	TPH aromatic >C7-C8		µg l-¹	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	TPH aromatic >C8-C10		µg l-¹	N	<0.1	<0.1	19	<0.1	<0.1	<0.1	7.5	<0.1
	TPH aromatic >C10-C12		µg l-¹	N	<0.1	<0.1	750	<0.1	<0.1	<0.1	600	<0.1
	TPH aromatic >C12-C16		µg l-¹	N	<0.1	<0.1	440	<0.1	<0.1	<0.1	750	<0.1
	TPH aromatic >C16-C21		µg l-¹	N	<0.1	<0.1	290	<0.1	<0.1	<0.1	450	<0.1
	TPH aromatic >C21-C35		µg l-¹	N	<0.1	<0.1	110	<0.1	<0.1	<0.1	160	<0.1
	Total Petroleum Hydrocarbons		µg l-¹	N	<10	<10	1800	<10	<10	<10	2700	<10
1700	Naphthalene	91203	µg l-¹	N	<0.01	<0.01	598.8	<0.01	<0.01	<0.01	278.7	<0.01
	Acenaphthylene	208968	µg l-¹	N	<0.01	<0.01	6.35	<0.01	<0.01	<0.01	50.47	<0.01
	Acenaphthene	83329	µg l-¹	N	<0.01	<0.01	2.39	<0.01	<0.01	<0.01	30.34	<0.01
	Fluorene	86737	µg l-¹	N	<0.01	<0.01	5.6	<0.01	<0.01	<0.01	55.66	<0.01
	Phenanthrene	85018	µg l-¹	N	<0.01	<0.01	10.38	<0.01	<0.01	<0.01	107.5	<0.01

All tests undertaken between 22-Apr-2009 and 30-Apr-2009

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LABORATORY TEST REPORT

Chemtest

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30 April 2009

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received 22 April 2009

FAO Andy Johnston

LE10104 - Lostock Works, Cheshire

Login Batch No					**94530**
Chemtest LIMS ID					AD98229
Sample ID					TP13
Sample No					
Depth					0.3
Matrix					*LEACHATE*
SOP↓	Determinand↓	CAS No↓	Units↓		
1010	pH	PH	-	U	8.9
1450	Arsenic	7440382	µg l-¹	U	6.0
	Cadmium	7440439	µg l-¹	U	<0.5
	Chromium	7440473	µg l-¹	U	3.7
	Copper	7440508	µg l-¹	U	1.6
	Lead	7439921	µg l-¹	U	<1
	Mercury	7439976	µg l-¹	U	<0.5
	Nickel	7440020	µg l-¹	U	1.5
	Selenium	7782492	µg l-¹	U	<1
	Zinc	7440666	µg l-¹	U	<1
1675	TPH aliphatic >C5-C6		µg l-¹	N	<0.1
	TPH aliphatic >C6-C8		µg l-¹	N	<0.1
	TPH aliphatic >C8-C10		µg l-¹	N	<0.1
	TPH aliphatic >C10-C12		µg l-¹	N	<0.1
	TPH aliphatic >C12-C16		µg l-¹	N	<0.1
	TPH aliphatic >C16-C21		µg l-¹	N	<0.1
	TPH aliphatic >C21-C35		µg l-¹	N	<0.1
	TPH aromatic >C5-C7		µg l-¹	N	<0.1
	TPH aromatic >C7-C8		µg l-¹	N	<0.1
	TPH aromatic >C8-C10		µg l-¹	N	<0.1
	TPH aromatic >C10-C12		µg l-¹	N	<0.1
	TPH aromatic >C12-C16		µg l-¹	N	<0.1
	TPH aromatic >C16-C21		µg l-¹	N	<0.1
	TPH aromatic >C21-C35		µg l-¹	N	<0.1
	Total Petroleum Hydrocarbons		µg l-¹	N	<10
1700	Naphthalene	91203	µg l-¹	N	<0.01
	Acenaphthylene	208968	µg l-¹	N	<0.01
	Acenaphthene	83329	µg l-¹	N	<0.01
	Fluorene	86737	µg l-¹	N	<0.01
	Phenanthrene	85018	µg l-¹	N	<0.01

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LE10104 - Lostock Works, Cheshire

					94530							
					AD98221	AD98222	AD98223	AD98224	AD98225	AD98226	AD98227	AD98228
					TP3	TP1	TP4	BH5	WS2	WS9	BH19	TP12
					0.5	0.4	0.4	2.1	0.7	0.3	0.5	1.6
					LEACHATE	*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*
1700	Anthracene	120127	µg l^{-1}	N	<0.01	<0.01	6.37	<0.01	<0.01	<0.01	34.75	<0.01
	Fluoranthene	206440	µg l^{-1}	N	<0.01	<0.01	12.52	<0.01	<0.01	<0.01	60.88	<0.01
	Pyrene	129000	µg l^{-1}	N	<0.01	<0.01	6.02	<0.01	<0.01	<0.01	47.09	<0.01
	Benzo[a]anthracene	56553	µg l^{-1}	N	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	13.38	<0.01
	Chrysene	218019	µg l^{-1}	N	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	10.57	<0.01
	Benzo[b]fluoranthene	205992	µg l^{-1}	N	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Benzo[k]fluoranthene	207089	µg l^{-1}	N	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Benzo[a]pyrene	50328	µg l^{-1}	N	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Dibenzo[a,h]anthracene	53703	µg l^{-1}	N	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Indeno[1,2,3-cd]pyrene	193395	µg l^{-1}	N	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Benzo[g,h,i]perylene	191242	µg l^{-1}	N	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Total (of 16) PAHs		µg l^{-1}	N	<0.2	<0.2	648.4	<0.2	<0.2	<0.2	689.3	<0.2
1760	Dichlorodifluoromethane	75718	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	<1	<1
	Chloromethane	74873	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	<1	<1
	Vinyl chloride	75014	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	<1	<1
	Bromomethane	74839	µg l^{-1}	U	<20	<20	<20	<20	<20	<20	<20	<20
	Chloroethane	75003	µg l^{-1}	U	<2	<2	<2	<2	<2	<2	<2	<2
	Trichlorofluoromethane	75694	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	<1	<1
	1,1-Dichloroethene	75354	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	<1	<1
	Dichloromethane	75092	µg l^{-1}	U	ne	ne	ne	ne	ne	ne	ne	ne
	trans-1,2-Dichloroethene	156605	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	<1	<1
	1,1-Dichloroethane	75343	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	<1	<1
	cis-1,2-Dichloroethene	156592	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	<1	<1
	Bromochloromethane	74975	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	<1	<1
	Trichloromethane	67663	µg l^{-1}	U	<1	2.2	34	<1	<1	<1	<1	<1
	1,1,1-Trichloroethane	71556	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	<1	<1
	Tetrachloromethane	56235	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	<1	<1
	1,1-Dichloropropene	563586	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	<1	<1
	Benzene	71432	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	6.1	<1
	1,2-Dichloroethane	107062	µg l^{-1}	U	<2	<2	<2	<2	<2	<2	<2	<2
	Trichloroethene	79016	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	<1	<1

All tests undertaken between 22-Apr-2009 and 30-Apr-2009

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

FAO Andy Johnston

LABORATORY TEST REPORT

Chemtest

Results of analysis of 39 samples received 22 April 2009

Report Date 30 April 2009

LE10104 - Lostock Works, Cheshire

					94530
					AD98229
					TP13
					0.3
					LEACHATE
1700	Anthracene	120127	µg l-1	N	<0.01
	Fluoranthene	206440	µg l-1	N	<0.01
	Pyrene	129000	µg l-1	N	<0.01
	Benzo[a]anthracene	56553	µg l-1	N	<0.01
	Chrysene	218019	µg l-1	N	<0.01
	Benzo[b]fluoranthene	205992	µg l-1	N	<0.01
	Benzo[k]fluoranthene	207089	µg l-1	N	<0.01
	Benzo[a]pyrene	50328	µg l-1	N	<0.01
	Dibenzo[a,h]anthracene	53703	µg l-1	N	<0.01
	Indeno[1,2,3-cd]pyrene	193395	µg l-1	N	<0.01
	Benzo[g,h,i]perylene	191242	µg l-1	N	<0.01
	Total (of 16) PAHs		µg l-1	N	<0.2
1760	Dichlorodifluoromethane	75718	µg l-1	U	<1
	Chloromethane	74873	µg l-1	U	<1
	Vinyl chloride	75014	µg l-1	U	<1
	Bromomethane	74839	µg l-1	U	<20
	Chloroethane	75003	µg l-1	U	<2
	Trichlorofluoromethane	75694	µg l-1	U	<1
	1,1-Dichloroethene	75354	µg l-1	U	<1
	Dichloromethane	75092	µg l-1	U	ne
	trans-1,2-Dichloroethene	156605	µg l-1	U	<1
	1,1-Dichloroethane	75343	µg l-1	U	<1
	cis-1,2-Dichloroethene	156592	µg l-1	U	<1
	Bromochloromethane	74975	µg l-1	U	<1
	Trichloromethane	67663	µg l-1	U	<1
	1,1,1-Trichloroethane	71556	µg l-1	U	<1
	Tetrachloromethane	56235	µg l-1	U	<1
	1,1-Dichloropropene	563586	µg l-1	U	<1
	Benzene	71432	µg l-1	U	<1
	1,2-Dichloroethane	107062	µg l-1	U	<2
	Trichloroethene	79016	µg l-1	U	<1

All tests undertaken between 22-Apr-2009 and 30-Apr-2009

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LABORATORY TEST REPORT

Chemtest

Report Date
30 April 2009

Results of analysis of 39 samples
received 22 April 2009

LE10104 - Lostock Works, Cheshire

					94530							
					AD98221	AD98222	AD98223	AD98224	AD98225	AD98226	AD98227	AD98228
					TP3	TP1	TP4	BH5	WS2	WS9	BH19	TP12
					0.5	0.4	0.4	2.1	0.7	0.3	0.5	1.6
					LEACHATE	*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*
1760	1,2-Dichloropropane	78875	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	<1	<1
	Dibromomethane	74953	µg l^{-1}	U	<10	<10	<10	<10	<10	<10	<10	<10
	Bromodichloromethane	75274	µg l^{-1}	U	<5	<5	<5	<5	<5	<5	<5	<5
	cis-1,3-Dichloropropene	10061015	µg l^{-1}	U	<10	<10	<10	<10	<10	<10	<10	<10
	Toluene	108883	µg l^{-1}	U	<1	<1	1.1	<1	<1	<1	2.4	<1
	trans-1,3-Dichloropropene	10061026	µg l^{-1}	U	<10	<10	<10	<10	<10	<10	<10	<10
	1,1,2-Trichloroethane	79005	µg l^{-1}	U	<10	<10	<10	<10	<10	<10	<10	<10
	Tetrachloroethene	127184	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	<1	<1
	1,3-Dichloropropane	142289	µg l^{-1}	U	<2	<2	<2	<2	<2	<2	<2	<2
	Dibromochloromethane	124481	µg l^{-1}	U	<10	<10	<10	<10	<10	<10	<10	<10
	1,2-Dibromoethane	106934	µg l^{-1}	U	<5	<5	<5	<5	<5	<5	<5	<5
	Chlorobenzene	108907	µg l^{-1}	U	<1	<1	3.1	<1	<1	<1	<1	<1
	1,1,1,2-Tetrachloroethane	630206	µg l^{-1}	U	<2	<2	<2	<2	<2	<2	<2	<2
	Ethylbenzene	100414	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	<1	<1
	m- & p-Xylene	1330207	µg l^{-1}	U	<1	<1	5.9	<1	<1	<1	1.8	<1
	o-Xylene	95476	µg l^{-1}	U	<1	<1	4.7	<1	<1	<1	1.4	<1
	Styrene	100425	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	<1	<1
	Tribromomethane	75252	µg l^{-1}	U	<10	<10	<10	<10	<10	<10	<10	<10
	Isopropylbenzene	98828	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	<1	<1
	Bromobenzene	108861	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	<1	<1
	1,1,2,2-Tetrachloroethane	79345	µg l^{-1}	U	<10	<10	<10	<10	<10	<10	<10	<10
	1,2,3-Trichloropropane	96184	µg l^{-1}	U	<50	<50	<50	<50	<50	<50	<50	<50
	n-Propylbenzene	103651	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	<1	<1
	2-Chlorotoluene	95498	µg l^{-1}	U	<1	<1	10	<1	<1	<1	<1	<1
	1,3,5-Trimethylbenzene	108678	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	1	<1
	4-Chlorotoluene	106434	µg l^{-1}	U	<1	<1	4.7	<1	<1	<1	<1	<1
	tert-Butylbenzene	98066	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	<1	<1
	1,2,4-Trimethylbenzene	95636	µg l^{-1}	U	<1	<1	8.8	<1	<1	<1	1.5	<1
	sec-Butylbenzene	135988	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	<1	<1
	1,3-Dichlorobenzene	541731	µg l^{-1}	U	<1	<1	16	<1	<1	<1	<1	<1
	4-Isopropyltoluene	99876	µg l^{-1}	U	<1	<1	<1	<1	<1	<1	<1	<1

All tests undertaken between 22-Apr-2009 and 30-Apr-2009

* Accreditation status

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Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

FAO Andy Johnston

LABORATORY TEST REPORT

Chemtest

Report Date
30 April 2009

Results of analysis of 39 samples
received 22 April 2009

LE10104 - Lostock Works, Cheshire

					94530
					AD98229
					TP13
					0.3
					LEACHATE
1760	1,2-Dichloropropane	78875	µg l^{-1}	U	<1
	Dibromomethane	74953	µg l^{-1}	U	<10
	Bromodichloromethane	75274	µg l^{-1}	U	<5
	cis-1,3-Dichloropropene	10061015	µg l^{-1}	U	<10
	Toluene	108883	µg l^{-1}	U	<1
	trans-1,3-Dichloropropene	10061026	µg l^{-1}	U	<10
	1,1,2-Trichloroethane	79005	µg l^{-1}	U	<10
	Tetrachloroethene	127184	µg l^{-1}	U	<1
	1,3-Dichloropropane	142289	µg l^{-1}	U	<2
	Dibromochloromethane	124481	µg l^{-1}	U	<10
	1,2-Dibromoethane	106934	µg l^{-1}	U	<5
	Chlorobenzene	108907	µg l^{-1}	U	<1
	1,1,1,2-Tetrachloroethane	630206	µg l^{-1}	U	<2
	Ethylbenzene	100414	µg l^{-1}	U	<1
	m- & p-Xylene	1330207	µg l^{-1}	U	<1
	o-Xylene	95476	µg l^{-1}	U	<1
	Styrene	100425	µg l^{-1}	U	<1
	Tribromomethane	75252	µg l^{-1}	U	<10
	Isopropylbenzene	98828	µg l^{-1}	U	<1
	Bromobenzene	108861	µg l^{-1}	U	<1
	1,1,2,2-Tetrachloroethane	79345	µg l^{-1}	U	<10
	1,2,3-Trichloropropane	96184	µg l^{-1}	U	<50
	n-Propylbenzene	103651	µg l^{-1}	U	<1
	2-Chlorotoluene	95498	µg l^{-1}	U	<1
	1,3,5-Trimethylbenzene	108678	µg l^{-1}	U	<1
	4-Chlorotoluene	106434	µg l^{-1}	U	<1
	tert-Butylbenzene	98066	µg l^{-1}	U	<1
	1,2,4-Trimethylbenzene	95636	µg l^{-1}	U	<1
	sec-Butylbenzene	135988	µg l^{-1}	U	<1
	1,3-Dichlorobenzene	541731	µg l^{-1}	U	<1
	4-Isopropyltoluene	99876	µg l^{-1}	U	<1

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LABORATORY TEST REPORT

Chemtest

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Report Date 30 April 2009

LE10104 - Lostock Works, Cheshire

					94530							
					AD98221	AD98222	AD98223	AD98224	AD98225	AD98226	AD98227	AD98228
					TP3	TP1	TP4	BH5	WS2	WS9	BH19	TP12
					0.5	0.4	0.4	2.1	0.7	0.3	0.5	1.6
					LEACHATE	*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*
1760	1,4-Dichlorobenzene	106467	µg l-¹	U	<1	<1	<1	<1	<1	<1	<1	<1
	n-Butylbenzene	104518	µg l-¹	U	<1	<1	<1	<1	<1	<1	<1	<1
	1,2-Dichlorobenzene	95501	µg l-¹	U	<1	<1	12	<1	<1	<1	<1	<1
	1,2-Dibromo-3-chloropropane	96128	µg l-¹	U	<50	<50	<50	<50	<50	<50	<50	<50
	1,2,4-Trichlorobenzene	120821	µg l-¹	U	<1	<1	<1	<1	<1	<1	<1	<1
	Hexachlorobutadiene	87683	µg l-¹	U	<1	<1	<1	<1	<1	<1	<1	<1
	1,2,3-Trichlorobenzene	87616	µg l-¹	U	<2	<2	<2	<2	<2	<2	<2	<2
1762	Tentatively Identified Compounds		µg l-¹		None Detected	None Detected	None Detected	None Detected	None Detected	None Detected	None Detected	None Detected
1790	N-Nitrosodimethylamine	62759	µg l-¹	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Phenol	108952	µg l-¹	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	bis(2-Chloroethyl)ether	111444	µg l-¹	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	2-Chlorophenol	95578	µg l-¹	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	1,3-Dichlorobenzene	541731	µg l-¹	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	1,4-Dichlorobenzene	106467	µg l-¹	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	1,2-Dichlorobenzene	95501	µg l-¹	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	2-Methylphenol	95487	µg l-¹	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	bis(2-Chloroisopropyl)ether	108601	µg l-¹	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	4-Methylphenol	106445	µg l-¹	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	N-Nitrosodi-n-propylamine	621647	µg l-¹	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Hexachloroethane	67721	µg l-¹	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Nitrobenzene	98953	µg l-¹	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Isophorone	78591	µg l-¹	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	2-Nitrophenol	88755	µg l-¹	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	2,4-Dimethylphenol	105679	µg l-¹	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	bis(2-Chloroethoxy)methane	111911	µg l-¹	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	2,4-Dichlorophenol	120832	µg l-¹	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	1,2,4-Trichlorobenzene	120821	µg l-¹	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Naphthalene	91203	µg l-¹	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	4-Chloroaniline	106478	µg l-¹	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Hexachlorobutadiene	87683	µg l-¹	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	4-Chloro-3-methylphenol	59507	µg l-¹	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

