

Caulmert Limited

Engineering, Environmental & Planning
Consultancy Services

Maw Green Landfill Soil Treatment Facility

3C Waste Limited

Environmental Permit Variation Application

Amenity & Accidents Risk Assessment

Prepared by:

Caulmert Limited

Office: Strelley Hall, Main Street, Strelley, Nottingham, NG8 6PE

Tel: 01773 749132

Email: andystocks@caulmert.com

Web: www.caulmert.com

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Project Manager: Andy Stocks

Caulmert Limited: Strelley Hall, Main Street, Strelley, Nottingham, NG8 6PE

Author	Samantha Hayden Environmental Consultant	Date	12/12/2022
Reviewer	Andy Stocks Director of Environment	Date	12/12/2022
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Amenity & Accidents Risk Assessment

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1.0 INTRODUCTION

1.1 Overview

- 1.1.1 Caulmert Limited have been appointed by 3C Waste Limited ('the operator') who are a wholly owned subsidiary of FCC Environment (UK) Limited, to prepare an environmental permit variation application to vary the existing Maw Green Landfill permit ref. EPR/BS7722ID to include for the treatment of contaminated soils with asbestos (additional Section 5.3A(1)(a)(ii) activity) by pre-screening and handpicking of bound asbestos fragments, which is to include an additional area for storage of solely asbestos contaminated soils, separate to the current STF area for bioremediation. The proposed area for asbestos handling and storage is located to the west of the current STF and is within the existing Maw Green Landfill permit boundary, with a small portion of the new treatment area to be located on top of the permanently capped landfill mass.
- 1.1.2 This report is an Amenity and Accidents Risk Assessment (ARA) for the impact of the proposed storage and treatment of asbestos contaminated soils at the STF and is an update to the existing risk assessment for the existing STF bioremediation area.
- 1.1.3 This report is an assessment of the potential impact the proposed activities on site could have on local sensitive receptors. This risk assessment has been compiled in accordance with the current GOV.UK guidance on 'Risk assessments for your environmental permit' (last updated 31st August 2022).

2.0 SITE BACKGROUND

2.1 Site Location

2.1.1 The Soils Treatment Facility ('the site') at Maw Green Landfill is located off Maw Green Road, Coppenhall, Crewe, Cheshire, postcode CW1 5NG. The southern boundary of the site is located approximately 2km north of the centre of Crewe (i.e. on the outskirts of Crewe). The site is centred on national grid reference SJ 71859 57401. The site is in a low-lying area, with general ground elevations around 45m Above Ordnance Datum (AOD). The site location is shown in Figure 1 below:

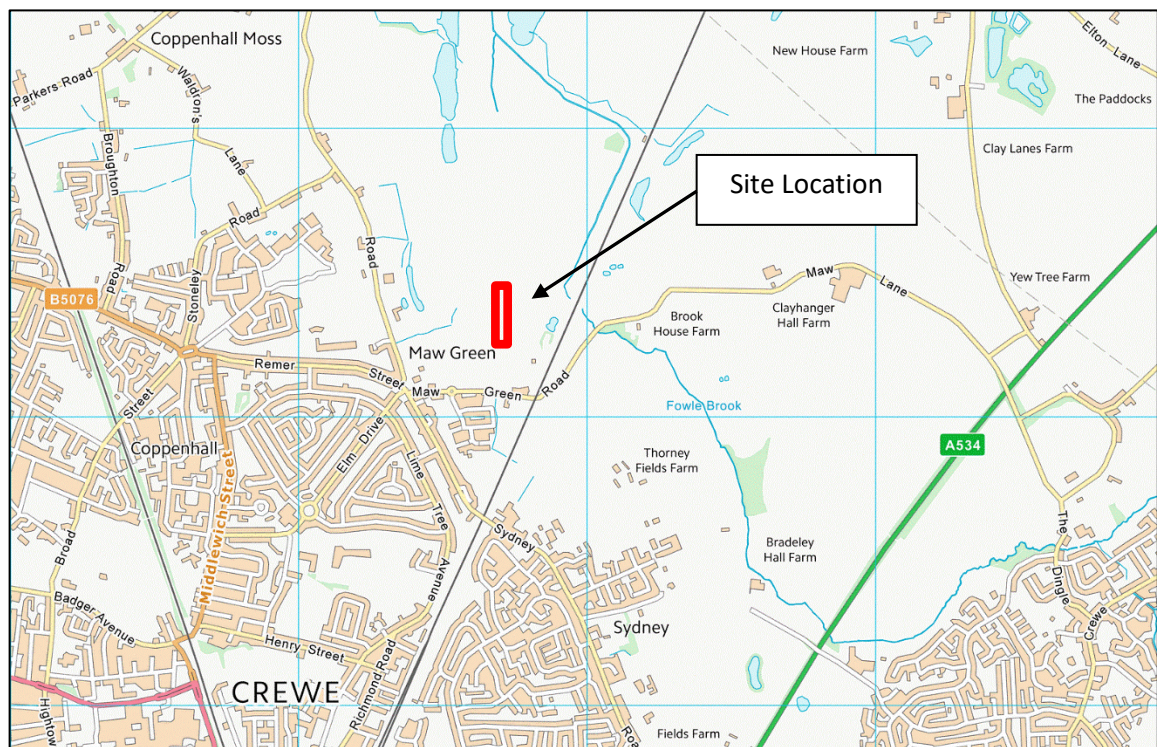


Figure 1 – Site Location

- 2.1.2 The ground rises very gently to both the west and the east, indicating that the site lies in a wide, open valley. The Fowle Brook flows through this valley in a northerly direction. This brook has been diverted around the site.
- 2.1.3 The site is in a predominantly agricultural setting on the north-eastern outskirts of the town of Crewe. As such, potential environmental receptors include domestic dwellings both within the town and farmlands surrounding the site. In addition, surface water receptors are present within the Sandbach Flashes Site of Special Scientific Interest (SSSI) to the north and the diverted Fowle Brook to the east being the closest to the site.

