BETTER SOLUTIONS, INTELLIGENTLY ENGINEERED

ENVIRONMENT

Manchester Metropolitan University
Ryebank Road
Chorlton
Flood Risk Statement and Conceptual Drainage Strategy

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Flood Risk Statement and Conceptual Drainage Strategy

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EXECUTIVE SUMMARY

This Flood Risk Assessment and Conceptual Drainage Strategy has been prepared on behalf of Manchester Metropolitan University to support divestment of their asset at Ryebank Fields, Chorlton (approximate grid reference: SJ810945). The report is therefore not for the purposes of a planning application.

This report demonstrates that the proposed development is at not at a significant flood risk, subject to the flood mitigation strategies being implemented at the planning stage. Any future planning application at the site will require a site-specific Flood Risk Assessment (FRA) and Sustainable Drainage Statement (SDS) to be produced.

The site is shown to be entirely located within Flood Zone 1 (Low Probability). The nearest Flood Zone extents are located approximately 390m south west of the site, associated with the River Mersey and Chorlton Platt Gore. Environment Agency data shows the site to be elevated approximately 4.03m above the 1 in 100-year event and 3.92m AOD in the 1 in 100-year + 30% climate change event flood levels, therefore fluvial flood risk is considered to be low.

A drainage ditch is shown to run through the centre of the site from east to west and is thought to be culverted to the west of the site. A pluvial flow route is shown to run through the site, attributed to the ditch. However, existing levels prevent water from flowing through the ditch and the ditch is therefore not considered to be an active drainage feature.

The site is considered to be at a medium risk of groundwater flooding, and it is recommended that finished floor levels of any buildings are suitably raised above surrounding ground levels to mitigate the groundwater flood risk identified. There is also potential for groundwater to be encountered during construction. Where significant groundwater is encountered within excavations alternative dewatering systems will need to be employed. The advice of a suitably experienced groundwater contractor should be sought to determine the most viable option.

The proposed development has also been assessed against a further range of potential risk sources including surface water, canals, reservoirs and sewers. The site is considered to be at a low risk from these sources.

To mitigate the developments impact on the current runoff regime it is proposed to appropriately manage surface water and foul water separately, in order to ensure flood risk in the wider area is not increased. At this stage it is proposed to store storm water runoff within above ground detention basins and discharge surface water from the site to the existing surface water sewer running through the site. United Utilities have confirmed that foul water will be allowed to drain to the public combined sewer network, with the preferred connection to be to the existing 225mm public combined sewer in Ryebank Road, to the north of the site.

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1. INTRODUCTION

1.1 This Flood Risk Assessment (FRA) and Conceptual Drainage Strategy has been prepared on behalf of Manchester Metropolitan University to support divestment of their asset at Ryebank Fields, Chorlton.

1.2 A Development Framework document has been produced on behalf of Manchester Metropolitan University to inform future proposals. The framework has been endorsed by Manchester City Council's Executive, to guide and assist the assessment of future planning applications for the site.

1.3 This FRA and Conceptual Drainage Strategy is not intended to support a planning application and as such the level of detail included is commensurate and subject to the nature of the proposals.

Table 1.1: Site Summary

Site Name	Ryebank Road
Location	Chorlton
NGR (approx.)	SJ810945
Application Site Area (ha)	4.68 (approx.)
Development Type	Residential
Flood Zone Classification	Flood Zone 1
NPPF Vulnerability	More Vulnerable
Environment Agency Office	Greater Manchester, Merseyside and Cheshire
Lead Local Flood Authority	Manchester City Council
Local Planning Authority	Manchester City Council

Sources of Data

i. Topographical Survey by CT Surveys, reference [Dwg No. 4692AB/1-5]
ii. OS Explorer Series mapping
iii. Environment Agency consultation
iv. Manchester City Council Consultation
v. Local Authority Surface Water Flood Risk Maps
vi. Ryebank Road Development Framework document
vii. Manchester City, Salford City and Trafford Council Strategic Flood Risk Assessment
viii. Manchester City Council Preliminary Flood Risk Assessment

ix. Site visit undertaken by BWB Consulting Ltd

x. Manchester City Council Local Flood Risk Management Strategy

xi. Ground Investigations undertaken by e3p, reference [13-355-R2-DRAFT and 13-533-R1-1]

xii. CCTV Survey undertaken by Drain Alert Ltd

xiii. Utility Assessment Report undertaken by Fuel Solutions UK Limited

xiv. United Utilities Sewer Records

xv. United Utilities Pre- Development Enquiry

xvi. British Geological Survey Drift & Geology Maps

Existing Site

1.4 The site is located on the land of Ryebank Fields, Ryebank Road, Chorlton, approximately 4.3km south west of Manchester. The site is bound to the north and east by residential development, to the south by Longford Road and to the west by Longford Park. The existing site comprises open space with an area of hardstanding to the south of the site. The site's location is illustrated within **Figure 1.1**.

Figure 1.1: Site Location

1.5 A topographic survey has been undertaken and is included as **Appendix 1**. The site is shown to be relatively flat with a gentle fall in a north westerly direction. Site levels are shown to range from approximately 26.20m Above Ordnance Datum (AOD) in the north west to 28.62m AOD in the south. A ditch is shown to run through the centre of the site in a westerly direction with levels ranging from 27.11m AOD at the top of the banks to 26.20m AOD at the bottom of the banks. Parts of the site have not been surveyed due to densely overgrown vegetation.