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LABORATORY TEST REPORT

Chemtest

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Report Date 30 April 2009

LE10104 - Lostock Works, Cheshire

					94530
					AD98229
					TP13
					0.3
					LEACHATE
1760	1,4-Dichlorobenzene	106467	µg l-1	U	<1
	n-Butylbenzene	104518	µg l-1	U	<1
	1,2-Dichlorobenzene	95501	µg l-1	U	<1
	1,2-Dibromo-3-chloropropane	96128	µg l-1	U	<50
	1,2,4-Trichlorobenzene	120821	µg l-1	U	<1
	Hexachlorobutadiene	87683	µg l-1	U	<1
	1,2,3-Trichlorobenzene	87616	µg l-1	U	<2
1762	Tentatively Identified Compounds		µg l-1		None Detected
1790	N-Nitrosodimethylamine	62759	µg l-1	N	<0.05
	Phenol	108952	µg l-1	N	<0.05
	bis(2-Chloroethyl)ether	111444	µg l-1	N	<0.05
	2-Chlorophenol	95578	µg l-1	N	<0.05
	1,3-Dichlorobenzene	541731	µg l-1	N	<0.05
	1,4-Dichlorobenzene	106467	µg l-1	N	<0.05
	1,2-Dichlorobenzene	95501	µg l-1	N	<0.05
	2-Methylphenol	95487	µg l-1	N	<0.05
	bis(2-Chloroisopropyl)ether	108601	µg l-1	N	<0.05
	4-Methylphenol	106445	µg l-1	N	<0.05
	N-Nitrosodi-n-propylamine	621647	µg l-1	N	<0.05
	Hexachloroethane	67721	µg l-1	N	<0.05
	Nitrobenzene	98953	µg l-1	N	<0.05
	Isophorone	78591	µg l-1	N	<0.05
	2-Nitrophenol	88755	µg l-1	N	<0.05
	2,4-Dimethylphenol	105679	µg l-1	N	<0.05
	bis(2-Chloroethoxy)methane	111911	µg l-1	N	<0.05
	2,4-Dichlorophenol	120832	µg l-1	N	<0.05
	1,2,4-Trichlorobenzene	120821	µg l-1	N	<0.05
	Naphthalene	91203	µg l-1	N	<0.05
	4-Chloroaniline	106478	µg l-1	N	<0.05
	Hexachlorobutadiene	87683	µg l-1	N	<0.05
	4-Chloro-3-methylphenol	59507	µg l-1	N	<0.05

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LE10104 - Lostock Works, Cheshire

					94530							
					AD98221	AD98222	AD98223	AD98224	AD98225	AD98226	AD98227	AD98228
					TP3	TP1	TP4	BH5	WS2	WS9	BH19	TP12
					0.5	0.4	0.4	2.1	0.7	0.3	0.5	1.6
					LEACHATE	*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*
1790	2-Methylnaphthalene	91576	µg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Hexachlorocyclopentadiene	77474	µg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	2,4,6-Trichlorophenol	88062	µg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	2,4,5-Trichlorophenol	95954	µg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	2-Chloronaphthalene	91587	µg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	2-Nitroaniline	88744	µg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Dimethylphthalate	131113	µg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	2,6-Dinitrotoluene	606202	µg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Acenaphthylene	208968	µg l^{-1}	N	0.52	<0.05	<0.05	<0.05	<0.05	<0.05	0.37	<0.05
	3-Nitroaniline	99092	µg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Acenaphthene	83329	µg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.44	<0.05
	Dibenzofuran	132649	µg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	2,4-Dinitrotoluene	121142	µg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Diethylphthalate	84662	µg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Fluorene	86737	µg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.40	<0.05
	4-Chlorophenylether	7005723	µg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	4-Nitroaniline	100016	µg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	2-Methyl-4,6-dinitrophenol	534521	µg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Azobenzene	103333	µg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	4-Bromophenylphenylether	101553	µg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Hexachlorobenzene	118741	µg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Pentachlorophenol	87865	µg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Phenanthrene	85018	µg l^{-1}	N	0.10	<0.05	0.50	<0.05	<0.05	<0.05	21	<0.05
	Anthracene	120127	µg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	4.9	<0.05
	Carbazole	86748	µg l^{-1}	N	<0.05	<0.05	2.3	<0.05	<0.05	<0.05	42	<0.05
	Di-n-butylphthalate	84742	µg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Fluoranthene	206440	µg l^{-1}	N	4.6	<0.05	0.24	<0.05	<0.05	<0.05	23	<0.05
	Pyrene	129000	µg l^{-1}	N	5.4	<0.05	0.12	<0.05	<0.05	<0.05	18	<0.05
	Butylbenzylphthalate	85687	µg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Benzo[a]anthracene	56553	µg l^{-1}	N	6.0	<0.05	<0.05	<0.05	<0.05	<0.05	6.8	<0.05
	Chrysene	218019	µg l^{-1}	N	7.1	<0.05	<0.05	<0.05	<0.05	<0.05	5.2	<0.05

All tests undertaken between 22-Apr-2009 and 30-Apr-2009

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

FAO Andy Johnston

LABORATORY TEST REPORT

Chemtest

Results of analysis of 39 samples
received 22 April 2009

Report Date
30 April 2009

LE10104 - Lostock Works, Cheshire

					94530
					AD98229
					TP13
					0.3
					LEACHATE
1790	2-Methylnaphthalene	91576	µg l-1	N	<0.05
	Hexachlorocyclopentadiene	77474	µg l-1	N	<0.05
	2,4,6-Trichlorophenol	88062	µg l-1	N	<0.05
	2,4,5-Trichlorophenol	95954	µg l-1	N	<0.05
	2-Chloronaphthalene	91587	µg l-1	N	<0.05
	2-Nitroaniline	88744	µg l-1	N	<0.05
	Dimethylphthalate	131113	µg l-1	N	<0.05
	2,6-Dinitrotoluene	606202	µg l-1	N	<0.05
	Acenaphthylene	208968	µg l-1	N	<0.05
	3-Nitroaniline	99092	µg l-1	N	<0.05
	Acenaphthene	83329	µg l-1	N	<0.05
	Dibenzofuran	132649	µg l-1	N	<0.05
	2,4-Dinitrotoluene	121142	µg l-1	N	<0.05
	Diethylphthalate	84662	µg l-1	N	<0.05
	Fluorene	86737	µg l-1	N	<0.05
	4-Chlorophenylether	7005723	µg l-1	N	<0.05
	4-Nitroaniline	100016	µg l-1	N	<0.05
	2-Methyl-4,6-dinitrophenol	534521	µg l-1	N	<0.05
	Azobenzene	103333	µg l-1	N	<0.05
	4-Bromophenylphenylether	101553	µg l-1	N	<0.05
	Hexachlorobenzene	118741	µg l-1	N	<0.05
	Pentachlorophenol	87865	µg l-1	N	<0.05
	Phenanthrene	85018	µg l-1	N	<0.05
	Anthracene	120127	µg l-1	N	<0.05
	Carbazole	86748	µg l-1	N	<0.05
	Di-n-butylphthalate	84742	µg l-1	N	<0.05
	Fluoranthene	206440	µg l-1	N	<0.05
	Pyrene	129000	µg l-1	N	<0.05
	Butylbenzylphthalate	85687	µg l-1	N	<0.05
	Benzo[a]anthracene	56553	µg l-1	N	<0.05
	Chrysene	218019	µg l-1	N	<0.05

All tests undertaken between 22-Apr-2009 and 30-Apr-2009

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Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

FAO Andy Johnston

LABORATORY TEST REPORT

Results of analysis of 39 samples received 22 April 2009

LE10104 - Lostock Works, Cheshire

Report Date 30 April 2009

					94530							
					AD98221	AD98222	AD98223	AD98224	AD98225	AD98226	AD98227	AD98228
					TP3	TP1	TP4	BH5	WS2	WS9	BH19	TP12
					0.5	0.4	0.4	2.1	0.7	0.3	0.5	1.6
					LEACHATE	*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*	*LEACHATE*
1790	bis(2-Ethylhexyl)phthalate	117817	μg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Di-n-octylphthalate	117840	μg l^{-1}	N	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Benzo[b]fluoranthene	205992	μg l^{-1}	N	6.2	<0.05	<0.05	<0.05	<0.05	<0.05	6.0	<0.05
	Benzo[k]fluoranthene	207089	μg l^{-1}	N	1.7	<0.05	<0.05	<0.05	<0.05	<0.05	1.6	<0.05
	Benzo[a]pyrene	50328	μg l^{-1}	N	2.7	<0.05	<0.05	<0.05	<0.05	<0.05	4.1	<0.05
	Indeno[1,2,3-cd]pyrene	193395	μg l^{-1}	N	1.3	<0.05	<0.05	<0.05	<0.05	<0.05	1.8	<0.05
	Dibenzo[a,h]anthracene	53703	μg l^{-1}	N	0.38	<0.05	<0.05	<0.05	<0.05	<0.05	0.42	<0.05
	Benzo[g,h,i]perylene	191242	μg l^{-1}	N	1.3	<0.05	<0.05	<0.05	<0.05	<0.05	1.7	<0.05
1792	9,10-anthracenedione		mg l^{-1}								0.015	
	9H-fluoren-9-one		mg l^{-1}				0.003					
	diphenyl sulfone		mg l^{-1}		0.07							
	Tentatively Identified Compounds		mg l^{-1}			Not detected		Not detected	Not detected	Not detected		Not detected
	9,10-anthracenedione		mg l^{-1}				0.006					

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LABORATORY TEST REPORT

Chemtest

Report Date
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received 22 April 2009

LE10104 - Lostock Works, Cheshire

					94530
					AD98229
					TP13
					0.3
					LEACHATE
1790	bis(2-Ethylhexyl)phthalate	117817	µg l-¹	N	<0.05
	Di-n-octylphthalate	117840	µg l-¹	N	<0.05
	Benzo[b]fluoranthene	205992	µg l-¹	N	<0.05
	Benzo[k]fluoranthene	207089	µg l-¹	N	<0.05
	Benzo[a]pyrene	50328	µg l-¹	N	<0.05
	Indeno[1,2,3-cd]pyrene	193395	µg l-¹	N	<0.05
	Dibenzo[a,h]anthracene	53703	µg l-¹	N	<0.05
	Benzo[g,h,i]perylene	191242	µg l-¹	N	<0.05
1792	9,10-anthracenedione		mg l-¹		
	9H-fluoren-9-one		mg l-¹		
	diphenyl sulfone		mg l-¹		
	Tentatively Identified Compounds		mg l-¹		Not detected
	9,10-anthracenedione		mg l-¹		

All tests undertaken between 22-Apr-2009 and 30-Apr-2009

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LABORATORY TEST REPORT

Chemtest

Report Date
30 April 2009

Results of analysis of 39 samples
received 22 April 2009

LE10104 - Lostock Works, Cheshire

Login Batch No					**94530**							
Chemtest LIMS ID					AD98191	AD98192	AD98193	AD98194	AD98195	AD98196	AD98197	AD98198
Sample ID					TP3	TP3	TP1	TP1	TP4	TP4	TP5	TP2
Sample No												
Depth					0.5	1.4	0.4	1.8	0.4	1.3	0.6	2
Matrix					*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
SOP↓	Determinand↓	CAS No↓	Units↓	*								
2450	Arsenic	7440382	mg kg^{-1}	M	200	16	4500	90	7800	520	220	39
	Cadmium	7440439	mg kg^{-1}	M	<0.1	<0.1	1.0	0.13	<0.1	<0.1	0.75	0.13
	Chromium	7440473	mg kg^{-1}	M	16	26	25	45	17	<5	25	53
	Copper	7440508	mg kg^{-1}	M	12	19	180	30	12	7.7	190	34
	Mercury	7439976	mg kg^{-1}	M	0.29	<0.1	3.8	0.15	0.36	1.5	1.0	0.22
	Nickel	7440020	mg kg^{-1}	M	110	38	56	56	22	<5	61	63
	Lead	7439921	mg kg^{-1}	M	24	7.4	1100	27	360	9.6	140	19
	Selenium	7782492	mg kg^{-1}	M	3.8	<0.2	7.9	<0.2	42	13	2.6	<0.2
	Zinc	7440666	mg kg^{-1}	M	46	55	220	83	31	31	170	83
2625	Fraction of Organic Carbon			M	0.012	0.0040	0.12	0.0068	0.0072	0.0039	0.18	0.0055
2675	TPH aliphatic >C5-C6		mg kg^{-1}	N	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		
	TPH aliphatic >C6-C8		mg kg^{-1}	N	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		
	TPH aliphatic >C8-C10		mg kg^{-1}	N	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		
	TPH aliphatic >C10-C12		mg kg^{-1}	N	< 0.1	< 0.1	21	< 0.1	< 0.1	< 0.1		
	TPH aliphatic >C12-C16		mg kg^{-1}	N	< 0.1	< 0.1	380	< 0.1	< 0.1	< 0.1		
	TPH aliphatic >C16-C21		mg kg^{-1}	N	< 0.1	< 0.1	1100	< 0.1	< 0.1	< 0.1		
	TPH aliphatic >C21-C35		mg kg^{-1}	N	< 0.1	< 0.1	1400	< 0.1	< 0.1	< 0.1		
	TPH aromatic >C5-C7		mg kg^{-1}	N	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		
	TPH aromatic >C7-C8		mg kg^{-1}	N	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		
	TPH aromatic >C8-C10		mg kg^{-1}	N	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1		
	TPH aromatic >C10-C12		mg kg^{-1}	N	< 0.1	< 0.1	2.8	< 0.1	15	< 0.1		
	TPH aromatic >C12-C16		mg kg^{-1}	N	< 0.1	< 0.1	17	< 0.1	9.0	< 0.1		
	TPH aromatic >C16-C21		mg kg^{-1}	N	< 0.1	< 0.1	19	< 0.1	5.8	< 0.1		
	TPH aromatic >C21-C35		mg kg^{-1}	N	< 0.1	< 0.1	26	< 0.1	16	< 0.1		
	Total Petroleum Hydrocarbons		mg kg^{-1}	N	< 10	< 10	2900	< 10	46	< 10		
2760	Dichlorodifluoromethane	75718	µg kg^{-1}	U	<1	<1	<1	<1	<1	<1		
	Chloromethane	74873	µg kg^{-1}	M	<1	<1	<1	<1	<1	<1		
	Vinyl chloride	75014	µg kg^{-1}	M	<1	<1	<1	<1	<1	<1		
	Bromomethane	74839	µg kg^{-1}	U	<20	<20	<20	<20	<20	<20		
	Chloroethane	75003	µg kg^{-1}	U	<2	<2	<2	<2	<2	<2		

All tests undertaken between 22-Apr-2009 and 30-Apr-2009

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Van Elle Geotechnical Division
Kirkby Lane
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NG16 6JA

FAO Andy Johnston

LABORATORY TEST REPORT

Chemtest

Results of analysis of 39 samples received 22 April 2009

Report Date 30 April 2009

LE10104 - Lostock Works, Cheshire

Login Batch No					**94530**							
Chemtest LIMS ID					AD98199	AD98200	AD98201	AD98202	AD98203	AD98204	AD98205	AD98206
Sample ID					TP6	TP6	BH5	WS4	TP8	WS7	WS6	WS2
Sample No												
Depth					0.6	3.3	2.1	0.05	0.5	0.4	0.8	0.7
Matrix					*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
SOP↓	Determinand↓	CAS No↓	Units↓									
2450	Arsenic	7440382	mg kg-¹	M	21	620	480	200	180	26	750	310
	Cadmium	7440439	mg kg-¹	M	0.14	1.2	7.5	0.15	0.52	0.40	<0.1	0.19
	Chromium	7440473	mg kg-¹	M	15	42	40	55	19	<5	24	39
	Copper	7440508	mg kg-¹	M	17	130	200	100	43	8.1	29	34
	Mercury	7439976	mg kg-¹	M	0.21	15	22	0.57	4.7	0.34	3.3	1.2
	Nickel	7440020	mg kg-¹	M	18	61	66	42	20	5.4	23	42
	Lead	7439921	mg kg-¹	M	21	730	600	58	140	81	240	67
	Selenium	7782492	mg kg-¹	M	<0.2	9.0	4.8	0.37	1.8	<0.2	8.5	1.3
	Zinc	7440666	mg kg-¹	M	90	170	240	130	59	24	53	69
2625	Fraction of Organic Carbon			M	0.0031	0.11	0.11	0.0067	0.019	0.0038	0.034	0.010
2675	TPH aliphatic >C5-C6		mg kg-¹	N			< 0.1					< 0.1
	TPH aliphatic >C6-C8		mg kg-¹	N			< 0.1					< 0.1
	TPH aliphatic >C8-C10		mg kg-¹	N			< 0.1					< 0.1
	TPH aliphatic >C10-C12		mg kg-¹	N			< 0.1					< 0.1
	TPH aliphatic >C12-C16		mg kg-¹	N			< 0.1					< 0.1
	TPH aliphatic >C16-C21		mg kg-¹	N			< 0.1					< 0.1
	TPH aliphatic >C21-C35		mg kg-¹	N			< 0.1					< 0.1
	TPH aromatic >C5-C7		mg kg-¹	N			< 0.1					< 0.1
	TPH aromatic >C7-C8		mg kg-¹	N			< 0.1					< 0.1
	TPH aromatic >C8-C10		mg kg-¹	N			< 0.1					< 0.1
	TPH aromatic >C10-C12		mg kg-¹	N			16					< 0.1
	TPH aromatic >C12-C16		mg kg-¹	N			56					1.7
	TPH aromatic >C16-C21		mg kg-¹	N			96					1.8
	TPH aromatic >C21-C35		mg kg-¹	N			300					9.0
	Total Petroleum Hydrocarbons		mg kg-¹	N			470					13
2760	Dichlorodifluoromethane	75718	µg kg-¹	U			<1					<1
	Chloromethane	74873	µg kg-¹	M			<1					<1
	Vinyl chloride	75014	µg kg-¹	M			<1					<1
	Bromomethane	74839	µg kg-¹	U			<20					<20
	Chloroethane	75003	µg kg-¹	U			<2					<2