2.2 Proposed Development

- 2.2.1 It is proposed to add an additional listed activity to permit ref. EPR/BS7722ID, for the treatment and storage of soils contaminated with asbestos at the Soils Treatment Facility (STF) at Maw Green Landfill Site, as follows:
- Section 5.3 Part A(1)(a)(ii) Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving physico-chemical treatment.
- 2.2.2 The new treatment activity is to be in a separate area to the west of the existing STF. The treatment of the asbestos in soils will be by 3-way screen and handpicking of bound asbestos and the storage will be solely for asbestos contaminated wastes in a separate area. The picking station will be an enclosed mobile unit.
- 2.2.3 The proposed soils bioremediation process will remain the same, utilising industry standard biopile technology.
- 2.2.4 For the new activities, hazardous soils containing bonded asbestos debris will undergo pre-acceptance checks, a pre-screening process and hand-picking of asbestos cement fragments in the new proposed area for treatment and storage, before being tested and then used in restoration of the Maw Green Landfill.
- 2.2.5 The new hazardous soils storage and treatment pad will be constructed from crushed concrete with underlying geo-composite clay liner (GCL). These will have sealed drainage where all surface waters will fall towards the pumping chamber in the north-eastern part of the new STF area, before being pumped across to the existing water treatment plant and then discharged to sewer in accordance with an existing discharge consent.

Screening Operations

- 2.2.6 A mechanical screener will be used to remove oversize material from asbestos cement containing soils. Soils will be screened using a three-way screener. The screened material is then passed through the picking station to allow the removal of any bound asbestos debris. This is to remove larger items (e.g. lumps of concrete) to reduce the potential of damage to the picking station and make hand picking of asbestos debris more effective.
- 2.2.7 The screener currently being used under the mobile plant deployment at Maw Green is unmodified. Trials on enclosed screeners with a HEPA filter and uncovered screeners with general dust suppression have shown no difference in emissions as they all meet the method detection limit of <0.0005f/ml. However, the use of enclosed screeners is far slower, prone to significant downtime and uses significantly more energy due to reduced throughput for no environmental benefit. The use of standard dust suppression with a propriety surfactant has been shown to be entirely effective as secondary mitigation to the waste acceptance criteria.
- 2.2.8 Where SEM testing is undertaken this will ensure that the asbestos concentrations in air are below 0.0005f/ml. This approach and reduced detection limit for the asbestos monitoring

meets the well-established principle of reducing emissions to be as low as reasonably practicable.

Asbestos Picking Station

- 2.2.9 The asbestos picking station will be a mobile enclosed unit and will be identical to the type approved for use under an environmental permit at the operator's other sites.
- 2.2.10 Airborne asbestos concentrations have been monitored both within, and directly adjacent to the picking station at the operator's other sites. There is no increase in asbestos concentrations above the method detection limit of either <0.01f/ml or <0.0005f/ml within the internal atmosphere of the soil screeners or picking stations monitored, nor ambient air immediately outside of the screener/picking station. This monitoring has been undertaken since the operator commenced the treatment of bound asbestos contaminated soils. All air monitoring data has been submitted to the Environment Agency and approved as being compliant with the site's permit for each site (existing Maw Green Landfill Mobile Plant and Edwin Richards Quarry Mobile Plant).
- 2.2.11 Notwithstanding the evidence that there are no elevated airborne asbestos emissions within the screening plant or picking stations of the above sites, as an additional control measure, there will be a series of spray rails on the incoming and outgoing conveyor to effectively capture and contain particulate emissions. This would act as secondary containment for any particulate emissions.
- 2.2.12 The out-going conveyor will drop the hand-picked picked processed soils, and the drop height will be minimised to reduce any agitation of the soils. A dust suppression system (using a water and proprietary asbestos surfactant solution) will be in place at the site that will consist of misting sprays with overlapping spray arcs, identical to the approved suppression system on the operator's other sites that can be used to continually dampen stockpiles during loading and unloading activities.
- 2.2.13 The process in the picking station will involve a manual sorting process by trained operatives who will remove visible fragments of asbestos from the materials from the conveyor. Asbestos picked from the conveyor will be placed by hand in individual polythene bags located inside the picking station beside the trained operatives. When the bags are either full, or the end of the working day is achieved, the polythene bag will be placed into a second bag and sealed using a taped swan neck. The double bagged asbestos will be taken outside and placed by hand into the on-site enclosed lockable asbestos skip. Used PPE from the picking station and direct working areas will be double bagged using the same approach as asbestos containing material (ACM) debris and placed into the enclosed lockable asbestos skip.
- 2.2.14 A Category B trained supervisor will regularly check the labelled, lockable asbestos waste skip and will arrange for the collection and delivery of new asbestos skips when the existing skip has reached 75% capacity. This is to ensure that there is no risk of the skip becoming over capacity and unable to accept further bagged asbestos. This will form part of the daily site checks.

Post-treatment Storage and Verification

- 2.2.15 The out-going conveyor from the asbestos picking station will deposit the hand processed soils into a separate stockpile labelled as treated soils. The stockpile within this designated area will then undergo further visual inspection by the suitably trained/qualified member of staff for any residual asbestos containing fragments. If any bonded asbestos fragments are encountered, the materials will be re-loaded into the asbestos picking station and processed until no visible bonded asbestos fragments are observed through visual inspection.
- 2.2.16 The materials will then undergo 'Post Treatment Verification Sampling' testing and sampling will confirm that treated soils meet the restoration soil quality targets to enable their use in the restoration area of Maw Green Landfill Site. If, after the receipt of laboratory analysis results, the soils do not meet the acceptance criteria, the soils will either be treated further or removed from site to an alternative disposal facility.
- 2.2.17 Following screening, the soils will be stockpiled for use in recovery at the landfill site, this may also include soils that have undergone bioremediation.