Proposed Development

1.6 It is expected that the proposed development will be residential, split into two parcels in the north and south, comprising approximately 120 properties and including detached, semi-detached and terraced properties along with associated open space, as informed by the Development Framework. An extract of the Development Framework is included as **Appendix 2**. Proposed plans are not available at the time of writing.

2. LOCAL GUIDANCE

Strategic Flood Risk Assessment

2.1 A Strategic Flood Risk Assessment (SFRA) is a study carried out by one or more local planning authorities to assess the risk to an area from flooding from all sources, now and in the future.

2.2 The Manchester City, Salford City and Trafford Councils Level 1 SFRA[1] has been reviewed in the production of this FRA. The SFRA provides information specific to the site location in the form of fluvial, surface water and groundwater flood risk mapping, as well as records of historic flooding. Information from the Level 1 SFRA will be referenced within **Section 3.0** where applicable.

2.3 The Manchester City, Salford City and Trafford Councils Level 2 SFRA[2] was produced to facilitate the application of Sequential and Exception Tests to screen allocated development sites. The proposed application site is not referenced within the Level 2 SFRA. Information from the Level 2 SFRA will be referenced within **Section 3.0** where applicable.

Preliminary Flood Risk Assessment

2.4 A Preliminary Flood Risk Assessment (PFRA) is an assessment of floods that have taken place in the past and floods that could take place in the future. It generally considers flooding from surface water runoff, groundwater and ordinary watercourses, and is prepared by the Lead Local Flood Authorities.

2.5 The Manchester City Council PFRA[3] considers flooding from surface water runoff, groundwater, ordinary watercourses and canals. However, no historical instances of flooding at the site are referenced. Information from the PFRA will be referenced within this report where applicable.

Local Flood Risk Management Strategy

2.6 A Local Flood Risk Management Strategy (LFRMS) is prepared by a Lead Local Flood Authority to help understand and manage flood risk at a local level. The LFRMS aims to ensure that the knowledge of local flood risk issues is communicated effectively so that they can be better managed. The LFRMS also aims to promote sustainable development and environmental protection.

2.7 The Manchester City Council LFRMS[4] has been reviewed and will be referenced within this report where applicable.

[1] Level 1 Strategic Flood Risk Assessment (Manchester City, Salford City and Trafford Council, 2010)
[2] Level 2 Strategic Flood Risk Assessment (Manchester City, Salford City and Trafford Council, 2011)
[3] Preliminary Flood Risk Assessment (Manchester City Council, 2011)
[4] Local Flood Risk Management Strategy (Manchester City Council, 2014)

Greater Manchester Strategic Flood Risk Management Framework

2.8 The Greater Manchester Strategic Flood Risk Management Framework (SFRMF)[5] aims to provide a spatial framework for flood risk management that highlights the key strategic flood risks including cross-boundary issues and recommends key priorities for intervention.

2.9 The Greater Manchester SFRMF has been reviewed and will be referenced within the report where applicable.

Development Framework

2.10 A Development Framework[6] has been prepared on behalf of Manchester Metropolitan University for Ryebank Road, Chorlton, Manchester. The role of the framework is to define the broad parameters that future development can be set within. It does not provide detailed design of the development project; this is something that will be dealt with through individual planning applications.

2.11 The Framework aims to provide the conditions to bring forward a high quality residential neighbourhood in keeping with its surrounding context whilst supporting a new residential product that will enhance the existing residential offer of Chorlton and the wider South Manchester market.

[5] Greater Manchester Strategic Flood Risk Management Framework (Greater Manchester Combined Authority, 2018)
[6] Development Framework, Manchester Metropolitan University (2019)

3. POTENTIAL SOURCES OF FLOOD RISK

3.1 Flooding can occur from a variety of sources, or combination of sources, which may be natural or artificial. **Table 3.1** below identifies the potential sources of flood risk to the site in its current condition, and the impacts which the development could have in the wider catchment, prior to mitigation. These are discussed in greater detail in the forthcoming section. The mitigation measures proposed to address flood risk issues and ensure the development is appropriate for its location are discussed within **Section 4.0**.

Table 3.1: Pre-Mitigation Sources of Flood Risk

Flood Source	Potential Risk				Description
	High	Medium	Low	None	
Fluvial			X		The site is entirely located in Flood Zone 1. Longford Brook is located approximately 150m north west of the site.
Coastal				X	The site is shown to be located away from any coastal/tidal influence.
Canals			X		The site is shown to be located away from the Bridgewater Canal.
Groundwater		X			The site is shown to fall within an area predicted to be at a medium susceptibility to groundwater flooding.
Reservoirs and waterbodies			X		The site is shown to fall within the area at risk of reservoir failure. However, maintenance and safety checks mean this only poses a low residual risk to the site.
Pluvial runoff			X		The site is shown to be largely at a very low risk of pluvial flooding with a pluvial flow route shown to run through the centre of the site, associated with the existing ditch.
Sewers			X		The surface water sewer running through the site is of sufficient depth that it is not thought to pose a flood risk.
Effect of Development			X		Development will not result in impedance/loss of surface water route.

Flood Source	Potential Risk				Description
	High	Medium	Low	None	
on Wider Catchment		X			The development will increase the area of impermeable surfaces leading to a potential increase in runoff.

Fluvial Flood Risk

3.2 Flooding from watercourses occurs when flows exceed the capacity of the channel, or where a restrictive structure is encountered, which leads to water overtopping the banks into the floodplain. This process can be exacerbated when debris is mobilised by high flows and accumulates at structures.

