



# **Liverpool Cruise Terminal**

## **Flood Risk Assessment**

October 2017

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### Quality Assurance – Approval Status

This document has been prepared and checked in accordance with Waterman Group's IMS (BS EN ISO 9001: 2015, BS EN ISO 14001: 2015 and BS OHSAS 18001:2007)

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**Comments** Preliminary

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**Comments** Preliminary



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## Contents

## Executive Summary

Waterman has been commissioned by Liverpool City Council to undertake a Flood Risk Assessment in relation to the proposed Liverpool Cruise Terminal development located at Princes Dock, Liverpool.

Environment Agency mapping shows that the landward parts of the site are primarily located within Flood Zone 1, which denotes a low probability of flooding from tidal sources. However, as the site boundary includes the adjacent River Mersey and associated pier, these areas are shown to lie within Flood Zone 3, denoting a high probability of tidal flooding.

The building is considered to be a water compatible use, due to the cruise terminal needing to be located adjacent to the River Mersey to facilitate access. However, Finished Floor Levels would be set at 7.55m AOD, 610mm above the 1 in 200 year plus climate change (2087) flood level, ensuring the development is protected.

The risk of flooding to the proposed building from tidal sources is considered to be low, however there is a residual risk due to the pier deck being overtopped by waves. To mitigate against likely overtopping, a wave wall or similar would be constructed along the exposed (northern and western) edges of the pier deck. Further investigation and design of appropriate mitigation measures would be carried out at the detailed design stage.

Due to the existing quay levels in the south of the site, there is the potential for tidal flooding in the highway present in this area. As this area would be retained for these purposes, alongside a secure marshalling area, this is considered acceptable in line with planning policy due to the scheme being water compatible.

The risk of flooding from fluvial, pluvial, groundwater and artificial sources has also been assessed and found to be low.

Surface water runoff from the proposed development would discharge to the River Mersey, as per the existing situation. As the river is tidal at this location, surface water would discharge unrestricted. This has been agreed by Liverpool City Council. The final connections would be confirmed with Liverpool City Council and Peel Ports.

Appropriate treatment would be incorporated through the use of Sustainable Drainage Systems, to ensure that the quality of water discharged is acceptable. This could be achieved through the use of pervious surfacing (e.g. permeable tarmac) used in conjunction with a shallow permavoid system fitted with a biomat filtration system or similar treatment device. This report sets out the principles of the Sustainable Drainage Systems, however the final strategy would be confirmed at the detailed design stage.

The on-site drainage network and Sustainable Drainage Systems would be managed and maintained for the lifetime of the development by an appropriate managing body, ensuring that they remain fit for purpose and function appropriately.

This report demonstrates that the development has a low probability of flooding from fluvial, pluvial, groundwater and artificial sources. Although there is a residual risk of the proposed pier deck being overtopped by wave action, this report shows that it can be managed effectively to ensure safety. It also confirms that surface water runoff from the site can be managed sustainably to ensure that flood risk is not increased elsewhere. It is considered that the information provided within this report satisfies the requirements of the National Planning Policy Framework and local policy.

## 1. Introduction

- 1.1. Waterman has been commissioned by Liverpool City Council (LCC) to undertake a Flood Risk Assessment (FRA) in relation to the Cruise Terminal development at Princes Dock (hereafter referred to as 'the Site'), located on Princes Parade, Liverpool.

### Site Description

- 1.2. The Site is approximately 5.77 hectares (ha) in size and comprises an existing dilapidated jetty, two car parks (one in the north of the Site and one in the south), and an existing pontoon with buildings and structures, including the existing lower cruise terminal and Isle of Man Ferry Terminal, and baggage reclaim buildings at the southern end of the Site. It is bounded by Princes Half Tide Dock to the north, Princes Dock to the east, existing buildings to the south and the Mersey Estuary to the west. The Site is located at approximate postcode L3 1BF.

Figure 1: Site Location Plan



#### Key

-  Site Location

Source: Bing Maps

- 1.3. The topographic survey (Appendix A) indicates that Princes Parade slopes gradually down from approximately 8.10m close to the junction with William Jessop Way in the northeast, to around 7.00m AOD adjacent to the carpark at Princes Parade. Levels in the centre of the Site along Princes Parade tend to fluctuate around 7.00m AOD, with a low spot of roughly 6.30m AOD in the south. The carpark surface to the east of Princes Parade is relatively flat, with levels ranging between 7.06m and 7.42m AOD.

## **Development Proposals**

The indicative development proposals (Appendix B) comprise demolition of the existing jetty, mooring dolphins and the northern end of the pontoon. The existing 'Lower Terminal' building would be modified, and a new pier and terminal building constructed. In addition, a new passenger Pick-up/Drop-off area would be provided to the east of the proposed terminal building.

## **Scope of Report**

This report assesses the potential effects of tidal, fluvial, groundwater, pluvial and artificial sources of flooding upon the development, in line with national and local policy. The management of surface water has also been assessed, and a strategy to effectively manage runoff whilst working within Site-specific constraints is proposed, so as not to increase flood risk elsewhere.

## 2. Planning Policy and Guidance

### National Planning Policy and Planning Practice Guidance

- 2.1. The National Planning Policy Framework<sup>i</sup> (NPPF) was published by the Department of Communities and Local Government in March 2012 and is the current national policy on flood risk and drainage. It states that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk. Where development is necessary, it must be made safe without increasing flood risk elsewhere.
- 2.2. The NPPF states that Local Plans should be supported by Strategic Flood Risk Assessments (SFRA) and policies developed in order to manage flood risk from all sources. They should take into account advice from the Environment Agency (EA) and other relevant flood risk management bodies, such as lead local flood authorities and internal drainage boards. It advises that Local Plans should apply a sequential, risk-based approach to the location of development to avoid, where possible, flood risk to people and property. In addition, they should manage any residual risk, taking account of the effects of climate change, by:
- Applying the Sequential Test and if necessary, the Exception Test;
  - Safeguarding land from development that is required for current and future flood management;
  - Using opportunities offered by new development to reduce the causes and effects of flooding; and
  - Where climate change is expected to increase flood risk so that some existing development may not be sustainable in the long-term, seeking opportunities to facilitate the relocation of development, including housing, to more sustainable locations.
- 2.3. The NPPF states that when determining planning applications, Local Planning Authorities (LPA) should ensure that flood risk is not increased elsewhere, and only consider development in areas at risk of flooding where it can be demonstrated that:
- Within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location; and
  - Development is appropriately flood resilient and resistant, includes safe access and escape routes where required, any residual risk can be safely managed (including emergency planning), and priority is given to the use of Sustainable Drainage Systems (SuDS).
- 2.4. The Planning Practice Guidance (PPG)<sup>ii</sup> provides additional guidance to LPAs to ensure effective implementation of the planning policies set out within the NPPF regarding development in areas at risk of flooding. The guidance retains key elements of superseded NPPF Technical Guidance<sup>iii</sup> and Planning Policy Statement 25 Development and Flood Risk Practice Guide<sup>iv</sup> (PPS25) and is accessed via a web-based portal.
- 2.5. The PPG states that developers and LPAs should seek opportunities to reduce the overall level of flood risk in the area and beyond through the layout and form of the development, and the appropriate application of SuDS. Referencing information provided by the EA, the PPG provides advice on taking climate change into account, setting out recommended contingency allowances for net sea level rise and peak rainfall intensities, which should be increased by between 5% and 30% from now until the

year 2115. It also advises on flood resilience and resistance measures when dealing with the residual risks remaining after applying the sequential approach and mitigating actions.

- 2.6. The PPG also includes advice on flood risk vulnerability and flood zone compatibility. The following flood zones refer to the probability of river and sea flooding, without the presence of defences:
- Zone 1 - low probability: less than 1 in 1000 annual probability of river or sea flooding (<0.1%) in any year;
  - Zone 2 - medium probability: between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% to 0.1%), or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% to 0.1%) in any year;
  - Zone 3a - high probability: 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability flooding from the sea (>0.5%) in any year; and
  - Zone 3b - the functional floodplain: where water has to flow or be stored in times of flood; identification should take account of local circumstances but would typically flood with an annual probability of 1 in 20 (5%) or greater in any year, or is designed to flood in an extreme 1 in 1000 (0.1%) flood.
- 2.7. Flood risk vulnerability is split into five classifications in Table 2 of the PPG, as follows, and the compatibility of these within each Flood Zone is set out in Table 3 of the PPG:
- Essential Infrastructure, e.g. essential transport and utility infrastructure, wind turbines;
  - Highly Vulnerable, e.g. emergency services (those required to be operational during flooding), basement dwellings;
  - More Vulnerable, e.g. residential dwellings, hospitals, schools, hotels, drinking establishments;
  - Less Vulnerable, e.g. retail, offices, storage and distribution, leisure, restaurants; and
  - Water-Compatible Development, e.g. docks, marinas, wharves.

## **Liverpool Unitary Development Plan**

- 2.8. Liverpool Unitary Development Plan (UDP)<sup>v</sup> was adopted in 2002. The role of the UDP is to provide the statutory framework to guide development and protect and enhance the environment of the City.
- 2.9. Policy EP12 covers the protection of water resources. Under this policy, a development must not adversely affect the quality or supply of surface water or groundwater as a result of the nature of the surface water or waste water discharge, unsatisfactory agreements for the disposal of foul sewage, trade effluent, disturbance of contaminated land or the spillage or leakage of stored oil or chemicals.
- 2.10. Policy EP13 of the UDP relates to Flood Prevention. This policy states that developments must not:
- Be at direct unacceptable risk from flooding;
  - Be likely to increase the risk of flooding elsewhere;
  - Cause loss of access to watercourses for future maintenance;
  - Result in an adverse impact on the water environment due to additional surface water runoff;  
or
  - Have adverse effects upon the integrity of tidal and fluvial defences.



- 2.11. Additionally, all works in, under, over or adjacent to watercourses, waterbodies and the coast will need to be approved by the EA's Environmental Appraisal Procedure. Culverting and diversion will not be permitted except to enable reasonable access over a watercourse.

### **Liverpool Local Plan**

- 2.12. The aim of the Liverpool Local Plan<sup>vi</sup> is to guide the long term strategic spatial development of the City of Liverpool. Once adopted the Local Plan will provide a long term spatial vision, strategic priorities and policies for future development in the City over the next 15 to 20 years.
- 2.13. Policy R3 relates to Flood Risk and Water Management. This policy requires the application of the sequential approach to determining the suitability of land for development. It requires developers to demonstrate through an FRA that the development proposals do not increase flood risk on site or elsewhere, and where possible decrease the risk of flooding. Additionally, it states that development proposals should comply with the Water Framework Directive (WFD) and reduce surface water runoff rates to include Sustainable Drainage Systems (SuDS) where feasible.
- 2.14. Under Policy R4 The Coast, development proposals must ensure that they do not increase the risk of tidal flooding or coastal erosion through their impact on coastal processes.
- 2.15. Policy R5 relates to rivers, canals, watercourses and culverts. Under this policy the development proposals should ensure that there are no adverse effects to the quality or supply of surface water or ground water as a result of surface water or waste water discharge, or unsatisfactory arrangements for the disposal of foul sewage or trade effluent.

### **Liverpool Strategic Flood Risk Assessment**

- 2.16. The LCC Strategic Flood Risk Assessment (SFRA)<sup>vii</sup> was published in January 2008. It was carried out by the LCC Planning Policy Department to act as a tool to aid in delivering sustainable development for the City of Liverpool.
- 2.17. The aims of this assessment were to:
- Identify land at risk of flooding in Liverpool and the degree of risk from river, sea and other sources;
  - Reduce flood risk from and to new development through location, design and mitigation measures;
  - Inform policy formulation and the Sustainability Appraisal for the emerging Local Development Framework concerning land use in flood risk areas; and provide a framework for development control officers and developers for dealing with the flood risk in development proposals.
- 2.18. Appendix B of the SFRA provides guidance for developers and development control, including important considerations such as the impact of the development on surface water runoff, incorporating SuDS where possible and the potential risk from groundwater. Additionally, it provides general advice on developments in Flood Zones 1, 2 and 3, and sets a requirement for minimum floor levels in Flood Zones 2 and 3 to be set 0.60m above the 1 in 200 year climate change design flood level at Gladstone Dock, i.e. 7.50m AOD for commercial properties.

### **Liverpool Preliminary Flood Risk Assessment**

- 2.19. The LCC Preliminary Flood Risk Assessment (PFRA)<sup>viii</sup> was published in June 2011. The aim of the PFRA is to provide an assessment of local flood risk across Liverpool. This assessment included past flood events, potential consequences of future floods, identifying flood risk areas and determining significant local flood risk.

### **Non-Statutory Technical Standards for Sustainable Drainage Systems**

- 2.20. The Non-Statutory Technical Standards for Sustainable Drainage Systems<sup>ix</sup> was published in March 2015 and is the current guidance for the design, maintenance and operation of SuDS.
- 2.21. The standards set out that the peak runoff rates should be as close as is reasonably practicable to the greenfield rate, but should never exceed the pre-development runoff rate.
- 2.22. The standards also set out that the drainage system should be designed so that flooding does not occur on any part of the Site for a 1 in 30 year rainfall event, and that no flooding of a building (including basement) would occur during a 1 in 100 year rainfall event.
- 2.23. It is also noted within the standards that pumping should only be used when it is not reasonably practicable to discharge by gravity.

### **Water Industry Act**

- 2.24. United Utilities is the local Sewerage Undertaker and provides sewerage services under the guidance of the Water Industry Act 1991.
- 2.25. Under Section 106 of the Water Industry Act, the developer currently maintains the automatic right to 'communicate' with the public foul water sewer system.

### **Sequential and Exception Test**

- 2.26. The Site is partly located within Flood Zone 3, and would therefore be subject to the Sequential Test. The majority of the development falls within the wider Liverpool Waters scheme which has been granted planning consent, and therefore has passed the Sequential Test.
- 2.27. There are some areas of the Site (in particular the pier), which fall outside of the Liverpool Waters scheme boundary. Discussions have been undertaken between the planning consultant JLL and LCC regarding the Sequential Test, and will continue through the planning process. Due to the nature of the proposed development as a cruise terminal, this requires a waterfront location. However, protection measures have been incorporated within the design to ensure safety of occupants.
- 2.28. In line with the PPG a cruise terminal would be termed 'water compatible', as this use is connected to the dock. The development is therefore appropriate and the Exception Test satisfied.

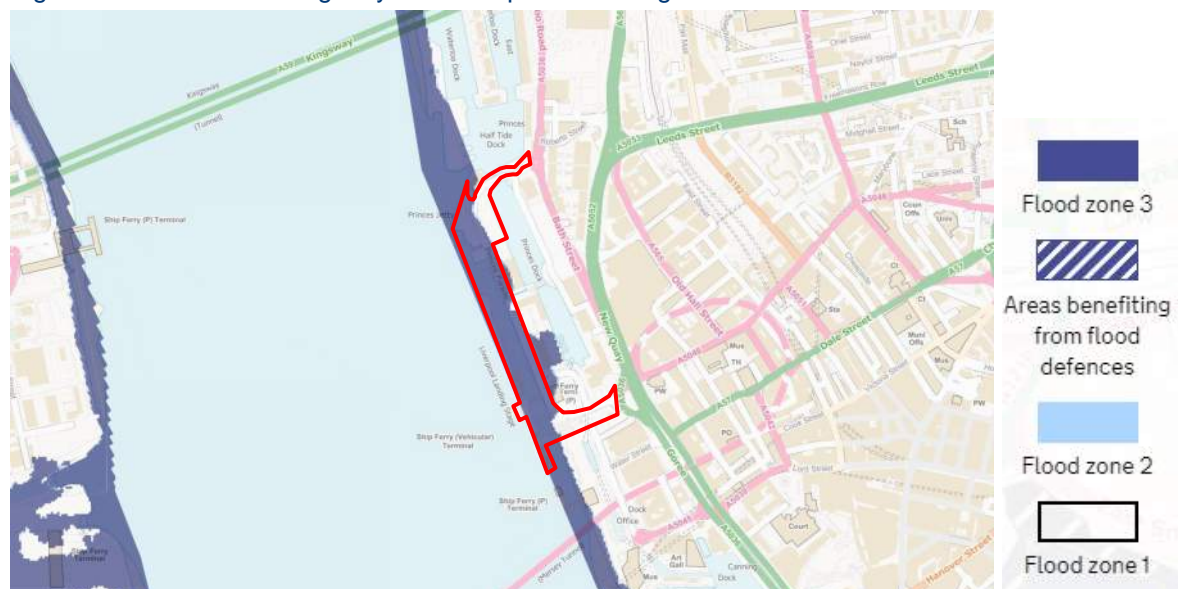


### 3. Sources of Potential Flooding

#### Tidal and Fluvial

- 3.1. The nearest waterbody to the Site is the River Mersey, which is tidal in this location and forms the western part of the Site. There are no fluvial watercourses in the vicinity, and the main source of flood risk is therefore tidal rather than fluvial.
- 3.2. According to the EA's Flood Map for Planning (Figure 2), as the western part of the Site comprises the River Mersey itself, this area is located within Flood Zone 3, denoting a high probability of flooding from tidal sources. The landward part of the Site is generally shown to be within Flood Zone 1, denoting a low probability of tidal flooding.

Figure 2: Environment Agency Flood Map for Planning



#### Key

 Site Location

Source: <https://flood-map-for-planning.service.gov.uk>

- 3.3. EA records (Appendix C) provide still water levels for the 1 in 200 year and 1 in 1000 year present day and climate change scenarios (2065 and 2115). The design flood level for tidal waterbodies is the 1 in 200 year event. These levels (with and without climate change) were therefore interrogated against the indicative development proposals (Appendix B) and topographic survey (Appendix A).
- 3.4. Appendix B of the SFRA states a requirement for Finished Floor Levels (FFL) to be set at a minimum of 0.6m above the 1 in 200 year climate change level at Gladstone Dock, i.e. 6.90m AOD. Gladstone Dock is a considerable distance north of the Site. Due to this, and on receipt of updated flood risk information from the EA, the appropriate design water level has been confirmed for this Site-specific FRA.
- 3.5. The SFRA also states that a precautionary design life of 67 years should be assumed for commercial development. The respective 1 in 200 year flood levels can be seen in Table 1 below.

Table 1: 1 in 200 year Still Water Levels

Year	Tidal Still Water Level (m AOD)
Present day	6.46
2065	6.77
2087*	6.94
2115	7.15

\* Assumed 67 year design life in accordance with LCC SFRA, plus 3 years to account for time prior to construction (70 years in total).

- 3.6. In line with the wider masterplan for Liverpool Waters (planning reference 100/2424), FFLs for commercial development were set at 7.55m AOD, which has been followed for the Cruise Terminal. The proposed FFL is therefore 0.61m above the 1 in 200 year plus climate change flood level, taking into account the design life of the development. The development would also remain free of flooding up to the 1 in 200 year 2115 flood event, with 0.40m freeboard provided.
- 3.7. Although the building would be protected, it is also important to assess the potential for flood risk to the remainder of the Site boundary. The EA have not defined the flood defence height in this location, however the land is currently protected to varying standards by raised ground/the quay.
- 3.8. The Liverpool Waters FRA<sup>xi</sup> states that the level along the River Mersey frontage adjacent to Princes Dock ranges from 7.30m to 7.80m AOD in the north, falling to 6.90m AOD in the south. The topographic survey (Appendix A) confirms this, with levels of the concrete retaining wall generally fluctuating about 7.50m AOD in the northern and central areas of the Site (low spot of 7.33m AOD noted in the centre of the Site). In the south levels could potentially drop to 6.52m AOD.
- 3.9. Based on the present day (6.46m AOD) and climate change scenario (6.94m AOD), the northern part of the Site would remain protected by the natural quay levels. However, the southern portion of the Site could be impacted by flooding in the climate change scenario. However, no alterations are proposed in the south, which would continue to function as a highway, with a secure marshalling area. It would not be feasible to raise the quay levels as a result of the proposals. However, as the quay is termed water compatible this would be acceptable in terms of planning policy.

### Residual Risk

- 3.10. HR Wallingford were commissioned to undertake a Hydrodynamic and Coastal Process Study<sup>xii</sup> to determine wave heights in the River Mersey that may affect the development. This was modelled for the 1 in 1, 1 in 10 and 1 in 50 year return periods.
- 3.11. Of the scenarios modelled, it was found that the largest peak to trough wave height was 2.0m (i.e. 1m higher and 1m lower than the static water level), during the 1 in 50 year return period combined with a wind direction of 300°N.
- 3.12. In the event of a present day 1 in 200 year storm occurring at the same time as a 1 in 50 year, 300°N wave height, the maximum wave height would reach a level of 7.46m AOD (i.e. 6.46m AOD plus 1m wave height) indicating that the pier deck would be protected from wave overtopping. However, when accounting for climate change the level would rise to 7.94m AOD in 2087 (6.94m AOD plus 1m wave height), and 8.15m AOD in 2115 (7.15m AOD plus 1m wave height), indicating that the pier deck would be at risk of overtopping.

- 3.13. As part of the proposals (Appendix B) a wave wall or similar would be constructed along the exposed (northern and western) edges of the pier deck. Further investigation and design of appropriate mitigation measures would be carried out at the detailed design stage.
- 3.14. LCC have confirmed (Appendix E) that there are no other main rivers or ordinary watercourses within the vicinity of the Site. Additionally, they have confirmed that they hold no records of fluvial flooding in the vicinity of the Site.
- 3.15. Based on the above assessment, the building would be protected from flooding for the lifetime of the Development, and the residual risk would be managed through the incorporation of a wave wall. There is a risk of flooding to the existing quay in the far south of the Site, however this comprises highway and a secure marshalling area. It would not be possible to raise these levels as they would need to allow conveyance of vehicles, however as the use is water compatible this would be acceptable in line with planning policy.

### Safe Access and Egress

- 3.16. In the event of a flood occurring, the building itself would remain above the still water level. The residual risk would be mitigated to an appropriate level. Mitigation measures would be investigated further at the detailed design stage.
- 3.17. Ground levels to the east of the proposed Cruise Terminal are set at a minimum of approximately 7.00m AOD. Dry escape would therefore be provided above the 1 in 200 year plus climate change flood level, ensuring safety. It is considered that any water in Princes Parade caused by wave overtopping would be relatively minor (the majority of which would be blocked by the proposed building), and therefore any residual flood hazard in this location would be relatively low.

### Off-Site Impacts

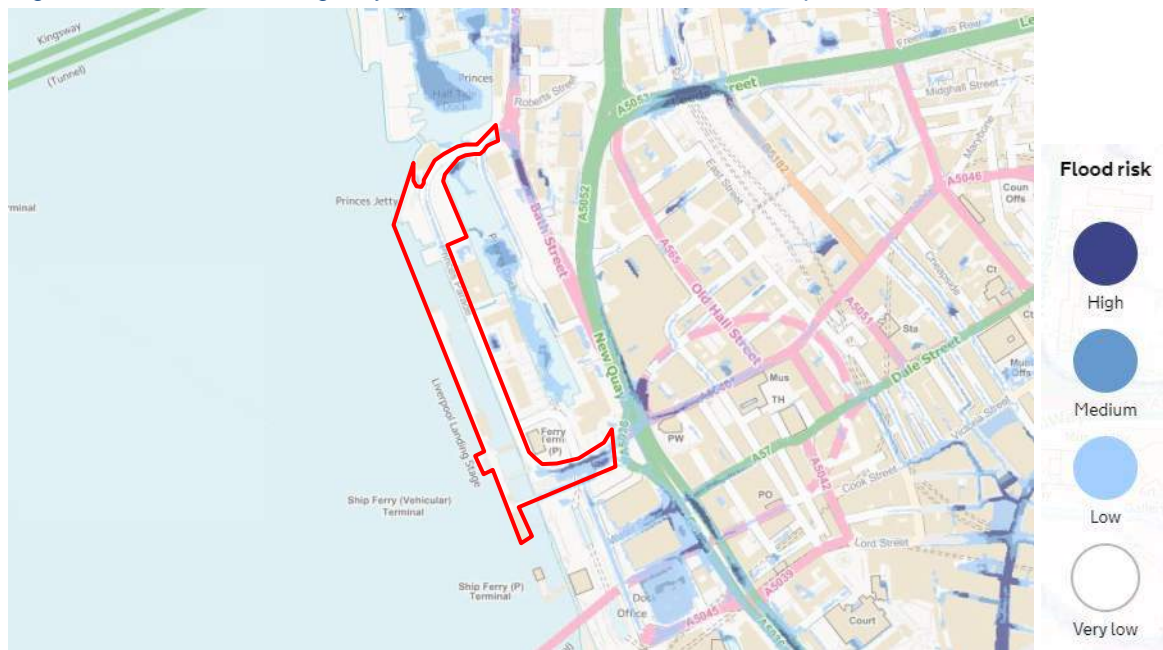
- 3.18. Any ground raising within the floodplain has the potential to offset flood storage, increasing the risk of flooding elsewhere. The proposed pier and Cruise Terminal building would be set at an elevated level to afford protection, however as constructed on piers water would be able to flow beneath the structure and therefore any impact would be minimal. Irrespective of the pier design, as the River Mersey is tidal in this location floodplain compensation would not be required in accordance with planning policy.
- 3.19. HR Wallingford have undertaken sediment transport modelling to confirm the impact of removal and replacement of the existing jetty. This confirms that the impact on the fine sediment regime would be local and negligible. Please refer to Chapter 14 of the Environmental Statement (Coastal Processes, Sediment Transport and Contamination) submitted separately in support of the planning application for further information.

### Pluvial

- 3.20. Pluvial flooding (also known as surface water and sewer flooding) occurs when natural and engineered drainage systems have insufficient capacity to deal with the volume of rainfall. Pluvial flooding can sometimes occur in urban areas during extreme, high intensity, low duration summer rainfall events which can overwhelm the local surface water drainage systems. Alternatively, it can occur in rural areas during medium intensity, long duration events where saturated ground conditions prevent infiltration into the subsoil. This flood water would then be conveyed via overland flow routes dictated by local topography.

- 3.21. Figure 5.2.2 of the PFRA (Appendix D) shows that the Site lies partially within an area susceptible to surface water flooding.
- 3.22. The EA's more recent Flood Risk from Surface Water Map (Figure 3) indicates that the majority of the Site is at 'very low' risk of flooding, however, there is an area of low flood risk within Princes Parade and an area of 'low' to 'high' risk in the south of the Site at the Isle of Man Ferry/Cruise Liner Marshalling Area.

Figure 3: Environment Agency Flood Risk from Surface Water Map



**Key**

 Site Location

Source: <https://flood-warning-information.service.gov.uk/long-term-flood-risk>

- 3.23. Further interrogation of the EA's Flood Risk from Surface Water mapping indicates that during a 'high' (up to 1 in 30 year) and 'medium' risk (1 in 30 to 1 in 100 year) scenarios the northern part of the Site would remain free of flooding. St Nicholas Place in the south could potentially experience flooding to depths below 0.3m during both scenarios.
- 3.24. During the 'low' risk (up to 1 in 1000 year) scenario, the Site could experience flooding to depths below 0.3m deep within Princes Parade and a maximum of 0.9m at the Isle of Man Ferry/Cruise Liner Marshalling Area.
- 3.25. Based on a maximum ground level in this area of 7.20m AOD (Appendix A) at Princes Parade, this could result in a maximum flood level of 7.50m AOD. Proposed ground floor FFLs are set at 7.55m AOD, indicating that the Cruise Terminal building would remain free of flooding and provide 0.05m freeboard above the maximum flood level.
- 3.26. As the flood extent shown on the EA mapping shows the potential ponding in the south of the Site confined to the naturally lower areas of the highway and open space, it is considered that the risk to the scheme would be relatively low. This area would be retained as highway, with a secure marshalling area, and it is understood that ground levels would generally remain as existing.