3.0 SENSITIVE RECEPTORS

3.1 Overview

3.1.1 A search of sensitive receptors within a 1km radius of the activity boundary at Bootham Lane Landfill Site was conducted using the DEFRA Magic Maps¹ website and other publicly available information sources, and the identified receptors are listed below in Table 1, and also shown on drawing ref. 5193-CAU-XX-XX-DR-V-1804. Distances to receptors are measured from the boundary of the new STF area for the treatment and storage of asbestos contaminated soils within the landfill site.

3.2 Receptors

3.2.1 A number of residential receptors on the outskirts of Crewe have been identified as sensitive receptors. Houses in Maw Green are located approximately 170m southwest of the site, Meadow Cottage is 210m southeast of the site and houses on Maw Green Road are 240m southwest. Brook House Farm is also located 315m east. The closest school is Monks Coppenhall Primary School located 560m to the west-southwest of the site. As the prevailing wind direction is from the southwest, none of these developments are considered to be at a high risk from odour or dust nuisance from the site.

3.2.2 The closest surface water feature is a stream, Fowle Brook, to the 140m to the east-northeast of the site, which runs parallel to the railway line along the northeast site boundary. Approximately 530m to the northwest is a pond, which is located directly south of the water features which constitute Sandbach Flashes SSSI (which are 615m northwest of the site). Brook House Pools are located approximately 400m to the north, north-east of the site.

3.2.3 The site is situated within a NO_x (as NO₂) Air quality Management Area (AQMA), as is most of Cheshire. There are no Source Protection Zones (SPZs) within 2km of the site, with the nearest SPZ (Zone III) located over 8km away to the southeast.

3.2.4 The site is not located within a flood risk zone. The site is located on Devensian Glacial Till deposits (silt, clay, sands and gravels) classified by the Environment Agency as a Secondary (undifferentiated) Aquifer. The superficial deposits are underlain by the Wilkesley Halite Member (Halite and Mudstone) of the Mercia Mudstone Group, which has not been given aquifer status by the Environment Agency.

3.3 Ecological Designations

3.3.1 A search was conducted for habitats and environmental receptors within a 2km radius of the site. From a review of the Magic Maps website the site is not within 2km of any of the following designated sites: Areas of Outstanding Natural Beauty (AONBs), Local Nature Reserves (LNRs), National Nature Reserves (NNRs), Ramsar sites, Special Areas of Conservation (SACs), Special Protection Areas (SPAs), or any Scheduled Monuments and World Heritage Sites.

¹ DEFRA Magic Maps website, 2022: <https://magic.defra.gov.uk/MagicMap.aspx>

- 3.3.2 Sandbach Flashes Site of Special Scientific Interest (SSSI) is located approximately 615m north-northwest of the proposed site. The Sandbach Flashes are made up of 14 live units, which are all found north of the site within a 5km radius. The 3 units within 900m of the site are in favourable condition (closest 615m NNW), with 8 units north of this in an unfavourable (no change) condition, one unit being unfavourable declining, and one more unit 3.4km north being in favourable condition. Sandbach Flashes are defined according to Natural England as:

'Sandbach Flashes is a site of physiographical and biological importance. It consists of a series of pools formed as a result of subsidence due to the solution of underlying salt deposits. The water varies from freshwater, chemically similar to other Cheshire meres, to highly saline. Inland saline habitats are extremely rare and are of considerable interest because of the unusual associations of plants and animals. Most of the flashes are surrounded by semi-improved or improved grassland. Fodens Flash is partly surrounded by an important area of wet woodland.'

- 3.3.3 Two Local Wildlife Sites (LWSs) have also been identified nearby: Brook House Pools approximately 400m north-northeast, and also Clay Lane Verges approximately 1.5km to the northeast of the site.

3.4 Identified Receptors

- 3.4.1 A review of nearby sensitive receptors within 1km of the site boundary are shown on drawing ref. 5193-CAU-XX-XX-DR-V-1804 and summarised in Table 1 below:

Table 1 – Sensitive Receptors within 1km of the site

Receptor	Receptor Type	Distance & Direction from Site
Maw Green Landfill Site	Industrial	<10m W&N
Fowle Brook	Surface Water	140m ENE
Railway Line	Commercial	140m E
Maw Green Residential Area	Residential	170m SW
Meadow Cottage	Residential	210m SE
Maw Green Road	Public Road	220m S
House on Maw Green Road	Residential	240m SW
Brook House Farm	Residential	315m E
Brookhouse Pools Local Wildlife Site	Habitat/Surface Water	400m NNE
Car Dealership	Industrial/Commercial	420m WNW
Residences on Groby Road	Residential	440m W
Public Footpath	Recreational	450m NW
Pond	Surface Water	530m NW

Receptor	Receptor Type	Distance & Direction from Site
Monks Coppenhall Primary School	Residential	560m WSW
Sandbach Flashes SSSI	Habitat	615m NNW
Stoneley Residential Area	Residential	630m NW
Sydney Residential Area	Residential	740m SE
Foxholme Farm	Residential	750m NE
Sir William Stanier Community School	Residential	930m SW
Clayhanger Hall Farm	Residential	1000m NE

3.5 Meteorological Setting

3.5.1 Fugitive emissions of dust, litter, odour and noise from the site are likely to be affected by local weather conditions, in particular by wind direction. Wind statistics observed from the closest weather station, Leek Thorncliffe, located approximately 28km east from the site are considered to be representative of the typical conditions at the site (Figure 2 below).

3.5.2 A review of the data recorded daily between April 2010 and September 2022 on the Windfinder.com website indicates that the most dominant wind direction is from the south-southwest towards the north-northeast.

Monthly wind direction and strength distribution



Figure 2 – Leek Thorncliffe – average annual wind direction & strength 2010-2022

4.0 RISK ASSESSMENTS

4.1 Introduction

4.1.1 Risk assessment tables have been completed for odour, noise and vibration, fugitive emissions (dust, litter, mud and debris, pests, surface water run-off), visible plumes, release of bioaerosols and accidents in line with the GOV.UK guidance on 'Risk assessments for your environmental permit' (updated 31st August 2022).