3.3 The site is shown to be located entirely within Flood Zone 1, as shown in **Figure 3.1**. The nearest Environment Agency (EA) Main River is Longford Brook, located approximately 150m north west of the site in Longford Park and flows in a north westerly direction. The watercourse is assumed to be culverted with no Flood Zones associated with it within the vicinity of the site.

Figure 3.1: Flood Map for Planning

3.4 The nearest Flood Zone 2 and 3 extents are located approximately 390m south west of the site, associated with the River Mersey and Chorlton Platt Gore.

3.5 The EA were contacted to request flood information available at the site and surrounding area. The correspondence is included as **Appendix 3**. The Chorlton Platt Gore 2012 model data provided by the EA shows the modelled water level associated with Chorlton Platt Gore to be 24.59m AOD during the 1 in 100-year undefended and defended event at the nearest modelled node, located approximately 1km south east of the site. The modelled water level during the 1 in 100-year + 30% climate change event is shown to be 24.70m AOD in both the undefended and defended scenarios. The site is shown to be elevated approximately 4.03m above the 1 in 100-year event and 3.92m AOD in the 1 in 100-year + 30% climate change event.

3.6 The EA Historical Flood Map shows the nearest recorded flood outline to be located approximately 2.5km south east of the site, associated with a 1964 flood event. Correspondence with Manchester City Council as the LLFA (included as **Appendix 4**) notes no record of any flooding at the site or within the immediate vicinity of the site.

3.7 Based upon the distance and intervening topography, the site is considered to be at a low risk from fluvial sources.

Longford Brook/Nico Ditch

3.8 A drainage ditch is shown to pass through the centre of the site from east to west and is currently understood to serve a small catchment of approximately 1.4km. Historical mapping (referenced within the Phase I Geoenvironmental Site Assessment[7]) suggests that Longford Brook once passed through the site to the north of the existing ditch before being diverted along the eastern site boundary.

3.9 A site visit undertaken by BWB Consulting in October 2019 noted that the ditch is not well defined with large amounts of vegetation and no apparent flowing water, as shown in **Figure 3.2**. A site visit undertaken in November 2019, following vegetation clearance, also shows the ditch to be dry, with no flowing water, as shown in **Figure 3.3**. A further site visit, undertaken in March 2020, noted standing water within the ditch, as shown in **Figure 3.4**. The ditch is, therefore, not considered to be an active drainage feature due to the lack of flowing water within the feature.

Figure 3.2: Ditch, October 2019, Taken Facing East

[7] Phase I Geoenvironmental Site Assessment, e3p (2020)

Figure 3.3: Ditch, November 2019, Taken Facing East

Figure 3.4: Ditch, March 2020, Taken Facing East

3.10 It is considered at this stage that there is no connectivity between the eastern boundary diversion of the Longford Brook and the drainage ditch, as the ditch was noted as not conveying any flows during a period of intense rainfall.

3.11 The ditch is understood to be culverted to the western boundary of the site and Longford Park, as shown in **Figure 3.5**. Standing water is shown to be present at the entrance to the culvert, implying that the culvert may be blocked, preventing the flow of water away from the site. Further investigation of the culvert is required in order to understand the connectivity of the ditch to the west of the site and confirm any connectivity to the Longford Brook. Recommendations for further investigation is included within **Section 5.0.**

Figure 3.5: Culvert, Taken Facing West

3.12 Overall, the fluvial flood risk surrounding the existing ditch is considered to be low.

Coastal/Tidal Flood Risk

3.13 Inundation of low lying coastal areas by the sea may be caused by seasonal high tides, storm surges and storm driven wave action. Coastal/Tidal flooding is most commonly a result of a combination of two or more of these mechanisms, which can result in the overtopping or breaching of sea defences. River systems may also be subject to tidal influences.

3.14 The site is shown to be located away from any coastal/tidal influence. Therefore, there is no risk of coastal/tidal flooding at the site.

Flood Risk from Canals

3.15 The Canal and River Trust (CRT) generally maintains canal levels using reservoirs, feeders and boreholes and manages water levels by transferring it within the canal system.

3.16 Water in a canal is typically maintained at predetermined levels by control weirs. When rainfall or other water enters the canal, the water level rises and flows out over the weir. If the level continues rising it will reach the level of the storm weirs. The control weirs and storm weirs are normally designed to take the water that legally enters the canal under normal conditions. However, it is possible for unexpected water to enter the canal or for the weirs to become obstructed. In such instances the increased water levels could result in water overtopping the towpath and flowing onto the surrounding land.

3.17 Flooding can also occur where a canal is impounded above surrounding ground levels and the retaining structure fails.

3.18 The Bridgewater Canal is located approximately 1km west of the site. The LFRMS identifies the site to be located outside of the canal breach zone and the SFRA notes limited canal overtopping in Manchester with overtopping events unlikely to affect areas beyond the canal towpath. Therefore, the flood risk associated with canals is thought to be low.

Groundwater Flood Risk

3.19 Groundwater flooding occurs when the water table rises above ground elevations. It is most likely to happen in low lying areas underlain by permeable geology. This may be regional scale chalk or sandstone aquifers, or localised deposits of sands and gravels underlain by less permeable strata such as that in a river valley.

3.20 According to British Geological Survey (BGS) mapping, the area is shown to be underlain by the Wilmslow Sandstone Formation, which is designated as a Principal Aquifer. Principal Aquifers are layers of rock or drift deposits that have high intergranular and/or fracture permeability, meaning they usually provide a high level of water storage. They may support water supply and/or base flow on a strategic scale.