Therefore, there would be no impact upon the proposed Cruise Terminal, and the risk of flooding would not be increased elsewhere through diverting flood flows.

- 3.27. During recent consultation with LCC (Appendix E) they confirmed that they do not hold any records of surface water flooding in the vicinity of the Site.
- 3.28. This is confirmed by Figure 4.2.2 of the PFRA (Appendix D) which shows a number of historic flooding incidents throughout Liverpool, all of which are over 3km away from the Site.
- 3.29. Based on the above analysis, the Cruise Terminal is considered to be at a low risk of flooding from surface water flooding, and the potential area of ponding in the south of the Site would not impact upon the proposed building.

## Groundwater

- 3.30. The existing site geology has been established from the British Geological Survey (BGS) 1:50,000 mapping, borehole records and the BGS website. A summary of the geology is provided in Table 2.

Table 2: Existing Site Geology

Stratum	Area Covered	Estimated Thickness	Typical Description
Made Ground	All areas with the exception of the west extent of the Site	13m	Made Ground is likely to be present to at least a thickness of 13m as a result of construction of the docks
Tidal Flat Deposits	Whole Site	6m	Clay, Silty, Sandy
Glacial Till	Whole Site	3-5m	Stiff brown Clay with lenses of sand
Chester Pebble Beds Formation	Whole Site	unknown	Sandstone, Pebbly (gravelly)

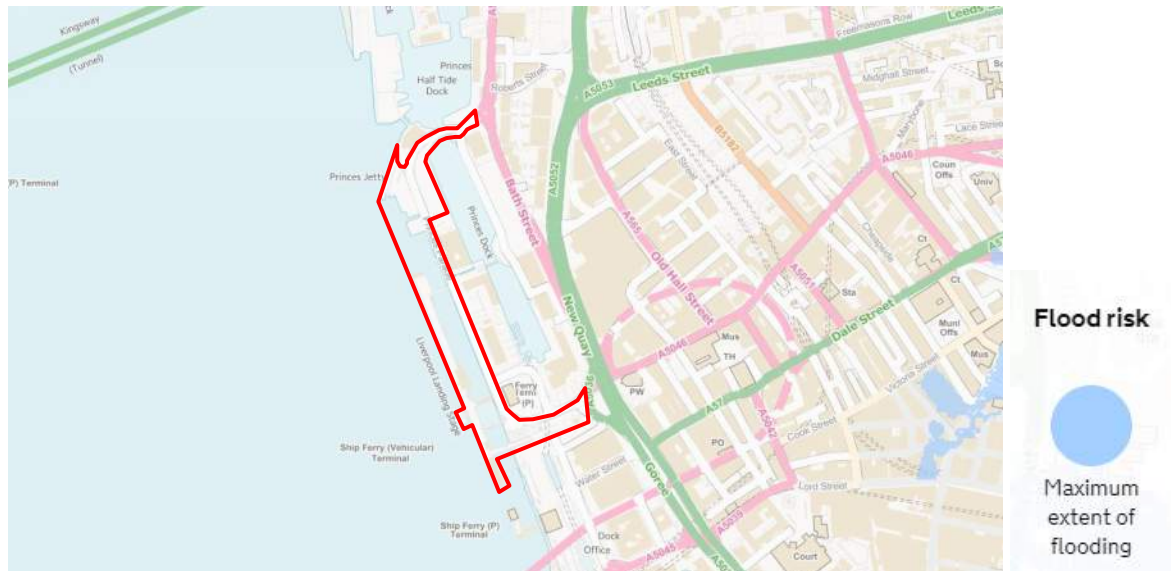
- 3.31. Figure 5.2.3 of the PFRA indicates that the Site does not lie within an area that is susceptible to groundwater flooding. LCC have confirmed (Appendix E) that they hold no records of groundwater flooding in the vicinity of the Site.
- 3.32. There are no basements proposed as a part of the development, therefore there would be no impact on the flow of groundwater below the Site. The risk of groundwater flooding to the Site and to others is therefore considered to be low.

## Artificial Sources

- 3.33. EA mapping shows the largest extent that may be affected by flooding if a reservoir were to fail. The EA note that this is a worst-case prediction and any such event is unlikely to be this large.
- 3.34. The EA's Flood Risk from Reservoirs map (Figure 4) shows that the Site lies outside of the maximum extent of flooding, indicating that there is a low risk of flooding from reservoir failure. Peel Ports have also been consulted to confirm whether there have been any historic flooding from Princes Dock, however confirmation has not been received to date.
- 3.35. It is considered that the risk of flooding from artificial sources is likely to be low.



Figure 4: Environment Agency Flood Risk from Reservoirs



**Key**

 Site Location

Source: <https://flood-warning-information.service.gov.uk/long-term-flood-risk>

**Summary**

- 3.36. The Site is considered to be at a low risk of flooding from fluvial, pluvial, groundwater and artificial sources. The building FFL has been raised in line with current guidance to ensure it remains protected. Wave action would be mitigated through the inclusion of a wave wall, which would be confirmed at the detailed design stage. There is the potential for overtopping in the south of the Site, however no development is proposed in this location. It would not be possible to raise ground levels to afford protection as this would impact upon the local highway network. As this is a quay it is termed water compatible, and therefore acceptable in line with planning policy.
- 3.37. It is also important to assess the potential for the development to increase flood risk to others by increasing surface water runoff from the Site. This is considered in Section 4.

## 4. Surface Water Drainage

### Existing Drainage

- 4.1. The existing drainage at the Site comprises a private drainage system owned by Peel Ports and a public drainage system managed by United Utilities. Peel Ports records (Appendix G) and United Utilities records (Appendix F) indicate several sewers in the vicinity of the Site, as shown in Table 3.

Table 3: Existing Drainage

Location	Sewer
Princes Parade	450 to 525mm surface water sewer
Princes Parade	225mm foul sewer
East Dock Road	150mm surface water sewer
St Nicholas Place	1200mm foul sewer
St Nicholas Place	2400mm surface water sewer

### Proposed Drainage

- 4.2. The proposed drainage system would be designed to convey surface and foul water separately. The design would be in accordance with BS EN 752 – Drain and Sewer Systems Outside Buildings, BS EN 12056 – Gravity Drainage Systems Inside Buildings, and Approved Document H of Building Regulations.
- 4.3. In line with Building Regulations and the PPG, the following hierarchy of surface water disposal should be adhered to, in decreasing order of preference.
- I. Discharge to ground;
  - II. Discharge to surface water body;
  - III. Discharge to a surface water sewer; and
  - IV. Discharge to a combined sewer.

### Discharge to Ground

- 4.4. The majority of the Site would be constructed as a pier over the River Mersey, as such there would be no ground beneath the drainage system to discharge to. Therefore, it is considered that discharging to ground is not feasible.

### Discharge to a Surface Water Body

- 4.5. The Site is located adjacent and over the River Mersey, therefore it is proposed that surface water runoff is discharged straight to the river.

### Sustainable Drainage Systems

- 4.6. The most sustainable way to drain surface water runoff is through the use of SuDS, which need to be considered in relation to Site-specific constraints.
- 4.7. SuDS mimic the natural drainage system and provide a method of surface water drainage which can

decrease the quantity of water discharged, and hence reduce the risk of flooding. In addition to reducing flood risk, SuDS features can improve water quality, and provide biodiversity and amenity benefits.

- 4.8. A variety of SuDS are available to reduce or temporarily hold back the discharge of surface water runoff. The potential for SuDS was considered throughout the design development. Table 4 outlines the potential SuDS devices and their constraints and opportunities at the Site.

**Table 4: Sustainable Drainage Systems**

<b>Device</b>	<b>Description</b>	<b>Constraints/Comments</b>	<b>✓/✗</b>
Green/brown roofs (source control)	Provide soft landscaping at roof level which reduces surface water runoff.	Due the complex design of the proposed roof of the Terminal building, green/brown roofs are considered unsuitable.	✗
Infiltration devices & Soakaways (source control)	Store runoff and allow water to percolate into the ground via natural infiltration.	The majority of the Site is suspended on a pier structure and has no underlying geology. Therefore, infiltration devices are not suitable.	✗
Pervious surfaces (source control)	Storm water is allowed to infiltrate through the surface into a storage layer, from which it can either infiltrate and/or slowly release to sewers.	Pervious surfaces could potentially be incorporated, however loadings and design would need to be carefully considered due to the presence of heavy goods vehicles.	✓
Rainwater harvesting (source control)	Reduces the annual average rate of runoff from the site by reusing water for non-potable uses e.g. toilet flushing or water butts. .	There are no constraints to the incorporation of rainwater harvesting. However, the reduction of surface water runoff cannot be quantified with certainty as this would be dependent on the demand for harvested rainwater.	✓
Swales (permeable conveyance)	Broad shallow channels that convey / store runoff, and allow infiltration (ground conditions permitting).	Due to the lack of external space and limited structure depth, the use of swales would not be feasible	✗
Filter drains & perforated pipes (permeable conveyance)	Trenches filled with granular materials (which are designed to take flows from adjacent impermeable areas) that convey runoff while allowing infiltration (ground conditions permitting).	The majority of the Site is suspended on a pier structure and has no underlying geology within which to infiltrate.	✗
Filter Strips (permeable conveyance)	Wide gently sloping areas of grass or dense vegetation that remove pollutants from runoff from adjacent areas.	Due to the lack of external space the incorporation of filter strips would not be feasible.	✗
Infiltration basins (end of pipe treatment)	Depressions in the surface designed to store runoff and allow infiltration through the base.	The lack of underlying geology and limited external space precludes the potential for infiltration basins.	✗



Device	Description	Constraints/Comments	✓/*
Bioretention Systems / Rain Garden (end of pipe treatment)	A shallow landscaped depression which allows runoff to pond temporarily on the surface before filtering through vegetation and underlying soils.	The limited depth of the pier precludes the potential for bioretention systems.	*
Dry ponds (end of pipe treatment)	Depressions in the surface designed to store runoff without infiltration through the base.	Due to the limited depth of the pier structure and spatial constraints, the incorporation of ponds would not be feasible.	*
Attenuation Underground (end of pipe treatment)	Oversized pipes or geocellular tanks designed to store water below ground level.	Used only when the SuDS listed above cannot be installed with sufficient volumes to restrict runoff to the required rate, no water quality benefits are provided. As runoff rates do not need to be restricted (as the River Mersey is a tidal water body), tanks would not be appropriate.	*

### Permeable Surfaces

- 4.9. Permeable surfaces allow for the infiltration of runoff through otherwise impermeable surfaces such as roads and pavements. As the external areas would be used by heavy goods vehicles, the structural integrity of this surfacing would need to be confirmed. Porous asphalt could potentially be incorporated and would be confirmed at the detailed design stage. Subject to design this would provide some water quality benefits.
- 4.10. If porous asphalt was not deemed appropriate at the detailed design stage, liner slot drains and/or gullies could be incorporated to capture rainwater, which would then be directed through water treatment devices, such as a biomat filter system or Smart Sponge. The potential to incorporate these features as part of the final SuDS scheme would be further considered at the detailed design stage.

### Rainwater Harvesting

- 4.11. The inclusion of rainwater harvesting would decrease the demand on potable water, and could be used for washdown/external cleaning and toilet flushing. However, due to the seasonality of the development it cannot be guaranteed that there would always be sufficient demand for recycled water to ensure an empty tank is available prior to a high intensity rainfall event, when the storage is most required. The feasibility of including rainwater harvesting as a part of the final SuDS scheme would therefore be considered at the detailed design stage.

### Proposed Surface Water Drainage Strategy

- 4.12. As the Site is located adjacent to and over the River Mersey, which is a tidal waterbody at this location, there are no requirements to restrict surface water discharge. LCC have confirmed (Appendix E) that surface water runoff can discharge unrestricted.
- 4.13. The Site can be split into two areas in terms of drainage:
- The Cruise Terminal and coach parking area, which would be newly constructed; and
  - Areas to be retained as existing (the rest of the Site area).

- 4.14. The existing areas to be retained would be subject to minor resurfacing only, and therefore the surface water drainage system would remain as existing.
- 4.15. Surface water runoff from the proposed Cruise Terminal would discharge into the River Mersey through new connections. The final locations and pipe diameters would be confirmed with LCC and Peel Ports. Please refer to Appendix H for the indicative surface water drainage layout.
- 4.16. Appropriate treatment would be incorporated through the use of SuDS to ensure that the quality of water discharged is acceptable. Due to the nature of the proposed pier deck, there is limited space and depth for many of the SuDS devices available. Treatment would be achieved through the potential incorporation of permeable asphalt used in conjunction with a shallow permavoid system fitted with a biomat filtration system (or similar treatment device). This report sets out the principles of the proposed drainage strategy, however the final strategy would be confirmed at the detailed design stage.
- 4.17. The on-site drainage network and Sustainable Drainage Systems would be managed and maintained for the lifetime of the development by an appropriate managing body, ensuring that they remain fit for purpose and function appropriately.

### Sustainable Drainage Systems Management Plan

- 4.18. The PPG sets out the requirement for developers to consider the operation, management and maintenance of all SuDS.
- 4.19. Post construction, the on-site management company (who will be appointed post-planning) would be responsible for the SuDS included in the scheme. Table 5 outlines the maintenance that is anticipated for the proposed SuDS features.

Table 5: Indicative Management and Maintenance Plan

SuDS Device	
Task	Frequency
<b>Rainwater Harvesting</b>	
Inspect system for debris/ blockages	Annually or as required
<b>Permeable Surfacing</b>	
Inspection of main structure, pipework and filtration devices and remove any sediment/ debris	Quarterly or as required
Jetting of main structure to remove any sediment build up	Annually or as required
<b>Treatment Device</b>	
Inspection of device for debris build-up	Quarterly or as required
Replace device (Smart Sponge and similar products)	As required

### Impact on Existing Infrastructure

- 4.20. As the development proposals include only minor resurfacing and changes to Princes Parade, it is assumed that there would be no impact on the existing infrastructure in this area. This would be investigated at the detailed design stage.

## 5. Conclusions

- 5.1. EA mapping shows that the landward parts of the site are primarily located within Flood Zone 1, which denotes a low probability of flooding from tidal sources. However, as the site boundary includes the adjacent River Mersey and associated pier, these areas are shown to lie within Flood Zone 3, denoting a high probability of tidal flooding.
- 5.2. The building is considered to be a water compatible use, due to the cruise terminal needing to be located adjacent to the River Mersey to facilitate access. However, FFLs would be set at 7.55m AOD, 610mm above the 1 in 200 year plus climate change (2087) flood level, ensuring the development is protected.
- 5.3. The risk of flooding to the proposed building from tidal sources is considered to be low, however there is a residual risk due to the pier deck being overtopped by waves. To mitigate against likely overtopping, a wave wall or similar would be constructed along the exposed (northern and western) edges of the pier deck. Further investigation and design of appropriate mitigation measures would be carried out at the detailed design stage.
- 5.4. Due to the existing quay levels in the south of the site, there is the potential for tidal flooding in the highway present in this area. As this area would be retained for these purposes, alongside a secure marshalling area, this is considered acceptable in line with planning policy due to the scheme being water compatible.
- 5.5. The risk of flooding from fluvial, pluvial, groundwater and artificial sources has also been assessed and found to be low.
- 5.6. Surface water runoff from the proposed development would discharge to the River Mersey, as per the existing situation. As the river is tidal at this location, surface water would discharge unrestricted. This has been agreed by LCC. The final connections would be confirmed with LCC and Peel Ports.
- 5.7. Appropriate treatment would be incorporated through the use of SuDS, to ensure that the quality of water discharged is acceptable. This could be achieved through the use of pervious surfacing (e.g. permeable tarmac) used in conjunction with a shallow permavoid system fitted with a biomat filtration system or similar treatment device. This report sets out the principles of the Sustainable Drainage Systems, however the final strategy would be confirmed at the detailed design stage.
- 5.8. The on-site drainage network and Sustainable Drainage Systems would be managed and maintained for the lifetime of the development by an appropriate managing body, ensuring that they remain fit for purpose and function appropriately.
- 5.9. This report demonstrates that the development has a low probability of flooding from fluvial, pluvial, groundwater and artificial sources. Although there is a residual risk of the proposed pier deck being overtopped by wave action, this report shows that it can be managed effectively to ensure safety. It also confirms that surface water runoff from the site can be managed sustainably to ensure that flood risk is not increased elsewhere. It is considered that the information provided within this report satisfies the requirements of the NPPF and local policy.

## 6. References

- 
- <sup>i</sup> Department for Communities and Local Government, March 2012. *National Planning Policy Framework*.
- <sup>ii</sup> Department for Communities and Local Government, March 2014. *Planning Practice Guidance*.
- <sup>iii</sup> Department for Communities and Local Government, March 2012. *National Planning Policy Framework Technical Guidance*.
- <sup>iv</sup> Communities and Local Government, 2009. *Planning Policy Statement 25: Development and Flood Risk Practice Guide*.
- <sup>v</sup> Liverpool City Council, November 2002. *The City of Liverpool Unitary Development Plan*.
- <sup>vi</sup> Liverpool City Council, September 2016. *Liverpool Local Plan*
- <sup>vii</sup> Liverpool City Council, January 2008. *Strategic Flood Risk Assessment*
- <sup>viii</sup> Liverpool City Council, June 2011. *Preliminary Flood Risk Assessment*
- <sup>ix</sup> Department for Environment, Food and Rural Affairs, March 2015. *Non-statutory technical standards for sustainable drainage systems*.
- <sup>xi</sup> Liverpool Waters, January 2010. *Liverpool Waters Flood Risk Assessment*.
- <sup>xii</sup> Hr Wallingford, September 2017. *Liverpool Cruise Terminal: Hydrodynamic and coastal process studies*



## **APPENDICES**

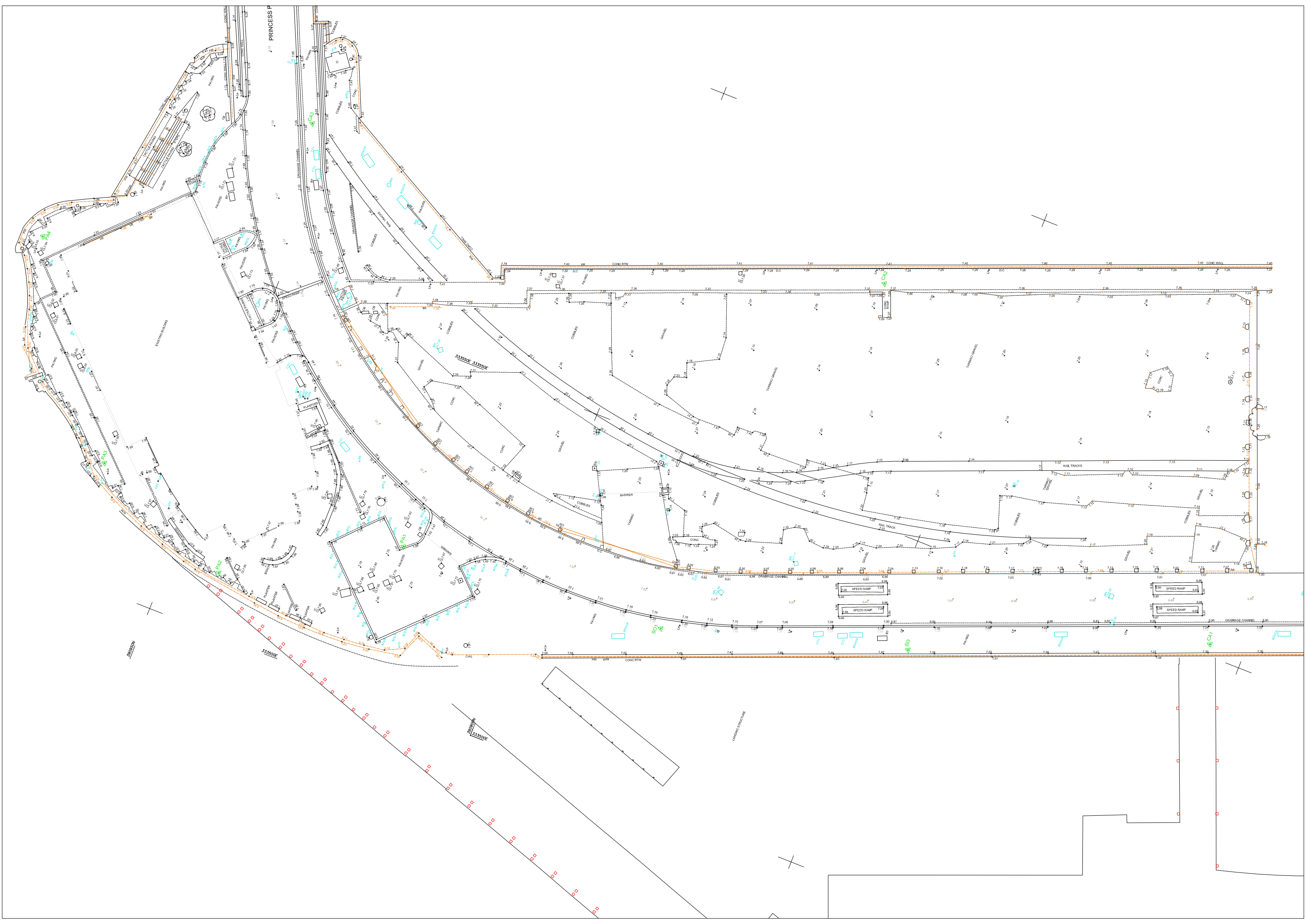
### **A. Topographic Survey**

#### **Appendices**

Liverpool Cruise Terminal

Project Number: WIE12464

Document Reference: WIE12464-100-R-8-2-2-FRA





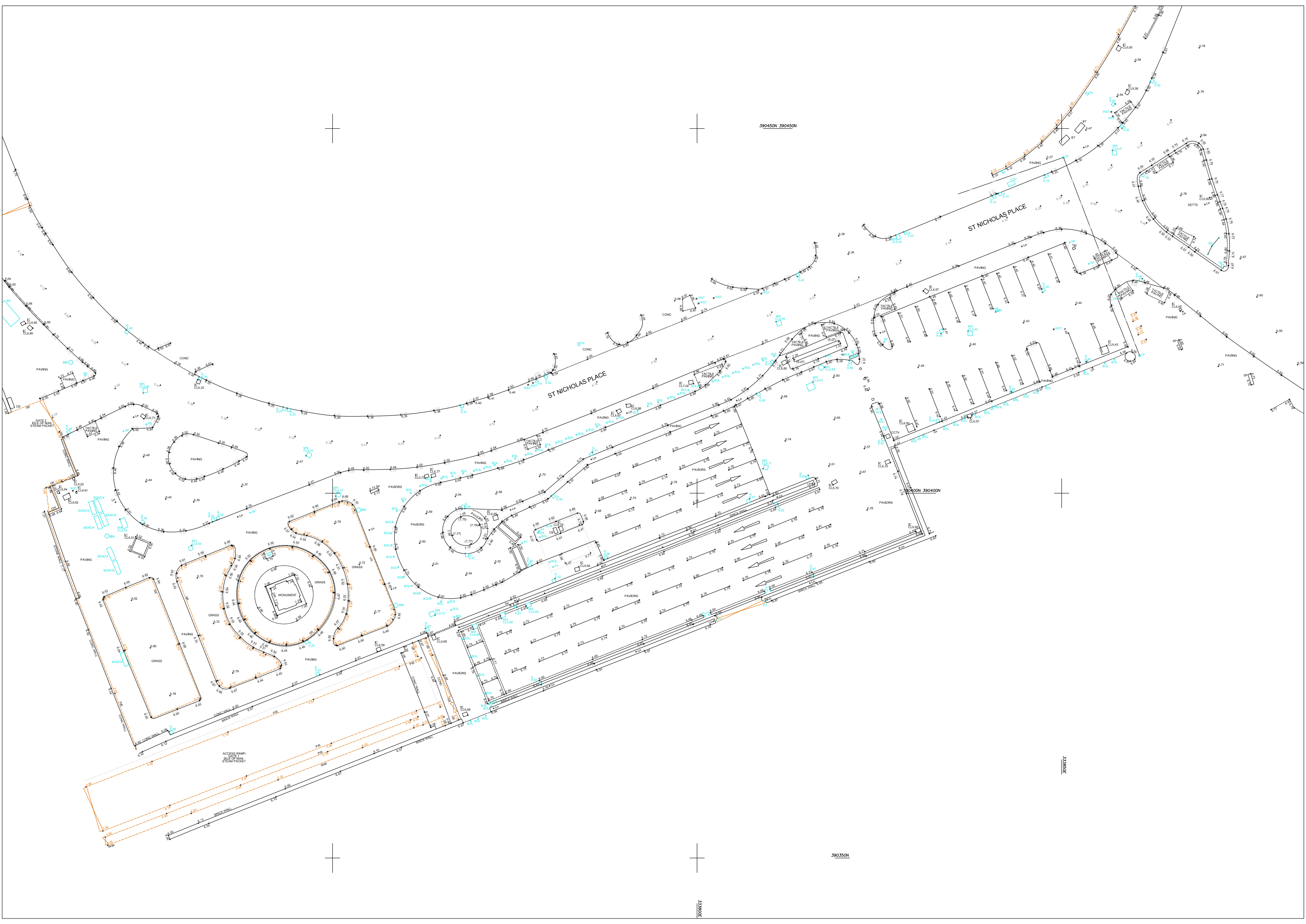
390450N 390450N

ST NICHOLAS PLACE

ST NICHOLAS PLACE

390400N

390350N





## **B. Indicative Development Proposals**

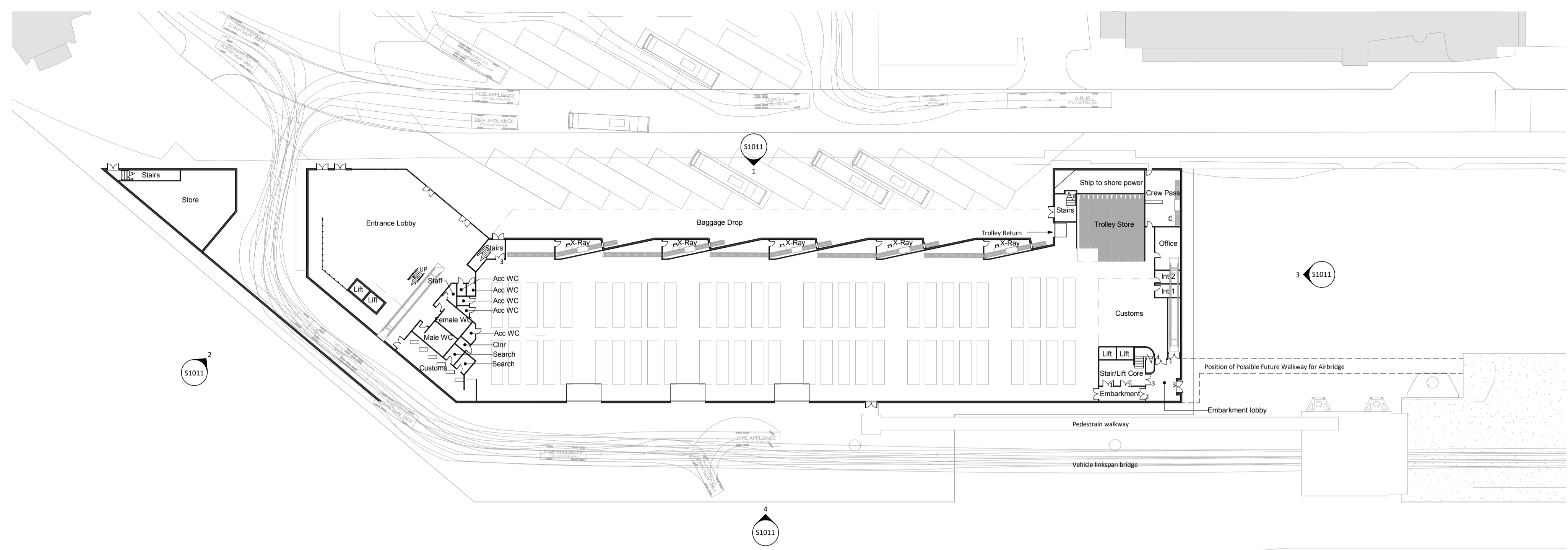
### **Appendices**

Liverpool Cruise Terminal

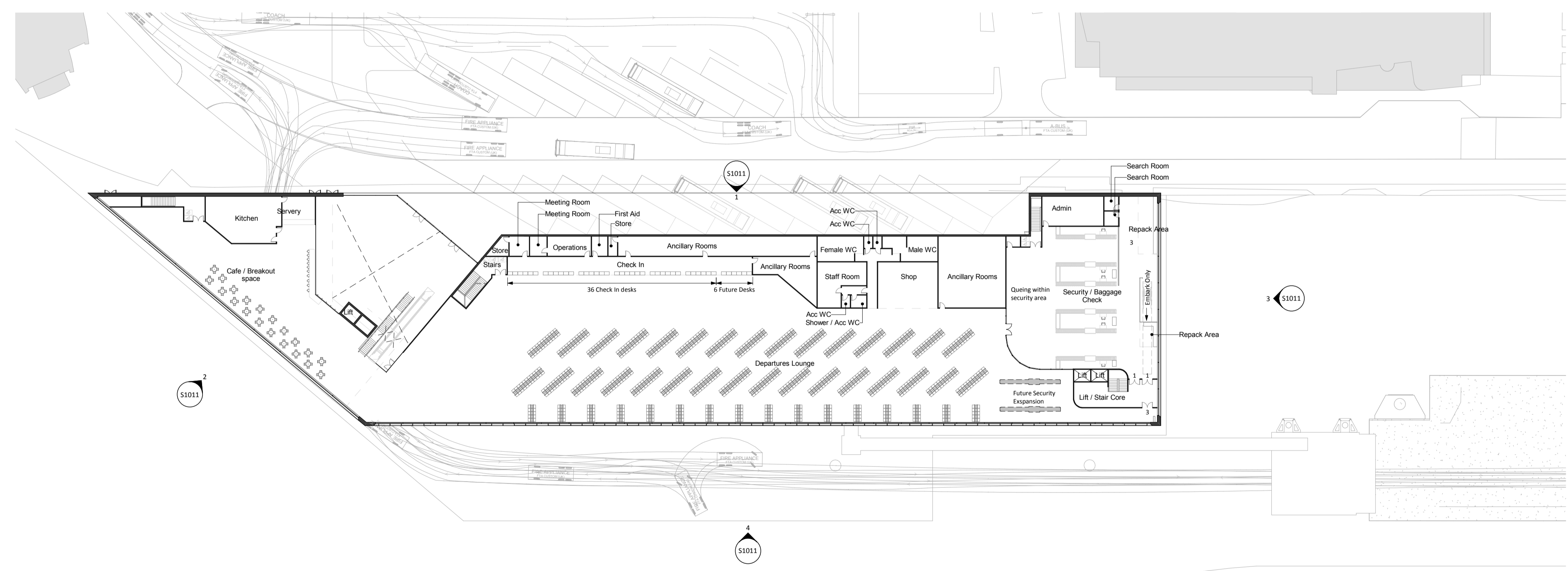
Project Number: WIE12464

Document Reference: WIE12464-100-R-8-2-2-FRA





00\_Ground Floor General Arrangement  
1:500



01\_First Floor General Arrangement  
1:500

**Door Operation During Embark & Disembark:**

- 1 - Doors held open during embarkation only (otherwise closed with maglocks)
- 2 - Doors held open during disembarkation & embarkation (close in the event of a fire)
- 3 - Doors normally closed & maglocked (maglock release in the event of a fire)
- 4 - Doors held open during disembarkation (otherwise closed with maglocks - released in the event of fire)