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LABORATORY TEST REPORT

Chemtest

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LE10104 - Lostock Works, Cheshire

Login Batch No					**94530**							
Chemtest LIMS ID					AD98207	AD98208	AD98209	AD98210	AD98211	AD98212	AD98213	AD98214
Sample ID					WS3	WS3	WS5	TP7	TP7	WS9	BH19	TP10
Sample No												
Depth					0.4	2.1	0.5	0.2	0.5	0.3	0.5	0.7
Matrix					*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
SOP↓	Determinand↓	CAS No↓	Units↓									
2450	Arsenic	7440382	mg kg-¹	M	260	18	160	22	20	870	260	76
	Cadmium	7440439	mg kg-¹	M	0.30	<0.1	0.62	0.33	0.11	1.1	0.83	0.21
	Chromium	7440473	mg kg-¹	M	28	31	25	6.6	44	13	30	36
	Copper	7440508	mg kg-¹	M	52	23	190	6.4	340	32	200	42
	Mercury	7439976	mg kg-¹	M	0.82	0.13	1.1	0.24	0.11	9.8	9.8	1.3
	Nickel	7440020	mg kg-¹	M	33	36	31	13	37	39	17	31
	Lead	7439921	mg kg-¹	M	73	5.9	130	11	21	850	2600	98
	Selenium	7782492	mg kg-¹	M	3.1	<0.2	0.88	<0.2	<0.2	12	5.6	0.84
	Zinc	7440666	mg kg-¹	M	96	54	180	13	81	240	140	79
2625	Fraction of Organic Carbon			M	0.0062	0.0027	0.0077	0.0039	0.0025	0.038	0.30	0.0094
2675	TPH aliphatic >C5-C6		mg kg-¹	N						< 0.1	< 0.1	
	TPH aliphatic >C6-C8		mg kg-¹	N						< 0.1	< 0.1	
	TPH aliphatic >C8-C10		mg kg-¹	N						< 0.1	< 0.1	
	TPH aliphatic >C10-C12		mg kg-¹	N						< 0.1	< 0.1	
	TPH aliphatic >C12-C16		mg kg-¹	N						< 0.1	< 0.1	
	TPH aliphatic >C16-C21		mg kg-¹	N						< 0.1	7600	
	TPH aliphatic >C21-C35		mg kg-¹	N						< 0.1	14000	
	TPH aromatic >C5-C7		mg kg-¹	N						< 0.1	< 0.1	
	TPH aromatic >C7-C8		mg kg-¹	N						< 0.1	< 0.1	
	TPH aromatic >C8-C10		mg kg-¹	N						< 0.1	< 0.1	
	TPH aromatic >C10-C12		mg kg-¹	N						3.1	310	
	TPH aromatic >C12-C16		mg kg-¹	N						17	1300	
	TPH aromatic >C16-C21		mg kg-¹	N						50	3400	
	TPH aromatic >C21-C35		mg kg-¹	N						130	6500	
	Total Petroleum Hydrocarbons		mg kg-¹	N						200	34000	
2760	Dichlorodifluoromethane	75718	µg kg-¹	U						<1	<1	
	Chloromethane	74873	µg kg-¹	M						<1	<1	
	Vinyl chloride	75014	µg kg-¹	M						<1	<1	
	Bromomethane	74839	µg kg-¹	U						<20	<20	
	Chloroethane	75003	µg kg-¹	U						<2	<2	

All tests undertaken between 22-Apr-2009 and 30-Apr-2009

This report should be interpreted in conjunction with the notes on the accompanying cover page

Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

FAO Andy Johnston

LABORATORY TEST REPORT

Chemtest

Report Date
30 April 2009

Results of analysis of 39 samples
received 22 April 2009

LE10104 - Lostock Works, Cheshire

Login Batch No					**94530**					
Chemtest LIMS ID					AD98215	AD98216	AD98217	AD98218	AD98219	AD98220
Sample ID					TP11	TP11	TP12	TP12	TP13	TP13
Sample No										
Depth					0.5	1.2	1.6	4.3	0.3	3.2
Matrix					*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
SOP↓	Determinand↓	CAS No↓	Units↓							
2450	Arsenic	7440382	mg kg-¹	M	45	5.3	37	9.1	25	6.4
	Cadmium	7440439	mg kg-¹	M	0.45	<0.1	1.4	0.10	0.57	0.18
	Chromium	7440473	mg kg-¹	M	6.3	23	20	30	<5	29
	Copper	7440508	mg kg-¹	M	10	18	35	24	9.4	25
	Mercury	7439976	mg kg-¹	M	0.57	<0.1	0.81	<0.1	<0.1	<0.1
	Nickel	7440020	mg kg-¹	M	7.2	26	39	34	10	31
	Lead	7439921	mg kg-¹	M	59	8.7	58	10	39	10
	Selenium	7782492	mg kg-¹	M	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Zinc	7440666	mg kg-¹	M	30	56	76	70	35	83
2625	Fraction of Organic Carbon			M	0.010	0.0023	0.043	< 0.0020	0.0024	< 0.0020
2675	TPH aliphatic >C5-C6		mg kg-¹	N			< 0.1	< 0.1	< 0.1	< 0.1
	TPH aliphatic >C6-C8		mg kg-¹	N			< 0.1	< 0.1	< 0.1	< 0.1
	TPH aliphatic >C8-C10		mg kg-¹	N			< 0.1	< 0.1	< 0.1	< 0.1
	TPH aliphatic >C10-C12		mg kg-¹	N			< 0.1	< 0.1	< 0.1	< 0.1
	TPH aliphatic >C12-C16		mg kg-¹	N			< 0.1	< 0.1	< 0.1	< 0.1
	TPH aliphatic >C16-C21		mg kg-¹	N			< 0.1	< 0.1	< 0.1	< 0.1
	TPH aliphatic >C21-C35		mg kg-¹	N			< 0.1	< 0.1	< 0.1	< 0.1
	TPH aromatic >C5-C7		mg kg-¹	N			< 0.1	< 0.1	< 0.1	< 0.1
	TPH aromatic >C7-C8		mg kg-¹	N			< 0.1	< 0.1	< 0.1	< 0.1
	TPH aromatic >C8-C10		mg kg-¹	N			< 0.1	< 0.1	< 0.1	< 0.1
	TPH aromatic >C10-C12		mg kg-¹	N			< 0.1	< 0.1	< 0.1	< 0.1
	TPH aromatic >C12-C16		mg kg-¹	N			2.6	< 0.1	< 0.1	< 0.1
	TPH aromatic >C16-C21		mg kg-¹	N			5.5	< 0.1	< 0.1	< 0.1
	TPH aromatic >C21-C35		mg kg-¹	N			16	< 0.1	< 0.1	< 0.1
	Total Petroleum Hydrocarbons		mg kg-¹	N			23	< 10	< 10	< 10
2760	Dichlorodifluoromethane	75718	µg kg-¹	U			<1	<1	<1	<1
	Chloromethane	74873	µg kg-¹	M			<1	<1	<1	<1
	Vinyl chloride	75014	µg kg-¹	M			<1	<1	<1	<1
	Bromomethane	74839	µg kg-¹	U			<20	<20	<20	<20
	Chloroethane	75003	µg kg-¹	U			<2	<2	<2	<2

All tests undertaken between 22-Apr-2009 and 30-Apr-2009

This report should be interpreted in conjunction with the notes on the accompanying cover page

Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

FAO Andy Johnston

LABORATORY TEST REPORT

Chemtest

Report Date
30 April 2009

Results of analysis of 39 samples
received 22 April 2009

LE10104 - Lostock Works, Cheshire

					94530							
					AD98191	AD98192	AD98193	AD98194	AD98195	AD98196	AD98197	AD98198
					TP3	TP3	TP1	TP1	TP4	TP4	TP5	TP2
					0.5	1.4	0.4	1.8	0.4	1.3	0.6	2
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2760	Trichlorofluoromethane	75694	µg kg^{-1}	U	<1	<1	<1	<1	<1	<1		
	1,1-Dichloroethene	75354	µg kg^{-1}	U	<1	<1	<1	<1	<1	<1		
	Dichloromethane	75092	µg kg^{-1}	U	ne	ne	ne	ne	ne	ne		
	trans-1,2-Dichloroethene	156605	µg kg^{-1}	M	<1	<1	<1	<1	<1	<1		
	1,1-Dichloroethane	75343	µg kg^{-1}	M	<1	<1	<1	<1	<1	<1		
	cis-1,2-Dichloroethene	156592	µg kg^{-1}	M	<1	<1	<1	<1	<1	<1		
	Bromochloromethane	74975	µg kg^{-1}	U	<1	<1	<1	<1	<1	<1		
	Trichloromethane	67663	µg kg^{-1}	M	<1	<1	23	<1	240	4.5		
	1,1,1-Trichloroethane	71556	µg kg^{-1}	M	<1	<1	<1	<1	<1	<1		
	Tetrachloromethane	56235	µg kg^{-1}	M	<1	<1	<1	<1	49	<1		
	1,1-Dichloropropene	563586	µg kg^{-1}	U	<1	<1	<1	<1	<1	<1		
	Benzene	71432	µg kg^{-1}	M	<1	<1	1.5	<1	<1	<1		
	1,2-Dichloroethane	107062	µg kg^{-1}	M	<2	<2	<2	<2	<2	<2		
	Trichloroethene	79016	µg kg^{-1}	N	<1	<1	<1	<1	3.7	<1		
	1,2-Dichloropropane	78875	µg kg^{-1}	U	<1	<1	<1	<1	<1	<1		
	Dibromomethane	74953	µg kg^{-1}	U	<10	<10	<10	<10	<10	<10		
	Bromodichloromethane	75274	µg kg^{-1}	U	<5	<5	<5	<5	12	<5		
	cis-1,3-Dichloropropene	10061015	µg kg^{-1}	U	<10	<10	<10	<10	<10	<10		
	Toluene	108883	µg kg^{-1}	M	<1	<1	<1	<1	6.4	<1		
	trans-1,3-Dichloropropene	10061026	µg kg^{-1}	U	<10	<10	<10	<10	<10	<10		
	1,1,2-Trichloroethane	79005	µg kg^{-1}	M	<10	<10	<10	<10	<10	<10		
	Tetrachloroethene	127184	µg kg^{-1}	M	<1	<1	<1	<1	18	<1		
	1,3-Dichloropropane	142289	µg kg^{-1}	U	<2	<2	<2	<2	<2	<2		
	Dibromochloromethane	124481	µg kg^{-1}	U	<10	<10	<10	<10	<10	<10		
	1,2-Dibromoethane	106934	µg kg^{-1}	U	<5	<5	<5	<5	<5	<5		
	Chlorobenzene	108907	µg kg^{-1}	M	<1	<1	<1	<1	24	2.5		
	1,1,1,2-Tetrachloroethane	630206	µg kg^{-1}	M	<2	<2	<2	<2	<2	<2		
	Ethylbenzene	100414	µg kg^{-1}	M	<1	<1	<1	<1	2.4	<1		
	m- & p-Xylene	1330207	µg kg^{-1}	M	<1	<1	<1	<1	25	<1		
	o-Xylene	95476	µg kg^{-1}	M	<1	<1	<1	<1	11	<1		
	Styrene	100425	µg kg^{-1}	U	<1	<1	<1	<1	<1	<1		

All tests undertaken between 22-Apr-2009 and 30-Apr-2009

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

FAO Andy Johnston

LABORATORY TEST REPORT

Chemtest

Results of analysis of 39 samples received 22 April 2009

Report Date 30 April 2009

LE10104 - Lostock Works, Cheshire

								94530				
					AD98199	AD98200	AD98201	AD98202	AD98203	AD98204	AD98205	AD98206
					TP6	TP6	BH5	WS4	TP8	WS7	WS6	WS2
					0.6	3.3	2.1	0.05	0.5	0.4	0.8	0.7
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2760	Trichlorofluoromethane	75694	µg kg-¹	U			<1					<1
	1,1-Dichloroethene	75354	µg kg-¹	U			<1					<1
	Dichloromethane	75092	µg kg-¹	U			ne					ne
	trans-1,2-Dichloroethene	156605	µg kg-¹	M			<1					<1
	1,1-Dichloroethane	75343	µg kg-¹	M			<1					<1
	cis-1,2-Dichloroethene	156592	µg kg-¹	M			<1					<1
	Bromochloromethane	74975	µg kg-¹	U			<1					<1
	Trichloromethane	67663	µg kg-¹	M			<1					<1
	1,1,1-Trichloroethane	71556	µg kg-¹	M			<1					<1
	Tetrachloromethane	56235	µg kg-¹	M			<1					<1
	1,1-Dichloropropene	563586	µg kg-¹	U			<1					<1
	Benzene	71432	µg kg-¹	M			2.4					<1
	1,2-Dichloroethane	107062	µg kg-¹	M			<2					<2
	Trichloroethene	79016	µg kg-¹	N			<1					<1
	1,2-Dichloropropane	78875	µg kg-¹	U			<1					<1
	Dibromomethane	74953	µg kg-¹	U			<10					<10
	Bromodichloromethane	75274	µg kg-¹	U			<5					<5
	cis-1,3-Dichloropropene	10061015	µg kg-¹	U			<10					<10
	Toluene	108883	µg kg-¹	M			5.4					<1
	trans-1,3-Dichloropropene	10061026	µg kg-¹	U			<10					<10
	1,1,2-Trichloroethane	79005	µg kg-¹	M			<10					<10
	Tetrachloroethene	127184	µg kg-¹	M			<1					<1
	1,3-Dichloropropane	142289	µg kg-¹	U			<2					<2
	Dibromochloromethane	124481	µg kg-¹	U			<10					<10
	1,2-Dibromoethane	106934	µg kg-¹	U			<5					<5
	Chlorobenzene	108907	µg kg-¹	M			<1					<1
	1,1,1,2-Tetrachloroethane	630206	µg kg-¹	M			<2					<2
	Ethylbenzene	100414	µg kg-¹	M			1.6					<1
	m- & p-Xylene	1330207	µg kg-¹	M			2.4					<1
	o-Xylene	95476	µg kg-¹	M			1.8					<1
	Styrene	100425	µg kg-¹	U			<1					<1

All tests undertaken between 22-Apr-2009 and 30-Apr-2009

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LABORATORY TEST REPORT

Chemtest

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Report Date 30 April 2009

LE10104 - Lostock Works, Cheshire

					94530							
					AD98207	AD98208	AD98209	AD98210	AD98211	AD98212	AD98213	AD98214
					WS3	WS3	WS5	TP7	TP7	WS9	BH19	TP10
					0.4	2.1	0.5	0.2	0.5	0.3	0.5	0.7
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2760	Trichlorofluoromethane	75694	µg kg-¹	U						<1	<1	
	1,1-Dichloroethene	75354	µg kg-¹	U						<1	<1	
	Dichloromethane	75092	µg kg-¹	U						ne	ne	
	trans-1,2-Dichloroethene	156605	µg kg-¹	M						<1	<1	
	1,1-Dichloroethane	75343	µg kg-¹	M						<1	<1	
	cis-1,2-Dichloroethene	156592	µg kg-¹	M						<1	<1	
	Bromochloromethane	74975	µg kg-¹	U						<1	<1	
	Trichloromethane	67663	µg kg-¹	M						<1	3.7	
	1,1,1-Trichloroethane	71556	µg kg-¹	M						<1	<1	
	Tetrachloromethane	56235	µg kg-¹	M						<1	<1	
	1,1-Dichloropropene	563586	µg kg-¹	U						<1	<1	
	Benzene	71432	µg kg-¹	M						<1	110	
	1,2-Dichloroethane	107062	µg kg-¹	M						<2	<2	
	Trichloroethene	79016	µg kg-¹	N						<1	<1	
	1,2-Dichloropropane	78875	µg kg-¹	U						<1	<1	
	Dibromomethane	74953	µg kg-¹	U						<10	<10	
	Bromodichloromethane	75274	µg kg-¹	U						<5	<5	
	cis-1,3-Dichloropropene	10061015	µg kg-¹	U						<10	<10	
	Toluene	108883	µg kg-¹	M						<1	52	
	trans-1,3-Dichloropropene	10061026	µg kg-¹	U						<10	<10	
	1,1,2-Trichloroethane	79005	µg kg-¹	M						<10	<10	
	Tetrachloroethene	127184	µg kg-¹	M						<1	<1	
	1,3-Dichloropropane	142289	µg kg-¹	U						<2	<2	
	Dibromochloromethane	124481	µg kg-¹	U						<10	<10	
	1,2-Dibromoethane	106934	µg kg-¹	U						<5	<5	
	Chlorobenzene	108907	µg kg-¹	M						<1	<1	
	1,1,1,2-Tetrachloroethane	630206	µg kg-¹	M						<2	<2	
	Ethylbenzene	100414	µg kg-¹	M						<1	8.1	
	m- & p-Xylene	1330207	µg kg-¹	M						<1	54	
	o-Xylene	95476	µg kg-¹	M						<1	34	
	Styrene	100425	µg kg-¹	U						<1	<1	

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LE10104 - Lostock Works, Cheshire