3.21 Superficial deposits of Till (Devensian) are expected to be present throughout the majority of the site with a small portion to the north western corner of the site expected to be underlain by Glaciofluvial Sheet Deposits (Devensian). The superficial deposits are designated Secondary (undifferentiated) and Secondary A Aquifers.

i. Secondary (undifferentiated) Aquifers are assigned in cases where it has not been possible to attribute either Category A or B to a rock type.
ii. Secondary A Aquifers are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.

3.22 Ground investigations carried out by e3p in December 2019 encountered Made Ground deposits in all exploratory hole locations to a maximum depth of 12.70m Below Ground Level (BGL).

3.23 Site investigations including 30 trial pits and 16 borehole logs have been undertaken by e3p. Groundwater was encountered within 24 trial pits between depths of 1.4m BGL and 2.9m BGL. Several of the trial pits had to be terminated due to rapid groundwater ingress, particularly within the south of the site. Groundwater was encountered within 8 borehole logs between depths of 2.1m BGL and 4.3m BGL. Further information can be found within the Phase II Geoenvironmental Site Assessment[8].

3.24 The Manchester City Council PFRA notes that the site is located within an area at risk of groundwater rebound and the LFRMS shows the site to be located within an area at risk of groundwater flooding; however, the SFRA notes no known records of groundwater flooding in Manchester and correspondence with the LLFA notes no record of flooding within the site.

3.25 A site visit undertaken by BWB Consulting in October 2019 noted muddy ground conditions, but no standing water appeared to be present. A further site visit in March 2020 also noted muddy ground conditions but with standing water pooling in the rutted areas, following a period of rainfall.

3.26 The proposed development is considered to be at a medium risk of groundwater flooding.

3.27 In the event of groundwater flooding, due to the relatively flat nature of the site, water is likely to pool across the site. Additionally, whilst there is scope for groundwater to rise through such deposits, in some cases, impermeable surfaces at the site would act as a barrier to groundwater emergence.

3.28 Mitigation measures are required to reduce the potential risk of groundwater flooding, especially during construction. Further details on which are included within **Section 5.0.**

Flood Risk from Reservoirs & Large Waterbodies

3.29 Flooding can occur from large waterbodies or reservoirs if they are impounded above the surrounding ground levels or are used to retain water in times of flood. Although unlikely, reservoirs and large waterbodies could overtop or breach leading to rapid inundation of the downstream floodplain.

3.30 To help identify this risk, reservoir failure flood risk mapping has been prepared, this shows the largest area that might be flooded if a reservoir were to fail and release the water it holds. The map displays a worst case scenario and is only intended as a guide. An extract from the mapping is included as **Figure 3.6**.

[8] Phase II Geoenvironmental Site Assessment, e3p (2020)