4.2 Assessments for the Proposed Operations

4.2.1 Possible hazards as a result of operations at the site that require risk assessment include:

- Sources of Odour (Table 2);
- Sources of Noise and Vibration (Table 3);
- Fugitive emissions (dust, litter, mud and debris, pests, surface water run-off) (Table 4);
- Visible emissions (smoke or visible plumes) (Table 5);
- Release of Bioaerosols (biofilter point source releases) (Table 6);
- Accidents (leaks and spillages, and fire) (Table 7).

4.2.2 The hazards identified above have the potential to escape beyond the site boundary and cause an amenity nuisance to sensitive receptors, or harm the environment and human health. For each possible hazard, an assessment of the risk that it poses to potential sensitive receptors has been carried out, taking into account the control measures that will be in place.

4.2.3 The following Tables 2 to 7 give further detail on each hazard source, pathway and sensitive receptor, the risk management measures to be implemented, probability of exposure, consequences of exposure and an overall risk rating from Low (little or no risk) to High (high risk) once all risk management measures have been taken into account.

Table 2 – Odour Risk Assessment

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway	Control Measures	Probability of Exposure	Consequence of Exposure	What is the overall risk?
What has the potential to cause harm?	What is at risk? What do you wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains?
Odour from the transfer and treatment of contaminated soils.	Workers and visitors to the site. Residential receptors 170m SW, 210m SE and 240m SW of the site. Users of Maw Green Road 220m SW	By air	The addition of treating and storing asbestos contaminated soils is unlikely to increase risk of odour to sensitive receptors. Preventative measures include: <ul style="list-style-type: none"> Waste acceptance measures will ensure that soils are not overly odorous. Should any particularly odorous soils be accepted, the biofilter is in place to mitigate the potential for odour. Soils containing asbestos not likely to be more or less odorous than existing waste codes accepted. General housekeeping, such as sweeping of surfaces and machinery being cleared regularly of residue build up. Meteorological conditions should be considered before activities such as transfer of waste takes place, these activities should be minimised during unfavourable wind conditions, in 	Unlikely – additional contaminated soils with asbestos unlikely to increase risk of odour from site – no more than existing waste types accepted.	Nuisance to human receptors.	Low – if control measures implemented

			<p>particular when winds are towards residential receptors to the southwest and southeast.</p> <p>An Odour Management Plan for the STF is in place and has been updated, as document ref. 5193-CAU-XX-XX-RP-V-0314.</p>			
<p>Odour from reception and storage of contaminated soils.</p>	<p>Workers and visitors to the site.</p> <p>Residential receptors 170m SW, 210m SE and 240m SW of the site.</p> <p>Users of Maw Green Road 220m SW</p>	<p>By air.</p>	<p>Odour could be generated during delivery and offloading, sorting, or during stockpiling of contaminated soils. The addition of treating and storing asbestos contaminated soils is unlikely to increase risk of odour to sensitive receptors.</p> <p>Measures to prevent odour nuisance from the reception and initial storage of soils will include:</p> <ul style="list-style-type: none"> • Waste acceptance procedures to ensure that only suitable soils are accepted. This includes hydrocarbon and asbestos contaminated soils. The potential for odour problems will be assessed on receipt and actions taken if required. • Excessively malodorous soils will be removed from site and a non-conformance note issued. • Odour olfactory monitoring undertaken daily to assess odour levels from site activities. <p>An Odour Management Plan for the STF is in place and has been updated which details site controls and procedures for</p>	<p>Unlikely - human receptors sensitive to odour are some distance away and the prevailing wind direction is from the southwest, away from residential receptors.</p> <p>Addition of asbestos contaminated soils to permit not likely to increase risk of odour.</p>	<p>Nuisance to human receptors.</p>	<p>Low – if control measures implemented.</p>

			odours as document ref. 5193-CAU-XX-XX-RP-V-0314.			
Odour from Soil Bioremediation Process	Workers and visitors to the site. Residential receptors 170m SW, 210m SE and 240m SW of the site. Users of Maw Green Road 220m SW	By air.	There will be no change to the existing control measures for the bioremediation of soils at the existing STF. The addition of treating and storing asbestos contaminated soils is unlikely to increase risk of odour to sensitive receptors. An Odour Management Plan for the STF is in place and has been updated as document ref. 5193-CAU-XX-XX-RP-V-0314.	Unlikely - following industry standards will allow for sufficient oxygen ingress to minimise the impact of odours. Odour minimisation and waste acceptance procedures are already in place. Addition of asbestos contaminated soil waste codes unlikely to increase risk of odours.	Nuisance to human receptors nearby.	Low – if control measures adhered to.
Soils treatment process failure - material becoming anaerobic and giving rise to odours	Local human population	Air transport, then inhalation	Preventative measures will include: <ul style="list-style-type: none"> • Good management of the treatment process, i.e. good mixing, aeration and regular monitoring, experienced and competent staff. In the event of failure of the treatment process:	Unlikely , the likelihood of soils becoming anaerobic is low – no change to risk as a result of this permit variation.	Odour nuisance.	Low - if control measures implemented.

			If material has become anaerobic and malodorous, the material may be covered with more soils to minimise odour and, if required, the removal of the failed material to landfill.			
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Table 3 - Noise and Vibration Risk Assessment

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway	Control Measures	Probability of Exposure	Consequence of Exposure	What is the overall risk?
What has the potential to cause harm?	What is at risk? What do you wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains?
Noise and vibration from soil handling and treatment.	Workers and visitors to the site. Residential receptors 170m SW, 210m SE and 240m SW of the site. Users of Maw Green Road 220m SW. Nearby wildlife.	By air and through ground.	The addition of treating and storing asbestos contaminated soils is unlikely to increase risk of noise and vibration to sensitive receptors. Similar soil handling plant that is currently used at the site will be used to move asbestos contaminated soils. Treatment of soils will involve screening and hand-picking of bound asbestos. Preventative measures include: Fully trained and competent plant operators to operate machinery. Daily site inspections include routine checks to ensure noise and vibration emissions from site operations are not overly excessive. Maintenance of mobile plant/equipment in line with manufactures specifications to ensure screening/turning process produces minimal noise.	Unlikely - the addition of the treatment and storage of asbestos contaminated soils will not significantly increase noise and vibration emissions, due to overall waste tonnages and operating times for the site remaining the same.	Noise may cause annoyance to people working in the local businesses within close proximity of the site and disturbance to local wildlife sensitive to noise.	Low - provided control measures implemented.