					94530					
					AD98215	AD98216	AD98217	AD98218	AD98219	AD98220
					TP11	TP11	TP12	TP12	TP13	TP13
					0.5	1.2	1.6	4.3	0.3	3.2
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2760	Trichlorofluoromethane	75694	µg kg-¹	U			<1	<1	<1	<1
	1,1-Dichloroethene	75354	µg kg-¹	U			<1	<1	<1	<1
	Dichloromethane	75092	µg kg-¹	U			ne	ne	ne	ne
	trans-1,2-Dichloroethene	156605	µg kg-¹	M			<1	<1	<1	<1
	1,1-Dichloroethane	75343	µg kg-¹	M			<1	<1	<1	<1
	cis-1,2-Dichloroethene	156592	µg kg-¹	M			<1	<1	<1	<1
	Bromochloromethane	74975	µg kg-¹	U			<1	<1	<1	<1
	Trichloromethane	67663	µg kg-¹	M			<1	<1	<1	<1
	1,1,1-Trichloroethane	71556	µg kg-¹	M			<1	<1	<1	<1
	Tetrachloromethane	56235	µg kg-¹	M			<1	<1	<1	<1
	1,1-Dichloropropene	563586	µg kg-¹	U			<1	<1	<1	<1
	Benzene	71432	µg kg-¹	M			<1	<1	<1	<1
	1,2-Dichloroethane	107062	µg kg-¹	M			<2	<2	<2	<2
	Trichloroethene	79016	µg kg-¹	N			<1	<1	<1	<1
	1,2-Dichloropropane	78875	µg kg-¹	U			<1	<1	<1	<1
	Dibromomethane	74953	µg kg-¹	U			<10	<10	<10	<10
	Bromodichloromethane	75274	µg kg-¹	U			<5	<5	<5	<5
	cis-1,3-Dichloropropene	10061015	µg kg-¹	U			<10	<10	<10	<10
	Toluene	108883	µg kg-¹	M			<1	<1	<1	<1
	trans-1,3-Dichloropropene	10061026	µg kg-¹	U			<10	<10	<10	<10
	1,1,2-Trichloroethane	79005	µg kg-¹	M			<10	<10	<10	<10
	Tetrachloroethene	127184	µg kg-¹	M			<1	<1	<1	<1
	1,3-Dichloropropane	142289	µg kg-¹	U			<2	<2	<2	<2
	Dibromochloromethane	124481	µg kg-¹	U			<10	<10	<10	<10
	1,2-Dibromoethane	106934	µg kg-¹	U			<5	<5	<5	<5
	Chlorobenzene	108907	µg kg-¹	M			<1	<1	<1	<1
	1,1,1,2-Tetrachloroethane	630206	µg kg-¹	M			<2	<2	<2	<2
	Ethylbenzene	100414	µg kg-¹	M			<1	<1	<1	<1
	m- & p-Xylene	1330207	µg kg-¹	M			<1	<1	<1	<1
	o-Xylene	95476	µg kg-¹	M			<1	<1	<1	<1
	Styrene	100425	µg kg-¹	U			<1	<1	<1	<1

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LE10104 - Lostock Works, Cheshire

					94530							
					AD98191	AD98192	AD98193	AD98194	AD98195	AD98196	AD98197	AD98198
					TP3	TP3	TP1	TP1	TP4	TP4	TP5	TP2
					0.5	1.4	0.4	1.8	0.4	1.3	0.6	2
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2760	Tribromomethane	75252	µg kg-¹	U	<10	<10	<10	<10	<10	<10		
	Isopropylbenzene	98828	µg kg-¹	U	<1	<1	<1	<1	<1	<1		
	Bromobenzene	108861	µg kg-¹	U	<1	<1	<1	<1	<1	<1		
	1,1,2,2-Tetrachloroethane	79345	µg kg-¹	M	<10	<10	<10	<10	<10	<10		
	1,2,3-Trichloropropane	96184	µg kg-¹	U	<50	<50	<50	<50	<50	<50		
	n-Propylbenzene	103651	µg kg-¹	U	<1	<1	<1	<1	<1	<1		
	2-Chlorotoluene	95498	µg kg-¹	U	<1	<1	<1	<1	54	7.9		
	1,3,5-Trimethylbenzene	108678	µg kg-¹	U	<1	<1	<1	<1	<1	<1		
	4-Chlorotoluene	106434	µg kg-¹	U	<1	<1	<1	<1	33	2.1		
	tert-Butylbenzene	98066	µg kg-¹	U	<1	<1	<1	<1	<1	<1		
	1,2,4-Trimethylbenzene	95636	µg kg-¹	U	<1	<1	<1	<1	22	1.8		
	sec-Butylbenzene	135988	µg kg-¹	U	<1	<1	<1	<1	<1	<1		
	1,3-Dichlorobenzene	541731	µg kg-¹	U	<1	<1	<1	<1	<1	<1		
	4-Isopropyltoluene	99876	µg kg-¹	U	<1	<1	<1	<1	<1	<1		
	1,4-Dichlorobenzene	106467	µg kg-¹	U	<1	<1	<1	<1	<1	<1		
	n-Butylbenzene	104518	µg kg-¹	U	<1	<1	<1	<1	<1	<1		
	1,2-Dichlorobenzene	95501	µg kg-¹	U	<1	<1	<1	<1	54	10		
	1,2-Dibromo-3-chloropropane	96128	µg kg-¹	U	<50	<50	<50	<50	<50	<50		
	1,2,4-Trichlorobenzene	120821	µg kg-¹	U	<1	<1	<1	<1	25	4.2		
	Hexachlorobutadiene	87683	µg kg-¹	U	<1	<1	<1	<1	<1	<1		
	1,2,3-Trichlorobenzene	87616	µg kg-¹	U	<2	<2	<2	<2	<2	<2		
2762	Tentatively Identified Compounds		µg kg-¹		Not Detected	Not Detected	Not Detected	Not Detected	Detected	Not Detected		
	1H-Indene,1-chloro-2,3-dihydro-		µg kg-¹									
	Alpha-Pinene		µg kg-¹									
	Bifhenyl		µg kg-¹									
	Ethane,hexachloro-		µg kg-¹						17			
	Benzene,1.2-dichloro-3-methyl		µg kg-¹						7.0			
	Indane		µg kg-¹									
2790	N-Nitrosodimethylamine	62759	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	Phenol	108952	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	bis(2-Chloroethyl)ether	111444	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		

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Pinxton
Nottinghamshire
NG16 6JA

FAO Andy Johnston

LABORATORY TEST REPORT

Chemtest

Report Date
30 April 2009

Results of analysis of 39 samples
received 22 April 2009

LE10104 - Lostock Works, Cheshire

					94530							
					AD98199	AD98200	AD98201	AD98202	AD98203	AD98204	AD98205	AD98206
					TP6	TP6	BH5	WS4	TP8	WS7	WS6	WS2
					0.6	3.3	2.1	0.05	0.5	0.4	0.8	0.7
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2760	Tribromomethane	75252	µg kg-1	U			<10					<10
	Isopropylbenzene	98828	µg kg-1	U			<1					<1
	Bromobenzene	108861	µg kg-1	U			<1					<1
	1,1,2,2-Tetrachloroethane	79345	µg kg-1	M			<10					<10
	1,2,3-Trichloropropane	96184	µg kg-1	U			<50					<50
	n-Propylbenzene	103651	µg kg-1	U			<1					<1
	2-Chlorotoluene	95498	µg kg-1	U			<1					<1
	1,3,5-Trimethylbenzene	108678	µg kg-1	U			3.5					<1
	4-Chlorotoluene	106434	µg kg-1	U			<1					<1
	tert-Butylbenzene	98066	µg kg-1	U			<1					<1
	1,2,4-Trimethylbenzene	95636	µg kg-1	U			6.9					<1
	sec-Butylbenzene	135988	µg kg-1	U			<1					<1
	1,3-Dichlorobenzene	541731	µg kg-1	U			<1					<1
	4-Isopropyltoluene	99876	µg kg-1	U			2.9					<1
	1,4-Dichlorobenzene	106467	µg kg-1	U			<1					<1
	n-Butylbenzene	104518	µg kg-1	U			<1					<1
	1,2-Dichlorobenzene	95501	µg kg-1	U			<1					<1
	1,2-Dibromo-3-chloropropane	96128	µg kg-1	U			<50					<50
	1,2,4-Trichlorobenzene	120821	µg kg-1	U			<1					<1
	Hexachlorobutadiene	87683	µg kg-1	U			<1					<1
	1,2,3-Trichlorobenzene	87616	µg kg-1	U			<2					<2
2762	Tentatively Identified Compounds		µg kg-1				Detected					Not Detected
	1H-Indene,1-chloro-2,3-dihydro-		µg kg-1									
	Alpha-Pinene		µg kg-1				76					
	Bifhenyl		µg kg-1									
	Ethane,hexachloro-		µg kg-1									
	Benzene,1.2-dichloro-3-methyl		µg kg-1									
	Indane		µg kg-1				9.7					
2790	N-Nitrosodimethylamine	62759	mg kg-1	N			<0.5					<0.5
	Phenol	108952	mg kg-1	N			<0.5					<0.5
	bis(2-Chloroethyl)ether	111444	mg kg-1	N			<0.5					<0.5

All tests undertaken between 22-Apr-2009 and 30-Apr-2009

This report should be interpreted in conjunction with the notes on the accompanying cover page

Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

FAO Andy Johnston

LABORATORY TEST REPORT

Chemtest

Results of analysis of 39 samples received 22 April 2009

Report Date 30 April 2009

LE10104 - Lostock Works, Cheshire

					94530							
					AD98207	AD98208	AD98209	AD98210	AD98211	AD98212	AD98213	AD98214
					WS3	WS3	WS5	TP7	TP7	WS9	BH19	TP10
					0.4	2.1	0.5	0.2	0.5	0.3	0.5	0.7
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2760	Tribromomethane	75252	µg kg-¹	U						<10	<10	
	Isopropylbenzene	98828	µg kg-¹	U						<1	<1	
	Bromobenzene	108861	µg kg-¹	U						<1	<1	
	1,1,2,2-Tetrachloroethane	79345	µg kg-¹	M						<10	<10	
	1,2,3-Trichloropropane	96184	µg kg-¹	U						<50	<50	
	n-Propylbenzene	103651	µg kg-¹	U						<1	<1	
	2-Chlorotoluene	95498	µg kg-¹	U						<1	<1	
	1,3,5-Trimethylbenzene	108678	µg kg-¹	U						<1	38	
	4-Chlorotoluene	106434	µg kg-¹	U						<1	<1	
	tert-Butylbenzene	98066	µg kg-¹	U						<1	<1	
	1,2,4-Trimethylbenzene	95636	µg kg-¹	U						<1	51	
	sec-Butylbenzene	135988	µg kg-¹	U						<1	<1	
	1,3-Dichlorobenzene	541731	µg kg-¹	U						<1	2.1	
	4-Isopropyltoluene	99876	µg kg-¹	U						<1	<1	
	1,4-Dichlorobenzene	106467	µg kg-¹	U						<1	<1	
	n-Butylbenzene	104518	µg kg-¹	U						<1	<1	
	1,2-Dichlorobenzene	95501	µg kg-¹	U						<1	<1	
	1,2-Dibromo-3-chloropropane	96128	µg kg-¹	U						<50	<50	
	1,2,4-Trichlorobenzene	120821	µg kg-¹	U						<1	<1	
	Hexachlorobutadiene	87683	µg kg-¹	U						<1	<1	
	1,2,3-Trichlorobenzene	87616	µg kg-¹	U						<2	<2	
2762	Tentatively Identified Compounds		µg kg-¹							Not Detected	Detected	
	1H-Indene,1-chloro-2,3-dihydro-		µg kg-¹								35	
	Alpha-Pinene		µg kg-¹									
	Bifhenyl		µg kg-¹									
	Ethane,hexachloro-		µg kg-¹									
	Benzene,1.2-dichloro-3-methyl		µg kg-¹									
	Indane		µg kg-¹									
2790	N-Nitrosodimethylamine	62759	mg kg-¹	N						<0.5	<0.5	
	Phenol	108952	mg kg-¹	N						<0.5	5.8	
	bis(2-Chloroethyl)ether	111444	mg kg-¹	N						<0.5	<0.5	

All tests undertaken between 22-Apr-2009 and 30-Apr-2009

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Pinxton
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Chemtest

Report Date
30 April 2009

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received 22 April 2009

LE10104 - Lostock Works, Cheshire

					94530					
					AD98215	AD98216	AD98217	AD98218	AD98219	AD98220
					TP11	TP11	TP12	TP12	TP13	TP13
					0.5	1.2	1.6	4.3	0.3	3.2
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2760	Tribromomethane	75252	µg kg-1	U			<10	<10	<10	<10
	Isopropylbenzene	98828	µg kg-1	U			<1	<1	<1	<1
	Bromobenzene	108861	µg kg-1	U			<1	<1	<1	<1
	1,1,2,2-Tetrachloroethane	79345	µg kg-1	M			<10	<10	<10	<10
	1,2,3-Trichloropropane	96184	µg kg-1	U			<50	<50	<50	<50
	n-Propylbenzene	103651	µg kg-1	U			<1	<1	<1	<1
	2-Chlorotoluene	95498	µg kg-1	U			<1	<1	<1	<1
	1,3,5-Trimethylbenzene	108678	µg kg-1	U			<1	<1	<1	<1
	4-Chlorotoluene	106434	µg kg-1	U			<1	<1	<1	<1
	tert-Butylbenzene	98066	µg kg-1	U			<1	<1	<1	<1
	1,2,4-Trimethylbenzene	95636	µg kg-1	U			<1	<1	<1	<1
	sec-Butylbenzene	135988	µg kg-1	U			<1	<1	<1	<1
	1,3-Dichlorobenzene	541731	µg kg-1	U			<1	<1	<1	<1
	4-Isopropyltoluene	99876	µg kg-1	U			<1	<1	<1	<1
	1,4-Dichlorobenzene	106467	µg kg-1	U			<1	<1	<1	<1
	n-Butylbenzene	104518	µg kg-1	U			<1	<1	<1	<1
	1,2-Dichlorobenzene	95501	µg kg-1	U			<1	<1	<1	<1
	1,2-Dibromo-3-chloropropane	96128	µg kg-1	U			<50	<50	<50	<50
	1,2,4-Trichlorobenzene	120821	µg kg-1	U			<1	<1	<1	<1
	Hexachlorobutadiene	87683	µg kg-1	U			<1	<1	<1	<1
	1,2,3-Trichlorobenzene	87616	µg kg-1	U			<2	<2	<2	<2
2762	Tentatively Identified Compounds		µg kg-1				Detected	Not Detected	Not Detected	Not Detected
	1H-Indene,1-chloro-2,3-dihydro-		µg kg-1							
	Alpha-Pinene		µg kg-1							
	Bifhenyl		µg kg-1				20			
	Ethane,hexachloro-		µg kg-1							
	Benzene,1.2-dichloro-3-methyl		µg kg-1							
	Indane		µg kg-1							
2790	N-Nitrosodimethylamine	62759	mg kg-1	N			<0.5	<0.5	<0.5	<0.5
	Phenol	108952	mg kg-1	N			<0.5	<0.5	<0.5	<0.5
	bis(2-Chloroethyl)ether	111444	mg kg-1	N			<0.5	<0.5	<0.5	<0.5

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NG16 6JA

LABORATORY TEST REPORT

Chemtest

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Report Date 30 April 2009

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LE10104 - Lostock Works, Cheshire

					94530							
					AD98191	AD98192	AD98193	AD98194	AD98195	AD98196	AD98197	AD98198
					TP3	TP3	TP1	TP1	TP4	TP4	TP5	TP2
					0.5	1.4	0.4	1.8	0.4	1.3	0.6	2
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2790	2-Chlorophenol	95578	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	1,3-Dichlorobenzene	541731	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	1,4-Dichlorobenzene	106467	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	0.67	<0.5		
	1,2-Dichlorobenzene	95501	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	2-Methylphenol	95487	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	bis(2-Chloroisopropyl)ether	108601	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	4-Methylphenol	106445	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	N-Nitrosodi-n-propylamine	621647	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	Hexachloroethane	67721	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	0.69	<0.5		
	Nitrobenzene	98953	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	Isophorone	78591	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	2-Nitrophenol	88755	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	2,4-Dimethylphenol	105679	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	bis(2-Chloroethoxy)methane	111911	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	2,4-Dichlorophenol	120832	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	1,2,4-Trichlorobenzene	120821	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	Naphthalene	91203	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	15	<0.5		
	4-Chloroaniline	106478	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	Hexachlorobutadiene	87683	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	4-Chloro-3-methylphenol	59507	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	2-Methylnaphthalene	91576	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	2.0	<0.5		
	Hexachlorocyclopentadiene	77474	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	2,4,6-Trichlorophenol	88062	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	2,4,5-Trichlorophenol	95954	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	2-Chloronaphthalene	91587	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	1.7	<0.5		
	2-Nitroaniline	88744	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	Dimethylphthalate	131113	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	2,6-Dinitrotoluene	606202	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	Acenaphthylene	208968	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	3-Nitroaniline	99092	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	Acenaphthene	83329	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		

All tests undertaken between 22-Apr-2009 and 30-Apr-2009

* Accreditation status

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LABORATORY TEST REPORT

Chemtest

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LE10104 - Lostock Works, Cheshire

					94530							
					AD98199	AD98200	AD98201	AD98202	AD98203	AD98204	AD98205	AD98206
					TP6	TP6	BH5	WS4	TP8	WS7	WS6	WS2
					0.6	3.3	2.1	0.05	0.5	0.4	0.8	0.7
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2790	2-Chlorophenol	95578	mg kg-1	N			<0.5					<0.5
	1,3-Dichlorobenzene	541731	mg kg-1	N			<0.5					<0.5
	1,4-Dichlorobenzene	106467	mg kg-1	N			<0.5					<0.5
	1,2-Dichlorobenzene	95501	mg kg-1	N			<0.5					<0.5
	2-Methylphenol	95487	mg kg-1	N			<0.5					<0.5
	bis(2-Chloroisopropyl)ether	108601	mg kg-1	N			<0.5					<0.5
	4-Methylphenol	106445	mg kg-1	N			<0.5					<0.5
	N-Nitrosodi-n-propylamine	621647	mg kg-1	N			<0.5					<0.5
	Hexachloroethane	67721	mg kg-1	N			<0.5					<0.5
	Nitrobenzene	98953	mg kg-1	N			<0.5					<0.5
	Isophorone	78591	mg kg-1	N			<0.5					<0.5
	2-Nitrophenol	88755	mg kg-1	N			<0.5					<0.5
	2,4-Dimethylphenol	105679	mg kg-1	N			<0.5					<0.5
	bis(2-Chloroethoxy)methane	111911	mg kg-1	N			<0.5					<0.5
	2,4-Dichlorophenol	120832	mg kg-1	N			<0.5					<0.5
	1,2,4-Trichlorobenzene	120821	mg kg-1	N			<0.5					<0.5
	Naphthalene	91203	mg kg-1	N			3.8					<0.5
	4-Chloroaniline	106478	mg kg-1	N			<0.5					<0.5
	Hexachlorobutadiene	87683	mg kg-1	N			<0.5					<0.5
	4-Chloro-3-methylphenol	59507	mg kg-1	N			<0.5					<0.5
	2-Methylnaphthalene	91576	mg kg-1	N			2.2					<0.5
	Hexachlorocyclopentadiene	77474	mg kg-1	N			<0.5					<0.5
	2,4,6-Trichlorophenol	88062	mg kg-1	N			<0.5					<0.5
	2,4,5-Trichlorophenol	95954	mg kg-1	N			<0.5					<0.5
	2-Chloronaphthalene	91587	mg kg-1	N			<0.5					<0.5
	2-Nitroaniline	88744	mg kg-1	N			<0.5					<0.5
	Dimethylphthalate	131113	mg kg-1	N			<0.5					<0.5
	2,6-Dinitrotoluene	606202	mg kg-1	N			<0.5					<0.5
	Acenaphthylene	208968	mg kg-1	N			1.9					<0.5
	3-Nitroaniline	99092	mg kg-1	N			<0.5					<0.5
	Acenaphthene	83329	mg kg-1	N			5.0					<0.5