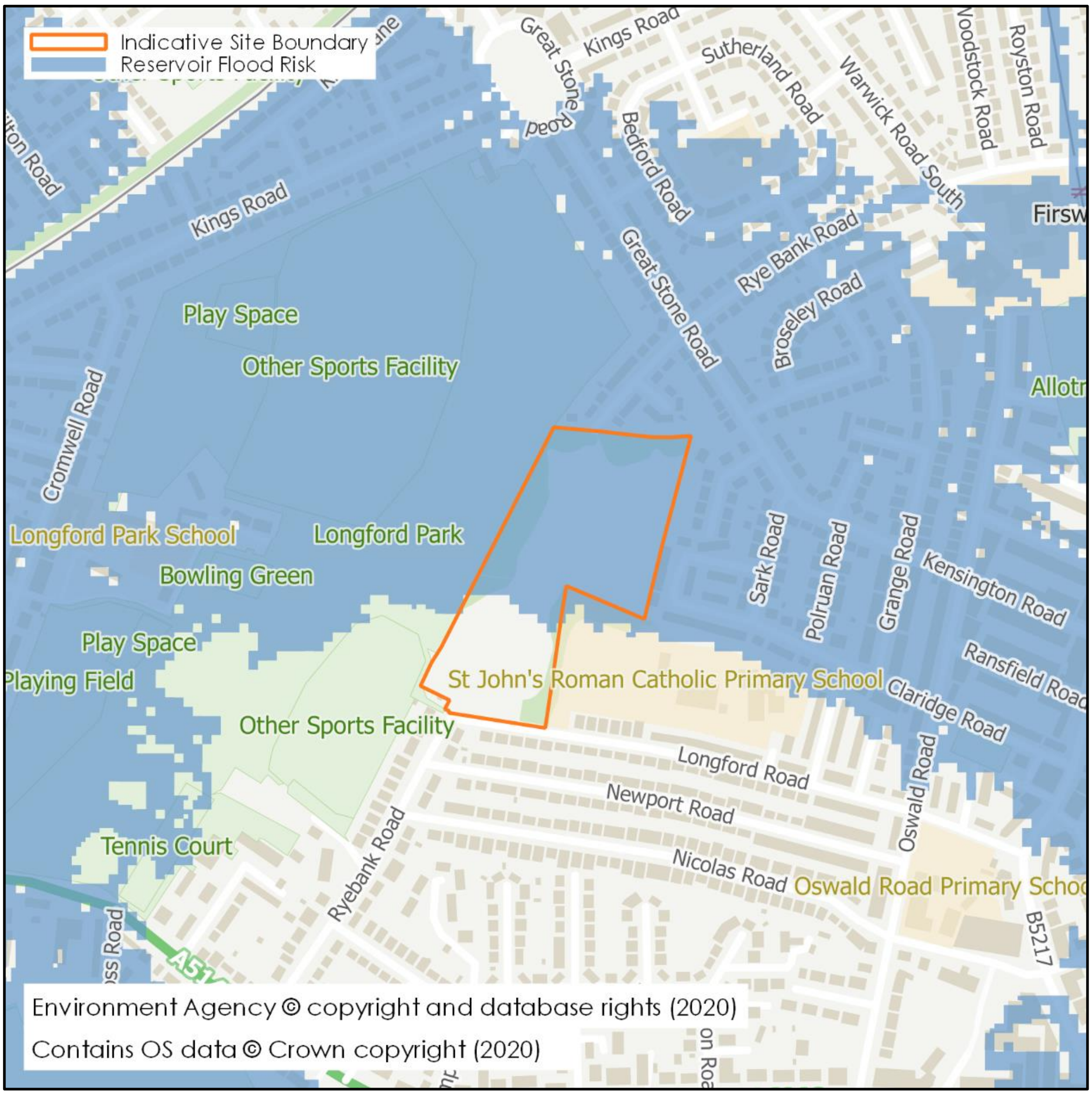

Figure 3.6: Reservoir Failure Flood Risk Map

3.31 The site is shown to be located within the potential failure flood extent of up to four reservoirs, this could pose a hazard to the site in its existing conditions.

3.32 The EA data (included as **Appendix 3**) confirmed the residual risk of reservoir flooding to the site. The reservoirs are owned and operated by United Utilities Water plc, who have the ultimate responsibility for the safety of their reservoir assets. Their responsibilities include regular safety inspections, any necessary design or repairs undertaken where required and an annual statement produce on the operation and maintenance regime.

3.33 Based on the safety legislation in place and the maintenance and repair responsibilities of the reservoir owners, the actual probability of a significant failure is considered to be low. Therefore, the risk of flooding at the site from this source is also considered to be low.

Pluvial Flood Risk

3.34 Pluvial flooding can occur during prolonged or intense storm events when the infiltration potential of soils, or the capacity of drainage infrastructure is overwhelmed leading to the accumulation of surface water and the generation of overland flow routes.

3.35 Risk of flooding from surface water mapping has been prepared, this shows the potential flooding which could occur when rainwater does not drain away through the normal drainage systems or soak into the ground but lies on or flows over the ground instead. An extract from the mapping is included as **Figure 3.7**.