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CLIENT				ML
Liverpool City Council				CHECKED BY
				MA
				ORIGINATOR NO
				150846

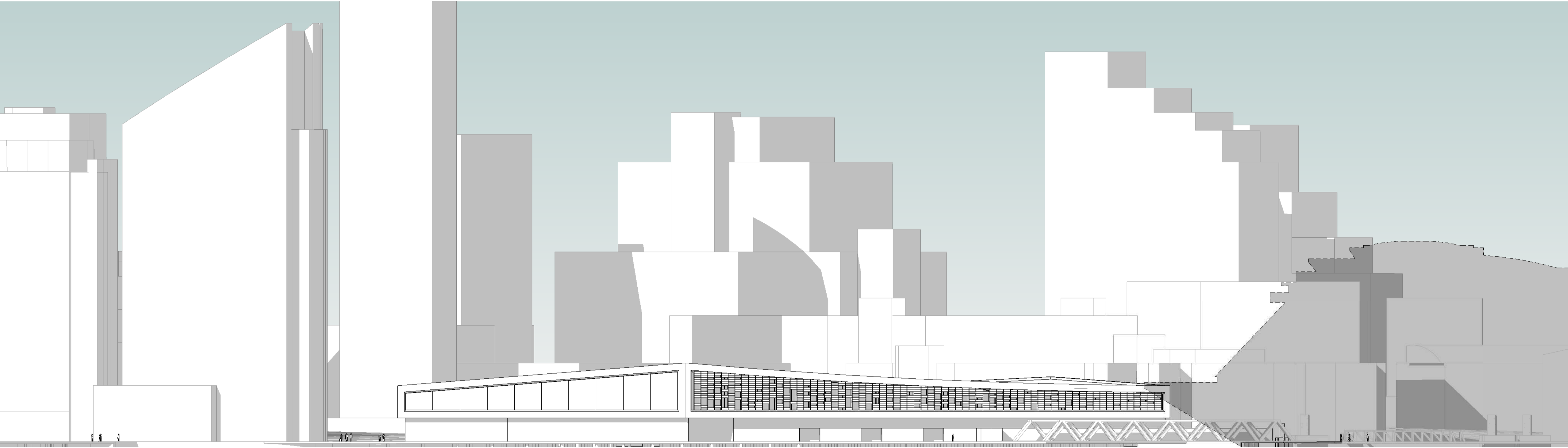
CONSULTANT  
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PROJECT  
 Liverpool Cruise Terminal  
 Princes Jetty,  
 Princes Parade,  
 Liverpool,  
 L3 1DL

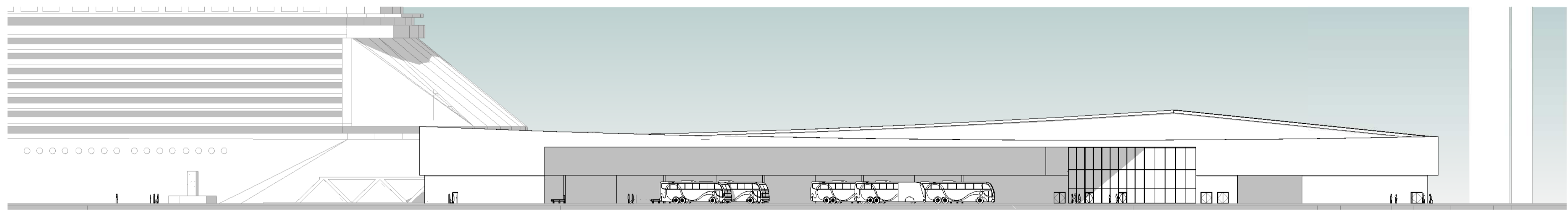
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**Slope - General Arrangements**

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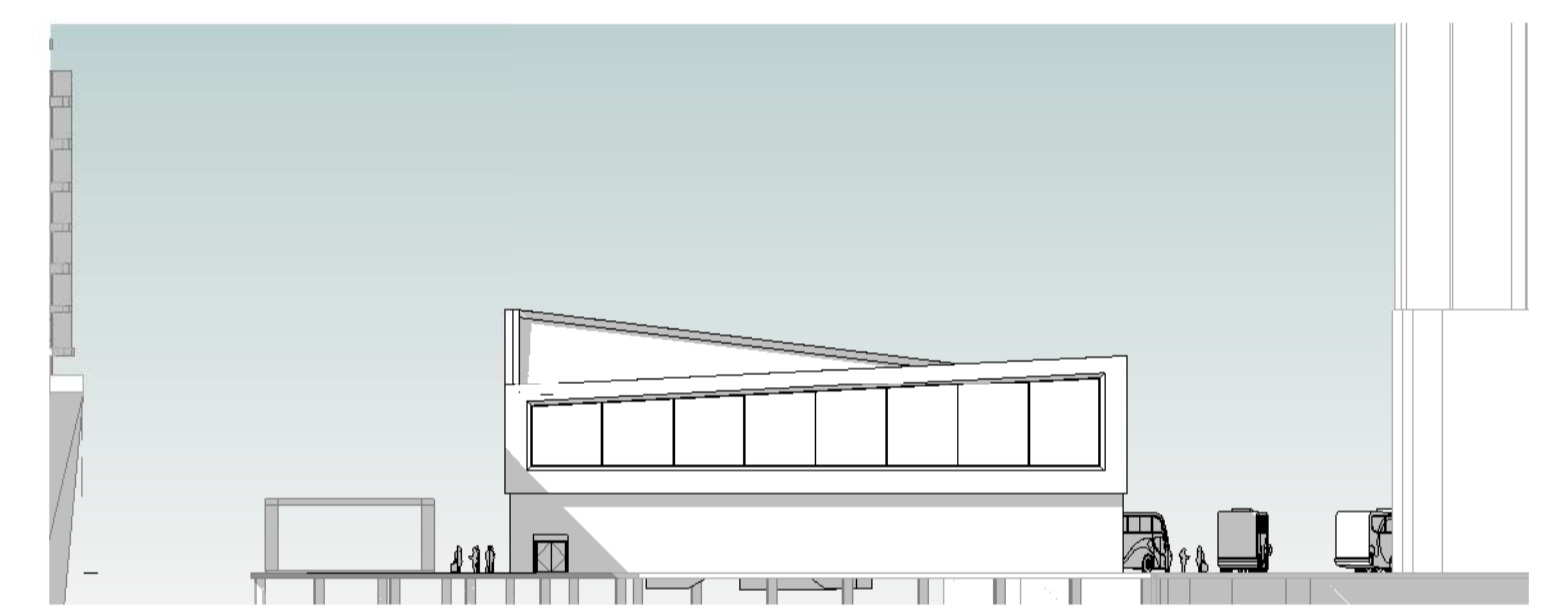
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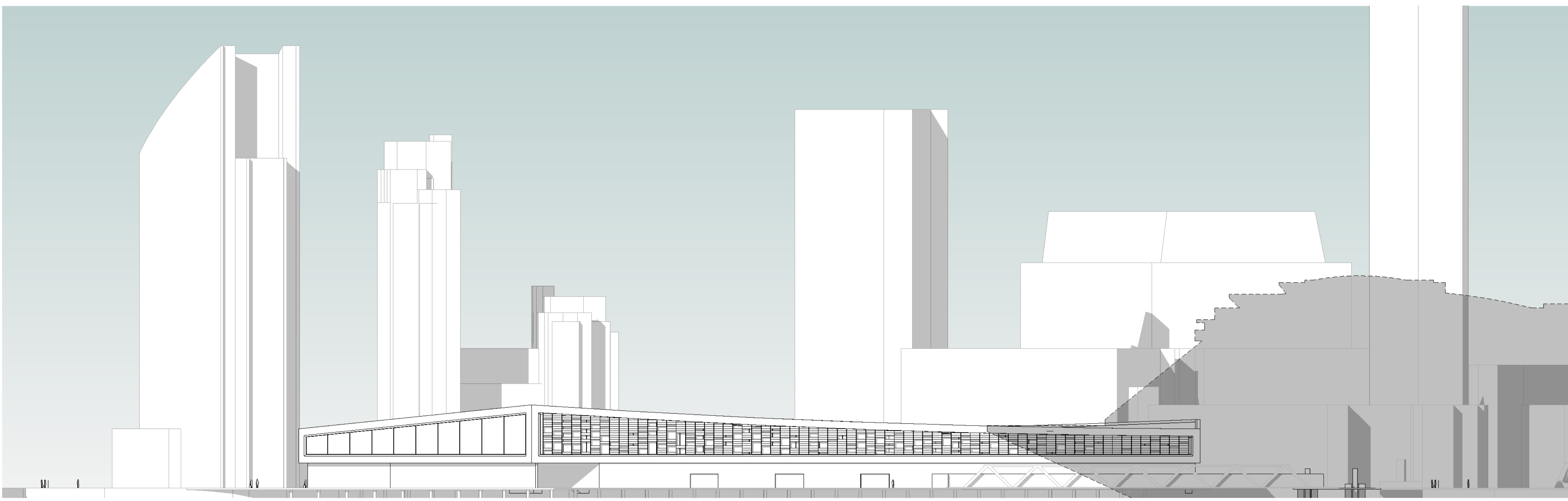
North West Face Elevation  
1:500



North East Elevation  
1:500



South East Elevation  
1:500



South West Elevation  
1:500

S2	P3	11/09/17	Ridge Heights lowered	REVISED BY	ML
CLIENT	Liverpool City Council	CHECKED BY	MA	ORIGINATOR NO	150846

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PROJECT  
Liverpool Cruise Terminal  
Princes Jetty,  
Princes Parade,  
Liverpool,  
L3 1DL

DRAWING TITLE  
Slope - General Arrangement Elevations

SUITABILITY STATUS S1 : SUITABLE FOR CO-ORDINATION	SCALE 1 : 500 @ A1
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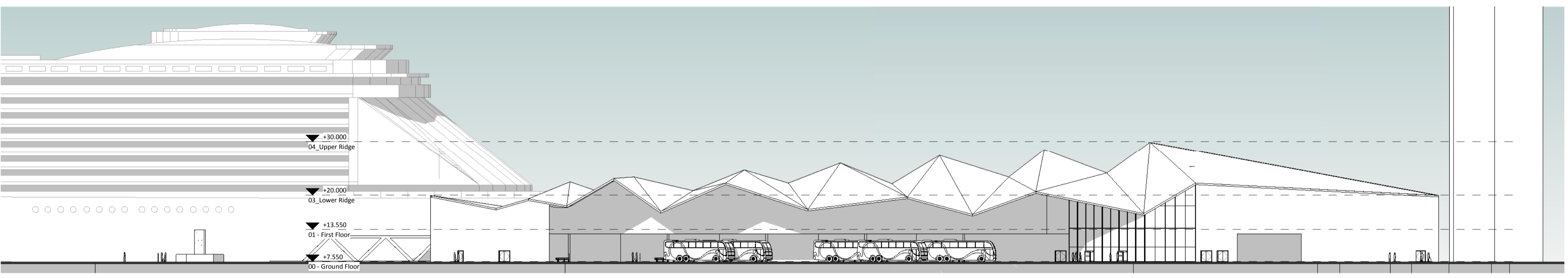
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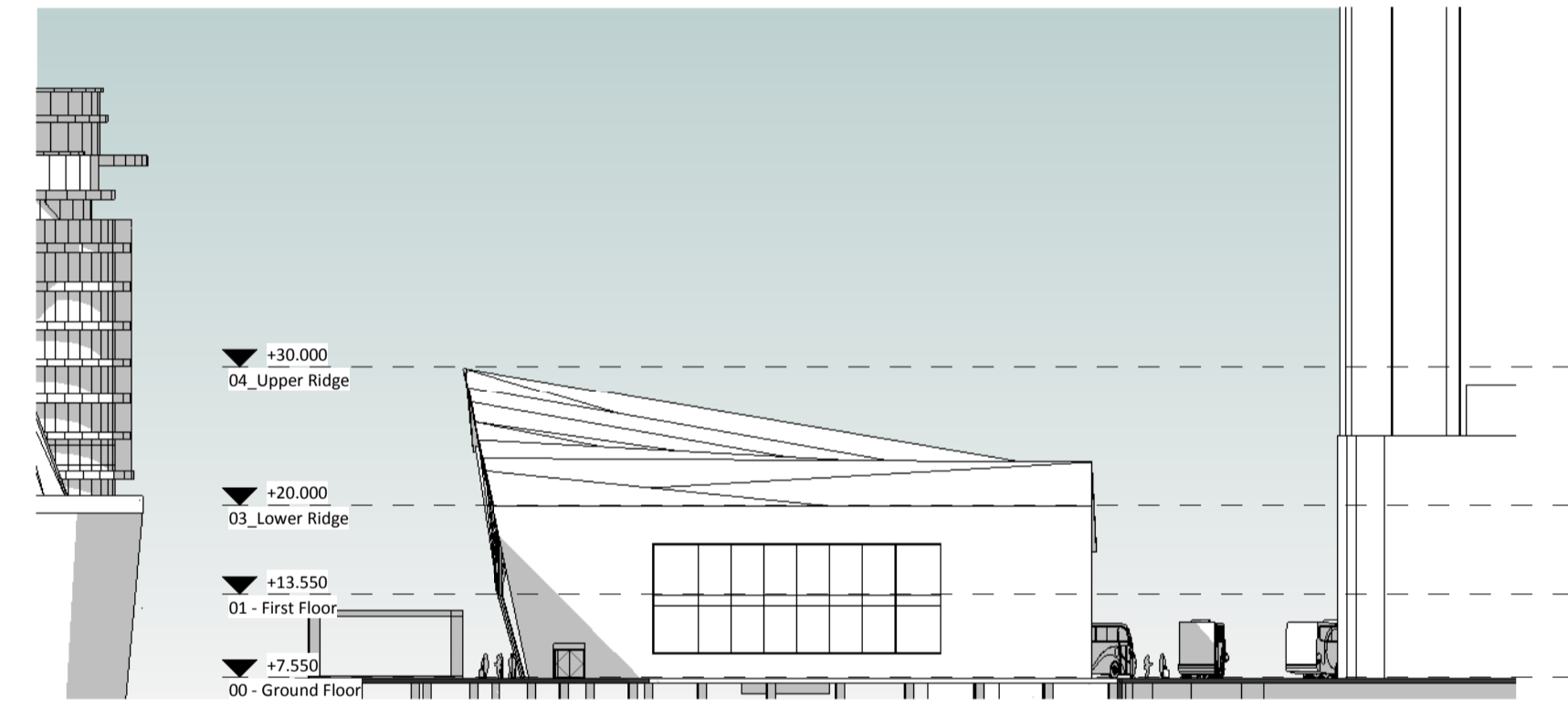




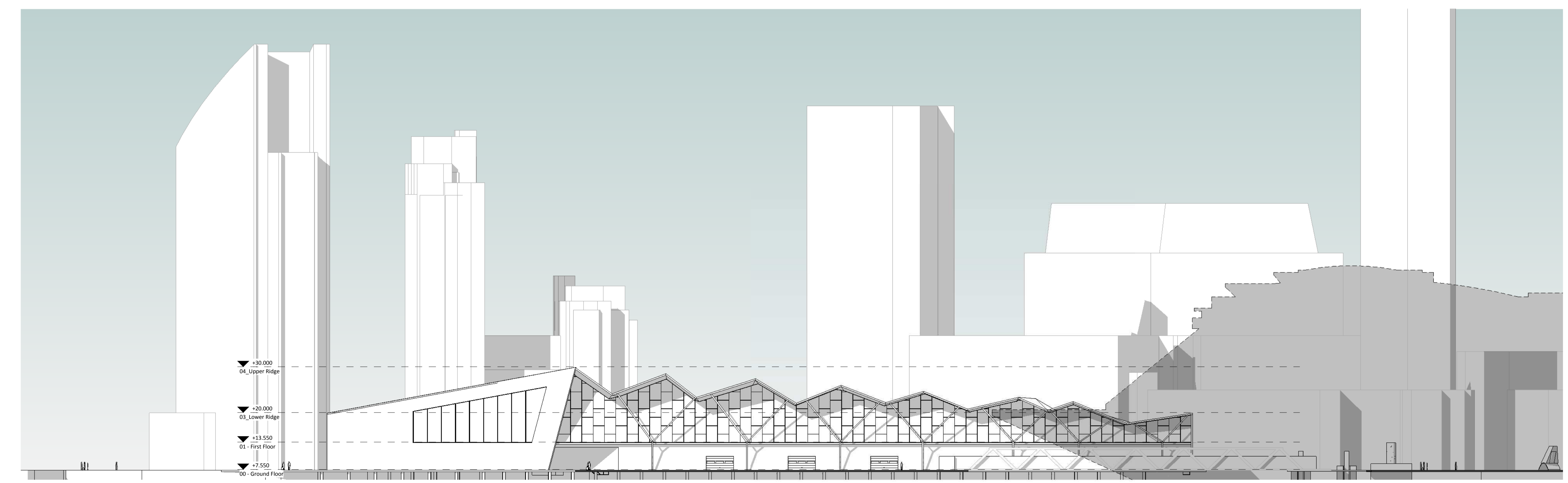
North West Face Elevation  
1:500



North East Elevation  
1:500



South East Elevation  
1:500



South West Elevation  
1:500

S2	P1	12/08/17	First Issue
STATUS	REV	DATE	DESCRIPTION
CLIENT			REVISOR
Liverpool City Council			ML
CHECKED BY			MA
ORIGINATOR NO			150846

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PROJECT  
 Liverpool Cruise Terminal  
 Princes Jetty,  
 Princes Parade,  
 Liverpool,  
 L3 1DL

DRAWING TITLE  
**Folded - General Arrangement Elevations**

SUITABILITY STATUS	SCALE
S0 : WORK IN PROGRESS	1 : 500 @ A1

PROJECT   ORIGINATOR   ZONE   LEVEL   TYPE   ROLE   CLASSIFICATION   NUMBER	REVISION
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## **C. Environment Agency Records**

### **Appendices**

Liverpool Cruise Terminal

Project Number: WIE12464

Document Reference: WIE12464-100-R-8-2-2-FRA

## Flood risk assessments: Climate change allowances

### Application of the allowances and local considerations

### Greater Manchester, Merseyside & Cheshire

#### 1) The climate change allowances

The [National Planning Practice Guidance](#) refers planners, developers and advisors to the Environment Agency guidance on considering climate change in Flood Risk Assessments (FRAs). This guidance was updated in February 2016 and is available on [Gov.uk](#) and should be read in conjunction with this document. The guidance can be used for planning applications, local plans, neighbourhood plans and other projects. It provides climate change allowances for peak river flow, peak rainfall, sea level rise, wind speed and wave height. The guidance provides a range of allowances to assess fluvial flooding, rather than a single national allowance. It advises on what allowances to use for assessment based on vulnerability classification, flood zone and development lifetime.

#### 2) Assessment of climate change impacts on fluvial flooding

**Table A** below indicates the level of technical assessment of climate change impacts on fluvial flooding appropriate for new developments depending on their scale and location. This should be used as **a guide only**. Ultimately, the agreed approach should be based on expert local knowledge of flood risk conditions, local sensitivities and other influences. **For these reasons we recommend that applicants and / or their consultants should contact the Environment Agency at the pre-planning application stage to confirm the assessment approach, on a case by case basis.** **Table A** defines three possible approaches to account for flood risk impacts due to climate change, in new development proposals:

- **Basic:** Developer can add an allowance to the 'design flood' (i.e. 1% annual probability) peak levels to account for potential climate change impacts. The allowance should be derived and agreed locally by Environment Agency teams.
- **Intermediate:** Developer can use existing modelled flood and flow data to construct a stage-discharge rating curve, which can be used to interpolate a flood level based on the required peak flow allowance to apply to the 'design flood' flow.
- **Detailed:** Perform detailed hydraulic modelling, through either re-running Environment Agency hydraulic models (if available) or construction of a new model by the developer.

**Table A – Indicative guide to assessment approach**

VULNERABILITY CLASSIFICATION	FLOOD ZONE	DEVELOPMENT TYPE		
		MINOR	SMALL-MAJOR	LARGE-MAJOR
ESSENTIAL INFRASTRUCTURE	Zone 2	Detailed		
	Zone 3a	Detailed		
	Zone 3b	Detailed		
HIGHLY VULNERABLE	Zone 2	Intermediate/ Basic	Intermediate/ Basic	Detailed
	Zone 3a	Not appropriate development		
	Zone 3b	Not appropriate development		
MORE VULNERABLE	Zone 2	Basic	Basic	Intermediate/ Basic
	Zone 3a	Basic	Detailed	Detailed
	Zone 3b	Not appropriate development		
LESS VULNERABLE	Zone 2	Basic	Basic	Intermediate/ Basic
	Zone 3a	Basic	Basic	Detailed
	Zone 3b	Not appropriate development		
WATER COMPATIBLE	Zone 2	None		
	Zone 3a	Intermediate/ Basic		
	Zone 3b	Detailed		

**NOTES:**

- Minor: 1-9 dwellings/ less than 0.5 ha | Office / light industrial under 1ha | General industrial under 1 ha | Retail under 1 ha | Gypsy/traveller site between 0 and 9 pitches
- Small-Major: 10 to 30 dwellings | Office / light industrial 1ha to 5ha | General industrial 1ha to 5ha | Retail over 1ha to 5ha | Gypsy/traveller site over 10 to 30 pitches
- Large-Major: 30+ dwellings | Office / light industrial 5ha+ | General industrial 5ha+ | Retail 5ha+ | Gypsy/traveller site over 30+ pitches | any other development that creates a non residential building or development over 1000 sq m.

**The assessment approach should be agreed with the Environment Agency as part of pre-planning application discussions to avoid abortive work.**

### 3) Specific local considerations

Where the Environment Agency and the applicant and / or their consultant has agreed that a 'basic' level of assessment is appropriate the figures in Table B below can be used as a precautionary allowance for potential climate change impacts on peak 'design' (i.e. 1% annual probability) fluvial flood level rather than undertaking detailed modelling.

**Table B – Local precautionary allowances for potential climate change impacts**

Watercourse	Central	Higher Central	Upper
All	0.15m	0.24m	0.48m

Use of these allowances will only be accepted after discussion with the Environment Agency.

### 4) Fluvial food risk mitigation

Read the guidance on [Gov.uk](http://Gov.uk) to find out which allowances to use to **assess** the impact of climate change on flood risk.

For planning consultations where we are a statutory consultee and our [Flood risk standing advice](#) **does not** apply we use the following benchmarks to inform flood risk **mitigation** for different vulnerability classifications. **These are a guide only. We strongly recommend you contact us at the pre-planning application stage to confirm this on a case by case basis. Please note you may be charged for this advice.** For planning consultations where we are not a statutory consultee or our [Flood risk Standing advice](#) applies we recommend local planning authorities and developers use these benchmarks but we do not expect to be consulted.

- For development classed as '[Essential Infrastructure](#)' our benchmark for flood risk mitigation is for it to be designed to the '**upper end**' climate change allowance for the epoch that most closely represents the lifetime of the development, including decommissioning.
- For [highly vulnerable](#) in flood zone 2, the '**higher central**' climate change allowance is our minimum benchmark for flood risk mitigation. In sensitive locations it may be necessary to use the **upper end** allowance.
- For [more vulnerable developments](#) in flood zone 2, the '**central**' climate change allowance is our minimum benchmark for flood risk mitigation, and in flood zone 3 the '**higher central**' climate change allowance is our minimum benchmark for flood risk

mitigation. In sensitive locations it may be necessary to use the **higher central** (in flood zone 2) and the **upper end** allowance (in flood zone 3).