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					94530							
					AD98207	AD98208	AD98209	AD98210	AD98211	AD98212	AD98213	AD98214
					WS3	WS3	WS5	TP7	TP7	WS9	BH19	TP10
					0.4	2.1	0.5	0.2	0.5	0.3	0.5	0.7
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2790	2-Chlorophenol	95578	mg kg^{-1}	N						<0.5	<0.5	
	1,3-Dichlorobenzene	541731	mg kg^{-1}	N						<0.5	<0.5	
	1,4-Dichlorobenzene	106467	mg kg^{-1}	N						<0.5	<0.5	
	1,2-Dichlorobenzene	95501	mg kg^{-1}	N						<0.5	<0.5	
	2-Methylphenol	95487	mg kg^{-1}	N						<0.5	4.1	
	bis(2-Chloroisopropyl)ether	108601	mg kg^{-1}	N						<0.5	<0.5	
	4-Methylphenol	106445	mg kg^{-1}	N						<0.5	7.1	
	N-Nitrosodi-n-propylamine	621647	mg kg^{-1}	N						<0.5	<0.5	
	Hexachloroethane	67721	mg kg^{-1}	N						<0.5	<0.5	
	Nitrobenzene	98953	mg kg^{-1}	N						<0.5	<0.5	
	Isophorone	78591	mg kg^{-1}	N						<0.5	<0.5	
	2-Nitrophenol	88755	mg kg^{-1}	N						<0.5	<0.5	
	2,4-Dimethylphenol	105679	mg kg^{-1}	N						<0.5	6.5	
	bis(2-Chloroethoxy)methane	111911	mg kg^{-1}	N						<0.5	<0.5	
	2,4-Dichlorophenol	120832	mg kg^{-1}	N						<0.5	<0.5	
	1,2,4-Trichlorobenzene	120821	mg kg^{-1}	N						<0.5	<0.5	
	Naphthalene	91203	mg kg^{-1}	N						<0.5	160	
	4-Chloroaniline	106478	mg kg^{-1}	N						<0.5	<0.5	
	Hexachlorobutadiene	87683	mg kg^{-1}	N						<0.5	<0.5	
	4-Chloro-3-methylphenol	59507	mg kg^{-1}	N						<0.5	<0.5	
	2-Methylnaphthalene	91576	mg kg^{-1}	N						<0.5	84	
	Hexachlorocyclopentadiene	77474	mg kg^{-1}	N						<0.5	<0.5	
	2,4,6-Trichlorophenol	88062	mg kg^{-1}	N						<0.5	<0.5	
	2,4,5-Trichlorophenol	95954	mg kg^{-1}	N						<0.5	<0.5	
	2-Chloronaphthalene	91587	mg kg^{-1}	N						<0.5	<0.5	
	2-Nitroaniline	88744	mg kg^{-1}	N						<0.5	<0.5	
	Dimethylphthalate	131113	mg kg^{-1}	N						<0.5	<0.5	
	2,6-Dinitrotoluene	606202	mg kg^{-1}	N						<0.5	<0.5	
	Acenaphthylene	208968	mg kg^{-1}	N						0.83	140	
	3-Nitroaniline	99092	mg kg^{-1}	N						<0.5	<0.5	
	Acenaphthene	83329	mg kg^{-1}	N						<0.5	54	

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LE10104 - Lostock Works, Cheshire

					94530					
					AD98215	AD98216	AD98217	AD98218	AD98219	AD98220
					TP11	TP11	TP12	TP12	TP13	TP13
					0.5	1.2	1.6	4.3	0.3	3.2
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2790	2-Chlorophenol	95578	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	1,3-Dichlorobenzene	541731	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	1,4-Dichlorobenzene	106467	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	1,2-Dichlorobenzene	95501	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	2-Methylphenol	95487	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	bis(2-Chloroisopropyl)ether	108601	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	4-Methylphenol	106445	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	N-Nitrosodi-n-propylamine	621647	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	Hexachloroethane	67721	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	Nitrobenzene	98953	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	Isophorone	78591	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	2-Nitrophenol	88755	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	2,4-Dimethylphenol	105679	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	bis(2-Chloroethoxy)methane	111911	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	2,4-Dichlorophenol	120832	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	1,2,4-Trichlorobenzene	120821	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	Naphthalene	91203	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	4-Chloroaniline	106478	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	Hexachlorobutadiene	87683	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	4-Chloro-3-methylphenol	59507	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	2-Methylnaphthalene	91576	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	Hexachlorocyclopentadiene	77474	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	2,4,6-Trichlorophenol	88062	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	2,4,5-Trichlorophenol	95954	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	2-Chloronaphthalene	91587	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	2-Nitroaniline	88744	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	Dimethylphthalate	131113	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	2,6-Dinitrotoluene	606202	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	Acenaphthylene	208968	mg kg^{-1}	N			1.6	0.57	<0.5	<0.5
	3-Nitroaniline	99092	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5
	Acenaphthene	83329	mg kg^{-1}	N			<0.5	<0.5	<0.5	<0.5

All tests undertaken between 22-Apr-2009 and 30-Apr-2009

This report should be interpreted in conjunction with the notes on the accompanying cover page

Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

FAO Andy Johnston

LABORATORY TEST REPORT

Chemtest

Report Date
30 April 2009

Results of analysis of 39 samples
received 22 April 2009

LE10104 - Lostock Works, Cheshire

					94530							
					AD98191	AD98192	AD98193	AD98194	AD98195	AD98196	AD98197	AD98198
					TP3	TP3	TP1	TP1	TP4	TP4	TP5	TP2
					0.5	1.4	0.4	1.8	0.4	1.3	0.6	2
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2790	Dibenzofuran	132649	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	0.98	<0.5		
	2,4-Dinitrotoluene	121142	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	Diethylphthalate	84662	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	Fluorene	86737	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	4-Chlorophenylether	7005723	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	4-Nitroaniline	100016	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	2-Methyl-4,6-dinitrophenol	534521	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	Azobenzene	103333	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	4-Bromophenylphenylether	101553	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	Hexachlorobenzene	118741	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	Pentachlorophenol	87865	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	Phenanthrene	85018	mg kg-¹	N	<0.5	<0.5	1.9	<0.5	0.88	<0.5		
	Anthracene	120127	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	Carbazole	86748	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	Di-n-butylphthalate	84742	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	Fluoranthene	206440	mg kg-¹	N	<0.5	<0.5	2.8	<0.5	<0.5	<0.5		
	Pyrene	129000	mg kg-¹	N	<0.5	<0.5	2.2	<0.5	<0.5	<0.5		
	Butylbenzylphthalate	85687	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	Benzo[a]anthracene	56553	mg kg-¹	N	<0.5	<0.5	1.4	<0.5	<0.5	<0.5		
	Chrysene	218019	mg kg-¹	N	<0.5	<0.5	1.2	<0.5	<0.5	<0.5		
	bis(2-Ethylhexyl)phthalate	117817	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	Di-n-octylphthalate	117840	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	Benzo[b]fluoranthene	205992	mg kg-¹	N	<0.5	<0.5	1.7	<0.5	<0.5	<0.5		
	Benzo[k]fluoranthene	207089	mg kg-¹	N	<0.5	<0.5	0.62	<0.5	<0.5	<0.5		
	Benzo[a]pyrene	50328	mg kg-¹	N	<0.5	<0.5	1.1	<0.5	<0.5	<0.5		
	Indeno[1,2,3-cd]pyrene	193395	mg kg-¹	N	<0.5	<0.5	0.51	<0.5	<0.5	<0.5		
	Dibenzo[a,h]anthracene	53703	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	Benzo[g,h,i]perylene	191242	mg kg-¹	N	<0.5	<0.5	0.60	<0.5	<0.5	<0.5		
2792	3-carene		mg kg-¹									
	Tentatively Identified Compounds		mg kg-¹		Not detected	Not detected	Not detected	Not detected	Not detected	Not detected		
2800	Naphthalene	91203	mg kg-¹	M	<0.1	<0.1	1.2	0.2	24	<0.1	2.9	<0.1

All tests undertaken between 22-Apr-2009 and 30-Apr-2009

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

FAO Andy Johnston

LABORATORY TEST REPORT

Chemtest

Report Date
30 April 2009

Results of analysis of 39 samples
received 22 April 2009

LE10104 - Lostock Works, Cheshire

					94530							
					AD98199	AD98200	AD98201	AD98202	AD98203	AD98204	AD98205	AD98206
					TP6	TP6	BH5	WS4	TP8	WS7	WS6	WS2
					0.6	3.3	2.1	0.05	0.5	0.4	0.8	0.7
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2790	Dibenzofuran	132649	mg kg^{-1}	N			3.2					<0.5
	2,4-Dinitrotoluene	121142	mg kg^{-1}	N			<0.5					<0.5
	Diethylphthalate	84662	mg kg^{-1}	N			<0.5					<0.5
	Fluorene	86737	mg kg^{-1}	N			2.9					<0.5
	4-Chlorophenylether	7005723	mg kg^{-1}	N			<0.5					<0.5
	4-Nitroaniline	100016	mg kg^{-1}	N			<0.5					<0.5
	2-Methyl-4,6-dinitrophenol	534521	mg kg^{-1}	N			<0.5					<0.5
	Azobenzene	103333	mg kg^{-1}	N			<0.5					<0.5
	4-Bromophenylphenylether	101553	mg kg^{-1}	N			<0.5					<0.5
	Hexachlorobenzene	118741	mg kg^{-1}	N			<0.5					<0.5
	Pentachlorophenol	87865	mg kg^{-1}	N			<0.5					<0.5
	Phenanthrene	85018	mg kg^{-1}	N			23					1.1
	Anthracene	120127	mg kg^{-1}	N			3.9					<0.5
	Carbazole	86748	mg kg^{-1}	N			0.92					<0.5
	Di-n-butylphthalate	84742	mg kg^{-1}	N			<0.5					<0.5
	Fluoranthene	206440	mg kg^{-1}	N			19					2.4
	Pyrene	129000	mg kg^{-1}	N			16					2.1
	Butylbenzylphthalate	85687	mg kg^{-1}	N			<0.5					<0.5
	Benzo[a]anthracene	56553	mg kg^{-1}	N			5.9					1.0
	Chrysene	218019	mg kg^{-1}	N			4.8					1.2
	bis(2-Ethylhexyl)phthalate	117817	mg kg^{-1}	N			<0.5					<0.5
	Di-n-octylphthalate	117840	mg kg^{-1}	N			<0.5					<0.5
	Benzo[b]fluoranthene	205992	mg kg^{-1}	N			5.6					1.6
	Benzo[k]fluoranthene	207089	mg kg^{-1}	N			1.7					0.52
	Benzo[a]pyrene	50328	mg kg^{-1}	N			3.7					0.97
	Indeno[1,2,3-cd]pyrene	193395	mg kg^{-1}	N			1.5					<0.5
	Dibenzo[a,h]anthracene	53703	mg kg^{-1}	N			<0.5					<0.5
	Benzo[g,h,i]perylene	191242	mg kg^{-1}	N			1.7					<0.5
2792	3-carene		mg kg^{-1}				5					
	Tentatively Identified Compounds		mg kg^{-1}									Not detected
2800	Naphthalene	91203	mg kg^{-1}	M	<0.1	1.1	31	0.1	0.1	0.1	2.6	<0.1

All tests undertaken between 22-Apr-2009 and 30-Apr-2009

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LE10104 - Lostock Works, Cheshire

					94530							
					AD98207	AD98208	AD98209	AD98210	AD98211	AD98212	AD98213	AD98214
					WS3	WS3	WS5	TP7	TP7	WS9	BH19	TP10
					0.4	2.1	0.5	0.2	0.5	0.3	0.5	0.7
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2790	Dibenzofuran	132649	mg kg-¹	N						<0.5	140	
	2,4-Dinitrotoluene	121142	mg kg-¹	N						<0.5	<0.5	
	Diethylphthalate	84662	mg kg-¹	N						<0.5	<0.5	
	Fluorene	86737	mg kg-¹	N						<0.5	200	
	4-Chlorophenylether	7005723	mg kg-¹	N						<0.5	<0.5	
	4-Nitroaniline	100016	mg kg-¹	N						<0.5	<0.5	
	2-Methyl-4,6-dinitrophenol	534521	mg kg-¹	N						<0.5	<0.5	
	Azobenzene	103333	mg kg-¹	N						<0.5	<0.5	
	4-Bromophenylphenylether	101553	mg kg-¹	N						<0.5	<0.5	
	Hexachlorobenzene	118741	mg kg-¹	N						<0.5	<0.5	
	Pentachlorophenol	87865	mg kg-¹	N						<0.5	<0.5	
	Phenanthrene	85018	mg kg-¹	N						13	670	
	Anthracene	120127	mg kg-¹	N						2.7	250	
	Carbazole	86748	mg kg-¹	N						<0.5	110	
	Di-n-butylphthalate	84742	mg kg-¹	N						<0.5	<0.5	
	Fluoranthene	206440	mg kg-¹	N						17	730	
	Pyrene	129000	mg kg-¹	N						13	590	
	Butylbenzylphthalate	85687	mg kg-¹	N						<0.5	<0.5	
	Benzo[a]anthracene	56553	mg kg-¹	N						5.3	430	
	Chrysene	218019	mg kg-¹	N						5.1	480	
	bis(2-Ethylhexyl)phthalate	117817	mg kg-¹	N						<0.5	<0.5	
	Di-n-octylphthalate	117840	mg kg-¹	N						<0.5	<0.5	
	Benzo[b]fluoranthene	205992	mg kg-¹	N						5.6	480	
	Benzo[k]fluoranthene	207089	mg kg-¹	N						1.8	170	
	Benzo[a]pyrene	50328	mg kg-¹	N						4.0	440	
	Indeno[1,2,3-cd]pyrene	193395	mg kg-¹	N						1.7	230	
	Dibenzo[a,h]anthracene	53703	mg kg-¹	N						<0.5	87	
	Benzo[g,h,i]perylene	191242	mg kg-¹	N						1.8	260	
2792	3-carene		mg kg-¹									
	Tentatively Identified Compounds		mg kg-¹							Not detected	Not detected	
2800	Naphthalene	91203	mg kg-¹	M	<0.1	<0.1	<0.1	<0.1	0.2	2.7	270	1.4

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NG16 6JA

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LABORATORY TEST REPORT

Results of analysis of 39 samples received 22 April 2009

LE10104 - Lostock Works, Cheshire

Chemtest

Report Date 30 April 2009

					94530					
					AD98215	AD98216	AD98217	AD98218	AD98219	AD98220
					TP11	TP11	TP12	TP12	TP13	TP13
					0.5	1.2	1.6	4.3	0.3	3.2
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2790	Dibenzofuran	132649	mg kg-¹	N			<0.5	<0.5	<0.5	<0.5
	2,4-Dinitrotoluene	121142	mg kg-¹	N			<0.5	<0.5	<0.5	<0.5
	Diethylphthalate	84662	mg kg-¹	N			<0.5	<0.5	<0.5	<0.5
	Fluorene	86737	mg kg-¹	N			<0.5	<0.5	<0.5	<0.5
	4-Chlorophenylether	7005723	mg kg-¹	N			<0.5	<0.5	<0.5	<0.5
	4-Nitroaniline	100016	mg kg-¹	N			<0.5	<0.5	<0.5	<0.5
	2-Methyl-4,6-dinitrophenol	534521	mg kg-¹	N			<0.5	<0.5	<0.5	<0.5
	Azobenzene	103333	mg kg-¹	N			<0.5	<0.5	<0.5	<0.5
	4-Bromophenylphenylether	101553	mg kg-¹	N			<0.5	<0.5	<0.5	<0.5
	Hexachlorobenzene	118741	mg kg-¹	N			<0.5	<0.5	<0.5	<0.5
	Pentachlorophenol	87865	mg kg-¹	N			<0.5	<0.5	<0.5	<0.5
	Phenanthrene	85018	mg kg-¹	N			0.76	<0.5	<0.5	<0.5
	Anthracene	120127	mg kg-¹	N			0.68	<0.5	<0.5	<0.5
	Carbazole	86748	mg kg-¹	N			<0.5	<0.5	<0.5	<0.5
	Di-n-butylphthalate	84742	mg kg-¹	N			<0.5	<0.5	<0.5	<0.5
	Fluoranthene	206440	mg kg-¹	N			1.0	<0.5	<0.5	<0.5
	Pyrene	129000	mg kg-¹	N			0.79	<0.5	<0.5	<0.5
	Butylbenzylphthalate	85687	mg kg-¹	N			<0.5	<0.5	<0.5	<0.5
	Benzo[a]anthracene	56553	mg kg-¹	N			0.56	<0.5	<0.5	<0.5
	Chrysene	218019	mg kg-¹	N			<0.5	<0.5	<0.5	<0.5
	bis(2-Ethylhexyl)phthalate	117817	mg kg-¹	N			<0.5	<0.5	<0.5	<0.5
	Di-n-octylphthalate	117840	mg kg-¹	N			<0.5	<0.5	<0.5	<0.5
	Benzo[b]fluoranthene	205992	mg kg-¹	N			0.61	<0.5	<0.5	<0.5
	Benzo[k]fluoranthene	207089	mg kg-¹	N			<0.5	<0.5	<0.5	<0.5
	Benzo[a]pyrene	50328	mg kg-¹	N			<0.5	<0.5	<0.5	<0.5
	Indeno[1,2,3-cd]pyrene	193395	mg kg-¹	N			<0.5	<0.5	<0.5	<0.5
	Dibenzo[a,h]anthracene	53703	mg kg-¹	N			<0.5	<0.5	<0.5	<0.5
	Benzo[g,h,i]perylene	191242	mg kg-¹	N			<0.5	<0.5	<0.5	<0.5
2792	3-carene		mg kg-¹							
	Tentatively Identified Compounds		mg kg-¹				Not detected	Not detected	Not detected	Not detected
2800	Naphthalene	91203	mg kg-¹	M	1.1	<0.1	0.3	<0.1	<0.1	<0.1