			<p>The STF will operate within the landfill site’s operating times and not during unsociable hours.</p> <p>Where practicable, mobile plant and site equipment fitted with silencers or acoustic hoods.</p> <p>Avoiding un-necessary revving of engines, engines switched off when not in use or idle for long durations.</p> <p>Use of broadband type noise reverse alarms (i.e. non-beeper type).</p> <p>Minimisation of drop heights during tipping.</p>			
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Table 4 - Fugitive Emissions Risk Assessment

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway	Control Measures	Probability of Exposure	Consequence of Exposure	What is the overall risk?
What has the potential to cause harm?	What is at risk? What do you wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains?
Dust						
Dust & asbestos fibres from contaminated soil treatment – 3-way screen and asbestos picking station . Dust from storage of hazardous soils.	Workers and visitors to the site. Residential receptors 170m SW, 210m SE and 240m SW of the site. Users of Maw Green Road 220m SW. Nearby wildlife and plants at Sandbach Flashes 615m NW and Local Wildlife Site 400m NE	By air.	The preventative measures used for the existing STF will be used for the new treatment and storing of asbestos contaminated soils activity. Whilst the waste acceptance procedures and historical air monitoring have been shown to eliminate the risk of elevated airborne asbestos fibres, a set of mitigation measures is included for reassurance. Preventative measures include: <ul style="list-style-type: none"> • Provision on site of a water bowser/dust cannon and adequate year-round water supply and dust suppression by regular spraying in dry conditions; • Continuous dust suppression misting system with added asbestos surfactant; 	Unlikely - Residential receptors not downwind of the site, with predominant wind direction blowing away from the SW towards the NE. Sandbach Flashes >600 north-west unlikely to be affected due to distance from site and less likely to be downwind most of the time. Local Wildlife Site 400m	Nuisance - dust on cars, clothing etc. Human health hazard from asbestos fibres. Smothering of fauna and flora by dust within SSSI and LWS.	Low – if control measures implemented.

			<ul style="list-style-type: none"> Asbestos monitoring will be carried out against background reference levels using a detection limit of <0.0005f/ml determined with on-site monitoring as a pre-commencement condition. Use of clean water for dust suppression, to avoid re-circulating fine material; High standards of house-keeping to minimise track-out and windblown dust; A preventative maintenance programme, including readily available spares, to ensure the efficient operation of plant and equipment; Minimisation of drop heights during tipping; Clear delineation of stockpiles to deter vehicles from running over edges; and Effective staff training in respect of the causes and prevention of dust and asbestos fibre release. <p>Specific measures in relation to activities within the treatment facility include:</p> <ul style="list-style-type: none"> Pre-acceptance testing of soils will be undertaken to quantify that asbestos fibres are lower than 0.1% for Chrysotile and 0.01% for any other forms of 	<p>unlikely to be affected due to distance from site.</p> <p>The same dust control and prevention measures will be in place for the bioremediation area.</p> <p>Asbestos ambient air monitoring from other FCC sites (Edwin Richards Quarry) undertaking asbestos in soils treatment and storage indicates negligible asbestos levels in air.</p>		
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			<p>asbestos detected in soil. If there are exceedances of these limits then that soil will be rejected from site.</p> <ul style="list-style-type: none"> • Daily dust monitoring carried out to assess levels of emissions from site activities. • Hand-picking operations are carried out in a fully enclosed picking station to minimise potential for asbestos fibre release to air; • Misting equipment to be employed if required during summer months. • Hand-picking is of bound asbestos, unlikely to release fugitive asbestos fibres; • Staff working in hand-picking station will undertake suitable training and wear correct personal protective clothing. • Decontamination of workers will be undertaken in decontamination unit and used PPE bagged and disposed of in asbestos skip, to prevent fugitive asbestos fibres leaving site. • Meteorological conditions should be considered before activities such as transfer, and this activity should be minimised during unfavourable wind conditions. 			
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			<ul style="list-style-type: none"> A Dust & Emissions Management Plan (DEMP) for the STF is in place and has been updated as document ref. 5193-CAU-XX-XX-RP-V-0313. 			
Run-Off						
Run-off from site surfacing directly into surface water.	Surface waters downstream of site. Local Wildlife Site ponds 400m NE.	Surface water run-off site.	<p>Run-off will be contained by site drainage system. The site directs surface water run-off via sealed drainage to a pumping chamber and then water treatment plant on site, prior to discharging to sewer, in compliance with limits set within the discharge consent for the STF.</p> <p>No direct link to surface water receptors from site.</p> <p>The discharge consent will continue to be adhered to as a result of the addition of treatment and storage of asbestos contaminated soils.</p>	<p>Unlikely – existing discharge consent limits to continue to be adhered to. (Accidental spillages are dealt with below). Run-off will be contained by site drainage.</p>	Contamination of local surface water.	Low - if control measures implemented.
Contaminated run-off percolating through ground.	Groundwater or surface waters close to the site.	Migration through site surfacing and underlying soil.	<p>Measures to control contaminated runoff into ground will include:</p> <ul style="list-style-type: none"> Offloading of soils to be supervised by suitably trained staff who will be aware of storage requirements and locations for various wastes. Daily site inspections will include checks to see that soils are stored in their designated storage areas. All areas used for storage or handling of soils that may have contaminated runoff will be in 	<p>Unlikely - The areas of the site used for soil activities are located on impermeable pads which drain to sealed drainage sumps and water treatment plant.</p>	Contamination of groundwater and surface water.	Low – if control measures implemented.