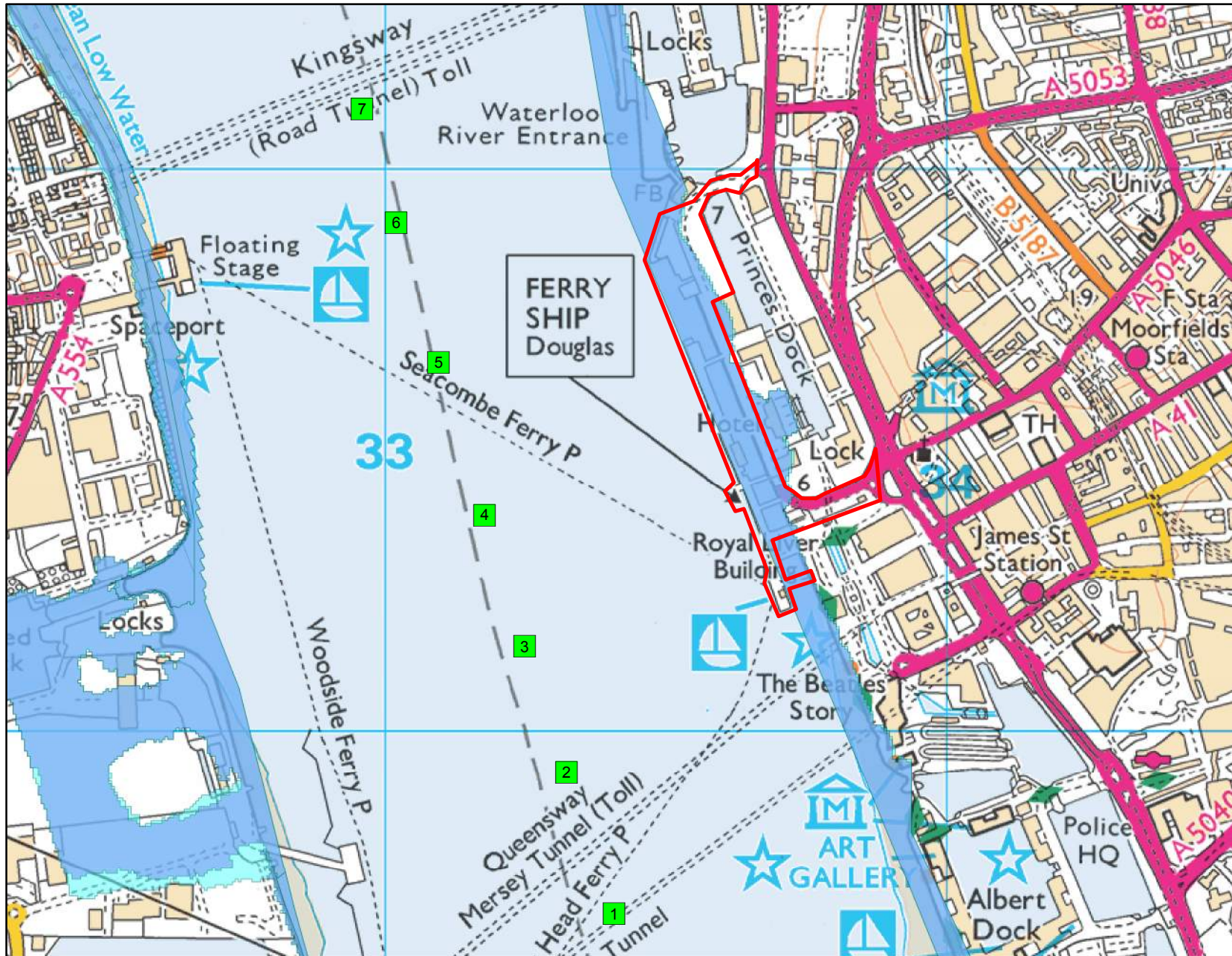
- For [water compatible](#) or [less vulnerable](#) development (e.g. commercial), the 'central' climate change allowance for the epoch that most closely represents the lifetime of the development is our minimum benchmark for flood risk mitigation. In sensitive locations it may be necessary to use the **higher central** (particularly in flood zone 3) to inform built in resilience.

There may be circumstances where local evidence supports the use of other data or allowances. Where you think this is the case we may want to check this data and how you propose to use it.

END.



Detailed Flood Map centred on Princes Dock, Liverpool, L3 1DE. Created 07/07/2017 [GMMC52064CC]



1:10,001



**Legend**

- Site Location
- Model Measurements
- Flood Zone 2
- Flood Zone 3

Map Reference	Model Node Reference	Easting	Northing	Undefended		Defended				
				0.5 % AEP (1 in 200 year)	0.1 % AEP (1 in 1000 year)	1 % AEP (1 in 100 year)	0.5 % AEP (1 in 200 year)	0.1 % AEP (1 in 1000 year)	0.5% AEP (1 in 200 year) + climate change (2065)*	0.5% AEP (1 in 200 year) + climate change (2115)*
1	Mersey Estuary	333410	389674	6.47	6.70	6.36	6.47	6.70	6.79	7.17
2		333325	389926	6.46	6.68	6.35	6.46	6.68	6.77	7.15
3		333250	390150	6.44	6.66	6.33	6.44	6.66	6.76	7.14
4		333179	390384	6.42	6.64	6.31	6.42	6.64	6.74	7.12
5		333097	390656	6.39	6.62	6.28	6.39	6.62	6.71	7.10
6		333022	390905	6.37	6.59	6.26	6.37	6.59	6.69	7.07
7		332961	391107	6.34	6.57	6.23	6.34	6.57	6.66	7.05

Model data taken from Draft Mersey Estuary 2016 Study

Notes:

AEP - Annual Exceedence Probability

m aodN - metres above ordnance datum Newlyn

cumecs - cubic metres per second

\*The impact of climate change was assessed by simulating a 200-year event including an increase in predicted sea-level rise up to the year 2065 and 2115. The new climate change guidance is available at <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>. The location of the site and the type (vulnerability) of development determine the climate change allowances to consider in any flood risk assessment.

## **D. Liverpool City Council Preliminary Flood Risk Assessment Mapping**

### **Appendices**

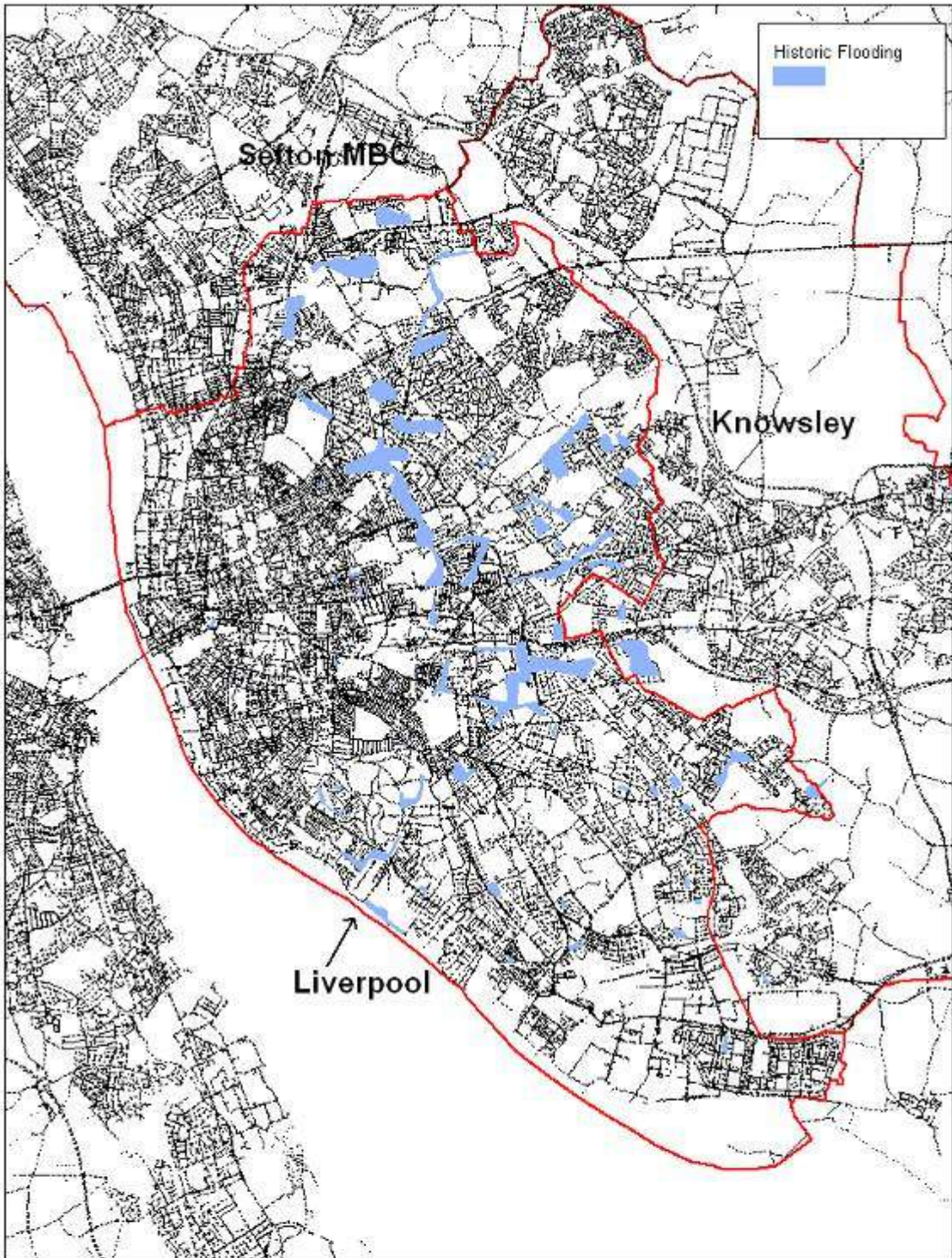
Liverpool Cruise Terminal

Project Number: WIE12464

Document Reference: WIE12464-100-R-8-2-2-FRA



Figure 4.2.2 Summary of past flooding





	Date: April 2011 Scale: N.T.S
<b>Historic Flooding Locations</b>	Status: Final
<small>This map is reproduced from Ordnance Survey material with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationery Office © Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings.</small>	 The City of Liverpool



Figure 5.2.2 Areas Susceptible to Surface Water Flooding (AStSWF)

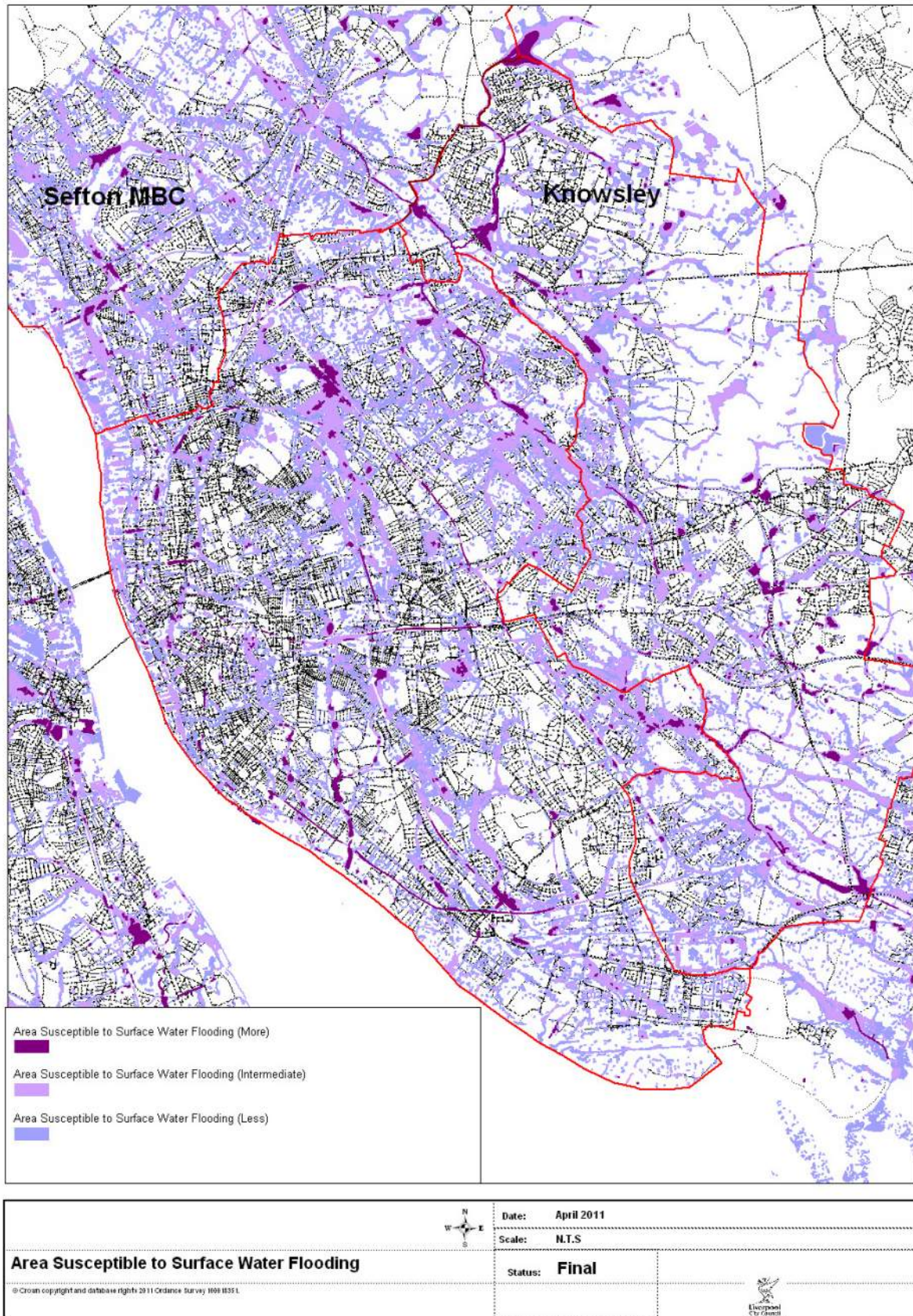




Figure 5.2.3 Areas Susceptible to Groundwater Flooding (AStGF)





## **E. Liverpool City Council Correspondence**

### **Appendices**

Liverpool Cruise Terminal  
Project Number: WIE12464

Document Reference: WIE12464-100-R-8-2-2-FRA



## Connor Henderson

---

**From:** Jackson, David <David.Jackson3@amey.co.uk>  
**Sent:** 01 August 2017 15:47  
**To:** Connor Henderson  
**Cc:** Gilmore, Laura  
**Subject:** Re: Liverpool Cruise Terminal Flood Risk Enquiry - WIE12464

**Categories:** To be Filed

Connor

I can confirm we have no details of flooding attributed to fluvial, groundwater, overland flow, lack of sewer capacity, and also confirm that we hold no records of such events.

Free discharge will be acceptable if the outlet invert level from any development drainage is above high tide levels. If the outlet invert level is below the high tide level then the surface water drainage system will need to be checked for any tidal locking effects.

Many thanks

### DAVE JACKSON

Engineer | Consulting

**Amey**

t: 0151 498 6825 | m: 0780 9313978 | e: [david.jackson3@amey.co.uk](mailto:david.jackson3@amey.co.uk)

Unit 3 | Matchworks | 142 Speke Road | Garston | Liverpool | L19 2PH



---

**From:** Gilmore, Laura <Laura.Gilmore@liverpool.gov.uk>  
**Sent:** 01 August 2017 14:57  
**To:** Jackson, David  
**Subject:** FW: Liverpool Cruise Terminal Flood Risk Enquiry - WIE12464

**CAUTION:** This email originated from outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Hi Dave,

Please see the email below, could you please respond to Connor.

Many thanks,

Laura

**Laura Gilmore** I Principal Engineer – Highways and Transportation  
Liverpool City Council I Cunard Building I Water Street I Liverpool I L3 1DS  
T: 0151 233 0277 I M: 07921943033 I E: [laura.gilmore@liverpool.gov.uk](mailto:laura.gilmore@liverpool.gov.uk)  
Online: [www.liverpool.gov.uk](http://www.liverpool.gov.uk)

**Postal address:**

Liverpool City Council I Municipal Buildings I Dale Street I Liverpool I L2 2DH



**#IAmLiverpool2022**

---

**From:** Connor Henderson [mailto:connor.henderson@watermangroup.com]

**Sent:** 01 August 2017 14:44

**To:** Gilmore, Laura <Laura.Gilmore@liverpool.gov.uk>

**Subject:** Liverpool Cruise Terminal Flood Risk Enquiry - WIE12464

Good Afternoon,

I am writing regarding a proposed development at Princess Dock, L3 1DE. Please find attached an approximate location plan for your reference.

We have been commissioned to investigate the potential flood risk to the development and to produce a Flood Risk Assessment and Surface Water Drainage Strategy.


Please could you confirm any details of flooding attributed to fluvial, groundwater, overland flow, lack of sewer capacity, or alternatively confirm that you hold no records of such events.

Additionally, the site is adjacent to the River Mersey and the development will discharge surface water flows into the River. Due to this section of the river being tidal, there is no restriction to discharge rates off-site. Please could you confirm that this is acceptable?

Many thanks

**Connor Henderson**  
**Graduate Engineer**  
**Waterman Infrastructure & Environment Ltd**

Pickfords Wharf | Clink Street | London SE1 9DG  
t +44 207 928 7888 | 03300602814  
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## Connor Henderson

---

**From:** Jackson, David <David.Jackson3@amey.co.uk>  
**Sent:** 02 August 2017 15:56  
**To:** Connor Henderson  
**Subject:** Re: Liverpool Cruise Terminal Flood Risk Enquiry - WIE12464

**Categories:** To be Filed

Connor

There are no culverted or open watercourses near the site

There is no flood risk from surface water in the vicinity of the site therefore the maps will show nothing

Liverpool City Council does not hold any information regarding specific ground water levels

Thanks

### DAVE JACKSON

Engineer | Consulting

Amey

t: 0151 498 6825 | m: 0780 9313978 | e: [david.jackson3@amey.co.uk](mailto:david.jackson3@amey.co.uk)

Unit 3 | Matchworks | 142 Speke Road | Garston | Liverpool | L19 2PH



---

**From:** Connor Henderson <connor.henderson@watermangroup.com>  
**Sent:** 02 August 2017 10:45  
**To:** Jackson, David  
**Cc:** Gilmore, Laura  
**Subject:** RE: Liverpool Cruise Terminal Flood Risk Enquiry - WIE12464

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Hi Dave,

Thanks for your prompt response.

I have a few more requests if you wouldn't mind:


1. Could you provide us with a map showing the location of any ordinary watercourses near the site.
2. Please could you provide your flood risk from surface water map for the vicinity of the site.
3. Could you confirm the likely groundwater levels in the vicinity of the site.

We are also writing to the Environment Agency and United Utilities to request details of flooding incidents and other relevant information. If you are aware of any other parties that may have useful information I would appreciate it if you could let me know.

Kind Regards,

**Connor Henderson**  
**Graduate Engineer**  
**Waterman Infrastructure & Environment Ltd**

Pickfords Wharf | Clink Street | London SE1 9DG  
t +44 207 928 7888 | 03300602814  
[www.watermangroup.com](http://www.watermangroup.com) | [LinkedIn](#) | [Twitter](#)

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**From:** Jackson, David [mailto:David.Jackson3@amey.co.uk]  
**Sent:** 01 August 2017 15:47  
**To:** Connor Henderson <connor.henderson@watermangroup.com>  
**Cc:** Gilmore, Laura <Laura.Gilmore@liverpool.gov.uk>  
**Subject:** Re: Liverpool Cruise Terminal Flood Risk Enquiry - WIE12464

Connor

I can confirm we have no details of flooding attributed to fluvial, groundwater, overland flow, lack of sewer capacity, and also confirm that we hold no records of such events.

Free discharge will be acceptable if the outlet invert level from any development drainage is above high tide levels. If the outlet invert level is below the high tide level then the surface water drainage system will need to be checked for any tidal locking effects.

Many thanks

**DAVE JACKSON**  
Engineer | Consulting  
**Amey**

t: 0151 498 6825 | m: 0780 9313978 | e: [david.jackson3@amey.co.uk](mailto:david.jackson3@amey.co.uk)  
Unit 3 | Matchworks | 142 Speke Road | Garston | Liverpool | L19 2PH



**From:** Gilmore, Laura <[Laura.Gilmore@liverpool.gov.uk](mailto:Laura.Gilmore@liverpool.gov.uk)>  
**Sent:** 01 August 2017 14:57  
**To:** Jackson, David  
**Subject:** FW: Liverpool Cruise Terminal Flood Risk Enquiry - WIE12464

**CAUTION:** This email originated from outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Hi Dave,

Please see the email below, could you please respond to Connor.

Many thanks,

Laura

**Laura Gilmore** I Principal Engineer – Highways and Transportation  
Liverpool City Council I Cunard Building I Water Street I Liverpool I L3 1DS  
T: 0151 233 0277 I M: 07921943033 I E: [laura.gilmore@liverpool.gov.uk](mailto:laura.gilmore@liverpool.gov.uk)  
Online: [www.liverpool.gov.uk](http://www.liverpool.gov.uk)

**Postal address:**

Liverpool City Council I Municipal Buildings I Dale Street I Liverpool I L2 2DH



**#IAmLiverpool2022**

---

**From:** Connor Henderson [<mailto:connor.henderson@watermangroup.com>]  
**Sent:** 01 August 2017 14:44  
**To:** Gilmore, Laura <[Laura.Gilmore@liverpool.gov.uk](mailto:Laura.Gilmore@liverpool.gov.uk)>  
**Subject:** Liverpool Cruise Terminal Flood Risk Enquiry - WIE12464

Good Afternoon,

I am writing regarding a proposed development at Princess Dock, L3 1DE. Please find attached an approximate location plan for your reference.



We have been commissioned to investigate the potential flood risk to the development and to produce a Flood Risk Assessment and Surface Water Drainage Strategy.


Please could you confirm any details of flooding attributed to fluvial, groundwater, overland flow, lack of sewer capacity, or alternatively confirm that you hold no records of such events.

Additionally, the site is adjacent to the River Mersey and the development will discharge surface water flows into the River. Due to this section of the river being tidal, there is no restriction to discharge rates off-site. Please could you confirm that this is acceptable?

Many thanks

**Connor Henderson**  
**Graduate Engineer**  
**Waterman Infrastructure & Environment Ltd**

Pickfords Wharf | Clink Street | London SE1 9DG  
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## **F. United Utilities Records**

### **Appendices**

Liverpool Cruise Terminal

Project Number: WIE12464

Document Reference: WIE12464-100-R-8-2-2-FRA

# Commercial Drainage and Water Enquiry

Responses to a drainage and water enquiry for commercial premises or development sites.

This document was ordered by: -

**Waterman Infrastructure & Environment  
Ltd**

**Pickfords Wharf  
Clink Street  
London**

**SE1 9DG**

**Client Ref: WIE12464**

**FAO: Connor Henderson**

This document was produced by: -

**United Utilities Water Limited  
Property Searches  
Ground Floor Grasmere House  
Lingley Mere Business Park  
Great Sankey  
Warrington  
WA5 3LP**

**Telephone 0370 7510101**

**e-mail - [property.searches@uuplc.co.uk](mailto:property.searches@uuplc.co.uk)**

The information in this document refers to: -

**Property: PRINCES DOCK PRINCES PARADE LIVERPOOL L3 1DZ**

For any queries relating to this report please e-mail, write or phone our Customer Liaison Team at the above address quoting United Utilities' Reference Number: 1314847

## 1. Section one: Introduction

The following records were searched in compiling this report:-

- \* The map of the public sewers
- \* The map of the waterworks
- \* Water and Sewerage connection records
- \* Adoption of public sewer records
- \* Building over public sewers records
- \* The properties subject to internal foul flooding
- \* Adoption of public water mains records
- \* The properties subject to poor water pressure and
- \* Water supply clarification.

All these are held by United Utilities Water Limited, Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP.

**Please Note - We must make you aware that due to the introduction of the open market with effect from 1st April 2017 for commercial customers, Property Searches will no longer be able to resolve issues regarding some discrepancies within the report. Due to the change in the structure of the market the retailer is now responsible for taking ownership of certain issues, particularly relating to billing/tariff charges as well as, but not limited to change of usage of a property.**

If you are planning works anywhere in the North West, please read our access statement before you start work to check how it will affect our network. <http://www.unitedutilities.com/work-near-asset.aspx>.

**United Utilities Water Limited**  
**Registered In England & Wales No. 2366678**  
**Registered Office Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP.**

## **Interpretation of Drainage and Water Enquiry**

**Appendix 1 of this report contains definitions of terms and expressions used in the report.**

### **Enquiries and Responses**

**The records were searched by Hazel Kay for United Utilities who does not have, nor is likely to have, any personal or business relationship with any person involved in the sale of the property.**

**This search report was prepared by Hazel Kay for United Utilities who does not have, nor is likely to have, any personal or business relationship with any person involved in the sale of the property.**

**Appendix 2 of this report contains the terms and conditions of sale**

**Appendix 3 of this report contains our formal complaints procedures**

### **Commercial drainage and water search complaint procedure**

In the event of any queries relating to this report please e-mail, write or phone our Customer Liaison Team at the address above quoting United Utilities reference. We will endeavour to resolve any telephone contact or complaint at the time of the call

Whilst we always try to resolve all complaints straightaway, if this is not possible and you are not happy with the course of action taken by us, you can ask us to escalate the issues internally or take your complaint to an independent third party.

We will listen to your complaint and do our best to deal with it immediately.

If we fail to give you a written substantive response within 5 working days Property Searches will compensate our client the original fee paid for a Property Searches Commercial Drainage and Water enquiry, regardless of the outcome of your complaint.

If it is a complex issue requiring more time, we will still get back to you within 5 days and notify you of progress and update you with the new timescales.


If we consider your complaint to be justified we will or we have made any errors that substantially change to outcome of the search we will-


- Refund your search fee
- Provide you with a revised search
- Take the necessary action within our power to put things right
- Keep you informed of any action required


If we cannot resolve your complaint or have failed to comply with the complaints procedure you can:

- Let us know and we can escalate your complaint
- Refer the issue to an independent body of your choice.

To help understand the implications of the Drainage and Water Enquiries Report a summary guide to the content of the full report is provided below.