All tests undertaken between 22-Apr-2009 and 30-Apr-2009

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FAO Andy Johnston

LABORATORY TEST REPORT

Chemtest

Results of analysis of 39 samples received 22 April 2009

Report Date 30 April 2009

LE10104 - Lostock Works, Cheshire

					94530							
					AD98191	AD98192	AD98193	AD98194	AD98195	AD98196	AD98197	AD98198
					TP3	TP3	TP1	TP1	TP4	TP4	TP5	TP2
					0.5	1.4	0.4	1.8	0.4	1.3	0.6	2
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2800	Acenaphthylene	208968	mg kg-¹	N	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	0.3	<0.1
	Acenaphthene	83329	mg kg-¹	M	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1
	Fluorene	86737	mg kg-¹	M	<0.1	<0.1	0.9	<0.1	0.4	<0.1	0.1	<0.1
	Phenanthrene	85018	mg kg-¹	M	<0.1	<0.1	5.1	<0.1	7.3	<0.1	3.4	<0.1
	Anthracene	120127	mg kg-¹	M	<0.1	<0.1	1.4	<0.1	0.2	<0.1	0.7	<0.1
	Fluoranthene	206440	mg kg-¹	M	<0.1	<0.1	5.7	<0.1	2.9	<0.1	6	<0.1
	Pyrene	129000	mg kg-¹	M	<0.1	<0.1	4.9	<0.1	1	<0.1	5.2	<0.1
	Benzo[a]anthracene	56553	mg kg-¹	M	<0.1	<0.1	2.8	<0.1	0.3	<0.1	3	<0.1
	Chrysene	218019	mg kg-¹	M	<0.1	<0.1	2.4	<0.1	0.8	<0.1	2.9	<0.1
	Benzo[b]fluoranthene	205992	mg kg-¹	M	<0.1	<0.1	3.2	<0.1	0.7	<0.1	4.3	<0.1
	Benzo[k]fluoranthene	207089	mg kg-¹	N	<0.1	<0.1	0.9	<0.1	0.2	<0.1	1.4	<0.1
	Benzo[a]pyrene	50328	mg kg-¹	M	<0.1	<0.1	2	<0.1	0.2	<0.1	2.9	<0.1
	Dibenzo[a,h]anthracene	53703	mg kg-¹	N	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	0.2	<0.1
	Indeno[1,2,3-cd]pyrene	193395	mg kg-¹	M	<0.1	<0.1	0.9	<0.1	<0.1	<0.1	1.3	<0.1
	Benzo[g,h,i]perylene	191242	mg kg-¹	M	<0.1	<0.1	1	<0.1	<0.1	<0.1	1.6	<0.1
	Total (of 16) PAHs		mg kg-¹	N	<2	<2	33	<2	38	<2	36	<2
2010	pH		-	M	7.4	7.6	7.7	7.9	5.0	6.5	8.3	8.2
2030	Moisture		%	n/a	20	12.3	22	20.9	33	16.1	20.1	20.9
	Stone content (as received)		%	n/a	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2140	Soil colour			n/a	brown	brown	brown	brown	brown	brown	brown	brown
	Soil texture			n/a	clay	clay	clay	clay	sand	clay	clay	clay
	Other material			n/a	none	none	none	none	stones	none	none	none

All tests undertaken between 22-Apr-2009 and 30-Apr-2009

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

FAO Andy Johnston

LABORATORY TEST REPORT

Chemtest

Report Date
30 April 2009

Results of analysis of 39 samples
received 22 April 2009

LE10104 - Lostock Works, Cheshire

					94530							
					AD98199	AD98200	AD98201	AD98202	AD98203	AD98204	AD98205	AD98206
					TP6	TP6	BH5	WS4	TP8	WS7	WS6	WS2
					0.6	3.3	2.1	0.05	0.5	0.4	0.8	0.7
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2800	Acenaphthylene	208968	mg kg-¹	N	<0.1	0.3	25	<0.1	<0.1	<0.1	0.6	<0.1
	Acenaphthene	83329	mg kg-¹	M	<0.1	<0.1	13	<0.1	<0.1	<0.1	0.8	<0.1
	Fluorene	86737	mg kg-¹	M	<0.1	0.1	21	<0.1	<0.1	<0.1	0.9	<0.1
	Phenanthrene	85018	mg kg-¹	M	<0.1	3.7	140	0.5	0.9	0.2	14	0.9
	Anthracene	120127	mg kg-¹	M	<0.1	0.8	47	<0.1	0.2	<0.1	3	0.1
	Fluoranthene	206440	mg kg-¹	M	<0.1	6.4	110	0.8	1.9	<0.1	15	1.5
	Pyrene	129000	mg kg-¹	M	<0.1	5.4	80	0.7	1.5	<0.1	12	1.2
	Benzo[a]anthracene	56553	mg kg-¹	M	<0.1	3.2	51	0.3	0.7	<0.1	7.5	0.8
	Chrysene	218019	mg kg-¹	M	<0.1	3.3	36	0.2	0.9	<0.1	7	0.8
	Benzo[b]fluoranthene	205992	mg kg-¹	M	<0.1	4.2	46	0.3	1.1	<0.1	8.3	1.1
	Benzo[k]fluoranthene	207089	mg kg-¹	N	<0.1	1.3	16	<0.1	0.4	<0.1	2.7	0.2
	Benzo[a]pyrene	50328	mg kg-¹	M	<0.1	3	33	<0.1	0.7	<0.1	5.8	0.5
	Dibenzo[a,h]anthracene	53703	mg kg-¹	N	<0.1	0.2	5.5	<0.1	<0.1	<0.1	0.6	<0.1
	Indeno[1,2,3-cd]pyrene	193395	mg kg-¹	M	<0.1	1.2	15	<0.1	0.2	<0.1	2.8	0.1
	Benzo[g,h,i]perylene	191242	mg kg-¹	M	<0.1	1.7	14	<0.1	0.3	<0.1	3.1	0.2
	Total (of 16) PAHs		mg kg-¹	N	<2	36	680	2.8	8.8	<2	87	7.4
2010	pH		-	M	8.2	8.0	8.7	5.4	12.0	9.1	7.9	7.9
2030	Moisture		%	n/a	8.39	15.4	23.7	21.5	5.93	9.75	11.5	13
	Stone content (as received)		%	n/a	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2140	Soil colour			n/a	brown	brown	brown	brown	brown	brown	brown	brown
	Soil texture			n/a	clay	clay	clay	clay	clay	clay	clay	clay
	Other material			n/a	none	none	none	none	none	none	none	none

All tests undertaken between 22-Apr-2009 and 30-Apr-2009

This report should be interpreted in conjunction with the notes on the accompanying cover page

Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

FAO Andy Johnston

LABORATORY TEST REPORT

Chemtest

Report Date
30 April 2009

Results of analysis of 39 samples
received 22 April 2009

LE10104 - Lostock Works, Cheshire

					94530							
					AD98207	AD98208	AD98209	AD98210	AD98211	AD98212	AD98213	AD98214
					WS3	WS3	WS5	TP7	TP7	WS9	BH19	TP10
					0.4	2.1	0.5	0.2	0.5	0.3	0.5	0.7
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2800	Acenaphthylene	208968	mg kg-¹	N	<0.1	<0.1	<0.1	<0.1	<0.1	0.9	300	1.6
	Acenaphthene	83329	mg kg-¹	M	<0.1	<0.1	<0.1	<0.1	<0.1	1	120	0.4
	Fluorene	86737	mg kg-¹	M	<0.1	<0.1	<0.1	<0.1	<0.1	2.2	370	2
	Phenanthrene	85018	mg kg-¹	M	0.2	<0.1	0.5	<0.1	<0.1	13	1200	13
	Anthracene	120127	mg kg-¹	M	<0.1	<0.1	<0.1	<0.1	<0.1	3.4	480	3.1
	Fluoranthene	206440	mg kg-¹	M	0.6	<0.1	0.8	<0.1	<0.1	14	1600	15
	Pyrene	129000	mg kg-¹	M	0.4	<0.1	0.7	<0.1	<0.1	12	1200	12
	Benzo[a]anthracene	56553	mg kg-¹	M	0.2	<0.1	0.2	<0.1	<0.1	6.7	790	6.5
	Chrysene	218019	mg kg-¹	M	0.2	<0.1	0.3	<0.1	<0.1	6.3	940	5.6
	Benzo[b]fluoranthene	205992	mg kg-¹	M	0.2	<0.1	0.3	<0.1	<0.1	7.4	750	7.7
	Benzo[k]fluoranthene	207089	mg kg-¹	N	<0.1	<0.1	<0.1	<0.1	<0.1	2.9	350	2
	Benzo[a]pyrene	50328	mg kg-¹	M	<0.1	<0.1	0.2	<0.1	<0.1	6	660	5.6
	Dibenzo[a,h]anthracene	53703	mg kg-¹	N	<0.1	<0.1	<0.1	<0.1	<0.1	0.5	170	0.6
	Indeno[1,2,3-cd]pyrene	193395	mg kg-¹	M	<0.1	<0.1	<0.1	<0.1	<0.1	2.6	380	2.9
	Benzo[g,h,i]perylene	191242	mg kg-¹	M	<0.1	<0.1	<0.1	<0.1	<0.1	3.1	440	2.9
	Total (of 16) PAHs		mg kg-¹	N	<2	<2	2.9	<2	<2	85	10000	82
2010	pH		-	M	8.6	8.5	8.2	7.9	7.3	8.3	7.4	8.2
2030	Moisture		%	n/a	10.8	12.8	11.2	4.34	14.3	14.1	29.2	13.4
	Stone content (as received)		%	n/a	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2140	Soil colour			n/a	brown	brown	brown	brown	brown	brown	brown	brown
	Soil texture			n/a	clay	clay	clay	clay	clay	clay	clay	clay
	Other material			n/a	none	none	none	none	none	none	none	none

All tests undertaken between 22-Apr-2009 and 30-Apr-2009

This report should be interpreted in conjunction with the notes on the accompanying cover page

Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

FAO Andy Johnston

LABORATORY TEST REPORT

Chemtest

Report Date
30 April 2009

Results of analysis of 39 samples
received 22 April 2009

LE10104 - Lostock Works, Cheshire

					94530					
					AD98215	AD98216	AD98217	AD98218	AD98219	AD98220
					TP11	TP11	TP12	TP12	TP13	TP13
					0.5	1.2	1.6	4.3	0.3	3.2
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2800	Acenaphthylene	208968	mg kg-¹	N	0.9	0.2	0.2	<0.1	<0.1	<0.1
	Acenaphthene	83329	mg kg-¹	M	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Fluorene	86737	mg kg-¹	M	0.8	<0.1	<0.1	<0.1	<0.1	<0.1
	Phenanthrene	85018	mg kg-¹	M	4.3	0.3	0.9	<0.1	0.3	<0.1
	Anthracene	120127	mg kg-¹	M	1.2	<0.1	0.1	<0.1	<0.1	<0.1
	Fluoranthene	206440	mg kg-¹	M	3.9	0.3	1.2	<0.1	0.5	<0.1
	Pyrene	129000	mg kg-¹	M	2.7	0.2	0.9	<0.1	0.3	<0.1
	Benzo[a]anthracene	56553	mg kg-¹	M	1.4	<0.1	0.6	<0.1	0.2	<0.1
	Chrysene	218019	mg kg-¹	M	1.3	<0.1	0.4	<0.1	0.1	<0.1
	Benzo[b]fluoranthene	205992	mg kg-¹	M	1.5	<0.1	0.7	<0.1	0.2	<0.1
	Benzo[k]fluoranthene	207089	mg kg-¹	N	0.4	<0.1	0.2	<0.1	<0.1	<0.1
	Benzo[a]pyrene	50328	mg kg-¹	M	1.1	<0.1	0.4	<0.1	<0.1	<0.1
	Dibenzo[a,h]anthracene	53703	mg kg-¹	N	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Indeno[1,2,3-cd]pyrene	193395	mg kg-¹	M	0.4	<0.1	0.1	<0.1	<0.1	<0.1
	Benzo[g,h,i]perylene	191242	mg kg-¹	M	0.4	<0.1	0.1	<0.1	<0.1	<0.1
	Total (of 16) PAHs		mg kg-¹	N	22	<2	6.1	<2	<2	<2
2010	pH		-	M	8.5	8.1	12.6	9.4	9.0	8.0
2030	Moisture		%	n/a	1.11	13.6	23.2	10.2	3.06	13.3
	Stone content (as received)		%	n/a	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2140	Soil colour			n/a	brown	brown	brown	brown	brown	brown
	Soil texture			n/a	clay	clay	clay	clay	clay	clay
	Other material			n/a	none	none	none	none	none	none

All tests undertaken between 22-Apr-2009 and 30-Apr-2009

This report should be interpreted in conjunction with the notes on the accompanying cover page

Chemtest
The right chemistry to deliver results

Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070

Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

FAO Robert Serjeant
13 May 2009

Dear Robert Serjeant

Test Report Number **94744**
Your Project Reference **LE10104 - Lostock Works, Cheshire**

Please find enclosed the results of analysis for the samples received 7 May 2009.

All soil samples will be retained for a period of one month and all water samples will be retained for 7 days following the date of the test report. Should you require an extended retention period then please detail your requirements in an email to customerservices@chemtest.co.uk. Please be aware that charges may be applicable for extended sample storage.

If you require any further assistance, please do not hesitate to contact the Customer Services team.

Yours sincerely

Authorised Signatory

☑ Darrell Hall	Laboratory Manager
☐ Phil Hellier	Operations Director
☐ Keith Jones	Technical Development Manager
☐ John Crawford	Quality Manager
☐ Malcolm Avis	Technical Director

UKAS TESTING
2183

MCERTS

Notes to accompany report:

- *The sign < means 'less than'*
- *Tests marked 'U' hold UKAS accreditation*
- *Tests marked 'M' hold MCertS (and UKAS) accreditation*
- *Tests marked 'N' do not currently hold UKAS accreditation*
- *Tests marked 'S' were subcontracted to an approved laboratory*
- *n/e means 'not evaluated'*
- *i/s means 'insufficient sample'*
- *u/s means 'unsuitable sample'*
- *Comments or interpretations are outside of the scope of UKAS accreditation*
- *The results relate only to the items tested*
- *Stones represent the quantity of material removed prior to analysis*
- *All results are expressed on a dry weight basis*
- *The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, phenols*
- *For all other tests the samples were dried at < 37°C prior to analysis*
- *Uncertainties of measurement for the determinands tested are available upon request*
- *Soil descriptions, including colour and texture, are beyond the scope of MCertS accreditation*

Test Report 94744 Cover Sheet

Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

LABORATORY TEST REPORT

Chemtest

Report Date
13 May 2009

Results of analysis of 7 samples
received 07 May 2009

FAO Robert Serjeant

LE10104 - Lostock Works, Cheshire

SOP↓	Determinand↓	CAS No↓	Units↓	*			
Login Batch No					**94744**		
Chemtest LIMS ID					AE02083	AE02084	AE02085
Sample ID					BH6	BH6	BH8
Sample No							
Depth					1.05	1.2	1.6
Matrix					*LEACHATE*	*LEACHATE*	*LEACHATE*
1010	pH	PH	-	U	7.4	7.7	7.6
1450	Arsenic	7440382	µg l-¹	U	51	51	22
	Cadmium	7440439	µg l-¹	U	<0.5	<0.5	<0.5
	Chromium	7440473	µg l-¹	U	1.4	2.3	5.0
	Copper	7440508	µg l-¹	U	3.1	3.1	7.6
	Lead	7439921	µg l-¹	U	<1	1.2	1.0
	Mercury	7439976	µg l-¹	U	<0.5	<0.5	<0.5
	Nickel	7440020	µg l-¹	U	14	18	5.7
	Selenium	7782492	µg l-¹	U	26	27	7.0
	Zinc	7440666	µg l-¹	U	32	33	61
1675	TPH aliphatic >C5-C6		µg l-¹	N	<0.1	<0.1	<0.1
	TPH aliphatic >C6-C8		µg l-¹	N	<0.1	<0.1	<0.1
	TPH aliphatic >C8-C10		µg l-¹	N	<0.1	<0.1	<0.1
	TPH aliphatic >C10-C12		µg l-¹	N	<0.1	<0.1	<0.1
	TPH aliphatic >C12-C16		µg l-¹	N	<0.1	<0.1	<0.1
	TPH aliphatic >C16-C21		µg l-¹	N	<0.1	<0.1	<0.1
	TPH aliphatic >C21-C35		µg l-¹	N	<0.1	<0.1	<0.1
	TPH aromatic >C5-C7		µg l-¹	N	<0.1	<0.1	<0.1
	TPH aromatic >C7-C8		µg l-¹	N	<0.1	<0.1	<0.1
	TPH aromatic >C8-C10		µg l-¹	N	<0.1	<0.1	<0.1
	TPH aromatic >C10-C12		µg l-¹	N	<0.1	<0.1	<0.1
	TPH aromatic >C12-C16		µg l-¹	N	<0.1	<0.1	<0.1
	TPH aromatic >C16-C21		µg l-¹	N	<0.1	<0.1	<0.1
	TPH aromatic >C21-C35		µg l-¹	N	<0.1	<0.1	<0.1
	Total Petroleum Hydrocarbons		µg l-¹	N	<10	<10	<10
1700	Naphthalene	91203	µg l-¹	N	<0.01	<0.01	<0.01
	Acenaphthylene	208968	µg l-¹	N	<0.01	<0.01	<0.01
	Acenaphthene	83329	µg l-¹	N	<0.01	<0.01	<0.01
	Fluorene	86737	µg l-¹	N	<0.01	<0.01	<0.01
	Phenanthrene	85018	µg l-¹	N	<0.01	<0.01	<0.01