			<p>areas which drain to sealed drainage containing any run-off.</p> <p>Regular inspections of impermeable ground: Any damage detected that could impair the integrity of the pavement should be recorded and repairs carried out as soon as possible.</p>			
Pests						
Rodents/pests	<p>Workers and visitors to the site.</p> <p>Residential receptors 170m SW, 210m SE and 240m SW of the site.</p> <p>Users of Maw Green Road 220m SW.</p>	Over ground.	<p>Unlikely due to nature of wastes accepted. Risk will remain the same as a result of addition of treatment and storage of asbestos contaminated soils, not likely to attract pests.</p> <p>Measures taken to prevent infestation:</p> <ul style="list-style-type: none"> • Daily site inspections will monitor for the presence of rats/pests on site. • Waste acceptance procedures will ensure that non-conforming wastes are rejected. • Soils unlikely to attract rodents if strict waste acceptance procedures adhered to. • In general, good housekeeping with regular sweeping and clearing of waste areas is encouraged. <p>Actions in the event of rodents/pests being detected at the site: -</p>	Unlikely – waste types to be accepted at site unlikely to result in rats/pests being a significant problem.	General nuisance and health risk from rats being vectors for human pathogens (e.g. Weil’s disease).	Low – if control measures implemented.

			<ul style="list-style-type: none"> • The incident must be reported to the site manager; • A record must be made of the incident and actions taken; • Waste acceptance and storage procedures should be reviewed; • Specialist pest control contractor will visit site regularly and on an ad hoc basis and if an infestation is detected, will be employed to remedy situation. 			
Fly infestation	<p>Workers and visitors to the site.</p> <p>Residential receptors 170m SW, 210m SE and 240m SW of the site.</p> <p>Users of Maw Green Road 220m SW.</p>	By air.	<p>Unlikely to attract flies due to nature of wastes accepted. No change to this as a result of addition of waste types containing asbestos in soils.</p> <p>Measures taken to prevent infestation:</p> <ul style="list-style-type: none"> • Waste acceptance procedures will ensure that non-conforming wastes are rejected. • Daily site inspections will monitor for the presence of flies on site. • In general, good housekeeping with regular sweeping and clearing of waste areas is encouraged. <p>Actions in the event of a fly infestation being detected at the site:</p> <ul style="list-style-type: none"> • The incident must be reported to the site manager. • A record must be made of the incident and actions taken. 	Unlikely - Significant flies are not anticipated.	General nuisance to human receptors and vectors of pathogens to humans and animals.	Low – if control measures implemented.

			<ul style="list-style-type: none"> Waste acceptance and storage procedures should be reviewed. In the event of severe infestations, the specialist pest control contractor will be employed and visit more regularly and on an ad hoc basis. 			
Mud/Litter						
Litter from off-loading and processing of mixed loads including possibility of some light wastes.	<p>Workers and visitors to the site.</p> <p>Residential receptors 170m SW, 210m SE and 240m SW of the site.</p> <p>Users of Maw Green Road 220m SW.</p>	Air and over ground.	<p>Acceptance of additional waste types containing asbestos in soil unlikely to contain litter. Measures taken to prevent litter leaving the site:</p> <ul style="list-style-type: none"> Waste acceptance procedures to ensure the acceptance of only permitted waste types, inherently unlikely to contain litter. <p>Actions in the event of litter being detected leaving the site: -</p> <ul style="list-style-type: none"> Litter picking will be carried out. Priority is given to clearing any litter outside the permit boundary furthest away and working inwards. The incident must be reported to the site manager. A record must be made of the incident and actions taken. <p>Waste acceptance, storage and treatment procedures should be reviewed, and additional control imposed as deemed necessary by the site manager.</p>	Unlikely - litter may be identified from time to time but likely to be in relatively small quantities and only problematic during high winds. There will be no changes to the risk of litter originating from site as a result of this permit variation. Litter control measures will remain the same.	Nuisance to nearby receptors.	Low – if control measures implemented.

<p>Mud being tracked onto surrounding roads.</p>	<p>Workers and visitors to site and users of surrounding roads.</p>	<p>Tracking on vehicle tyres entering/leaving the site.</p>	<p>Preventative measures taken to prevent mud leaving the site will remain the same as a result of this permit variation:</p> <ul style="list-style-type: none"> • The site is constructed from crushed concrete that will minimise the risk of mud being generated. • Roads and site areas will be regularly swept. • Drivers will be encouraged to ensure their vehicle tyres are clean before leaving site and that any loose material is in enclosed containers, or the loads are sheeted or netted. • Daily site inspections will monitor for mud or debris being tracked from the site. • In general, good housekeeping with regular sweeping and clearing of debris is encouraged. <p>Actions in the event of mud and debris is being tracked onto roads outside the site: -</p> <ul style="list-style-type: none"> • Affected road areas will be cleaned by road sweeper. • The incident must be reported to the site manager. <p>A record must be made of the incident and actions taken.</p>	<p>Unlikely - Mud and debris may be tracked onto surrounding roads but same control measures in place.</p>	<p>Nuisance to nearby road users. In severe circumstances mud on the road could affect road safety.</p>	<p>Low – if control measures implemented.</p>
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Table 5 - Visible Plumes Risk Assessment

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway	Control Measures	Probability of Exposure	Consequence of Exposure	What is the overall risk?
What has the potential to cause harm?	What is at risk? What do you wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains?
Potential visible plumes.	Nearby receptors.	Air.	N/A – no visible plumes are generated by the existing operations or as a result of this permit variation.	N/A	N/A	N/A

Table 6 - Release of Bioaerosols Risk Assessment

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway	Control Measures	Probability of Exposure	Consequence of Exposure	What is the overall risk?
What has the potential to cause harm?	What is at risk? What do you wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains?
Release of Bio-aerosols.	Local human population.	Via air.	Not applicable – bioaerosols not likely to be generated by the site activities. The restoration materials to be accepted at the site are not a source of bioaerosols. Any biodegradable or putrescible wastes not to be accepted at the site. Not considered further.	N/A	N/A	N/A