 *The attention of the purchaser is drawn to this response. The purchaser may wish to make further investigations into this situation.*

 *This response represents the typical situation for a property.*

 *This response represents an uncommon situation for a property and the purchaser should carefully consider its implications.*

Question	Report Schedule	Answer
1	Where relevant, please include a copy of an extract from the public sewer map.	Yes & in vicinity 
2	Where relevant, please include a copy of an extract from the map of waterworks.	Yes & in vicinity 
3	Does foul water from the property drain to a public sewer?	Plot of Land 
4	Does surface water from the property drain to a public sewer?	Plot of Land 
5	Is a surface water drainage charge payable?	No 
6	Does the public sewer map indicate any public sewer, disposal main or lateral drain within the boundaries of the property?	None 
6.1	Does the public sewer map indicate any pumping station or any other ancillary apparatus within the boundaries of the property?	None 
7	Does the public sewer map indicate any public sewer within 30.48 metres (100 feet) of any buildings within the property?	None 
7.1	Does the public sewer map indicate any public pumping station or any other ancillary apparatus within 50 metres of any buildings within the property?	None 
8.1	Are any sewers or lateral drains serving or which are proposed to serve the property the subject of an existing adoption agreement or an application for such an agreement?	Not applicable 
8.2	Are any sewers or lateral drains serving, or which are proposed to serve the property, the subject of an existing adoption agreement or an application for such an agreement?	Not applicable 
9	Has a sewerage undertaker approved or been consulted about any plans to erect a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain?	None 
10	Is the property, or part of the property, at risk of internal foul flooding due to overloaded public sewers?	No 
11	Please state the distance from the property to the nearest boundary of the nearest sewage treatment works.	Yes 
12	Is the property connected to mains water supply?	Plot of Land 
13	Are there any water mains, resource mains or discharge pipes within the boundaries of the property?	Yes 
14	Is any water main or service pipe serving or which is proposed to serve the property the subject of an existing adoption agreement or an application for such an agreement?	No 
15	Is the building at risk of receiving low water pressure or flow?	No 
16	What is the clarification of the water supply for the property?	Very Soft 
18	Please include details of the location of any water meter serving the property.	No Meter 
19	Who is responsible for providing the sewerage services for the property?	United Utilities 
19	Who is responsible for providing the water services for the property?	United Utilities 
20	Who bills the property for sewerage services?	Not Billed 
21	Who bills the property for water services?	Not Billed 
AQ1	Has a customer been granted a trade effluent consent at this property?	No 
AQ2	Is there an easement affecting the property?	No 



## Waste Water Symbolology

Combined	Foul	Surface	Overflow					
				Manhole				WW pumping station
				Manhole, side entry				Inspection chamber
				Public sewer				Extent of survey
				Private sewer				Head of system
				S104 sewer				Soakaway
				Rising main, public				Rodding eye
				Rising main, private				Lamp hole
				Rising main, S104				T junction/saddle
				Highway drain, private				Gulley
				Screen chamber				Air valve
				Discharge point				Non return valve
				Outfall				Sewer overflow
				Control kiosk				Cascade
				Sludge main				Flow meter
								Hatch box
								Hydrobrake
								Inlet
								Bifurcation
								Catchpit
								Oil interceptor
								Penstock
								Summit
								Valve
								Valve chamber
								Washout chamber
								Drop shaft
								WW treatment works
								Septic tank
								Vent column
								Network storage tank
								Orifice plate
								Vortex chamber
								Penstock chamber

Abandoned pipe		Manhole function	
	Public sewer	FO	Foul
	Rising main	SW	Surface Water
	Private sewer	CO	Combined
	Sludge main	OV	Overflow

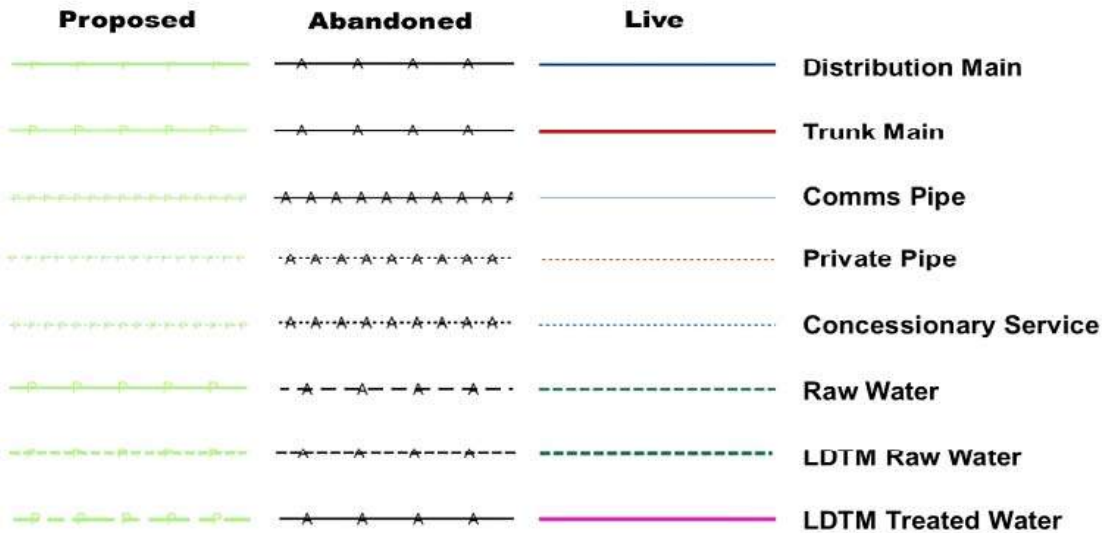
Sewer shape		U	Unspecified
CI	Circular	SQ	Square
EG	Egg	TR	Trapezoidal
OV	Oval	AR	Arch
FT	Flat top	BA	Barrel
RE	Rectangular	HO	Horse shoe

Sewer material			
AC	Asbestos cement	DI	Ductile iron
BR	Brick	VC	Vitrified clay
CO	Concrete	PP	Polypropylene
CSB	Concrete segment	PF	Pitched fibre
CSU	Concrete segment	MA	Masonry, coursed
CC	Concrete box culverted	MA	Masonry, random
PSC	Plastic	RP	Reinforced plastic
GR	Glass reinforced	CI	Cast iron
GRP	Glass reinforced	SI	Spun iron
PVC	Polyvinyl chloride	ST	Steel
PE	Polyethylene	U	Unspecified



## Clean Water Symbology



- Air Valve
- AC Valve, open
- AC Valve, closed
- CC Valve, open
- CC Valve, closed
- Non Return Valve
- Pressure Management Valve
- OMS Valve
- Stop Tap
- Flow Meter
- Domestic Meter
- Commercial Meter
- Pump
- Hydrant
- Fire Hydrant
- Anode
- Chlorination Point
- De-chlorination Point
- Strainer Point
- Access Point
- Hatch Box
- IP Point
- Sampling Station
- Logger Box

- Bore Hole
- Bulk Supply Point
- Inlet Point
- End Cap
- Site Termination
- Change of Characteristic

### Property Types

- Water Tower
- Valve House
- Booster Pumping Station
- Intake Pumping Station
- Water Treatment Works
- Supply Reservoir
- Service Reservoir
- Impounding Reservoir
- Pipe Bridge
- Condition Report

### Material Types

AC	Asbestos Cement
CI	Cast Iron
CU	Copper
CO	Concrete
DI	Ductile Iron
GI	Galvanised Iron
GR	Grey Iron
OT	Others
PB	Lead
PV	uPVC
SI	Spun Iron
ST	Steel
UN	Unknown
PE	Ployethelene

### Lining Types

CL	Cement Lining
TB	Tar or Bitumen
ERL	Epoxy Resin

### Insertion Types

DD	Die Drawn
DR	Directional Drilling
MO	Moling
PI	Pipeline
SL	Slip Lined

Symbology for proposed assets is the same as above, but shown in **green**.

Symbology for abandoned assets is the same as above, but shown in **black**.

**Question 1** Where relevant, please include a copy of an extract from the public sewer map.

**Answer** **A copy of an extract of the public sewer map within the vicinity of the property is included.**

Informative

1. The Water Industry Act 1991 defines Public Sewers as those which (United Utilities) have responsibility for. Other assets and rivers, water courses, ponds, culverts or highway drains may be shown for information purposes only.
2. Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.
3. The Sewerage Undertaker has a statutory right of access to carry out work on its assets, subject to notice. This may result in employees of the Sewerage Undertaker or its contractors needing to enter the property to carry out work.

**Question 2** Where relevant, please include a copy of an extract from the map of waterworks.

**Answer** **A copy of an extract of the map of waterworks is included, showing water mains, resource mains or discharge pipes in the vicinity of the property.**

Informative

The "water mains" in this context are those which are vested in and maintainable by the Water Undertaker under statute.

Assets other than public water mains may be shown on the plan, for information only. Water Undertakers are not responsible for private supply pipes connecting the property to the public water main and do not hold details of these. These may pass through land outside of the control of the seller, or may be shared with adjacent properties. The buyer may wish to investigate whether separate rights or easements are needed for their inspection, repair or renewal.

If an extract of the public water main record is enclosed, it will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

The presence of a public water main running within the boundary of the property may restrict further development within it. Water Undertakers have a statutory right of access to carry out work on their assets, subject to notice. This may result in employees of the Water Undertaker or its contractors needing to enter the property to carry out work.

**Question 3 Does foul water from the property drain to a public sewer?**

**Answer** **This enquiry appears to relate to a plot of land or a recently built property. It is recommended that drainage proposals are checked with the developer.**

**Informative** Sewerage Undertakers are not responsible for any private drains or sewers that connect the property to the public sewerage system, and do not hold details of these.

The property owner will normally have sole responsibility for private drains serving the property and may have shared responsibility, with other users, if the property is served by a private sewer which also serves other properties. These may pass through land outside of the control of the seller and the buyer may wish to investigate whether separate rights or easements are needed for their inspection, repair or renewal.

If foul water does not drain to the public sewerage system the property may have private facilities in the form of a cesspit, septic tank or other type of treatment plant.

If an extract from the public sewer map is enclosed, this will show known public sewers in the vicinity of the property and it should be possible to estimate the likely length and route of any private drains and/or sewers connecting the property to the public sewerage system.

**Question 4 Does surface water from the property drain to a public sewer?**

**Answer** **This enquiry appears to relate to a plot of land or a recently built property. It is recommended that drainage proposals are checked with the developer. If the property was constructed after the 6th April 2015 the surface water drainage may be served by a sustainable drainage system.**

**Informative** Sewerage Undertakers are not responsible for any private drains or sewers that connect the property to the public sewerage system and do not hold details of these.

The property owner will normally have sole responsibility for private drains serving the property and may have shared responsibility with other users, if the property is served by a private sewer which also serves other properties. These may pass through land outside of the control of the seller and the buyer may wish to investigate whether separate rights or easements are needed for their inspection, repair or renewal.

In some cases, Sewerage Undertakers' records do not distinguish between foul and surface water connections to the public sewerage system. If on inspection the buyer finds that the property is not connected for surface water drainage, the property may be eligible for a rebate of the surface water drainage charge. Details can be obtained from the Sewerage Undertaker.

If surface water does not drain to the public sewerage system the property may have private facilities in the form of a soakaway or private connection to a watercourse.

If an extract from the public sewer map is enclosed, this will show known public sewers in the vicinity of the property and it should be possible to estimate the likely length and route of any private drains and/or sewers connecting the property to the public sewerage system.

**Question 5 Is a surface water drainage charge payable?****Answer** **Records confirm that a surface water drainage charge is not payable for the property.**

Informative Since 1st April 2017 commercial customers can choose their retailer for clean, waste or both services. For more information on any applicable surface water charges you will need to contact the current owner of the property to find out who the current retailer is. Details of the retailer for a property can be found on the current occupiers bill. For a list of all potential retailers of water and waste water services for the property please visit [www.open-water.org.uk](http://www.open-water.org.uk).

Please note if the property was constructed after 6th April 2015 the Surface Water drainage may be served by a Sustainable Drainage System. Further information may be available from the Developer.

**Question 6 Does the public sewer map indicate any public sewer, disposal main or lateral drain within the boundaries of the property?****Answer** **The public sewer map included indicates that there are no public sewers, disposal mains or lateral drains within the boundary of the property. However from the 1st October 2011 there may be additional public sewers, disposal mains or lateral drains which are not recorded on the public sewer map which may further prevent or restrict development of the property. If you are considering any future development at this property which may require build over consent, please complete the enquiry form by accessing the following link <http://www.unitedutilities.com/planning-wastewater-guidance.aspx>.**

Informative The approximate boundary of the property has been determined by reference to the Ordnance Survey record or the map supplied.  
The presence of a public sewer running within the boundary of the property may restrict further development.

United Utilities has a statutory right of access to carry out work on its assets, subject to notice. This may result in employees of United Utilities or its contractors needing to enter the property to carry out work.

Sewers indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended that these details be checked with the developer, if any.

Assets other than public sewers may be shown on the copy extract, for information only. Please note if the property was constructed after 1st July 2011 any sewers and/or lateral drains within the boundary of the property are the responsibility of the householder.

**Question 6.1** Does the public sewer map indicate any pumping station or any other ancillary apparatus within the boundaries of the property?

**Answer** **The public sewer map included indicates that there is no public pumping station or other ancillary apparatus within the boundaries of the property. However, from the 1st October 2016 private pumping stations which serve more than one property will be transferred into public ownership but may not be recorded on the public sewer map until that time**

**Informative** From 1 October 2016 United Utilities will be responsible for private pumping stations (though we may take ownership of some stations before this date) that either:

- serve a single property, and are outside the property boundary or
- serves two or more properties

Only private pumping stations installed before 1st July 2011 will be transferred into our ownership. United Utilities will be responsible for all associated costs, maintenance, repairs and any necessary upgrade work.

If you think there might be a private pumping station on your land or near your business property, please let us know by completing this questionnaire with as much information as possible, please visit our website <http://www.unitedutilities.com/ppstransfer.aspx>

United Utilities has rights of access to maintain this asset on a regular basis.

**Question 7** Does the public sewer map indicate any public sewer within 30.48 metres (100 feet) of any buildings within the property?

**Answer** **The public sewer map included indicates that there are no public sewers within 30.48 (100 feet) of a building within the boundary of the property. However from the 1st October 2011 private sewers will be transferred into public ownership and may not be recorded on the public sewer map and it is our professional opinion that there will be a public sewer within 30.48 (100 feet) of a building within the boundary of the property.**

**Informative** From 1st October 2011 there may be additional lateral drains and/or public sewers which are not recorded on the public sewer map but are also within 30.48 metres (100 feet) of a building within the property.

The presence of a public sewer within 30.48 metres (100 feet) of the building(s) within the property can result in the Local Authority requiring a property to be connected to the public sewer.

The measure is estimated from the Ordnance Survey record, between the building(s) within the boundary of the property and the nearest public sewer.

Sewers indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended that these details are checked with the developer, if any.

Assets other than public sewers may be shown on the copy extract for information only.

Where the property is part of a very recent or ongoing development and the sewers/pumping station are not the subject of an adoption application, buyers should consult with the developer to ascertain the extent of private drains, sewers and pumping stations for which they will hold maintenance and renewal liabilities.



**Question 7.1** Does the public sewer map indicate any public pumping station or any other ancillary apparatus within 50 metres of any buildings within the property?

**Answer** **The public sewer map included indicates that there is no public pumping station or other ancillary apparatus within 50 metres of any buildings within the property. However, from 1st October 2016 private pumping stations which serve more than one property will be transferred into public ownership but may not be recorded on the public sewer map until that time.**

**Informative** From 1 October 2016 United Utilities will be responsible for private pumping stations (though we may take ownership of some stations before this date) that either:  
" serve a single property, and are outside the property boundary or  
" serves two or more properties  
Only private pumping stations installed before 1st July 2011 will be transferred into our ownership. United Utilities will be responsible for all associated costs, maintenance, repairs and any necessary upgrade work.  
If you think there might be a private pumping station on your land or near your business property, please let us know by completing this questionnaire with as much information as possible, please visit our website <http://www.unitedutilities.com/ppstransfer.aspx>  
Where the property is part of a very recent or ongoing development and the sewers/pumping station are not the subject of an adoption application, buyers should consult with the developer to ascertain the extent of private drains, sewers and pumping stations for which they will hold maintenance and renewal liabilities.

**Question 8.1** **Are any sewers or lateral drains serving or which are proposed to serve the property the subject of an existing adoption agreement or an application for such an agreement?**

**Answer** **The property is part of an established development and is not subject to an adoption agreement**

**Informative** This enquiry is of interest to purchasers of new property who will want to know whether or not the property will be linked to a public sewer.

Where the property is part of a very recent or ongoing development and the sewers are not the subject of an adoption application, buyers should consult with the developer to ascertain the extent of private drains and sewers for which they will hold maintenance and renewal liabilities.

Final adoption is subject to the developer complying with the terms of the adoption agreement under Section 104 of the Water Industry Act 1991.

**Question 8.2** Are any sewers or lateral drains serving, or which are proposed to serve the property, the subject of an existing adoption agreement or an application for such an agreement?

**Answer** **The property is part of an established development and is not subject to an adoption agreement**

**Informative** This enquiry is of interest to purchasers of new property who will want to know whether or not the property will be linked to a public sewer.

Where the property is part of a very recent or ongoing development and the sewers are not the subject of an adoption application, buyers should consult with the developer to ascertain the extent of private drains and sewers for which they will hold maintenance and renewal liabilities.

Final adoption is subject to the developer complying with the terms of the adoption agreement under Section 104 of the Water Industry Act 1991.

**Question 9** Has a sewerage undertaker approved or been consulted about any plans to erect a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain?

**Answer** **There are no records in relation to any approval or consultation about plans to erect a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain. However, the sewerage undertaker might not be aware of a building or extension on the property over or in the vicinity of a public sewer, disposal main or drain.**

**Informative** From the 1st October 2011 private sewers, disposal mains and lateral drains were transferred into public ownership and the sewerage undertaker may not have granted approval or been consulted about any plans to erect a building or extension on the property over or in the vicinity of these assets.

Prior to 2003 United Utilities Water Limited had sewerage agency agreements with the local authorities therefore details of any agreements/consents or rejections may not have been forwarded on to our offices before this date.

Buildings or extensions erected over a sewer in contravention of building controls may have to be removed or altered.

**Question 10** Is the property, or part of the property, at risk of internal foul flooding due to overloaded public sewers?

**Answer** **The building is not recorded as being at risk of internal flooding due to overloaded public sewers. From the 1st October 2011 private sewers, disposal mains and lateral drains were transferred into public ownership it is therefore possible that a property may be at risk of internal flooding due to an overloaded public sewer which the sewerage undertaker is not aware of. For further information it is recommended that enquiries are made of the vendor.**

**Informative**

1. A sewer is "overloaded" when the flow from a storm is unable to pass through it due to a permanent problem (e.g. flat gradient, small diameter). Flooding as a result of temporary problems such as blockages, siltation, collapses and equipment or operational failures are excluded.
2. "Internal flooding" from public sewers is defined as flooding, which enters a building or passes below a suspended floor. For reporting purposes, buildings are restricted to those normally occupied and used for residential, public, commercial, business or industrial purposes.
3. These are defined as properties that have suffered or are likely to suffer internal flooding from public foul, combined or surface water sewers due to overloading of the sewerage system more frequently than the relevant reference period (either once or twice in ten years) as determined by the Sewerage Undertaker's reporting procedure.
4. Flooding as a result of storm events proven to be exceptional and beyond the reference period of one in ten years are not included.
5. Properties may be at risk of flooding but not included where flooding incidents have not been reported to the Sewerage Undertaker.
6. Public sewers are defined as those for which the Sewerage Undertaker holds statutory responsibility under the Water Industry Act 1991.
7. It should be noted that flooding can occur from private sewers and drains which are not the responsibility of the Sewerage Undertaker.
8. This report excludes flooding from private sewers and drains and the Sewerage Undertaker makes no comment upon this matter. For reporting purposes buildings are restricted to those normally occupied and used for residential, public, commercial, business or industrial purposes.

**Question 11** Please state the distance from the property to the nearest boundary of the nearest sewage treatment works.

**Answer** **The nearest Sewage Treatment Works is 0.78 miles (1.26 km), South West of the property. The name of the Sewage treatment works is BIRKENHEAD MORPETH DOCK.**

**The owner is United Utilities**

**Informative** The nearest sewage treatment works will not always be the sewage treatment works serving the catchment within which the property is situated i.e. the property may not necessarily drain to this works.

The Sewerage Undertaker's records were inspected to determine the nearest sewage treatment works.

It should be noted therefore that there may be a private sewage treatment works closer than the one detailed above that has not been identified. As a responsible utility operator, United Utilities Water Limited seeks to manage the impact of odour from operational sewage works on the surrounding area.

This is done in accordance with the "Code of Practice on Odour Nuisance from Sewage Treatment Works" issued via the Department of Environment, Food and Rural Affairs (DEFRA).

This Code recognises that odour from sewage treatment works can have a detrimental impact on the quality of the local environment for those living close to works.

However DEFRA also recognises that sewage treatment works provide important services to communities and are essential for maintaining standards in water quality and protecting aquatic based environments. For more information visit [www.unitedutilities.com](http://www.unitedutilities.com).

**Question 12** Is the property connected to mains water supply?

**Answer** **This enquiry relates to a plot of land or a recently built property. It is recommended that the water supply proposals are checked with the developer.**

**Informative** If the property is supplied by private water mains please note that details of private supplies are not kept by the Water Undertaker. The situation should be checked with the current owner of the property.

**Question 13** Are there any water mains, resource mains or discharge pipes within the boundaries of the property?

**Answer** **The map of waterworks indicates that there are water mains, resource mains or discharge pipes within the boundaries of the property.**

**Informative** The boundary of the property has been determined by reference to the Ordnance Survey record.

The presence of a public water main within the boundary of the property may restrict further development within it. Water Undertakers have a statutory right of access to carry out work on their assets, subject to notice.

This may result in employees of the Water Undertaker or its contractors needing to enter the property to carry out work.

**Question 14** Is any water main or service pipe serving or which is proposed to serve the property the subject of an existing adoption agreement or an application for such an agreement?

**Answer** **Records confirm that water mains or service pipes serving the property are not the subject of an existing adoption agreement or an application for such an agreement.**

**Informative** This enquiry is of interest to purchasers of new premises who will want to know whether or not the property will be linked to the mains water supply.



**Question 15 Is the building at risk of receiving low water pressure or flow?**

**Answer** **Records confirm that the building is not recorded by the water undertaker as being at risk of receiving low water pressure or flow.**

**Informative** The boundary of the property has been determined by reference to the Ordnance Survey record. "Low water pressure" means water pressure below the regulatory reference level which is the minimum pressure when demand on the system is not abnormal.

Water Undertakers report properties receiving pressure below the reference level, provided that allowable exclusions do not apply (i.e. events which can cause pressure to temporarily fall below the reference level).

The reference level of service is a flow of 9 litres/minute at a pressure of 10 metres head on the customer's side of the main stop tap. The reference level of service must be applied on the customer's side of a meter or any other company fittings that are on the customer's side of the main stop tap. The reference level applies to a single property.

**Allowable exclusions:**

The Water Undertaker to include in the properties receiving pressure below the reference level, provided that allowable exclusions listed below do not apply.

**Abnormal demand:**

This exclusion is intended to cover abnormal peaks in demand and not the daily, weekly or monthly peaks in demand, which are normally expected. Water Undertakers exclude from figures properties which are affected by low pressure only on those days with the highest peak demands. During the report year Water Undertakers may exclude, for each property, up to five days of low pressure caused by peak demand.

**Planned maintenance:**

Water Undertakers will not report low pressures caused by planned maintenance.

It is not intended that Water Undertakers identify the number of properties affected in each instance. However, Water Undertakers must maintain sufficiently accurate records to verify that low-pressure incidents that are excluded because of planned maintenance, are actually caused by maintenance.

**One-off incidents:**

This exclusion covers a number of causes of low pressure; mains bursts; failures of company equipment (such as pressure reducing valves or booster pumps); fire fighting and action by a third party.

However, if problems of this type affect a property frequently, they cannot be classed as one-off events and further investigation will be required before they can be excluded.

**Low pressure incidents of short duration:**

Properties affected by low pressures that only occur for a short period, and for which there is evidence that incidents of a longer duration would not occur during the course of the year, may be excluded.

It should be noted that low water pressure can occur from private water mains, private supply pipes (the pipework from the external stop cock to the property) or internal plumbing which are not the responsibility of the Water Undertaker. This report excludes low water pressure from private water mains, supply pipes and internal plumbing and the Water Undertaker makes no comment upon this matter.

**Question 16**      **What is the clarification of the water supply for the property?**

**Answer**

**The water supplied to the property has an average water hardness of 58 mg/l calcium carbonate which is defined as very soft by United Utilities.**

Informative

The hardness of water is due to the presence of calcium and magnesium minerals that are naturally present in the water. The usual signs of a hard water supply are scaling inside kettles, poor lathering of soaps and scum.

What is water hardness?

Hard water is formed when water passes through or over limestone or chalk areas and calcium and magnesium ions dissolve into the water. The hardness is made up of two parts: temporary (carbonate) and permanent (non-carbonate) hardness. When water is boiled, calcium carbonate scale can form, which can deposit on things like kettle elements. The scale will not stick to kettles that have a plastic polypropylene lining but will float on the surface. The permanent hardness that comprises calcium and magnesium sulphate does not go on to form scale when heated or boiled.

How is water hardness measured?

Hardness is usually expressed in terms of the equivalent quantity of calcium carbonate (CaCO<sub>3</sub>) in milligrams per litre or parts per million. You may also see hardness expressed as degrees of hardness in Clark (English) degrees, French or German degrees. Interconversion between the different measurements can be made by using the appropriate conversion factors below.

There are no standard levels as to what constitutes a hard or a soft water. Table 1 gives an indication of the equivalents of calcium and calcium carbonate and the relative degree of hardness.

Water quality standards

There are no regulatory standards for water hardness in drinking water.

Water hardness in the North West

The majority of raw water in the United Utilities region comes from upland surface water reservoirs. The water in the reservoirs has little chance of passing through rocks and to dissolve the minerals that make water hard. Therefore, the majority of water in this region is soft or very soft. We supply water from a number of boreholes in the south of the region that are reasonably hard, but these tend to be blended with softer sources to meet demand. No water supply in the North West is artificially softened.

Can hard water be softened?

Yes, water can be softened artificially by the installation of a water softener or the use of 'jug type' filters. Medical experts recommend that a non-softened supply is maintained for drinking purposes because softened water may contain high levels of sodium. Softeners should be fitted after the drinking water tap and comply with the requirements of the Water Supply (Water Fittings) Regulations 1999. They should be maintained in accordance with manufacturers' instructions.

If you're interested in finding out more about the quality of your drinking water, please visit [www.unitedutilities.com/waterquality](http://www.unitedutilities.com/waterquality) and enter your postcode..

The Drinking Water Inspectorate is responsible for ensuring the quality of public water supplies. Visit their website at: [www.dwi.defra.gov.uk](http://www.dwi.defra.gov.uk)

mg Ca/l	mg CaCO <sub>3</sub> /l	Clark Degrees	French Degrees	German Degrees	Hardness
<30	<75	<5.3	<7.5	<4.2	Very soft
30-50	75 – 125	5.3 – 8.8	7.5 – 12.5	4.0 – 7.0	Soft
50-100	125 – 250	8.8 – 17.5	12.5 – 25.0	7.0 – 14.0	Mod. hard
100-150	250 – 375	17.5 – 26.3	25.0 – 37.5	14.0 – 21.0	Hard
>150	>375	>26.3	>37.5	>21.0	Very hard

**Question 18** Please include details of the location of any water meter serving the property.

**Answer** Records indicate that the property is not served by a water meter.

Informative Where the property is not served by a meter the current occupier can contact the retailer directly to advise on the current charging method, details of the retailer can also be found on the current occupiers bill.

**Question 19** Who is responsible for providing the sewerage services for the property?

**Answer** United Utilities Water Limited, Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP is the sewerage undertaker for the area and United Utilities Water Limited, Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP is the water undertaker for the area.

Informative Not Applicable

**Question 20** Who bills the property for sewerage services?

**Answer** Since 1st April 2017 commercial customers can choose their retailer. If you wish to know who currently bills the property for sewerage services you will need to contact the current owner of the property to find out who the current retailer is.

Informative Details of the retailer for a property can be found on the current occupiers bill. For a list of all potential retailers of waste water services for the property please visit [www.open-water.org.uk](http://www.open-water.org.uk)

**Question 21** Who bills the property for water services?

**Answer** Since 1st April 2017 commercial customers can choose their retailer. If you wish to know who currently bills the property for water services you will need to contact the current owner of the property to find out who the current retailer is.

Informative Details of the retailer for a property can be found on the current occupiers bill. For a list of all potential retailers of water services for the property please visit [www.open-water.org.uk](http://www.open-water.org.uk)

## Additional Questions

**Additional  
Question 1  
Answer**

**Has a customer been granted a trade effluent consent at this property?**

**There is no record of a Trade Effluent consent at this property. Applications for Trade Effluent consents should be submitted via your retailer for info please visit <https://www.unitedutilities.com/services/wholesale-services/trade-effluent/>**

**Informative**

The owner/occupiers of Trade Premises do not have the right to discharge Trade Effluent to the public wastewater network. Any Trade Effluent Discharge Consent will be issued under Section 118 of the Water Industry Act 1991 and will be subject to conditions set by the Sewerage Undertaker.