All tests undertaken between 17-Apr-2009 and 13-May-2009

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

LABORATORY TEST REPORT

Chemtest

Results of analysis of 7 samples received 07 May 2009

Report Date 13 May 2009

FAO Robert Serjeant

LE10104 - Lostock Works, Cheshire

					94744		
					AE02083	AE02084	AE02085
					BH6	BH6	BH8
					1.05	1.2	1.6
					LEACHATE	*LEACHATE*	*LEACHATE*
1700	Anthracene	120127	µg l-¹	N	<0.01	<0.01	<0.01
	Fluoranthene	206440	µg l-¹	N	<0.01	<0.01	<0.01
	Pyrene	129000	µg l-¹	N	<0.01	<0.01	<0.01
	Benzo[a]anthracene	56553	µg l-¹	N	<0.01	<0.01	<0.01
	Chrysene	218019	µg l-¹	N	<0.01	<0.01	<0.01
	Benzo[b]fluoranthene	205992	µg l-¹	N	<0.01	<0.01	<0.01
	Benzo[k]fluoranthene	207089	µg l-¹	N	<0.01	<0.01	<0.01
	Benzo[a]pyrene	50328	µg l-¹	N	<0.01	<0.01	<0.01
	Dibenzo[a,h]anthracene	53703	µg l-¹	N	<0.01	<0.01	<0.01
	Indeno[1,2,3-cd]pyrene	193395	µg l-¹	N	<0.01	<0.01	<0.01
	Benzo[g,h,i]perylene	191242	µg l-¹	N	<0.01	<0.01	<0.01
	Total (of 16) PAHs		µg l-¹	N	<0.2	<0.2	<0.2
1760	Dichlorodifluoromethane	75718	µg l-¹	U	<1	<1	<1
	Chloromethane	74873	µg l-¹	U	<1	<1	<1
	Vinyl chloride	75014	µg l-¹	U	<1	<1	<1
	Bromomethane	74839	µg l-¹	U	<20	<20	<20
	Chloroethane	75003	µg l-¹	U	<2	<2	<2
	Trichlorofluoromethane	75694	µg l-¹	U	<1	<1	<1
	1,1-Dichloroethene	75354	µg l-¹	U	<1	<1	<1
	Dichloromethane	75092	µg l-¹	U	ne	ne	ne
	trans-1,2-Dichloroethene	156605	µg l-¹	U	<1	<1	<1
	1,1-Dichloroethane	75343	µg l-¹	U	<1	<1	<1
	cis-1,2-Dichloroethene	156592	µg l-¹	U	<1	<1	<1
	Bromochloromethane	74975	µg l-¹	U	<1	<1	<1
	Trichloromethane	67663	µg l-¹	U	<1	<1	<1
	1,1,1-Trichloroethane	71556	µg l-¹	U	<1	<1	<1
	Tetrachloromethane	56235	µg l-¹	U	<1	<1	<1
	1,1-Dichloropropene	563586	µg l-¹	U	<1	<1	<1
	Benzene	71432	µg l-¹	U	<1	<1	<1
	1,2-Dichloroethane	107062	µg l-¹	U	<2	<2	<2
	Trichloroethene	79016	µg l-¹	U	<1	<1	<1

All tests undertaken between 17-Apr-2009 and 13-May-2009

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FAO Robert Serjeant

LABORATORY TEST REPORT

Chemtest

Report Date
13 May 2009

Results of analysis of 7 samples
received 07 May 2009

LE10104 - Lostock Works, Cheshire

					94744		
					AE02083	AE02084	AE02085
					BH6	BH6	BH8
					1.05	1.2	1.6
					LEACHATE	*LEACHATE*	*LEACHATE*
1760	1,2-Dichloropropane	78875	µg l-¹	U	<1	<1	<1
	Dibromomethane	74953	µg l-¹	U	<10	<10	<10
	Bromodichloromethane	75274	µg l-¹	U	<5	<5	<5
	cis-1,3-Dichloropropene	10061015	µg l-¹	U	<10	<10	<10
	Toluene	108883	µg l-¹	U	<1	<1	<1
	trans-1,3-Dichloropropene	10061026	µg l-¹	U	<10	<10	<10
	1,1,2-Trichloroethane	79005	µg l-¹	U	<10	<10	<10
	Tetrachloroethene	127184	µg l-¹	U	<1	<1	<1
	1,3-Dichloropropane	142289	µg l-¹	U	<2	<2	<2
	Dibromochloromethane	124481	µg l-¹	U	<10	<10	<10
	1,2-Dibromoethane	106934	µg l-¹	U	<5	<5	<5
	Chlorobenzene	108907	µg l-¹	U	<1	<1	<1
	1,1,1,2-Tetrachloroethane	630206	µg l-¹	U	<2	<2	<2
	Ethylbenzene	100414	µg l-¹	U	<1	<1	<1
	m- & p-Xylene	1330207	µg l-¹	U	<1	<1	<1
	o-Xylene	95476	µg l-¹	U	<1	<1	<1
	Styrene	100425	µg l-¹	U	<1	<1	<1
	Tribromomethane	75252	µg l-¹	U	<10	<10	<10
	Isopropylbenzene	98828	µg l-¹	U	<1	<1	<1
	Bromobenzene	108861	µg l-¹	U	<1	<1	<1
	1,1,2,2-Tetrachloroethane	79345	µg l-¹	U	<10	<10	<10
	1,2,3-Trichloropropane	96184	µg l-¹	U	<50	<50	<50
	n-Propylbenzene	103651	µg l-¹	U	<1	<1	<1
	2-Chlorotoluene	95498	µg l-¹	U	<1	<1	<1
	1,3,5-Trimethylbenzene	108678	µg l-¹	U	<1	<1	<1
	4-Chlorotoluene	106434	µg l-¹	U	<1	<1	<1
	tert-Butylbenzene	98066	µg l-¹	U	<1	<1	<1
	1,2,4-Trimethylbenzene	95636	µg l-¹	U	<1	<1	<1
	sec-Butylbenzene	135988	µg l-¹	U	<1	<1	<1
	1,3-Dichlorobenzene	541731	µg l-¹	U	<1	<1	<1
	4-Isopropyltoluene	99876	µg l-¹	U	<1	<1	<1

All tests undertaken between 17-Apr-2009 and 13-May-2009

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

FAO Robert Serjeant

LABORATORY TEST REPORT

Chemtest

Report Date
13 May 2009

Results of analysis of 7 samples
received 07 May 2009

LE10104 - Lostock Works, Cheshire

					94744		
					AE02083	AE02084	AE02085
					BH6	BH6	BH8
					1.05	1.2	1.6
					LEACHATE	*LEACHATE*	*LEACHATE*
1760	1,4-Dichlorobenzene	106467	µg l-¹	U	<1	<1	<1
	n-Butylbenzene	104518	µg l-¹	U	<1	<1	<1
	1,2-Dichlorobenzene	95501	µg l-¹	U	<1	<1	<1
	1,2-Dibromo-3-chloropropane	96128	µg l-¹	U	<50	<50	<50
	1,2,4-Trichlorobenzene	120821	µg l-¹	U	<1	<1	<1
	Hexachlorobutadiene	87683	µg l-¹	U	<1	<1	<1
	1,2,3-Trichlorobenzene	87616	µg l-¹	U	<2	<2	<2
1762	Tentatively Identified Compounds		µg l-¹		None Detected	None Detected	None Detected
1790	N-Nitrosodimethylamine	62759	µg l-¹	N	<0.05	<0.05	<0.05
	Phenol	108952	µg l-¹	N	<0.05	<0.05	<0.05
	bis(2-Chloroethyl)ether	111444	µg l-¹	N	<0.05	<0.05	<0.05
	2-Chlorophenol	95578	µg l-¹	N	<0.05	<0.05	<0.05
	1,3-Dichlorobenzene	541731	µg l-¹	N	<0.05	<0.05	<0.05
	1,4-Dichlorobenzene	106467	µg l-¹	N	<0.05	<0.05	<0.05
	1,2-Dichlorobenzene	95501	µg l-¹	N	<0.05	<0.05	<0.05
	2-Methylphenol	95487	µg l-¹	N	<0.05	<0.05	<0.05
	bis(2-Chloroisopropyl)ether	108601	µg l-¹	N	<0.05	<0.05	<0.05
	4-Methylphenol	106445	µg l-¹	N	<0.05	<0.05	<0.05
	N-Nitrosodi-n-propylamine	621647	µg l-¹	N	<0.05	<0.05	<0.05
	Hexachloroethane	67721	µg l-¹	N	<0.05	<0.05	<0.05
	Nitrobenzene	98953	µg l-¹	N	<0.05	<0.05	<0.05
	Isophorone	78591	µg l-¹	N	<0.05	<0.05	<0.05
	2-Nitrophenol	88755	µg l-¹	N	<0.05	<0.05	<0.05
	2,4-Dimethylphenol	105679	µg l-¹	N	<0.05	<0.05	<0.05
	bis(2-Chloroethoxy)methane	111911	µg l-¹	N	<0.05	<0.05	<0.05
	2,4-Dichlorophenol	120832	µg l-¹	N	<0.05	<0.05	<0.05
	1,2,4-Trichlorobenzene	120821	µg l-¹	N	<0.05	<0.05	<0.05
	Naphthalene	91203	µg l-¹	N	<0.05	<0.05	<0.05
	4-Chloroaniline	106478	µg l-¹	N	<0.05	<0.05	<0.05
	Hexachlorobutadiene	87683	µg l-¹	N	<0.05	<0.05	<0.05
	4-Chloro-3-methylphenol	59507	µg l-¹	N	<0.05	<0.05	<0.05

All tests undertaken between 17-Apr-2009 and 13-May-2009

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NG16 6JA

FAO Robert Serjeant

LABORATORY TEST REPORT

Chemtest

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received 07 May 2009

LE10104 - Lostock Works, Cheshire

					94744		
					AE02083	AE02084	AE02085
					BH6	BH6	BH8
					1.05	1.2	1.6
					LEACHATE	*LEACHATE*	*LEACHATE*
1790	2-Methylnaphthalene	91576	µg l-¹	N	<0.05	<0.05	<0.05
	Hexachlorocyclopentadiene	77474	µg l-¹	N	<0.05	<0.05	<0.05
	2,4,6-Trichlorophenol	88062	µg l-¹	N	<0.05	<0.05	<0.05
	2,4,5-Trichlorophenol	95954	µg l-¹	N	<0.05	<0.05	<0.05
	2-Chloronaphthalene	91587	µg l-¹	N	<0.05	<0.05	<0.05
	2-Nitroaniline	88744	µg l-¹	N	<0.05	<0.05	<0.05
	Dimethylphthalate	131113	µg l-¹	N	<0.05	<0.05	<0.05
	2,6-Dinitrotoluene	606202	µg l-¹	N	<0.05	<0.05	<0.05
	Acenaphthylene	208968	µg l-¹	N	<0.05	<0.05	<0.05
	3-Nitroaniline	99092	µg l-¹	N	<0.05	<0.05	<0.05
	Acenaphthene	83329	µg l-¹	N	<0.05	<0.05	<0.05
	Dibenzofuran	132649	µg l-¹	N	<0.05	<0.05	<0.05
	2,4-Dinitrotoluene	121142	µg l-¹	N	<0.05	<0.05	<0.05
	Diethylphthalate	84662	µg l-¹	N	<0.05	<0.05	<0.05
	Fluorene	86737	µg l-¹	N	<0.05	<0.05	<0.05
	4-Chlorophenylether	7005723	µg l-¹	N	<0.05	<0.05	<0.05
	4-Nitroaniline	100016	µg l-¹	N	<0.05	<0.05	<0.05
	2-Methyl-4,6-dinitrophenol	534521	µg l-¹	N	<0.05	<0.05	<0.05
	Azobenzene	103333	µg l-¹	N	<0.05	<0.05	<0.05
	4-Bromophenylphenylether	101553	µg l-¹	N	<0.05	<0.05	<0.05
	Hexachlorobenzene	118741	µg l-¹	N	<0.05	<0.05	<0.05
	Pentachlorophenol	87865	µg l-¹	N	<0.05	<0.05	<0.05
	Phenanthrene	85018	µg l-¹	N	<0.05	<0.05	<0.05
	Anthracene	120127	µg l-¹	N	<0.05	<0.05	<0.05
	Carbazole	86748	µg l-¹	N	<0.05	<0.05	<0.05
	Di-n-butylphthalate	84742	µg l-¹	N	<0.05	<0.05	<0.05
	Fluoranthene	206440	µg l-¹	N	<0.05	<0.05	<0.05
	Pyrene	129000	µg l-¹	N	<0.05	<0.05	<0.05
	Butylbenzylphthalate	85687	µg l-¹	N	<0.05	<0.05	<0.05
	Benzo[a]anthracene	56553	µg l-¹	N	<0.05	<0.05	<0.05
	Chrysene	218019	µg l-¹	N	<0.05	<0.05	<0.05

All tests undertaken between 17-Apr-2009 and 13-May-2009

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Pinxton
Nottinghamshire
NG16 6JA

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LABORATORY TEST REPORT

Results of analysis of 7 samples received 07 May 2009

Report Date 13 May 2009

LE10104 - Lostock Works, Cheshire

					94744		
					AE02083	AE02084	AE02085
					BH6	BH6	BH8
					1.05	1.2	1.6
					LEACHATE	*LEACHATE*	*LEACHATE*
1790	bis(2-Ethylhexyl)phthalate	117817	µg l-¹	N	<0.05	<0.05	<0.05
	Di-n-octylphthalate	117840	µg l-¹	N	<0.05	<0.05	<0.05
	Benzo[b]fluoranthene	205992	µg l-¹	N	<0.05	<0.05	<0.05
	Benzo[k]fluoranthene	207089	µg l-¹	N	<0.05	<0.05	<0.05
	Benzo[a]pyrene	50328	µg l-¹	N	<0.05	<0.05	<0.05
	Indeno[1,2,3-cd]pyrene	193395	µg l-¹	N	<0.05	<0.05	<0.05
	Dibenzo[a,h]anthracene	53703	µg l-¹	N	<0.05	<0.05	<0.05
	Benzo[g,h,i]perylene	191242	µg l-¹	N	<0.05	<0.05	<0.05
1792	Tentatively Identified Compounds		ug l-¹		None Detected	None Detected	None Detected

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NG16 6JA

LABORATORY TEST REPORT

Chemtest

Report Date
13 May 2009

Results of analysis of 7 samples
received 07 May 2009

FAO Robert Serjeant

LE10104 - Lostock Works, Cheshire

Login Batch No					**94744**			
Chemtest LIMS ID					AE02079	AE02080	AE02081	AE02082
Sample ID					BH6	BH6	BH8	BH8
Sample No								
Depth					1.05	1.2	1.6	2.6
Matrix					*SOIL*	*SOIL*	*SOIL*	*SOIL*
SOP↓	Determinand↓	CAS No↓	Units↓	*				
2450	Arsenic	7440382	mg kg-¹	M	250	290	38	60
	Cadmium	7440439	mg kg-¹	M	<0.1	<0.1	<0.1	0.42
	Chromium	7440473	mg kg-¹	M	15	19	22	50
	Copper	7440508	mg kg-¹	M	23	22	24	63
	Mercury	7439976	mg kg-¹	M	0.42	0.78	0.32	0.64
	Nickel	7440020	mg kg-¹	M	19	30	20	52
	Lead	7439921	mg kg-¹	M	31	28	45	100
	Selenium	7782492	mg kg-¹	M	4.5	8.1	0.95	0.56
	Zinc	7440666	mg kg-¹	M	30	32	40	79
2625	Fraction of Organic Carbon			M	0.021	0.014	0.027	0.0067
2675	TPH aliphatic >C5-C6		mg kg-¹	N	< 0.1	< 0.1	< 0.1	< 0.1
	TPH aliphatic >C6-C8		mg kg-¹	N	< 0.1	< 0.1	< 0.1	< 0.1
	TPH aliphatic >C8-C10		mg kg-¹	N	1.5	< 0.1	< 0.1	< 0.1
	TPH aliphatic >C10-C12		mg kg-¹	N	7.2	0.8	< 0.1	< 0.1
	TPH aliphatic >C12-C16		mg kg-¹	N	55	20	< 0.1	< 0.1
	TPH aliphatic >C16-C21		mg kg-¹	N	78	30	< 0.1	< 0.1
	TPH aliphatic >C21-C35		mg kg-¹	N	26	9.6	< 0.1	< 0.1
	TPH aromatic >C5-C7		mg kg-¹	N	< 0.1	< 0.1	< 0.1	< 0.1
	TPH aromatic >C7-C8		mg kg-¹	N	< 0.1	< 0.1	< 0.1	< 0.1
	TPH aromatic >C8-C10		mg kg-¹	N	< 0.1	< 0.1	< 0.1	< 0.1
	TPH aromatic >C10-C12		mg kg-¹	N	3.8	0.7	< 0.1	1.8
	TPH aromatic >C12-C16		mg kg-¹	N	9.3	7.0	< 0.1	11
	TPH aromatic >C16-C21		mg kg-¹	N	6.7	0.4	< 0.1	19
	TPH aromatic >C21-C35		mg kg-¹	N	1.9	0.3	< 0.1	4.9
	Total Petroleum Hydrocarbons		mg kg-¹	N	190	68	< 10	37
2760	Dichlorodifluoromethane	75718	µg kg-¹	U	<1	<1	<1	<1
	Chloromethane	74873	µg kg-¹	M	<1	<1	<1	<1
	Vinyl chloride	75014	µg kg-¹	M	<1	<1	<1	<1
	Bromomethane	74839	µg kg-¹	U	<20	<20	<20	<20
	Chloroethane	75003	µg kg-¹	U	<2	<2	<2	<2

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LABORATORY TEST REPORT

Chemtest

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LE10104 - Lostock Works, Cheshire