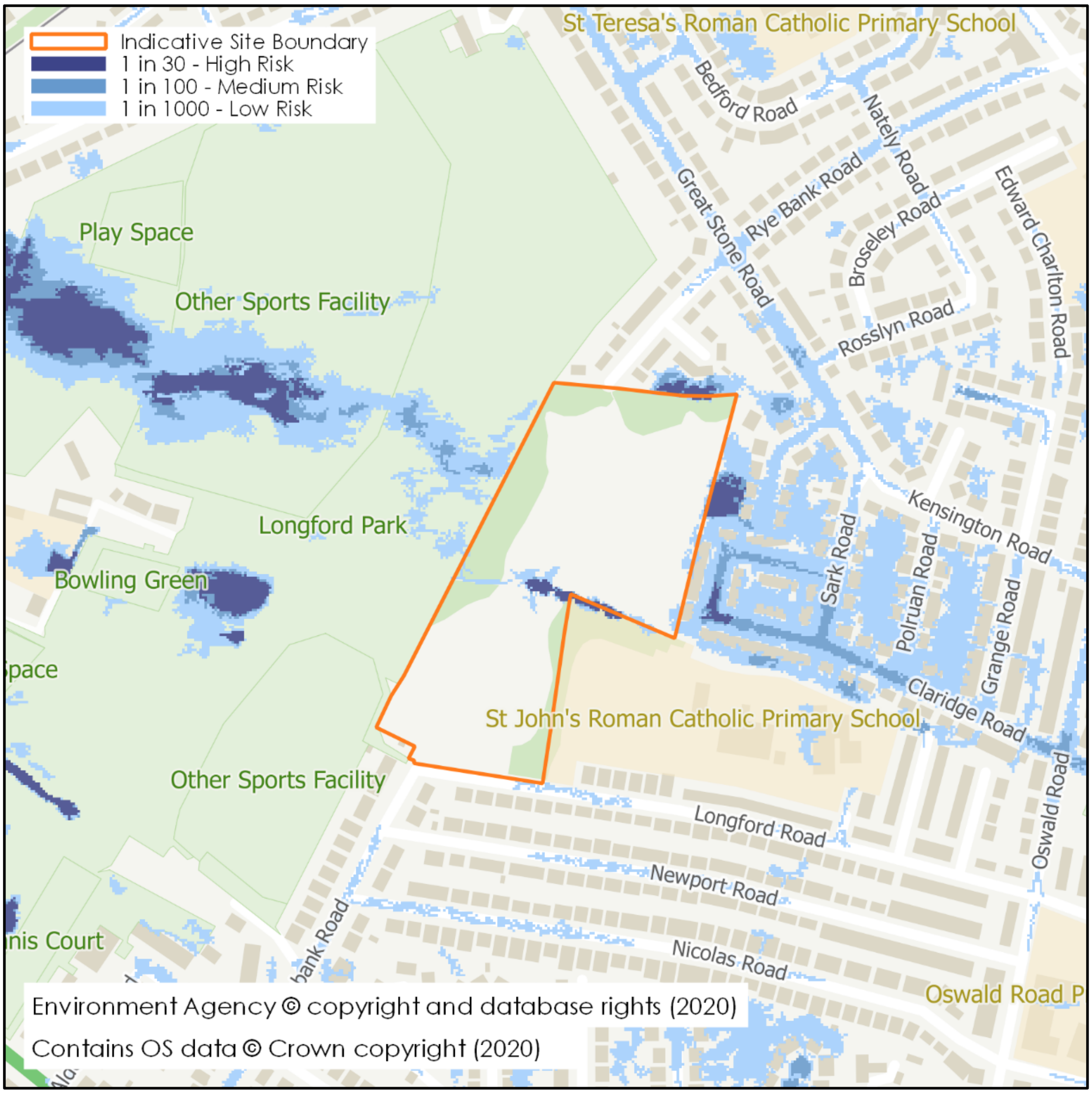

Figure 3.7: Surface Water Flood Risk Map

3.36 The site is largely shown to be at a very low risk of surface water flooding. A pluvial flow route is shown to flow through the centre of the site from east to west presenting a Low (1 in 1000-year) to High (1 in 30-year) risk of surface water flooding. This is thought to be associated with the ditch on site and is shown to be generally constrained. Due to existing levels of the ditch, water cannot flow and collects as standing water as a result of prolonged rainfall, as shown by the small areas of high susceptibility.

3.37 A large area of low to high surface water flood risk is shown to be present to the north east and east of the site. To the south of the site, Ryebank Road and Longford Road are largely shown to be at a very low risk of surface water flooding, therefore safe/dry access and egress is achievable.

3.38 The Greater Manchester SFRMF identifies surface water flood risk as a general issue for Greater Manchester, however it does not provide details on the exact areas deemed to be affected.

3.39 The overall flood risk to the site from pluvial sources is thought to be low.

Flood Risk from Sewers

3.40 Sewer flooding can occur when the capacity of the infrastructure is exceeded by excessive flows, or as a result of a reduction in capacity due to collapse or blockage, or if the downstream system becomes surcharged. This can lead to the sewers flooding onto the surrounding ground via manholes and gullies, which can generate overland flows.

3.41 The local sewerage undertaker is United Utilities Water. A copy of their sewer records is included as **Appendix 5**.

3.42 A public surface water sewer with a construction comprising of brick, a diameter of 1275mm and an average depth to invert of approximately 5.40m is shown to the be present in the south western corner of the site. An overflow pipe with a diameter of 1500mm is located to the north of the site and is known to flow from the north where it serves a wider area, the depth of the pipe is not known. There are a number of public foul water sewers located to the north, east and south of the site, which serve the existing residential development.

3.43 A CCTV survey and investigation of the public surface water sewer were undertaken by Drain Alert (included as **Appendix 6**) in order to understand the connectivity between any sewers on site. Die testing and sounding out proved the connectivity of the surface water sewer in the south west of the site to the overflow sewer to the north of the site. Therefore, the public surface water sewer is shown to run through the entire site as shown in **Figure 3.8**. The location of the sewer is approximate and based on site investigations and existing United Utilities Sewer Records.

3.44 There is a need for any future development to consider the sewer by means of an easement. Further details are included within **Section 5.0**.

3.45 In the unlikely event of sewer flooding, water will follow local topography and may pool in places due to the relatively flat nature of the topography or flow in a north westerly direction.