Generally these conditions are to ensure:

- a) The Health and Safety of staff working within the wastewater network and at wastewater treatment plants.
- b) The apparatus of the wastewater network is not damaged.
- c) The flow of the contents of the wastewater network is not restricted.
- d) Equipment, plant, and processes at treatment works are not disrupted or damaged.
- e) Treatment of sewage sludge is not impeded and sludges are disposed of in an environmentally friendly manner.
- f) Final effluent discharge from wastewater treatment plants has no impact on the environment or prevents the receiving waters from complying with EU Directives.
- g) Potential damage to the environment via storm water overflows is minimised.

Disputes between an occupier of a Trade Premise and the Sewerage Undertaker can be referred to the Director General of Water Services (OFWAT).

Protecting Public Sewers - Discharges Section 111 of the Water Industry Act 1991, places prohibition on the discharge of the following into a public sewer, drain or a sewer that communicates with a public sewer.

- i) Any matter likely to injure the sewer or drain, to interfere with the free flow of its contents or to affect prejudicially the treatment or disposal of its contents.
- ii) Any chemical refuse or waste steam or any liquid of temperature higher than 43.3 degrees Celsius (110 degrees Fahrenheit).
- iii) Any petroleum spirit or carbide of calcium.

On summary conviction offences under this Section carry a fine not exceeding the statutory maximum or a term of imprisonment not exceeding two years, or both.

Please note any existing consent is dependant on the business being carried out at the property and will not transfer automatically upon change of ownership.

**Additional  
Question 2  
Answer**

**Is there an easement affecting the property?**

**There is no record of a formal easement agreement affecting this property.**

**Informative**

Not Applicable.

## **Appendix 1 - General Interpretation**

1. (1) In this Schedule-

"the 1991 Act" means the Water Industry Act 1991(a);

"the 2000 Regulations" means the Water Supply (Water Quality) Regulations 2000(b);

"the 2001 Regulations" means the Water Supply (Water Quality) Regulations 2001(c);

"adoption agreement" means an agreement made or to be made under Section 51A(1) or 104(1) of the 1991 Act (d);

"bond" means a surety granted by a developer who is a party to an adoption agreement;

"bond waiver" means an agreement with a developer for the provision of a form of financial security as a substitute for a bond;

"calendar year" means the twelve months ending with 31st December;

"discharge pipe" means a pipe from which discharges are made or are to be made under Section 165(1) of the 1991 Act;

"disposal main" means (subject to Section 219(2) of the 1991 Act) any outfall pipe or other pipe which-

- (a) is a pipe for the conveyance of effluent to or from any sewage disposal works, whether of a sewerage undertaker or of any other person; and
- (b) is not a public sewer;

"drain" means (subject to Section 219(2) of the 1991 Act) a drain used for the drainage of one building or any buildings or yards appurtenant to buildings within the same curtilage;

"effluent" means any liquid, including particles of matter and other substances in suspension in the liquid;

"financial year" means the twelve months ending with 31st March;

"lateral drain" means-

- (a) that part of a drain which runs from the curtilage of a building (or buildings or yards within the same curtilage) to the sewer with which the drain communicates or is to communicate; or
- (b) (if different and the context so requires) the part of a drain identified in a declaration of vesting made under Section 102 of the 1991 Act or in an agreement made under Section 104 of that Act (e);

"licensed water supplier" means a company which is the holder for the time being of a water supply licence under Section 17A(1) of the 1991 Act(f);

"maintenance period" means the period so specified in an adoption agreement as a period of time-

- (a) from the date of issue of a certificate by a Sewerage Undertaker to the effect that a developer has built (or substantially built) a private sewer or lateral drain to that undertaker's satisfaction; and
- (b) until the date that private sewer or lateral drain is vested in the Sewerage Undertaker;

"map of waterworks" means the map made available under Section 198(3) of the 1991 Act (g) in relation to the information specified in subsection (1A);

"private sewer" means a pipe or pipes which drain foul or surface water, or both, from premises, and are not vested in a Sewerage Undertaker;

"public sewer" means, subject to Section 106(1A) of the 1991 Act(h), a sewer for the time being vested in a Sewerage Undertaker in its capacity as such, whether vested in that undertaker-

- (a) by virtue of a scheme under Schedule 2 to the Water Act 1989(i);
- (b) by virtue of a scheme under Schedule 2 to the 1991 Act (j);



(c) under Section 179 of the 1991 Act (k); or  
(d) otherwise;

"public sewer map" means the map made available under Section 199(5) of the 1991 Act (l);

"resource main" means (subject to Section 219(2) of the 1991 Act) any pipe, not being a trunk main, which is or is to be used for the purpose of-

- (a) conveying water from one source of supply to another, from a source of supply to a regulating reservoir or from a regulating reservoir to a source of supply; or
- (b) giving or taking a supply of water in bulk;

"sewerage services" includes the collection and disposal of foul and surface water and any other services which are required to be provided by a Sewerage Undertaker for the purpose of carrying out its functions;

"Sewerage Undertaker" means the company appointed to be the Sewerage Undertaker under Section 6(1) of the 1991 Act for the area in which the property is or will be situated;

"surface water" includes water from roofs and other impermeable surfaces within the curtilage of the property;

"water main" means (subject to Section 219(2) of the 1991 Act) any pipe, not being a pipe for the time being vested in a person other than the water Undertaker, which is used or to be used by a Water Undertaker or licensed water supplier for the purpose of making a general supply of water available to customers or potential customers of the undertaker or supplier, as distinct from for the purpose of providing a supply to particular customers;

"water meter" means any apparatus for measuring or showing the volume of water supplied to, or of effluent discharged from any premises;

"Water Undertaker" means the company appointed to be the Water Undertaker under Section 6(1) of the 1991 Act for the area in which the property is or will be situated.

(2) In this Schedule, references to a pipe, including references to a main, a drain or a sewer, shall include references to a tunnel or conduit which serves or is to serve as the pipe in question and to any accessories for the pipe.

(a) 1991 c. 56.

(b) S.I. 2000/3184. These Regulations apply in relation to England.

(c) S.I. 2001/3911. These Regulations apply in relation to Wales.

(d) Section 51A was inserted by Section 92(2) of the Water Act 2003 (c. 37). Section 104(1) was amended by Section 96(4) of that Act.

(e) Various amendments have been made to Sections 102 and 104 by Section 96 of the Water Act 2003.

(f) Inserted by Section 56 of and Schedule 4 to the Water Act 2003.

(g) Subsection (1A) was inserted by Section 92(5) of the Water Act 2003.

(h) Section 106(1A) was inserted by Section 99 of the Water Act 2003.

(i) 1989 c. 15.

(j) To which there are various amendments made by Section 101(1) of and Schedule 8 to the Water Act 2003.

(k) To which there are various amendments made by Section 101(1) of and Schedule 8 to the Water Act 2003.

(l) Section 199 was amended by Section 97(1) and (8) of the Water Act 2003.

## Appendix 2 - DRAINAGE AND WATER ENQUIRY (COMMERCIAL) AGREEMENT

The Customer, the Client and the Purchaser are asked to note this Agreement which governs the basis on which this drainage and water report is supplied

### Definitions

'Company' means United Utilities Water Limited who produce the Report; its registered office being at Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Great Sankey, Warrington WA5 3LP, company number 2366678.

'Order' means any request completed by the Customer requesting the Report.

'Report' means the drainage and water report prepared by the Company in respect of the Property.

'Property' means the address or location supplied by the Customer in the Order.

'Customer' means the person, company, firm or other legal body placing the Order, either on their own behalf as Client, or, as an agent for a Client.

'Client' means the person, company or body who is the intended recipient of the Report with an actual or potential interest in the Property.

'Purchaser' means the actual or potential purchaser of the Property including their mortgage lender.

### Agreement

1.1 The Company agrees to supply the Report to the Customer and the Client subject to this Agreement. The scope and limitations of the Report are described in clause 2 of this Agreement.

Where the Customer is acting as an agent for the Client then the Customer shall be responsible for bringing this Agreement to the attention of the Client and the Purchaser.

1.2 The Customer, the Client and the Purchaser agree that the placing of an Order for a Report and the subsequent provision of a copy of the Report to the Client and/ or the Purchaser indicates their acceptance of this Agreement.

### The Report

Whilst the Company will use reasonable care and skill in producing the Report, it is provided to the Customer, the Client and the Purchaser on the basis that they acknowledge and agree to the following:

2.1 The information contained in the Report can change on a regular basis so the Company cannot be responsible to the Customer, the Client and the Purchaser for any change in the information contained in the Report after the date on which the Report was produced and sent to the Client.

2.2 The Report does not give details about the actual state or condition of the Property nor should it be used or taken to indicate or exclude actual suitability or unsuitability of the Property for any particular purpose, or relied upon for determining saleability or value, or used as a substitute for any physical investigation or inspection. Further advice and information from appropriate experts and professionals should always be obtained.

2.3 The information contained in the Report is based upon the accuracy, completeness and legibility of the address and/or plans supplied by the Customer or Client or Purchaser.

2.4 The Report provides information as to the location and connection status of existing services and other information in relation to drainage and water enquiries and should not be relied on for any other purpose. The Report may contain opinions or general advice to the Customer, the Client and the Purchaser. The Company cannot ensure that any such opinion or general advice is accurate, complete or valid and therefore accepts no liability in relation thereto.

2.5 The position and depth of apparatus shown on any maps attached to the Report are approximate and are furnished as a general guide only, and no warranty as to its correctness is given or implied. The exact positions and depths should be obtained by excavation trial holes and the maps must not be relied on in the event of excavation or other works made in the vicinity of the Company's apparatus.

### Liability

3.1 The Company shall not be liable to the Client or the Purchaser for any failure or non-performance of its obligations arising from any failure to provide or delay in providing the Report to the extent that such failure or delay is due to an event or circumstance beyond the reasonable control of the Company including but not limited to any delay, failure of or defect in any machine, processing system or transmission link or any failure or default of a supplier or sub-contractor of the Company or any provider of any third party information except to the extent that such failure or delay is caused by the negligence of the Company.

3.2 Where a Report is requested for an address falling within a geographical area where two different companies separately provide Water and Sewerage Services, then it shall be deemed that liability for the information given by either company will remain with that company in respect of the accuracy of the information supplied.

A company supplying information which has been provided to it by another company for the purposes outlined in this agreement will therefore not be liable in any way for the accuracy of that information and will supply that information as an agent for the company from which the information was obtained.

3.2 The Report is produced for use in relation to individual commercial property transactions where the property is used solely for carrying on a trade or business, the property is intended to be developed for commercial gain or the property is not a single residential, domestic property. The Company's entire liability (except to the extent provided by clause 3.5) in respect of all causes of action arising by reason of or in connection with the Report (whether for breach of contract, negligence or any other tort, under statute or statutory duty or otherwise at all) shall be limited to £2,000,000.

3.3 In any event, the Company shall not have any liability in contract, negligence or any other tort or for breach of statutory duty or otherwise in respect of any loss of profit, loss of revenue, loss of opportunity or anticipated savings, or any indirect or consequential loss or damage that may be suffered by the Customer, the Client or the Purchaser howsoever arising. The plans attached to the report are provided pursuant to the Company's statutory duty to make such plans available for inspection (notwithstanding the provisions of this clause) and attention is drawn to the notice on the plan(s) attached to the report which applies to the plan and its contents.

3.4 Where the Customer sells this Report to a Client or Purchaser under its own name or as a reseller of the Company (other than in the case of a bona fide legal adviser recharging the cost of the Report as a disbursement) the Company shall not in any circumstances (whether for breach of contract, negligence or any other tort, under statute or statutory duty, restitution or otherwise at all) be liable to the Customer for any loss (whether direct, indirect or consequential loss (all three of which terms include without limitation, pure economic loss, loss of profit, loss of business, depletion of goodwill and like loss)) or damage whatsoever caused in respect of the Report or any use of the Report or reliance placed upon it and the Customer shall indemnify and keep indemnified the Company in respect of any claim by the Client or the Purchaser that the Company may incur or suffer.

3.5 Nothing in this Agreement shall exclude the Company's liability for death or personal injury arising from its negligence or for fraud.

### Copyright and Confidentiality

4.1 The Customer, the Client and the Purchaser acknowledge that the Report is confidential and is intended for the personal use of the Client and the Purchaser. The copyright and any other intellectual property rights in the Report shall remain the property of the Company. No intellectual or other property rights are transferred or licensed to the Customer, the Client or the Purchaser except to the extent expressly provided herein.

4.2 The Customer or the Client or the Purchaser is entitled to make copies of the Report but may only copy Ordnance Survey mapping or data contained in or attached to the Report if they have an appropriate licence from the originating source of that mapping or data.

4.3 The Customer, The Client and the Purchaser agree (in respect of both the original and any copies made) to respect and not to alter any part of the Report including but not limited to the trademark, copyright notice or other property marking which appears on the Report.

4.4 The maps contained in the Report are protected by Crown Copyright and must not be used for any purpose outside the context of the Report.

4.5 The enquiries in the Report are protected by copyright by the Law Society of 113 Chancery Lane, London WC2A 1PL and must not be used for any purpose outside the context of the Report.

4.6 The Customer, the Client and the Purchaser agree to indemnify the Company against any losses, costs, claims and damage suffered by the Company as a result of any breach by either of them of the provisions of clauses 4.1 to 4.4 inclusive.

### Payment

5.1 Unless otherwise stated all prices are inclusive of VAT. The Customer shall pay the price of the Report specified by the Company, without any set off, deduction or counterclaim.

5.2 Payment must be received in advance unless an account has been set up with the Company. In these cases, payment terms will be as agreed with the Company, but in any event any invoice must be paid within 30 days.

5.3 The Company reserves the right to increase fees on reasonable prior written notice at any time.

**Appendix 2 continued - DRAINAGE AND WATER ENQUIRY (COMMERCIAL) AGREEMENT**

Data Protection

6.1 We will process any personal data you provide to us in accordance with the Data Protection Act 1998. Any personal information you provide to us may be used for the purposes for which the information is provided and to assist with our debt recovery processes. We may also disclose it to other companies in the United Utilities group (being United Utilities Group PLC and its subsidiary companies) and their sub-contractors in connection with those purposes, but it will not be processed for other purposes or disclosed to other third parties without your express permission. We may also utilise any information we collect so that we are able to correctly administer, develop and improve the business and services we provide to our customers.

General

7.1 If any provision of this Agreement is or becomes invalid or unenforceable, it will be taken to be removed from the rest of this Agreement to the extent that it is invalid or unenforceable. No other provision of this Agreement shall be affected.

7.2 This Agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts.

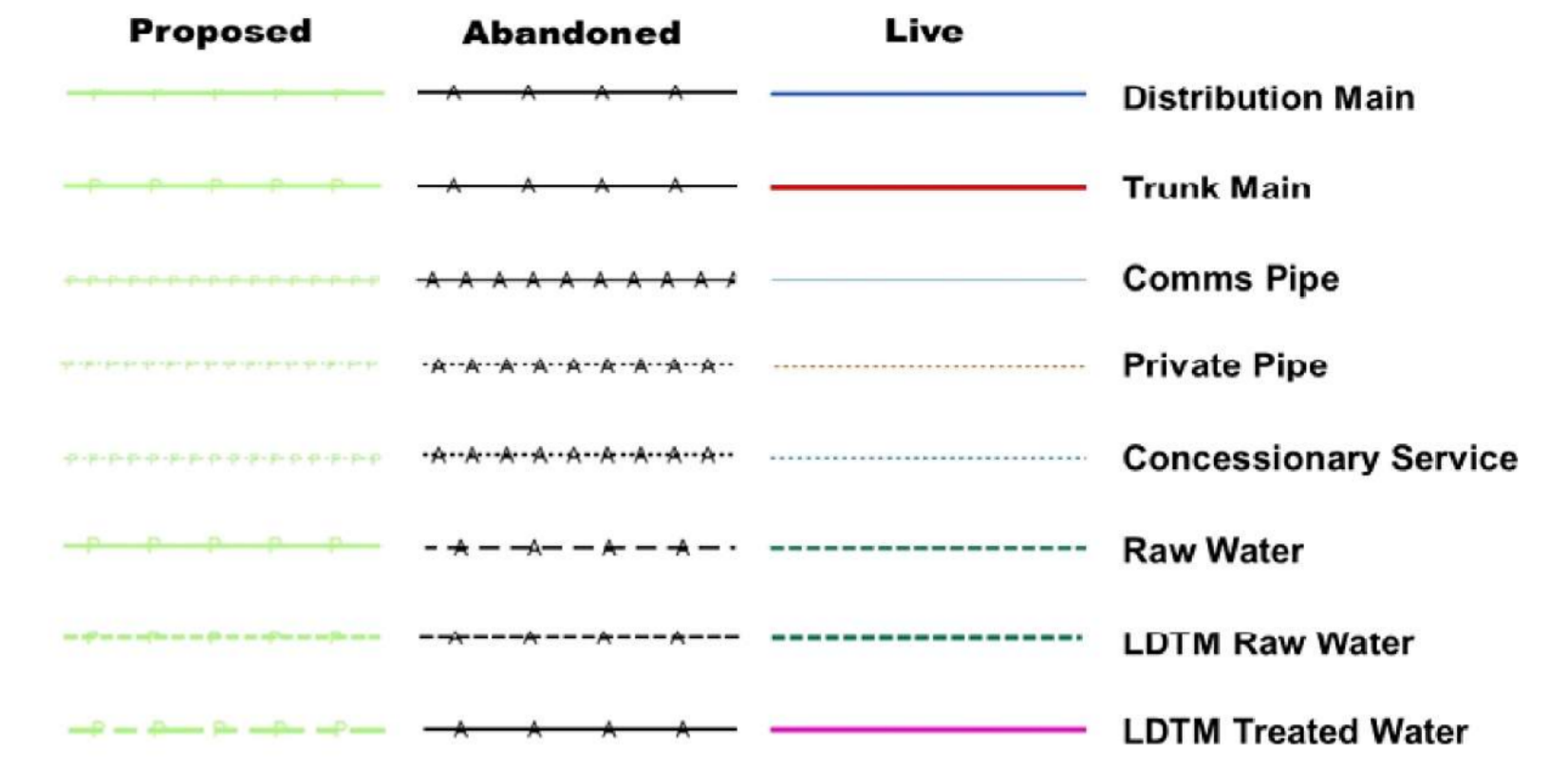
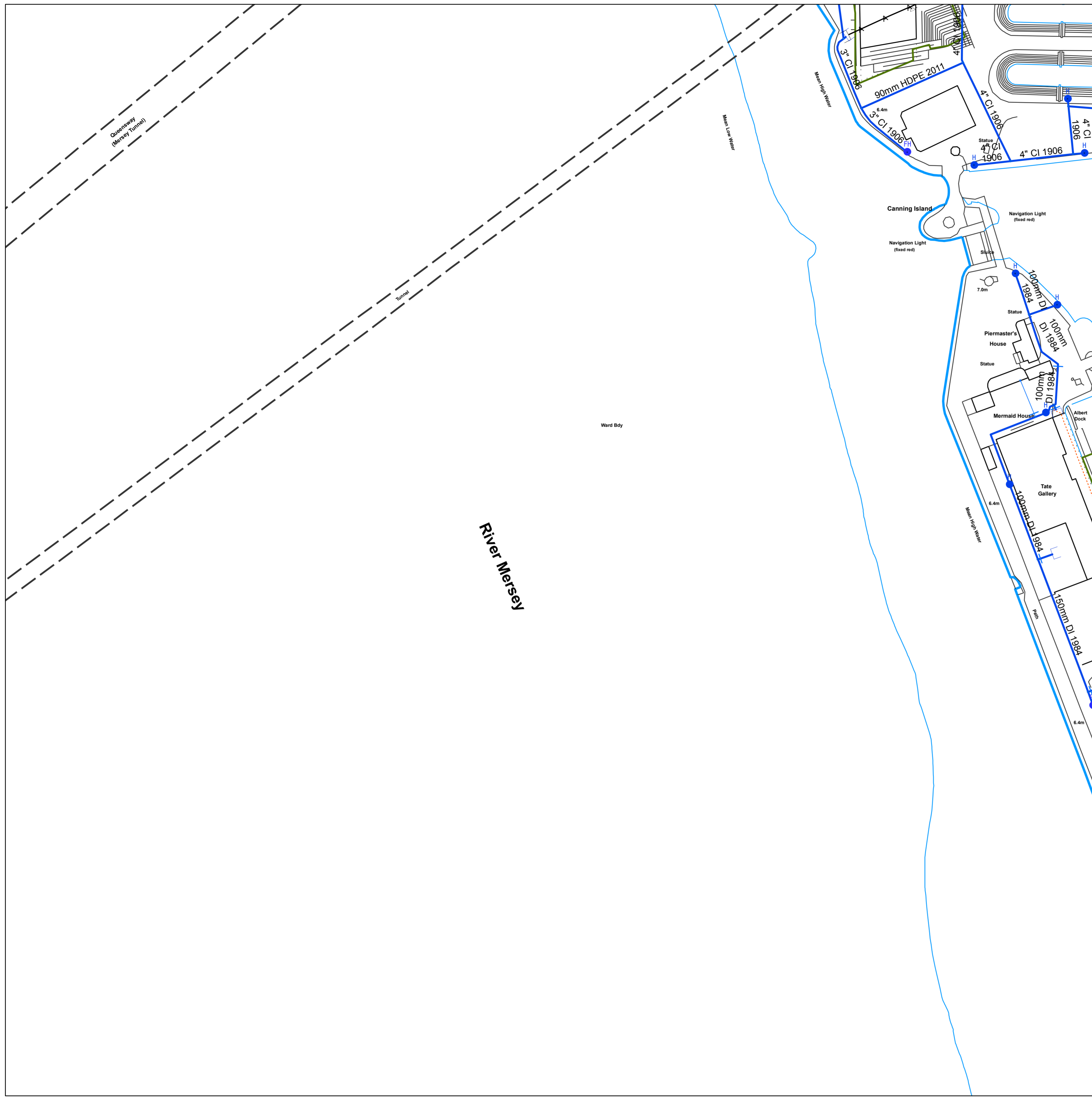
7.3 Nothing in this Agreement and conditions shall in any way restrict the Customer's the Client's or the Purchaser's statutory or any other rights of access to the information contained in the Report.

7.4 This Agreement and conditions may be enforced by the Customer, the Client and the Purchaser.

7.5 Before you agree to this Agreement, please note it is your responsibility to ensure your client/customer is aware of them and that any objections are raised accordingly.







- |   |  |  |    |                 |    |           |    |        |    |          |    |              |    |                 |    |           |    |        |    |      |    |      |    |           |    |       |    |         |    |              |    |               |    |                |     |             |    |           |    |                      |    |        |    |          |    |            |
|---|--|--|----|-----------------|----|-----------|----|--------|----|----------|----|--------------|----|-----------------|----|-----------|----|--------|----|------|----|------|----|-----------|----|-------|----|---------|----|--------------|----|---------------|----|----------------|-----|-------------|----|-----------|----|----------------------|----|--------|----|----------|----|------------|
| <ul style="list-style-type: none"> <li> Air Valve</li> <li> AC Valve, open</li> <li> AC Valve, closed</li> <li> CC Valve, open</li> <li> CC Valve, closed</li> <li> Non Return Valve</li> <li> Pressure Management Valve</li> <li> OMS Valve</li> <li> Stop Tap</li> <li> Flow Meter</li> <li> Domestic Meter</li> <li> Commercial Meter</li> <li> Pump</li> <li> Hydrant</li> <li> Fire Hydrant</li> <li> Anode</li> <li> Chlorination Point</li> <li> De-chlorination Point</li> <li> Strainer Point</li> <li> Access Point</li> <li> Hatch Box</li> <li> IP Point</li> <li> Sampling Station</li> <li> Logger Box</li> </ul> | <ul style="list-style-type: none"> <li> Bore Hole</li> <li> Bulk Supply Point</li> <li> Inlet Point</li> <li> End Cap</li> <li> Site Termination</li> <li> Change of Characteristic</li> </ul> | <p><b>Material Types</b></p> <table border="0"> <tr><td>AC</td><td>Asbestos Cement</td></tr> <tr><td>CI</td><td>Cast Iron</td></tr> <tr><td>CU</td><td>Copper</td></tr> <tr><td>CO</td><td>Concrete</td></tr> <tr><td>DI</td><td>Ductile Iron</td></tr> <tr><td>GI</td><td>Galvanised Iron</td></tr> <tr><td>GR</td><td>Grey Iron</td></tr> <tr><td>OT</td><td>Others</td></tr> <tr><td>PB</td><td>Lead</td></tr> <tr><td>PV</td><td>uPVC</td></tr> <tr><td>SI</td><td>Spun Iron</td></tr> <tr><td>ST</td><td>Steel</td></tr> <tr><td>UN</td><td>Unknown</td></tr> <tr><td>PE</td><td>Ployethelene</td></tr> </table> <p><b>Lining Types</b></p> <table border="0"> <tr><td>CL</td><td>Cement Lining</td></tr> <tr><td>TB</td><td>Tar or Bitumen</td></tr> <tr><td>ERL</td><td>Epoxy Resin</td></tr> </table> <p><b>Insertion Types</b></p> <table border="0"> <tr><td>DD</td><td>Die Drawn</td></tr> <tr><td>DR</td><td>Directional Drilling</td></tr> <tr><td>MO</td><td>Moling</td></tr> <tr><td>PI</td><td>Pipeline</td></tr> <tr><td>SL</td><td>Slip Lined</td></tr> </table> | AC | Asbestos Cement | CI | Cast Iron | CU | Copper | CO | Concrete | DI | Ductile Iron | GI | Galvanised Iron | GR | Grey Iron | OT | Others | PB | Lead | PV | uPVC | SI | Spun Iron | ST | Steel | UN | Unknown | PE | Ployethelene | CL | Cement Lining | TB | Tar or Bitumen | ERL | Epoxy Resin | DD | Die Drawn | DR | Directional Drilling | MO | Moling | PI | Pipeline | SL | Slip Lined |
| AC  | Asbestos Cement  |  |    |                 |    |           |    |        |    |          |    |              |    |                 |    |           |    |        |    |      |    |      |    |           |    |       |    |         |    |              |    |               |    |                |     |             |    |           |    |                      |    |        |    |          |    |            |
| CI  | Cast Iron  |  |    |                 |    |           |    |        |    |          |    |              |    |                 |    |           |    |        |    |      |    |      |    |           |    |       |    |         |    |              |    |               |    |                |     |             |    |           |    |                      |    |        |    |          |    |            |
| CU  | Copper   |  |    |                 |    |           |    |        |    |          |    |              |    |                 |    |           |    |        |    |      |    |      |    |           |    |       |    |         |    |              |    |               |    |                |     |             |    |           |    |                      |    |        |    |          |    |            |
| CO  | Concrete   |  |    |                 |    |           |    |        |    |          |    |              |    |                 |    |           |    |        |    |      |    |      |    |           |    |       |    |         |    |              |    |               |    |                |     |             |    |           |    |                      |    |        |    |          |    |            |
| DI  | Ductile Iron   |  |    |                 |    |           |    |        |    |          |    |              |    |                 |    |           |    |        |    |      |    |      |    |           |    |       |    |         |    |              |    |               |    |                |     |             |    |           |    |                      |    |        |    |          |    |            |
| GI  | Galvanised Iron  |  |    |                 |    |           |    |        |    |          |    |              |    |                 |    |           |    |        |    |      |    |      |    |           |    |       |    |         |    |              |    |               |    |                |     |             |    |           |    |                      |    |        |    |          |    |            |
| GR  | Grey Iron  |  |    |                 |    |           |    |        |    |          |    |              |    |                 |    |           |    |        |    |      |    |      |    |           |    |       |    |         |    |              |    |               |    |                |     |             |    |           |    |                      |    |        |    |          |    |            |
| OT  | Others   |  |    |                 |    |           |    |        |    |          |    |              |    |                 |    |           |    |        |    |      |    |      |    |           |    |       |    |         |    |              |    |               |    |                |     |             |    |           |    |                      |    |        |    |          |    |            |
| PB  | Lead   |  |    |                 |    |           |    |        |    |          |    |              |    |                 |    |           |    |        |    |      |    |      |    |           |    |       |    |         |    |              |    |               |    |                |     |             |    |           |    |                      |    |        |    |          |    |            |
| PV  | uPVC   |  |    |                 |    |           |    |        |    |          |    |              |    |                 |    |           |    |        |    |      |    |      |    |           |    |       |    |         |    |              |    |               |    |                |     |             |    |           |    |                      |    |        |    |          |    |            |
| SI  | Spun Iron  |  |    |                 |    |           |    |        |    |          |    |              |    |                 |    |           |    |        |    |      |    |      |    |           |    |       |    |         |    |              |    |               |    |                |     |             |    |           |    |                      |    |        |    |          |    |            |
| ST  | Steel  |  |    |                 |    |           |    |        |    |          |    |              |    |                 |    |           |    |        |    |      |    |      |    |           |    |       |    |         |    |              |    |               |    |                |     |             |    |           |    |                      |    |        |    |          |    |            |
| UN  | Unknown  |  |    |                 |    |           |    |        |    |          |    |              |    |                 |    |           |    |        |    |      |    |      |    |           |    |       |    |         |    |              |    |               |    |                |     |             |    |           |    |                      |    |        |    |          |    |            |
| PE  | Ployethelene   |  |    |                 |    |           |    |        |    |          |    |              |    |                 |    |           |    |        |    |      |    |      |    |           |    |       |    |         |    |              |    |               |    |                |     |             |    |           |    |                      |    |        |    |          |    |            |
| CL  | Cement Lining  |  |    |                 |    |           |    |        |    |          |    |              |    |                 |    |           |    |        |    |      |    |      |    |           |    |       |    |         |    |              |    |               |    |                |     |             |    |           |    |                      |    |        |    |          |    |            |
| TB  | Tar or Bitumen   |  |    |                 |    |           |    |        |    |          |    |              |    |                 |    |           |    |        |    |      |    |      |    |           |    |       |    |         |    |              |    |               |    |                |     |             |    |           |    |                      |    |        |    |          |    |            |
| ERL   | Epoxy Resin  |  |    |                 |    |           |    |        |    |          |    |              |    |                 |    |           |    |        |    |      |    |      |    |           |    |       |    |         |    |              |    |               |    |                |     |             |    |           |    |                      |    |        |    |          |    |            |
| DD  | Die Drawn  |  |    |                 |    |           |    |        |    |          |    |              |    |                 |    |           |    |        |    |      |    |      |    |           |    |       |    |         |    |              |    |               |    |                |     |             |    |           |    |                      |    |        |    |          |    |            |
| DR  | Directional Drilling   |  |    |                 |    |           |    |        |    |          |    |              |    |                 |    |           |    |        |    |      |    |      |    |           |    |       |    |         |    |              |    |               |    |                |     |             |    |           |    |                      |    |        |    |          |    |            |
| MO  | Moling   |  |    |                 |    |           |    |        |    |          |    |              |    |                 |    |           |    |        |    |      |    |      |    |           |    |       |    |         |    |              |    |               |    |                |     |             |    |           |    |                      |    |        |    |          |    |            |
| PI  | Pipeline   |  |    |                 |    |           |    |        |    |          |    |              |    |                 |    |           |    |        |    |      |    |      |    |           |    |       |    |         |    |              |    |               |    |                |     |             |    |           |    |                      |    |        |    |          |    |            |
| SL  | Slip Lined   |  |    |                 |    |           |    |        |    |          |    |              |    |                 |    |           |    |        |    |      |    |      |    |           |    |       |    |         |    |              |    |               |    |                |     |             |    |           |    |                      |    |        |    |          |    |            |