Table 7 – Accidents Risk Assessment

What do you do that can harm and what could be harmed?			Managing the risk	Assessing the risk		
Hazard	Receptor	Pathway	Control Measures	Probability of Exposure	Consequence of Exposure	What is the overall risk?
What has the potential to cause harm?	What is at risk? What do you wish to protect?	How can the hazard get to the receptor?	What measures will you take to reduce the risk?	How likely is this contact?	What is the harm that can be caused?	What is the risk that still remains?
Spillage or leak of fuel, various liquid products used in equipment or vehicle maintenance, or other hazardous liquids.	Underlying soil, Groundwater and/or Surface water (closest is the Fowle Brook). Connected ponds at the Local Wildlife Site 400m NE	Through site surfacing and ground.	<p>Preventative measures:</p> <ul style="list-style-type: none"> The soil treatment and storage activities take place on impermeable surfacing with drainage to sealed sumps and a treatment plant. All fuels and tanks will be appropriately stored and banded 110% of their capacity and be compliant with CIRIA 'Containment systems for the prevention of pollution: Secondary, Tertiary and other measures for industrial and commercial premises (C736, 2014). Regular inspections are carried out that check for integrity of site surfacing and correct storage of any hazardous liquids e.g. fuel for mobile plant. 	<p>Unlikely - impermeable surfacing and sealed drainage will prevent migration of spills or leakages to underlying ground. In the event of any uncontained spill, the drainage system will collect any oil spillages and other hazardous liquids would be collected by the drainage system. On that basis, it is very unlikely that any spills would reach water courses or groundwater. There will be no additional risk of</p>	Contamination of local water course or underlying ground or groundwater.	Low – provided control measures implemented.

			<ul style="list-style-type: none"> All staff involved in soils handling are inducted in the emergency procedures regarding the handling of spills. <p>Actions in the event of spillages:</p> <ul style="list-style-type: none"> Incidents to be managed in accordance with emergency procedures regarding the handling of spills. Spillages will be contained using appropriate spill kits or absorbent materials (e.g. soils). Where the spill is near any drains, drains should be protected. For larger spills of hazardous materials, any affected interceptors should be isolated and if necessary the interceptor cleaned out. Depending on the severity of the spill, the Environment Agency will be contacted. <p>The emergency procedure includes incident reporting and, as part of the environmental management system, incidents will be reviewed by management on a regular basis.</p>	spills or leaks as part of this permit variation. The control measures in place remain valid.		
Fire in processing areas.	Surface water receiving contaminated fire	Air Ground.	Fires could occur as a result of arson, from sources of ignition, or from electrical faults on site.	Unlikely -Measures in place to prevent the fire spreading or	Smoke, local nuisance, risk of fire	Low – provided control

	<p>waters (Fowle Brook 30m E).</p> <p>Surrounding site facilities.</p> <p>Air.</p>		<p>Preventative measures:</p> <ul style="list-style-type: none"> • No smoking policy. • Emergency vehicles will be able to gain access to the processing buildings at all times whilst the site is operational. • All staff involved in soil handling will be inducted in the emergency procedures including the fire action plan and a regular fire drill. • Daily checks and emergency procedures in place to prevent fire risk. • Site staff trained in fire risk and how to deal with an incident on site. • Any visitors to the site will be inducted and be made aware of the fire risks. • Actions in the event of fire: • Where it is safe to do so, site staff will use on-site fire-fighting equipment to extinguish fires. • Where a fire may have been caused by electricity or is close to electrical equipment, electricity to that area should be switched off and isolated. • Clear directions will be given to the fire service and 	<p>to limit its consequences will significantly reduce the probability of receptors being affected by a fire. There will be no additional risk of fires breaking out as a result of this permit variation.</p> <p>It is considered that mitigation measures in place remain valid.</p>	<p>spreading to other areas or properties.</p>	<p>measures implemented.</p>
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			<p>members of staff will provide assistance where required.</p> <ul style="list-style-type: none"> Procedures are set out in the Fire Prevention Plan and associated Fire Risk Assessment. <p>The emergency procedure includes incident reporting. As part of the environmental management system, incidents will be reviewed by management on a regular basis to identify whether lessons can be learnt, and procedures improved.</p>			
<p>Flooding</p>	<p>Underlying soil. Groundwater. Surface water.</p>	<p>Flood water from Fowle Brook.</p> <p>Drainage systems.</p>	<p>Preventative measures: Minimum 90mm bunds around area to provide additional protection.</p> <p>Surface water drainage collection and treatment system.</p> <p>Actions in the event of flooding:</p> <ul style="list-style-type: none"> In the event of flood warnings for the area, the site manager or technically competent manager should consider the possibilities of moving waste materials or any other materials with hazardous properties away from areas vulnerable to flood waters. Where flooding could reach areas where electrical 	<p>Unlikely² - site is assessed to lie outside the 1:1,000 annual probability fluvial flood outlines for Fowle Brook.</p>	<p>Contamination/silting of surface waters or surrounding areas with soil materials could, depending on the properties of the soils (hydrocarbon content), affect water quality or be unsightly.</p>	<p>Low – provided control measures implemented.</p>

² Maw Green Landfill Soil Treatment Facility Flood Risk and Drainage Assessment March 2019

			<p>equipment is used, electricity to that area should be switched off and isolated.</p> <p>After flood waters have receded, the areas outside the site should be inspected and any materials which have escaped the boundary should be picked up.</p>			
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5.0 CONCLUSION

5.1 Risk Assessment Tables – Overall Risk

5.1.1 The risk assessments above enable identification of appropriate mitigation measures to control the amenity and accident risks from the proposed activities. All identified risk mitigation measures will be incorporated within the Environmental Management System (EMS) for the site.

5.2 Report Conclusions

5.2.1 This Amenity and Accidents Risk Assessment report indicates that provided the identified risk mitigation measures (as identified above in Tables 2 to 7 above) are implemented, the risk of nuisance or pollution from odour, noise and vibration, fugitive emissions, bioaerosols, visible plumes and accidents reaching sensitive receptors is low.