3.46 Due to the depth of the sewer within the site, flood risk from sewers is considered to be low.

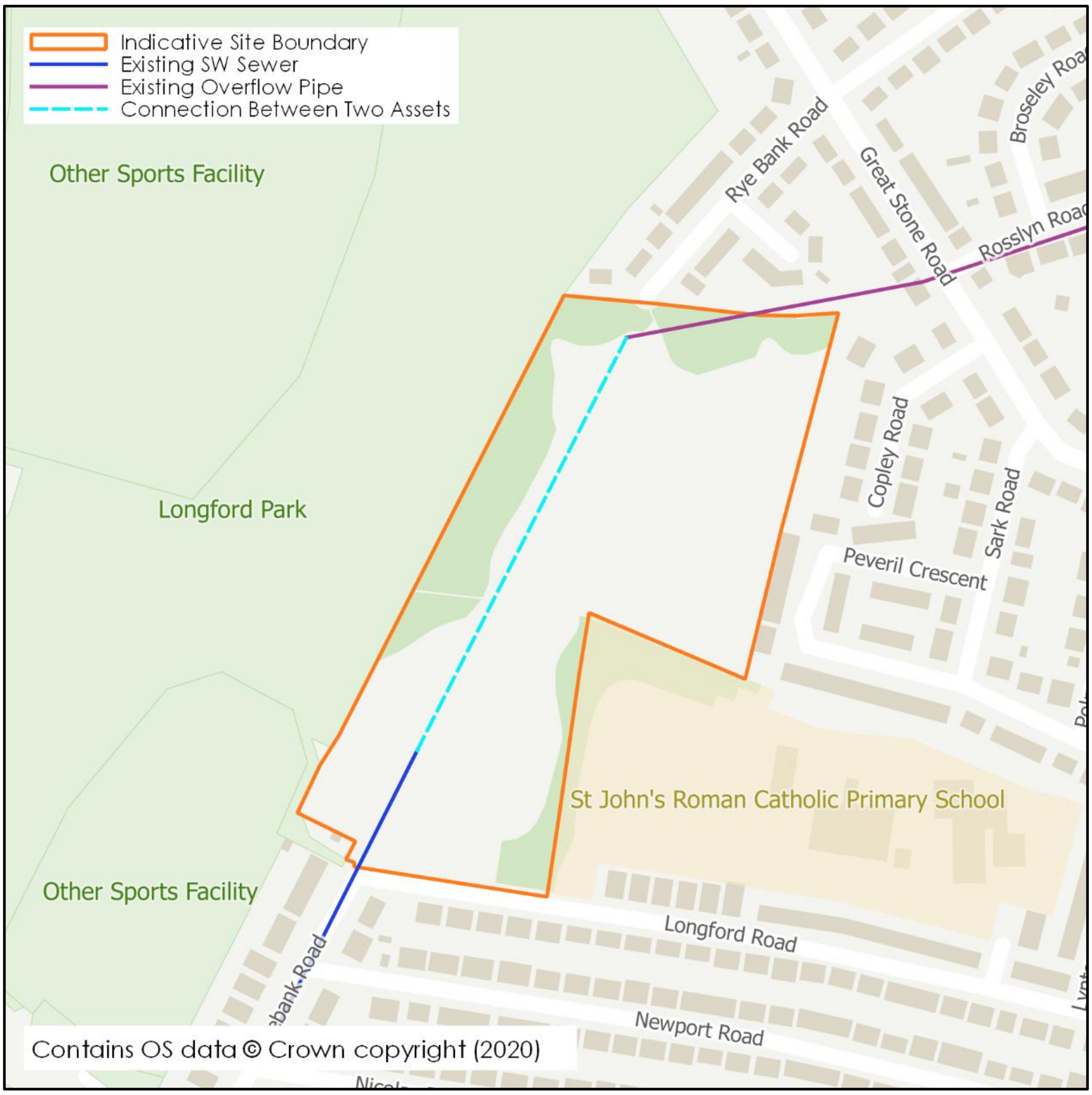

Figure 3.8: Approximate Location of United Utilities Sewerage Assets (taken from United Utilities Sewer Records and Drain Alert Site Investigations)

Effect of Development on Wider Catchment

Impedance of Flood Flows

3.47 The Development Framework suggests that development will be split into two parcels in the north and south of the site with green infrastructure located along the western site boundary and along the alignment of the existing ditch. Therefore, development will not impede any pluvial flow routes through the site.

Development Land Use

3.48 The proposed development will increase the area of impermeable surfaces on site. This will result in an increase in surface water runoff, which could increase flood risk downstream unless properly mitigated.

4. DRAINAGE

Surface Water

Drainage Requirements

4.1 Local and national policy requires the use of Sustainable Drainage Systems (SuDS) principles for new developments, which would necessitate consideration of the infiltration potential of the ground, in the first instance, as a means of surface water disposal, followed by discharge to a local waterbody. An allowance of attenuation and treatment of surface water will also be required.

4.2 Manchester City Council, in their role as LLFA, have published a SuDS Requirements for New Developments Update 2019[9] which advises that SuDS are designed in line with the national Non-Statutory Technical Standards for SuDS[10]. This guidance has been used to inform this assessment and is included as **Appendix 4**.

4.3 Typically, an allowance for urban creep, to account for residents increasing the impermeable areas through driveways and patios etc, should be included and usually depends on the density of the residential development. Given the early and conceptual stage of this surface water drainage strategy, no allowance has been included for urban creep. Once an indicative masterplan is available, a more detailed strategy that includes an appropriate allowance for urban creep should be produced. Typically, an additional 10% of the proposed impermeable area would be required to accounted for as part of the site drainage.

Existing Conditions

4.4 The total site is approximately 4.68ha. The developable area, as measured by the two indicative catchments, is approximately 2.99ha.

4.5 The runoff rate, per hectare, for the site has been estimated using the IH124 method, with appropriate prorated adjustments for a site of less than 50ha. This was undertaken within Micro Drainage, which makes the necessary adjustments for small sites automatically. The results are summarised within **Table 4.1** and included as **Appendix 7**.

Table 4.1: Exiting Greenfield Runoff Rates from the Site

Return Period (Yrs.)	Runoff Rate (l/s/ha)
1	2.0
Mean Annual Flow Rate (QBAR)	2.3
30	3.9
100	4.8

[9] SuDS Requirements for New Developments, Manchester City Council (2019)
[10] Sustainable Drainage Systems Non-statutory technical standards for sustainable drainage systems, DEFRA (2015)

Drainage Hierarchy

4.6 The Planning Policy Guidance[11] and the SuDS Manual identify that surface water runoff from a development should be disposed of as high up the following hierarchy as reasonably practicable:

i. Into the ground (infiltration);
ii. To a surface water body;
iii. To a surface water sewer, highway drain, or another drainage system;
iv. To a combined sewer.

4.7 In-situ (falling) head permeability tests were undertaken by e3p as part of the Phase II investigations, within two environmental monitoring wells. As the site is underlain by Made Ground impacted by low-level inorganic and hydrocarbon compounds, soakaway drainage is not considered to be suitable for the proposed development.

4.8 A drainage ditch is shown to run through the centre of the site with a culvert located to the western site boundary. The ditch is not understood to be an active drainage feature with the existing levels preventing water from flowing within the ditch. At this stage, the ditch is not considered to be a suitable receiving body for surface water runoff.

4.9 Due to the presence of the surface water sewer running through the entire site, it is proposed to discharge surface water from the site to this asset following development. This is subject to confirmation from United Utilities.

Surface Water Drainage Strategy

4.10 The site has been split into two drainage catchments, with the existing drainage ditch separating the two parcels, in line with the Development Framework.