					94744			
					AE02079	AE02080	AE02081	AE02082
					BH6	BH6	BH8	BH8
					1.05	1.2	1.6	2.6
					SOIL	*SOIL*	*SOIL*	*SOIL*
2760	Trichlorofluoromethane	75694	µg kg-¹	U	<1	<1	<1	<1
	1,1-Dichloroethene	75354	µg kg-¹	U	<1	<1	<1	<1
	Dichloromethane	75092	µg kg-¹	U	ne	ne	ne	ne
	trans-1,2-Dichloroethene	156605	µg kg-¹	M	<1	<1	<1	<1
	1,1-Dichloroethane	75343	µg kg-¹	M	<1	<1	<1	<1
	cis-1,2-Dichloroethene	156592	µg kg-¹	M	<1	<1	<1	<1
	Bromochloromethane	74975	µg kg-¹	U	<1	<1	<1	<1
	Trichloromethane	67663	µg kg-¹	M	<1	<1	<1	<1
	1,1,1-Trichloroethane	71556	µg kg-¹	M	<1	<1	<1	<1
	Tetrachloromethane	56235	µg kg-¹	M	<1	<1	<1	<1
	1,1-Dichloropropene	563586	µg kg-¹	U	<1	<1	<1	<1
	Benzene	71432	µg kg-¹	M	<1	<1	<1	<1
	1,2-Dichloroethane	107062	µg kg-¹	M	<2	<2	<2	<2
	Trichloroethene	79016	µg kg-¹	N	<1	<1	<1	<1
	1,2-Dichloropropane	78875	µg kg-¹	U	<1	<1	<1	<1
	Dibromomethane	74953	µg kg-¹	U	<10	<10	<10	<10
	Bromodichloromethane	75274	µg kg-¹	U	<5	<5	<5	<5
	cis-1,3-Dichloropropene	10061015	µg kg-¹	U	<10	<10	<10	<10
	Toluene	108883	µg kg-¹	M	<1	1.3	<1	<1
	trans-1,3-Dichloropropene	10061026	µg kg-¹	U	<10	<10	<10	<10
	1,1,2-Trichloroethane	79005	µg kg-¹	M	<10	<10	<10	<10
	Tetrachloroethene	127184	µg kg-¹	M	<1	<1	<1	<1
	1,3-Dichloropropane	142289	µg kg-¹	U	<2	<2	<2	<2
	Dibromochloromethane	124481	µg kg-¹	U	<10	<10	<10	<10
	1,2-Dibromoethane	106934	µg kg-¹	U	<5	<5	<5	<5
	Chlorobenzene	108907	µg kg-¹	M	<1	<1	<1	<1
	1,1,1,2-Tetrachloroethane	630206	µg kg-¹	M	<2	<2	<2	<2
	Ethylbenzene	100414	µg kg-¹	M	<1	<1	<1	<1
	m- & p-Xylene	1330207	µg kg-¹	M	<1	2.3	<1	<1
	o-Xylene	95476	µg kg-¹	M	<1	9.6	<1	<1
	Styrene	100425	µg kg-¹	U	<1	<1	<1	<1

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LE10104 - Lostock Works, Cheshire

					94744			
					AE02079	AE02080	AE02081	AE02082
					BH6	BH6	BH8	BH8
					1.05	1.2	1.6	2.6
					SOIL	*SOIL*	*SOIL*	*SOIL*
2760	Tribromomethane	75252	µg kg-¹	U	<10	<10	<10	<10
	Isopropylbenzene	98828	µg kg-¹	U	<1	5.7	<1	<1
	Bromobenzene	108861	µg kg-¹	U	<1	<1	<1	<1
	1,1,2,2-Tetrachloroethane	79345	µg kg-¹	M	<10	<10	<10	<10
	1,2,3-Trichloropropane	96184	µg kg-¹	U	<50	<50	<50	<50
	n-Propylbenzene	103651	µg kg-¹	U	<1	<1	<1	<1
	2-Chlorotoluene	95498	µg kg-¹	U	<1	<1	<1	<1
	1,3,5-Trimethylbenzene	108678	µg kg-¹	U	<1	110	<1	<1
	4-Chlorotoluene	106434	µg kg-¹	U	<1	<1	<1	<1
	tert-Butylbenzene	98066	µg kg-¹	U	<1	<1	<1	<1
	1,2,4-Trimethylbenzene	95636	µg kg-¹	U	<1	210	<1	<1
	sec-Butylbenzene	135988	µg kg-¹	U	<1	<1	<1	<1
	1,3-Dichlorobenzene	541731	µg kg-¹	U	<1	<1	<1	<1
	4-Isopropyltoluene	99876	µg kg-¹	U	<1	<1	<1	<1
	1,4-Dichlorobenzene	106467	µg kg-¹	U	<1	<1	2.5	<1
	n-Butylbenzene	104518	µg kg-¹	U	<1	<1	<1	<1
	1,2-Dichlorobenzene	95501	µg kg-¹	U	<1	<1	<1	<1
	1,2-Dibromo-3-chloropropane	96128	µg kg-¹	U	<50	<50	<50	<50
	1,2,4-Trichlorobenzene	120821	µg kg-¹	U	<1	<1	<1	<1
	Hexachlorobutadiene	87683	µg kg-¹	U	<1	<1	<1	<1
	1,2,3-Trichlorobenzene	87616	µg kg-¹	U	<2	<2	<2	<2
2762	benzene,1-ethyl-3-methyl		µg kg-¹			330		
	Tentatively Identified Compounds		µg kg-¹		None detected		None detected	None detected
2790	N-Nitrosodimethylamine	62759	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Phenol	108952	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	bis(2-Chloroethyl)ether	111444	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	2-Chlorophenol	95578	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	1,3-Dichlorobenzene	541731	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	1,4-Dichlorobenzene	106467	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	1,2-Dichlorobenzene	95501	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	2-Methylphenol	95487	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5

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Chemtest

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LE10104 - Lostock Works, Cheshire

					94744			
					AE02079	AE02080	AE02081	AE02082
					BH6	BH6	BH8	BH8
					1.05	1.2	1.6	2.6
					SOIL	*SOIL*	*SOIL*	*SOIL*
2790	bis(2-Chloroisopropyl)ether	108601	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	4-Methylphenol	106445	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	N-Nitrosodi-n-propylamine	621647	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Hexachloroethane	67721	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Nitrobenzene	98953	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Isophorone	78591	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	2-Nitrophenol	88755	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	2,4-Dimethylphenol	105679	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	bis(2-Chloroethoxy)methane	111911	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	2,4-Dichlorophenol	120832	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	1,2,4-Trichlorobenzene	120821	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Naphthalene	91203	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	4-Chloroaniline	106478	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Hexachlorobutadiene	87683	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	4-Chloro-3-methylphenol	59507	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	2-Methylnaphthalene	91576	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Hexachlorocyclopentadiene	77474	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	2,4,6-Trichlorophenol	88062	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	2,4,5-Trichlorophenol	95954	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	2-Chloronaphthalene	91587	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	2-Nitroaniline	88744	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Dimethylphthalate	131113	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	2,6-Dinitrotoluene	606202	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Acenaphthylene	208968	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	3-Nitroaniline	99092	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Acenaphthene	83329	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Dibenzofuran	132649	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	2,4-Dinitrotoluene	121142	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Diethylphthalate	84662	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Fluorene	86737	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	4-Chlorophenylether	7005723	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5

All tests undertaken between 17-Apr-2009 and 13-May-2009

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

Van Elle Geotechnical Division
Kirkby Lane
Pinxton
Nottinghamshire
NG16 6JA

FAO Robert Serjeant

LABORATORY TEST REPORT

Results of analysis of 7 samples received 07 May 2009

LE10104 - Lostock Works, Cheshire

Chemtest

Report Date
13 May 2009

					94744			
					AE02079	AE02080	AE02081	AE02082
					BH6	BH6	BH8	BH8
					1.05	1.2	1.6	2.6
					SOIL	*SOIL*	*SOIL*	*SOIL*
2790	4-Nitroaniline	100016	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	2-Methyl-4,6-dinitrophenol	534521	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Azobenzene	103333	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	4-Bromophenylphenylether	101553	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Hexachlorobenzene	118741	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Pentachlorophenol	87865	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Phenanthrene	85018	mg kg-¹	N	<0.5	<0.5	<0.5	0.52
	Anthracene	120127	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Carbazole	86748	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Di-n-butylphthalate	84742	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Fluoranthene	206440	mg kg-¹	N	<0.5	<0.5	<0.5	0.65
	Pyrene	129000	mg kg-¹	N	<0.5	<0.5	<0.5	0.50
	Butylbenzylphthalate	85687	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Benzo[a]anthracene	56553	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Chrysene	218019	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	bis(2-Ethylhexyl)phthalate	117817	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Di-n-octylphthalate	117840	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Benzo[b]fluoranthene	205992	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Benzo[k]fluoranthene	207089	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Benzo[a]pyrene	50328	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Indeno[1,2,3-cd]pyrene	193395	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Dibenzo[a,h]anthracene	53703	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
	Benzo[g,h,i]perylene	191242	mg kg-¹	N	<0.5	<0.5	<0.5	<0.5
2792	diphenyl sulfone		mg kg-¹		6			
	Tentatively Identified Compounds		mg kg-¹			Not detected	Not detected	Not detected
2800	Naphthalene	91203	mg kg-¹	M	0.2	<0.1	<0.1	0.5
	Acenaphthylene	208968	mg kg-¹	N	<0.1	<0.1	<0.1	0.1
	Acenaphthene	83329	mg kg-¹	M	<0.1	<0.1	<0.1	<0.1
	Fluorene	86737	mg kg-¹	M	<0.1	<0.1	<0.1	0.4
	Phenanthrene	85018	mg kg-¹	M	0.3	<0.1	<0.1	5.5
	Anthracene	120127	mg kg-¹	M	<0.1	<0.1	<0.1	1.2

All tests undertaken between 17-Apr-2009 and 13-May-2009

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NG16 6JA

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LABORATORY TEST REPORT

Results of analysis of 7 samples received 07 May 2009

LE10104 - Lostock Works, Cheshire

Chemtest

Report Date
13 May 2009

					94744			
					AE02079	AE02080	AE02081	AE02082
					BH6	BH6	BH8	BH8
					1.05	1.2	1.6	2.6
					SOIL	*SOIL*	*SOIL*	*SOIL*
2800	Fluoranthene	206440	mg kg-¹	M	<0.1	<0.1	<0.1	4.7
	Pyrene	129000	mg kg-¹	M	<0.1	<0.1	<0.1	3.3
	Benzo[a]anthracene	56553	mg kg-¹	M	<0.1	<0.1	<0.1	1.7
	Chrysene	218019	mg kg-¹	M	<0.1	<0.1	<0.1	1.7
	Benzo[b]fluoranthene	205992	mg kg-¹	M	<0.1	<0.1	<0.1	1.7
	Benzo[k]fluoranthene	207089	mg kg-¹	N	<0.1	<0.1	<0.1	0.6
	Benzo[a]pyrene	50328	mg kg-¹	M	<0.1	<0.1	<0.1	0.9
	Dibenzo[a,h]anthracene	53703	mg kg-¹	N	<0.1	<0.1	<0.1	<0.1
	Indeno[1,2,3-cd]pyrene	193395	mg kg-¹	M	<0.1	<0.1	<0.1	0.4
	Benzo[g,h,i]perylene	191242	mg kg-¹	M	<0.1	<0.1	<0.1	0.4
	Total (of 16) PAHs		mg kg-¹	N	<2	<2	<2	23
2010	pH		-	M	10.0	9.7	7.4	7.7
2030	Moisture		%	n/a	25.5	23.2	30.7	22
	Stone content (as received)		%	n/a	<0.02	<0.02	<0.02	<0.02
2140	Soil colour			n/a	brown	brown	brown	brown
	Soil texture			n/a	clay	clay	clay	clay
	Other material			n/a	stones	stones	stones	stones
2186	Asbestos Containing Material		-	N	not found	not found	not found	not found

All tests undertaken between 17-Apr-2009 and 13-May-2009

* Accreditation status

This report should be interpreted in conjunction with the notes on the accompanying cover page

Phase II Factual Report

Contract: Lostock Works, Cheshire

Ref: G900000

Appendix G

Plates

VAN ELLE
TOTAL FOUNDATION SOLUTIONS

Recovered cores from WS1

Recovered cores from WS3

Project No.	29002	Drawn	GJS
Client	Viridor Limited	Checked	
		Approved	
Project	Lostock Works Cheshire	Scale	NTS
		Date Drawn	30/04/2009
		Rev.	
Title	Views of Recovered Cores from WS1 & WS3 (Inside Building)	Plate 1	

GeoDyne

Recovered cores from WS4

Recovered cores from WS8

Project No.	29002	Drawn	GJS
Client	Viridor Limited	Checked	
		Approved	
Project	Lostock Works Cheshire	Scale	NTS
		Date Drawn	30/04/2009
		Rev.	
Title	Views of Recovered Cores from WS4 & WS8	Plate 2	

GeoDyne

Project No.	29002	Drawn	GJS
Client	Viridor Limited	Checked	
		Approved	
Project	Lostock Works Cheshire	Scale	NTS
		Date Drawn	30/04/2009
		Rev.	
Title	Views of Exploratory Hole WS8 & Recovered Core from WS10	3	

GeoDyne

Cable Percusive Rig Advancing Exploratory Hole BH1

Cable Percusive Rig Advancing Exploratory Hole BH4

Project No.	29002	Drawn	GJS
Client	Viridor Limited	Checked	
		Approved	
Project	Lostock Works Cheshire	Scale	NTS
		Date Drawn	30/04/2009
		Rev.	
Title	Cable Percusive Drilling Rig	Plate 4	

GeoDyne

Cable Percusive Rig Advancing Exploratory Hole BH7

Cable Percusive Rig Advancing Exploratory Hole BH18A

Project No.	29002	Drawn	GJS
Client	Viridor Limited	Checked	
		Approved	
Project	Lostock Works Cheshire	Scale	NTS
		Date Drawn	30/04/2009
		Rev.	
Title	Cable Percusive Drilling Rig	Plate 5	

GeoDyne

Project No.	29002	Drawn	GJS
Client	Viridor Limited	Checked	
		Approved	
Project	Lostock Works Cheshire	Scale	NTS
		Date Drawn	30/04/2009
Title	View of Exploratory Hole TP1 & TP4	Rev.	
		Plate 6	

GeoDyne

Project No.	29002	Drawn	GJS
Client	Viridor Limited	Checked	
		Approved	
Project	Lostock Works Cheshire	Scale	NTS
		Date Drawn	30/04/2009
		Rev.	
Title	View of Exploratory Hole TP5 & TP6	Plate 7	

GeoDyne

Exploratory Hole TP11

Exploratory Hole TP12

Project No.	29002	Drawn	GJS
Client	Viridor Limited	Checked	
		Approved	
Project	Lostock Works Cheshire	Scale	NTS
		Date Drawn	30/04/2009
		Rev.	
Title	View of Exploratory Hole TP11 & TP12	Plate 8	

GeoDyne

Exploratory Hole TP13

Horizons excavated from TP13

Project No.	29002	Drawn	GJS
Client	Viridor Limited	Checked	
		Approved	
Project	Lostock Works Cheshire	Scale	NTS
		Date Drawn	30/04/2009
		Rev.	
Title	Views of Exploratory Hole TP13	Plate 9	

GeoDyne

Phase II Factual Report

Contract: Lostock Works, Cheshire

Ref: G900000

Appendix H

Conditions and Limitations

Conditions & Limitations

Phase I Desk Studies

1. Works undertaken to provide the basis of the Phase I Desk Study report comprise a review of information available from a number of sources/parties (potentially also including the Client) together with a walk over of the site (where applicable and included within the quotation). The opinions given in the Phase I Desk Study are based on the information available from third parties/sources that has been obtained within the available timeframe. Van Elle assumes all third party information to be true and correct and therefore cannot accept liability for the accuracy of such information supplied.

2. Should additional information become available that may affect the comments and opinions made within the Phase I Desk Study, Van Elle reserves the right to review such information and make modifications to comments/opinions as appropriate.

3. It should be borne in mind that a Phase I Desk Study collates available information to generate a conceptual model of the site. The actual geotechnical and environmental considerations can only be fully quantified by intrusive investigation works to confirm the accuracy of the conceptual site model.

Phase II Intrusive Investigations

1. Our quotation assumes that access to the site will be arranged by others at no cost to ourselves.

2. We have assumed that free access is available throughout to the entire site and that works can be undertaken during a single mobilisation. Where restricted access is encountered, or where additional unscheduled mobilisations are required, additional costs may be incurred to the client.

3. We have assumed that all available information relating to buried services will be supplied by the Client at no cost to ourselves. No responsibility will be accepted for damage to underground services that have not been brought to our prior attention by the Client.

4. All excavations/boreholes will be backfilled with compacted arisings upon completion, with any excess arisings left proud of ground levels. Excess arisings will not be removed from the site unless specifically requested by the Client. Where we are requested to remove excess arisings, all associated costs will be passed to the Client.

5. We will attempt to leave the site in a clean and tidy state, however, it must be understood that some disturbance of the site is unavoidable during intrusive works.

6. Exploratory holes are positioned approximately on site by Van Elle. Should the client require precise locations of all exploratory points, additional fees will be incurred. It must be borne in mind that backfilled trial pits can create 'soft spots', therefore, should the Client wish to designate 'no dig' zones, for example under the footprint of proposed structures, these must be brought to our attention prior to commencement of works.

7. Groundwater observations relate to conditions encountered at the time of investigation. It must be understood that groundwater levels may vary as a result of recent climatic conditions or seasonal variation.

8. Trial pits and boreholes examine only a small proportion of the total site area. No liability can be accepted for conditions not revealed in exploratory holes, particularly between positions. All extrapolations of available data are given in good faith.

Payment

1 Payment terms are strictly 28 days from the invoice date.

2 Prior to commencement of works, we require receipt of formal written instruction from the party accepting full financial responsibility for the work. In the absence of such an instruction, we would expect the instructing Consulting Engineers/Architects to accept full financial responsibility for the works.

3 Receipt of instruction to commence work shall be taken as acceptance and compliance of the foregoing conditions.

Liability

1. No individual liability shall be implied to, or accepted by, any employee for works undertaken for and on the behalf of Van Elle.