5.3 Further Information

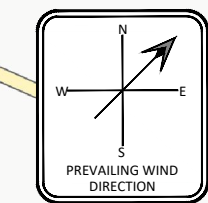
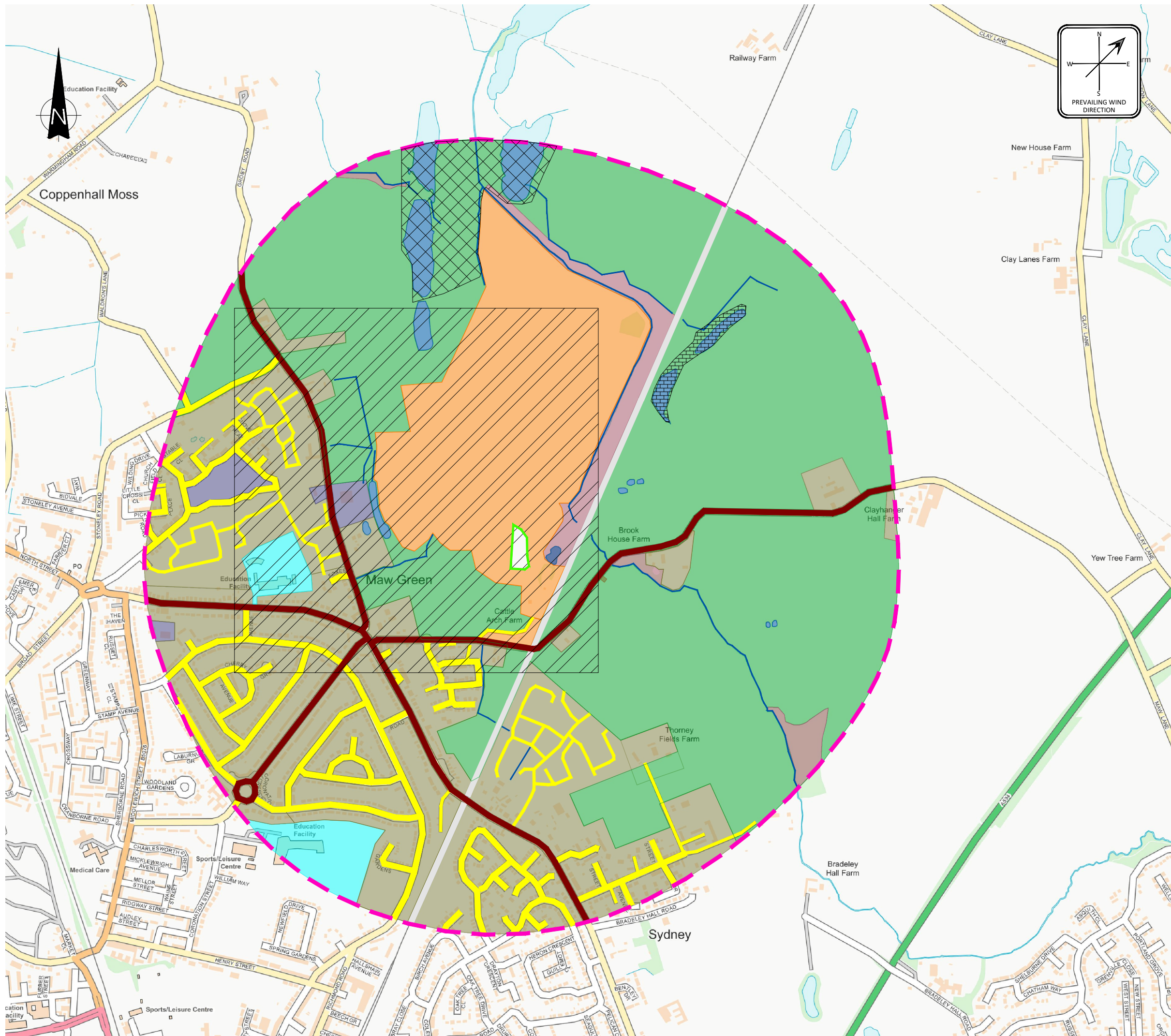
5.3.1 A review of dust and asbestos fibre emission risks from site are also covered in the updated Dust & Emissions Management Plan document ref. 5193-CAU-XX-XX-RP-V-0313, included with this application.

6.0 REFERENCES

- Environment Agency and DEFRA (1st February 2016) – ‘Risk assessments for your environmental permit’, from GOV.UK website: <https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit> (last updated 31st August 2022).

DRAWINGS

5193-CAU-XX-XX-DR-V-1804 Sensitive Receptor Plan



- LEGEND**
- ACTIVITY BOUNDARY
 - 1000m OFFSET
 - SURFACE WATER
 - WOODLAND
 - COMMERCIAL
 - LANDFILL SITE
 - RESIDENTIAL
 - MAJOR ROAD
 - MINOR ROAD
 - RAIL
 - AGRICULTURAL
 - EDUCATIONAL
 - RECREATIONAL
 - SSSI
 - PROTECTED SPECIES - NON FISH
 - LOCAL WILDLIFE SITE

P01	ISSUED FOR INFORMATION	EJD	SH	SH	19.10.22
REV	MODIFICATIONS	BY	RE	AP	DATE
PURPOSE OF ISSUE					STATUS
FOR INFORMATION					S2
CLIENT:					
3C WASTE LIMITED					
PROJECT:					
MAW GREEN SOILS TREATMENT FACILITY					
TITLE:					
NEW TREATMENT AREA SENSITIVE RECEPTORS PLAN					
DESIGNED BY	DRAWN BY	REVIEWED BY	AUTHORISED BY		
EJD	EJD	SH	SH		
DATE	SCALE @ A3	JOB REF:	REVISION		
18.10.2022	1:10000	5193	P01		
DRAWING NUMBER					
5193-CAU-XX-XX-DR-V-1804					

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WWW.CAULMERT.COM



Registered Office: InTec, Parc Menai, Bangor, Gwynedd, LL57 4FG

Tel: 01248 672666

Email: contact@caulmert.com

Web: www.caulmert.com