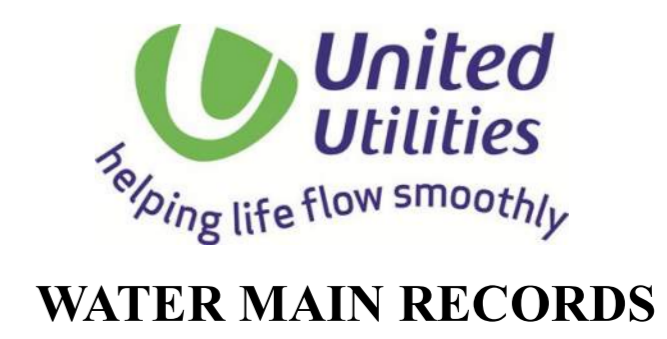
Symbology for proposed assets is the same as above, but shown in green.  
 Symbology for abandoned assets is the same as above, but shown in black.

The position of underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. The actual positions may be different from those shown on the plan, private service pipes may be shown where a known record is available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown. Crown copyright and database rights [2016] Ordnance Survey 100022432. **United Utilities Water Limited 2014. The plan is based on the Ordnance Survey Map with the sanction of Controller of H.M.Stationery Office. Crown and Utilities copyrights are reserved. Unauthorised reproduction will infringe these copyrights.**

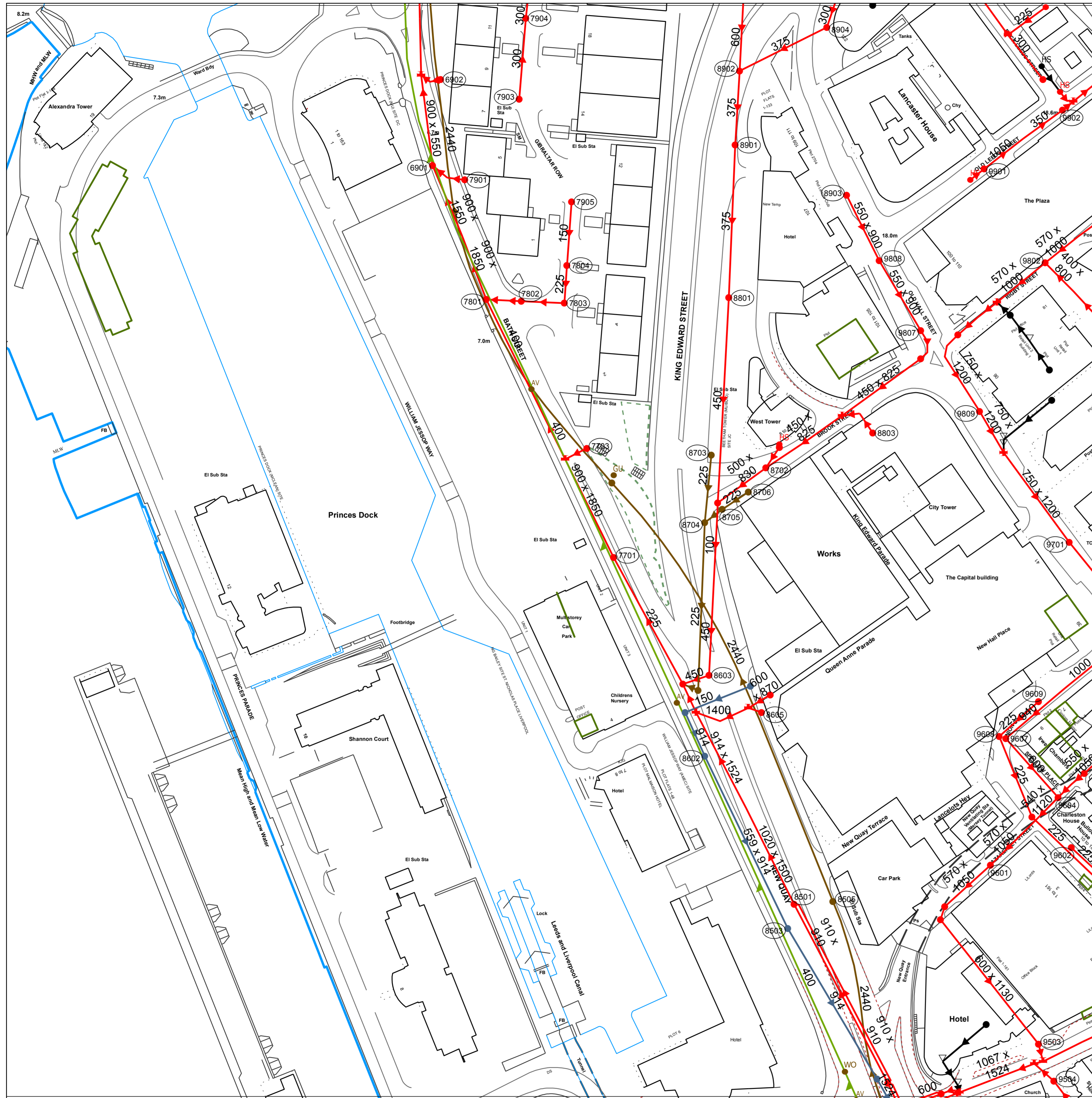
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 Scale: 1: 1250 Date: 11/08/2017

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 Scale: 1: 1250 Date: 11/08/2017

Printed By: Property Searches







Refo	Cover	Func	Invert	Size	X	Y	Shape	Mat	Length	Grad
6901	6.72	CO	3.87	800	930	EG	BR	5.1	240	
6902	8.35	CO	4.38	900	1850	EG	VC	131.93		
7703	7.88	CO	4.99	450		CI	VC	11.18		
7704		FO								
7801	7.13	CO	3.83	900	1850	EG	VC	30.76	220	
7802	7.12	CO	4.59	240	280	EG	CO	8.83		
7803	7.44	CO	5.32	300		CI	VC	19.74	28	
7804	7.5	CO	5.59	225		CI	VC	17.25	64	
7901		FO	0	150		CI	VC	8.06		
7903	8.38	CO	5.93	300		CI	VC	37.12	112	
7904	8.8	CO	6.39	150		CI	VC	29.3	37	
7905	7.78	CO	4.51	1524		CI	CO	20.2		
8502	7.76	SW	5.05	914		CI	CO	80.26	149	
8503	8.22	SW								
8505		FO								
8601	9.46	CO								
8602	9.37	SW								
8603	10.6	CO	7.16	800	870	EG	BR	11.66		
8604	9.85	CO	4.98	1400		CI	BR	32.35		
8605	9.55	CO	0	150		CI	VC	32.31		
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8607		FO								
8612	10.49	SW	5.84	225		CI	VC	7.62	6	
8701	11.66	CO	6.78	100		CI	VC	39.05		
8702	13.2	CO	10.77	900	830	EG	BR	27.2	7	
8703	11.52	FO	0	225		CI	VC	31.14		
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8708		FO	0	225		CI	VC	11.29		
8801		CO								
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8905	15.22	CO								
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8911	18.07	CO	14.36	450	825	EG	BR	44.41		
8912	19.71	CO	15.93	670	1000	EG	BR	28.43		
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8997		CO								
8998		CO								
8999		CO								
9000		CO								

### WASTE WATER SYMBOLGY

Foul	Surface	Combined	Overflow	Manhole
				Manhole
				Manhole, Side Entry
				MainSewer, Public
				MainSewer, Private
				MainSewer, S104
				Rising Main, Public
				Rising Main, Private
				Rising Main, S104
				Highway Drain, Private

Foul	Surface	Combined	Manhole
			Manhole
			Manhole, Side Entry
			MainSewer, Public
			MainSewer, Private
			MainSewer, S104
			Rising Main, Public
			Rising Main, Private
			Rising Main, S104
			Highway Drain, Private

Manhole Function	Manhole
WW Site Termination	
Air Valve	
Cascade	
Non Return Valve	
Extent of Survey	
Flow Meter	
Gulley	
Head Box	
Head of System	
Hydrobrake / Vortex	
Inlet	
Inspection Chamber	
Bifurcation	
Catchpit	
Contaminated Surface Water	
WW Pumping Station	
Sludge Pumping Station	
Sewer Overflow	
T Junction/Saddle	
LampHole	
OilInterceptor	
PenStock	
Pump	
RoddingEye	
Soakaway	
Summit	
Valve	
Valve Chamber	
Washout Chamber	
DropShaft	
WW Treatment Works	
Septic Tank	
Vent Column	
Network Storage Tank	
Orifice Plate	
Vortex Chamber	
Penstock Chamber	
Blind Manhole	
Control Kiosk	
Unspecified	

SEWER SHAPE	SEWER MATERIAL
CI Circular	DI Ductile Iron
EG Egg	PVC Polyvinyl Chloride
OV Oval	CI Cast Iron
FT Flat Top	SI Spun Iron
RE Rectangular	ST Steel
SQ Square	VC Vitrified Clay
	PP Polypropylene
	PF Pitch Fibre
	MAC Masonry, Coursed
	MAR Masonry, Random
	U Unspecified

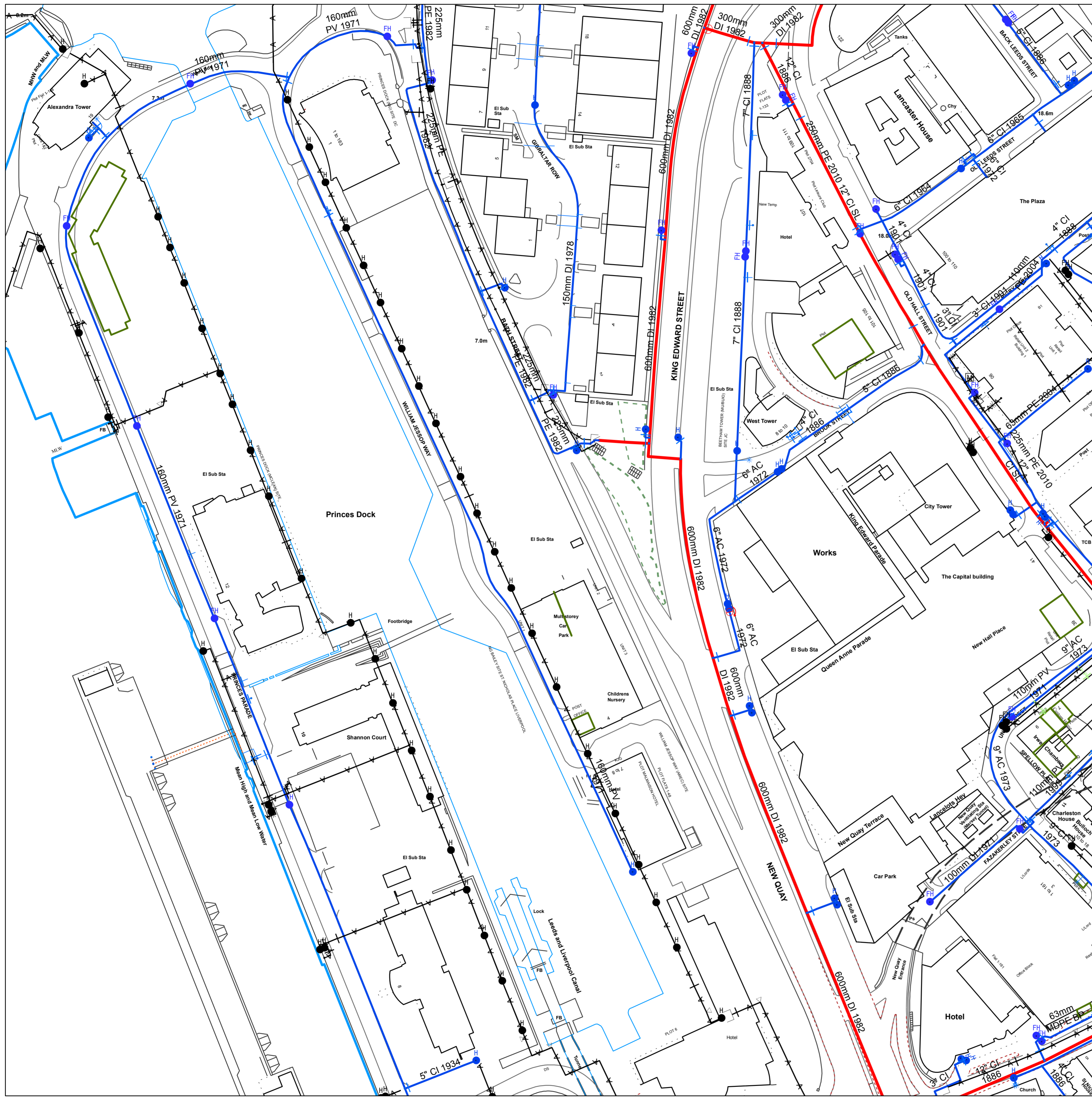
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Scale: 1:1250 Date: 11/08/2017

OS Sheet No: SJ3390NE  
 Scale: 1:1250 Date: 11/08/2017  
 112 Nodes  
 Sheet 1 of 1





Proposed	Abandoned	Live	
			Distribution Main
			Trunk Main
			Comms Pipe
			Private Pipe
			Concessionary Service
			Raw Water
			LDTM Raw Water
			LDTM Treated Water

Material Types	
AC	Asbestos Cement
CI	Cast Iron
CU	Copper
CO	Concrete
DI	Ductile Iron
GI	Galvanised Iron
GR	Grey Iron
OT	Others
PB	Lead
PV	uPVC
SI	Spun Iron
ST	Steel
UN	Unknown
PE	Polyethylene

Property Types	
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	Valve House
	Booster Pumping Station
	Intake Pumping Station
	Water Treatment Works
	Supply Reservoir
	Service Reservoir
	Impounding Reservoir
	Pipe Bridge
	Condition Report

Lining Types	
CL	Cement Lining
TB	Tar or Bitumen
ERL	Epoxy Resin

Insertion Types	
DD	Die Drawn
DR	Directional Drilling
MO	Moling
PI	Pipeline
SL	Slip Lined

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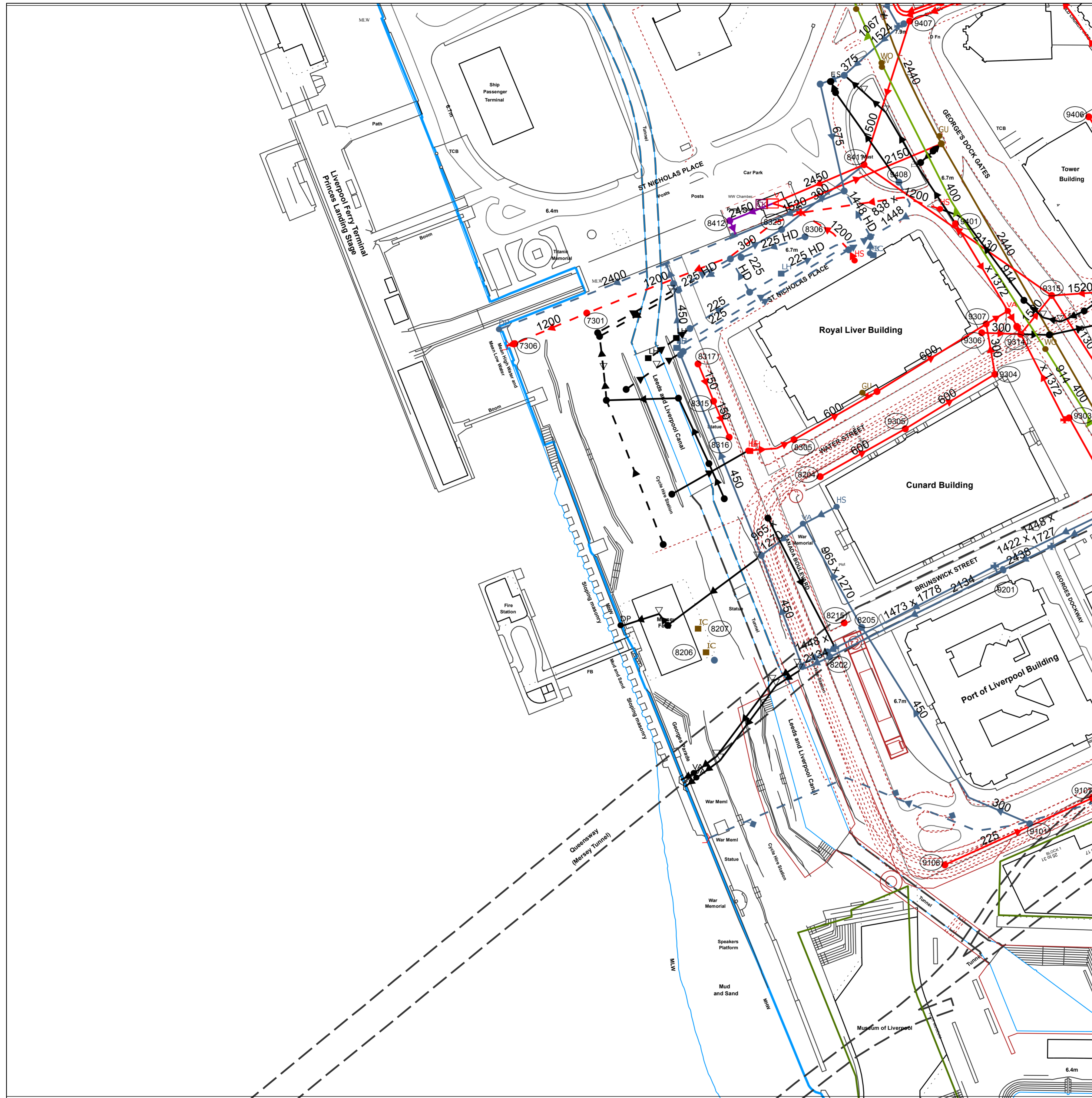
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 Scale: 1: 1250  
 Date: 11/08/2017

OS Sheet No: SJ3390NE  
 Scale: 1: 1250 Date: 11/08/2017

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Refno	Cover	Func	Invert	Size	Shape	Mat	Length	Grad	Refno	Cover	Func	Invert	Size	Shape	Mat	Length	Grad
7301	6.45	CO															
7306	6.45	CO															
8101	6.8	SW	1200		DI	4.12											
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8303	6.71	SW															
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8305	6.52	CO															
8306	6.48	SW	5.11	225	CI	CO 30.75	154										
8309	6.43	SW	4.91	225	CI	CO 33.01	34										
8312		CO															
8313	6.8	SW															
8315		CO															
8316		CO	150		CI	VC 18.55											
8317		CO															
8318	6.85	SW															
8322		SW															
8323		SW															
8326	6.6	SW	0	300	CI	CO 48.03											
8328		SW															
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8402		SW	3.04	375	CI	CO 11.7											
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9304	6.27	CO															
9305	6.45	CO	3.93	300	CI	VC 17.83											
9306	6.28	CO															
9307	6.3	CO	0	914	1372	EG	CO 4.09										
9308	6.24	CO															
9314		CO															
9315	6.92	CO	4.04	1067	1524	EG	CO 2.7										
9400	7.76	SW	0	914	1372	EG	CO 46.65										
9401	6.65	CO															
9402		FO															
9406	8.06	CO	3.3	225	CI	VC 30.53											
9407	7.75	CO	0	1500	CI	CO 69.18											
9408	7.74	SW	0	838	1448	EG	35.88										
8212		SW															
8301		SW															
8307		FO															
8311		CO															
8326		CO	1.57	375	CI	UN 5.63											
8413		SW	0	450	CI	CO 14.87											
9104		SW															
9204		SW															
9404		FO															
9416		CO	0.41	1200	CI	DI 65.16											
9419		CO															
0200		SW	0	1270	CI	CO 16.86											
8121		CO															
8201		SW	0	1473	1778	EG	BR 3.95										
8214		SW															
8308		SW															
8310		SW															
8321		SW															
8324		SW															
8327		SW															
8406		FO															
8406		CO															
9102		SW															
9103		SW															
9202		SW	0	1422	2438	EG	BR 27.73										
9203		SW	0	1473	1778	EG	BR 82.28										
9311		CO	0	914	1372	EG	CO 44.22										
9403		FO															
9412		SW	0	1067	1524	EG	CO 18.56										
7201		SW															
7300		SW															
7302		SW															
7303		SW															
7305		SW															
7308		SW															
7309		SW															
7310		SW															
8100		SW															
8103		CO															
8104		CO															
8105		SW															
8106		SW															
8107		SW															
8108		SW															
8109		SW															
8110		SW															
8120		SW															
8207		SW															
8208		SW															
8209		SW															
8210		SW															
8211		SW															
8213		SW															
8219		SW															
8315		SW															
8316		SW															
8329		SW															
8330		SW															
8401	6.97	CO															
8404		CO															
9301	6.43	CO															
9302	6.53	CO															
9309	6.5	CO															
9312		CO															
9313		CO															
9405	6.97	CO															
9409		CO															
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9411		CO															
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### WASTE WATER SYMBIOLOGY

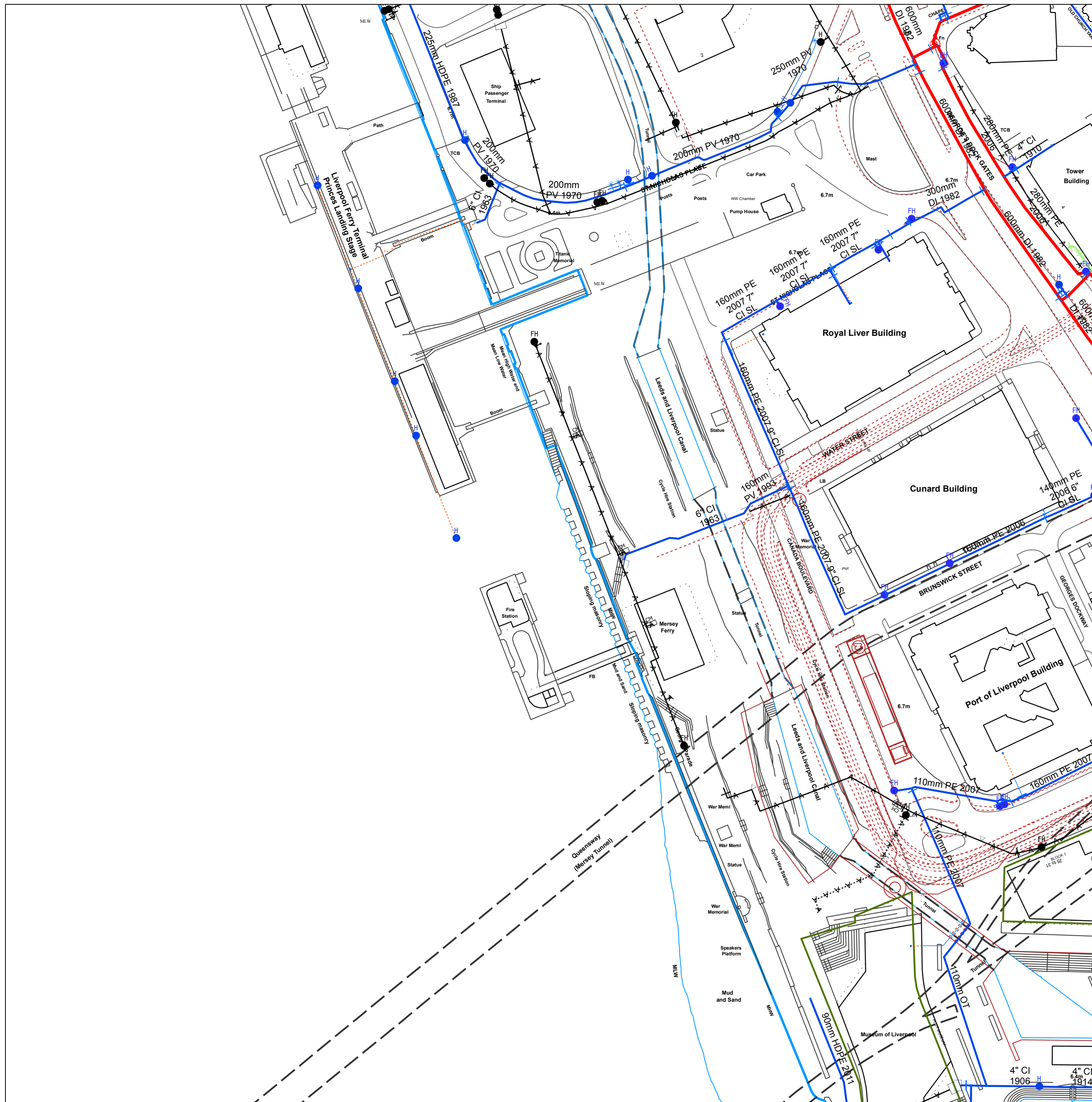
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### LEGEND

**MANHOLE FUNCTION**





Proposed	Abandoned	Live	
			Distribution Main
			Trunk Main
			Comms Pipe
			Private Pipe
			Concessionary Service
			Raw Water
			LDTM Raw Water
			LDTM Treated Water

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GR	Grey Iron
OT	Others
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SI	Spun Iron
ST	Steel
UN	Unknown
PE	Polyethylene

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	Valve House
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	Intake Pumping Station
	Water Treatment Works
	Supply Reservoir
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	Impounding Reservoir
	Pipe Bridge
	Condition Report

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ERL	Epoxy Resin

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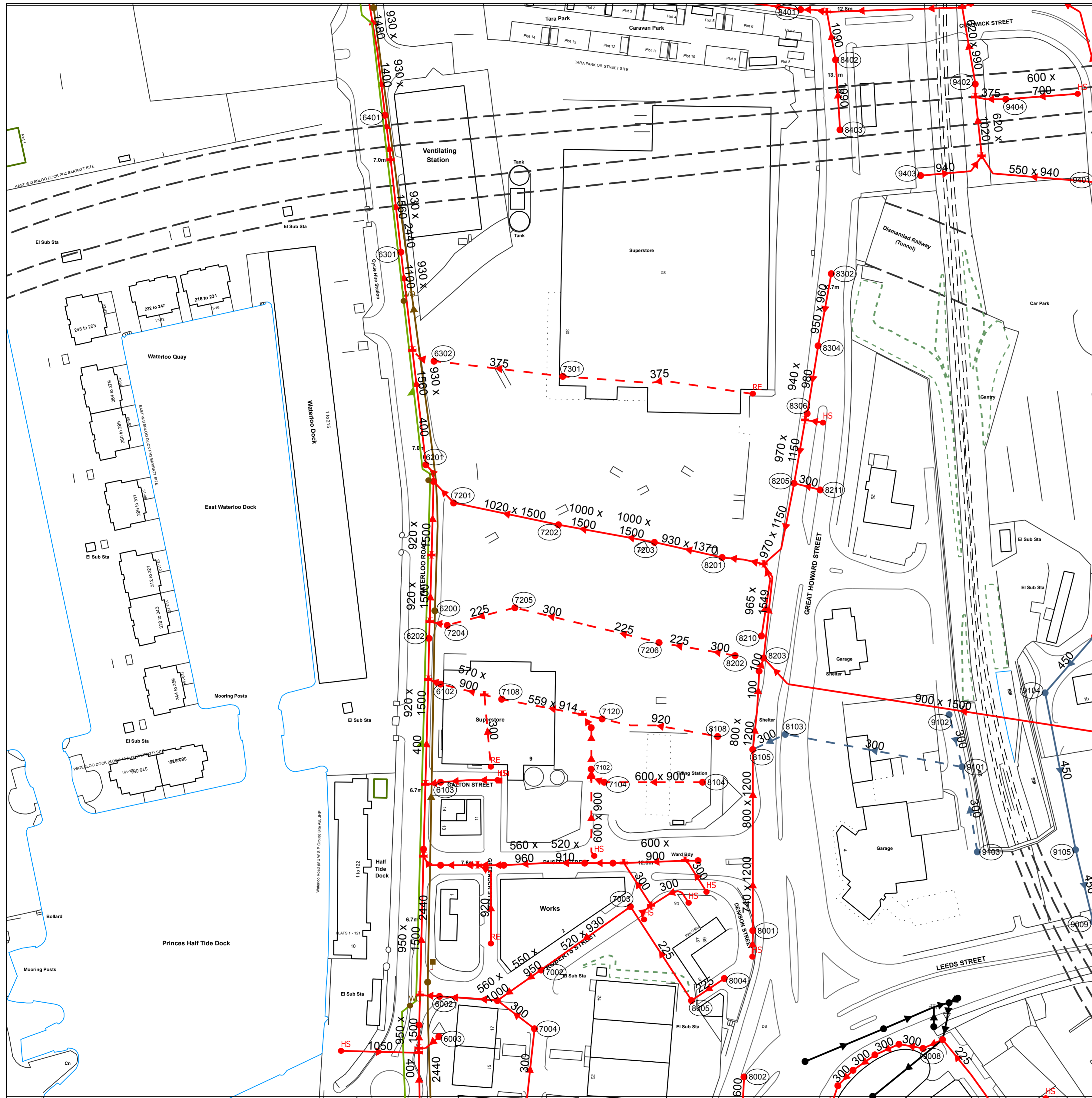
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6101	6.6	CO																		
6102	6.67	CO	3.43	510	880	EG	BR	7.13												
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8005	13.84	CO																		
8008	16.71	CO	13.8	300		CI	VC	15.81	144											
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9105	16.13	SW	11.75	450		CI	VC	33.96	309											
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7000	4.21	450	1000	EG	BR	13.57														
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7124	0	530	920	EG	BR	6														
7125	1.72	560	940	EG	BR	9														
7207	0	1150	300	CI	CO	8.29														
7208	0	300	300	CI	VC	17.43														
8000	0	600	700	EG	CO	33.05														
8006	0	1200	300	CI	CO	11.9														
8007	0	620	1090	EG	BR	31.02														
8008	0	750	1130	EG	BR	33.25														
8004																				
8005																				
8001																				
8002																				
8003																				
8009																				
8010																				
8011																				

### WASTE WATER SYMOLOGY

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### LEGEND

**MANHOLE FUNCTION**  
 FO Foul  
 SW Surface Water  
 CO Combined  
 OV Overflow

**SEWER SHAPE**  
 CI Circular TR Trapezoidal  
 EG Egg AR Arch  
 OV Oval BA Barrel  
 FT Flat Top HO HorseShoe  
 RE Rectangular UN Unspecified

**SEWER MATERIAL**  
 AC Asbestos Cement DI Ductile Iron  
 BR Brick PVC Polyvinyl Chloride  
 PE Polyethylene CI Cast Iron  
 RP Reinforced Plastic Matrix SI Spun Iron  
 CO Concrete ST Steel  
 CSB Concrete Segment Bolted VC Vitrified Clay  
 CSU Concrete Segment Unbolted PP Polypropylene  
 CC Concrete Box Culverted PF Pitch Fibre  
 PSC Plastic/Steel Composite MAC Masonry, Coursed  
 GRC Glass Reinforced Concrete MAR Masonry, Random  
 GRP Glass Reinforced Plastic U Unspecified

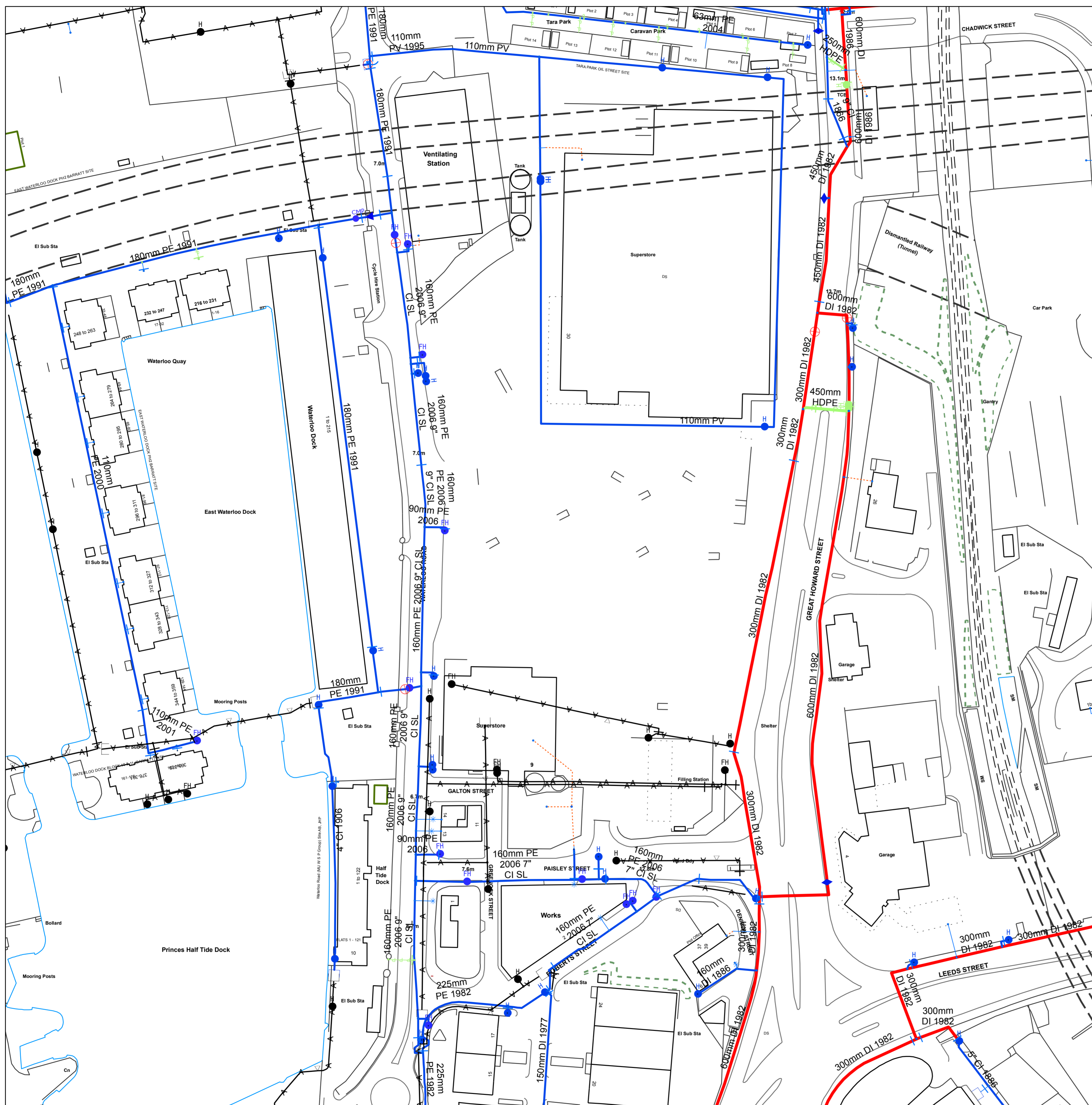
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OS Sheet No: SJ3391SE  
 Scale: 1:1250 Date: 11/08/2017

OS Sheet No: SJ3391SE  
 Scale: 1





Proposed	Abandoned	Live	
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			Trunk Main
			Comms Pipe
			Private Pipe
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PE	Polyethelene

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Scale: 1: 1250

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OS Sheet No: SJ3391SE

Scale: 1: 1250 Date: 11/08/2017

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WATER MAIN RECORDS





## **G. Peel Ports Drainage Records**

### **Appendices**

Liverpool Cruise Terminal

Project Number: WIE12464

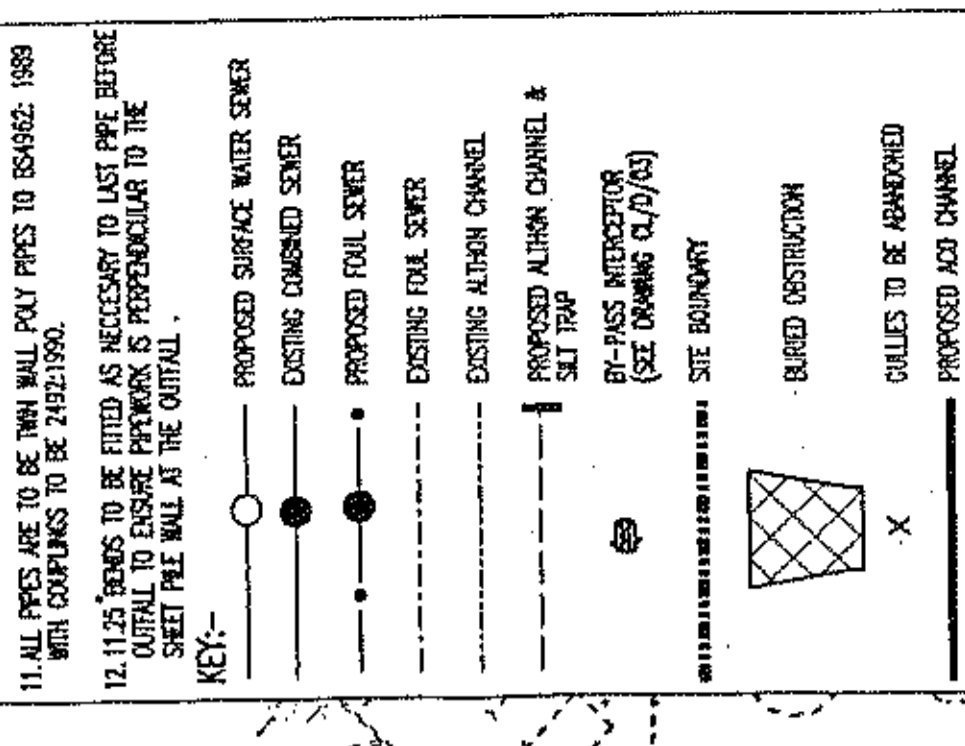
Document Reference: WIE12464-100-R-8-2-2-FRA



**NOTES-**

1. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
2. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM (MAOD).
3. BASED UPON SURVEY DATA 11/2010 AND WITH THE PERMISSION OF THE CONTROLLER OF HER MAJESTY'S STATISTICAL SERVICE. DRAWN COPYRIGHT RESERVED.
4. FOR SURFACE WATER DRAINAGE OF EAST DOCK ROAD SEE DRAWING C/D/01.
5. THE CONTRACTOR'S ATTENTION IS DRAWN TO THE DRAINAGE LEVEL OF APPROXIMATELY 4.8m AOD.
6. INFORMATION REGARDING EXISTING SERVICES IS BASED ON THE SEARCH RECORDS HELD BY LANCASHIRE CITY COUNCIL.
7. POSITION OF S.W. MANHOLE AND OUTFALLS ON EAST DOCK ROAD TO BE LOCALLY ADJUSTED TO SUIT SHEET PILE ANCHOR AND EXISTING STRONG COLUMN LOCATIONS.
8. STUB ENDS TO BE TAKEN 3m BEYOND BACK OF FOOTWAY AND CAPPED IN ACCORDANCE WITH THE SPECIFICATION.
9. AT LOCATIONS WHERE THE ALTRON CHANNEL MEETS S. TO FALL AWAY FROM THE SHEET PILE ANCHOR THE ALTRON CHANNEL IS TO BE PART FALLEN WITH GRANULITE BEING TO CREATE MINIMUM 1:100 FALL TO OUTFALL.
10. FOR ALTRON-LITE CHANNEL BEINGS DETAIL REFER TO C/D/01/16.
11. ALL PIPES ARE TO BE 100mm WALL POLY PROPYLENE TO BS4584: 1989 WITH COUPLERS TO BE 242/252.
12. 11.125 BEINGS TO BE FITTED AS NECESSARY TO LAST PIPE BEFORE OUTFALL TO ENSURE PATTERNS IS PERPENDICULAR TO THE SHEET PILE WALL AT THE OUTFALL.

**KEY-**



Mark	Date	By	Rev
C6	02/00/01		
C5	08/99/01		
C4	07/99/01		
C3	09/98/01		
C2	05/98/01		

**CONSTRUCTION**

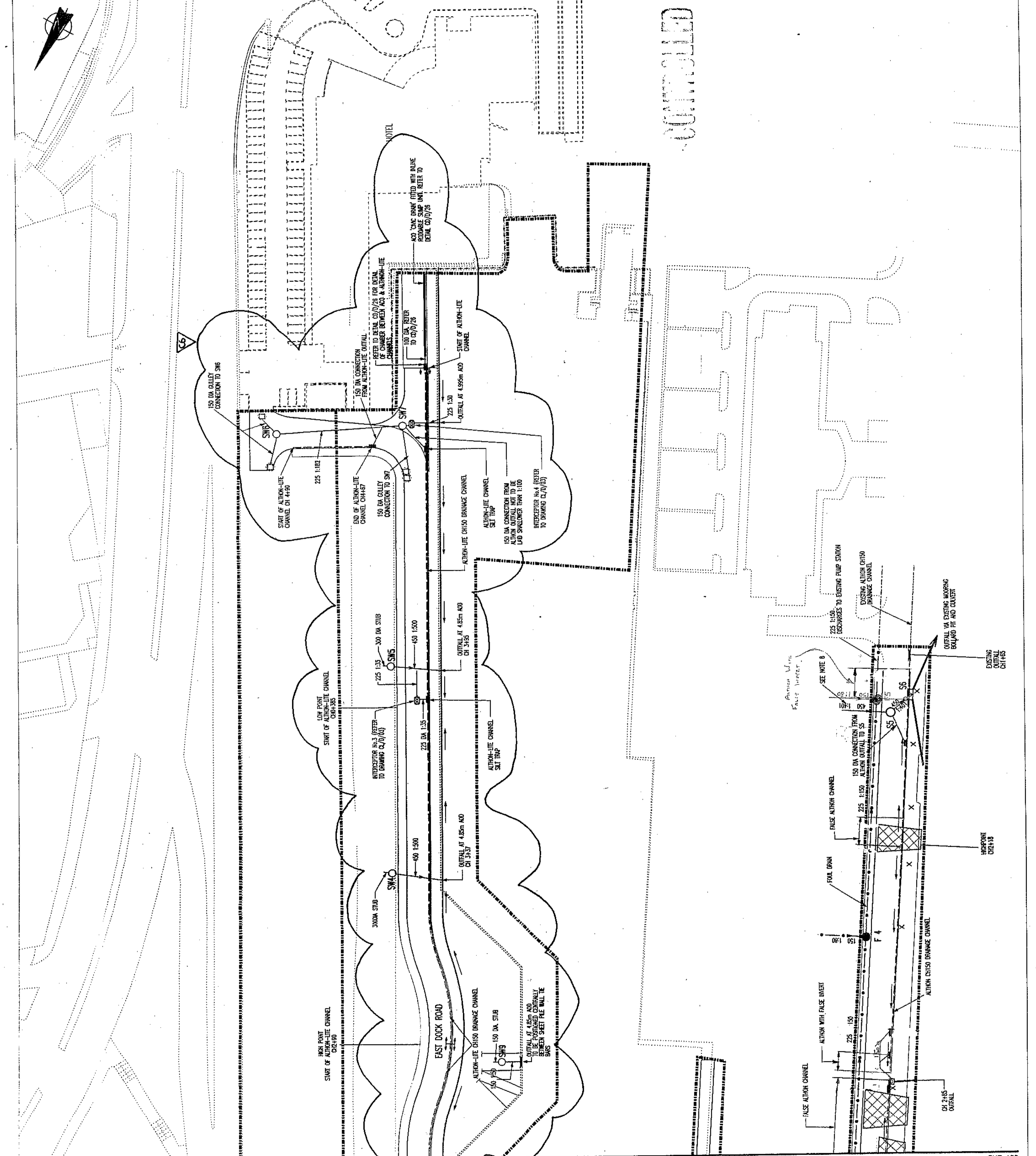
S.W. DRAINAGE ON EAST DOCK ROAD AMENDED  
 CONSTRUCTION ISSUE  
 WEST DRAINAGE ADDED FOR PLANNING PURPOSES ONLY  
 F.W. DRAINAGE AMENDED  
 S.W. DRAINAGE AMENDED

**KEY PLAN**

**PRINCES DOCK INFRASTRUCTURE**

**AS-BUILT DRAINAGE LAYOUT**

**SHEET 2 OF 2**



CONTINUED ON DWG No CL/D/01

CUT LINE



## H. Proposed Drainage Layout

### **Appendices**

Liverpool Cruise Terminal

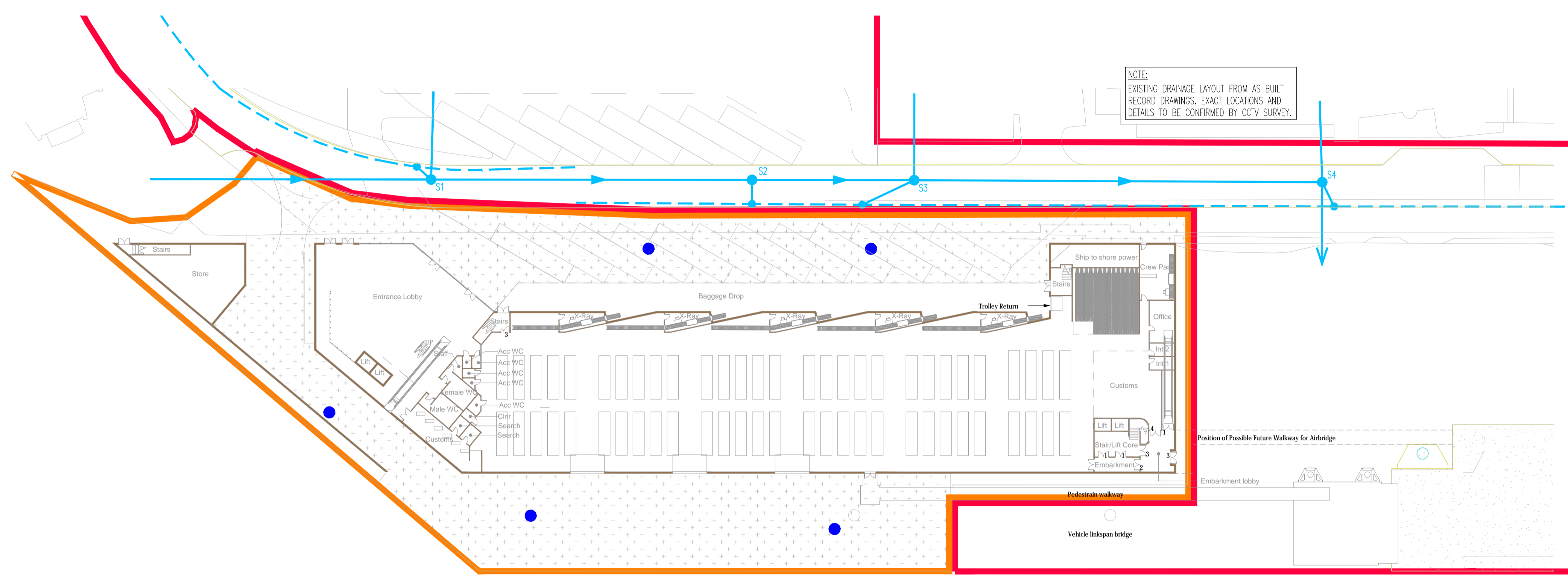
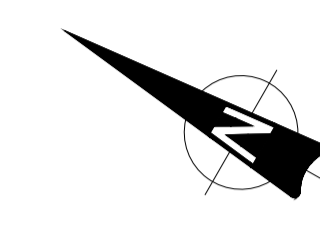
Project Number: WIE12464

Document Reference: WIE12464-100-R-8-2-2-FRA



**GENERAL NOTES**

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEER'S, ARCHITECT'S OR OTHER RELEVANT DRAWINGS AND SPECIFICATIONS.
2. ALL DIMENSIONS AND LEVELS ARE TO BE CHECKED ON SITE BY THE CONTRACTOR PRIOR TO PREPARING ANY WORKING DRAWINGS OR COMMENCING ON SITE.
3. THE CONTRACTOR MUST ENSURE AND WILL BE HELD RESPONSIBLE FOR THE OVERALL STABILITY OF THE BUILDING/STRUCTURE/EXCAVATION AT ALL STAGES OF THE WORK.
4. ALL WORK BY THE CONTRACTOR MUST BE CARRIED OUT IN SUCH A WAY THAT ALL REQUIREMENTS UNDER THE HEALTH AND SAFETY AT WORK ACT ARE SATISFIED.
5. ALL WORK IS TO BE CARRIED OUT IN COMPLIANCE WITH THE REQUIREMENTS OF THE RELEVANT STATUTORY AUTHORITIES AND REGULATIONS.



- KEY:**
- PROPOSED NEW DRAINAGE CATCHMENT
  - AREAS TO BE RETAINED AS EXISTING
  - EXISTING/RETAINED SW SEWER AND CONNECTIONS
  - EXISTING/RETAINED CHANNEL DRAIN
  - PROPOSED VERTICAL SW OUTFALL TO RIVER MERSEY
  - PROPOSED PERMEABLE SURFACING OR TREATMENT UNITS

PO1	25.10.17	PRELIMINARY ISSUE	LS
Rev	Date	Description	By

Amendments

**Project**  
LIVERPOOL CRUISE TERMINAL

**Title**  
OUTLINE SURFACE WATER DRAINAGE STRATEGY

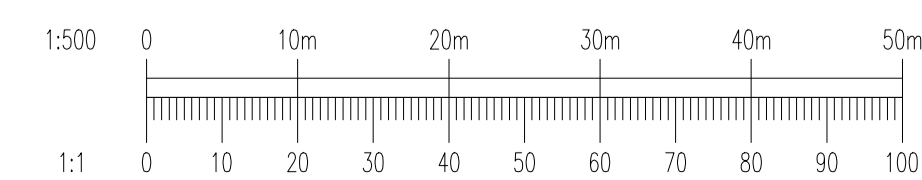
**Client**  
LIVERPOOL CITY COUNCIL



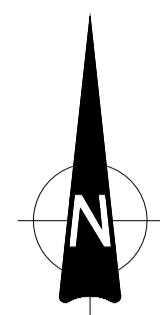
**Status**  
PRELIMINARY

Designed By	CH	Checked By	CH	Waterman Ref	WIE12464
Drawn By	LS	Date	OCTOBER 2017	Scales @ A1	1:500

Project	Originator	Volume	Level	Type	Role	Number	Revision
12464-WIE-ZZ-DR-M-ASBUILTS						92001	P01







Waterloo  
River Entrance

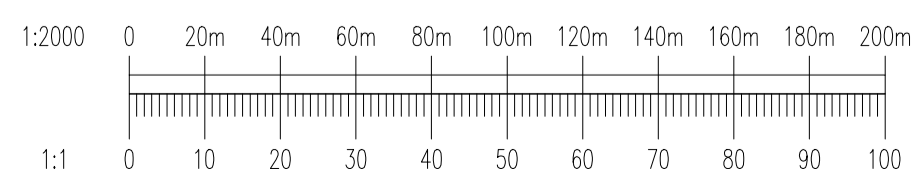
Princes  
Half Tide  
Dock



Princes Jetty

Seacombe Ferry (P)

Ship Ferry (Vehicular)  
Terminal

Ship Ferry (P)  
Terminal



KEY:  
 AREA TO DRAIN AS EXISTING  
 PROPOSED NEW DRAINAGE CATCHMENT

Rev	Date	Description	By
P01	25.10.17	PRELIMINARY ISSUE	LS

Amendments

Project  
**LIVERPOOL CRUISE TERMINAL**

Title  
**OUTLINE SURFACE WATER  
DRAINAGE CATCHMENTS**

Client  
**LIVERPOOL CITY COUNCIL**



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Status  
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Designed By	CH	Checked By	CH	Waterman Ref	WIE12464
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Project	Originator	Volume	Level	Type	Role	Number	Revision
12464-WIE-ZZ-ZZ-DR-D-92002							P01



# UK and Ireland Office Locations