4.11 The Non-statutory technical standards for sustainable drainage systems requires that the peak runoff rate from the development to any highway drain, sewer or surface water body for the 1 in 100-year rainfall event should never exceed the peak greenfield runoff rate from the same event.

4.12 The greenfield runoff rate for each catchment has been calculated using the catchment area and the existing greenfield rate of 2.3l/s/ha. The results are shown in **Table 4.2**. The greenfield runoff rate for Catchment 2 has been increased to 3l/s in order to reduce the potential risk of blockage of flow restriction devices, this increased runoff rate has been used to calculate the attenuated storage requirement for the catchment.

[11] Planning Practice Guidance. http://planningguidance.planningportal.gov.uk/

Table 4.2: Restricted Discharge Rate per Catchment

Catchment No.	Catchment Area (ha)	Greenfield Runoff Rate (l/s)
1	1.95	4.5
2	1.04	2.4

4.13 A simulation has been run using Micro Drainage 'Source Control' to identify the necessary storage provision for each catchment. Using a restriction of 4.5l/s for Catchment 1 and 3l/s for Catchment 2, and a proposed impermeable area of 1.27ha for Catchment 1 and 0.68ha for Catchment 2, the volume of attenuated storage required for the development has been calculated for storm events up to the 1 in 100-year + 40% climate change storm. The results are summarised in **Table 4.3** and included as **Appendix 7**.

Table 4.3: Total Attenuated Storage Requirement per Catchment

Catchment No.	Critical Storm	Maximum Volume (m^3)
1	1440 min Winter	1019.4
2	960 min Winter	511.2

4.14 The catchment-based approach will treat and attenuate the surface water runoff as close to its source as possible. Storm water runoff from each catchment will be stored within an above ground detention basin. The water will then discharge at a controlled rate via a vortex flow control or similar device, into the receiving surface water network.

4.15 Water quality should be considered within the drainage strategy to capture any potential pollutants in the runoff from the development. The detention basins will provide the primary stage of treatment. However, to supply a minimum two stage treatment train, further features such as conveyance swales, bioretention areas and pervious pavements should be incorporated into the development and included within the detailed design. Rainwater harvesting measures should also be considered as a method of recycling surface water and reducing/delaying surface water entering the surrounding network.

4.16 As part of any future planning application, this conceptual drainage design should be developed into a more detailed drainage strategy which should be created alongside the masterplan to ensure that a suitable area is designated for SuDS in line with local and national guidance.

4.17 A Conceptual Surface Water Drainage Strategy is included as **Appendix 8** (Drawing reference: MMU-BWB-ZZ-XX-SK-CD-0001) and demonstrates how the required storage could be achieved within each catchment.

Foul Water

4.18 United Utilities have confirmed via a Pre-development Enquiry (included as **Appendix 9**), that foul will be allowed to drain to the public combined sewer network. Their preferred

4.19 connection would be to the existing 225mm public combined sewer in Ryebank Road, to the north of the site.

4.20 A formal application will have to be made to United Utilities in order to make a formal sewer connection.

5. RECOMMENDATIONS AND FURTHER WORKS

5.1 This report has been produced on behalf of Manchester Metropolitan University to support divestment of their asset at Ryebank Fields, Chorlton (approximate grid reference: SJ810945).

5.2 Any future planning application at the site will require a site-specific Flood Risk Assessment (FRA) and Sustainable Drainage Statement (SDS) to be produced.

Flood Risk

5.3 The site has been identified to fall within Flood Zone 1 (Low Probability). A drainage ditch is shown to run through the centre of the site from east to west; however, this is not considered to be an active drainage feature due to the lack of flowing water. The ditch is culverted to the west of the site, further investigation of the connectivity of the culvert to the west of the site is recommended.

5.4 An overland flow route is shown to be present through the centre of the site, attributed to the drainage ditch. Mitigation would be required to ensure obstructions are not placed over natural overland flow routes.

5.5 The site has been identified to be at a medium risk of groundwater flooding. It is recommended that finished floor levels of any buildings are suitably raised above surrounding ground levels to mitigate the groundwater flood risk identified. There is also potential for groundwater to be encountered during construction. Where significant groundwater is encountered within excavations alternative dewatering systems will need to be employed. The advice of a suitably experienced groundwater contractor should be sought to determine the most viable option.

5.6 Due to the presence of the surface water sewer passing through the site there is a need for any future development to consider this by means of an easement, where no built development or planting can take place. Initial correspondence from United Utilities would suggest that such a sewer would require an easement of 3m either side of the sewer centre line. However, due to its depth and diameter it is thought there is the potential for an easement of circa 8m either side of the sewer. Further clarification has been sought from United Utilities on this matter, at the time of writing a response is yet to be received.

5.7 The site has also been assessed against a range of potential flood risk sources including surface water, sewers, canals and reservoirs. None of these flood sources are thought to represent a potential barrier to development.

Surface Water Drainage

5.8 Due to the increase in impermeable area and the resulting implication upon the surface water runoff regime, a Sustainable Drainage Strategy which incorporates SuDS into the development in line with the latest guidance would be required.

5.9 It is proposed at this stage to discharge surface water from the site to the existing surface water sewer running through the site. This is subject to confirmation from United Utilities.

5.10 A catchment-based approach has been applied and the site has been divided into two catchments based on the Development Framework. This approach aims to treat and attenuate the surface water runoff as close to its source as possible. Storm water runoff from each catchment will be stored within above ground detention basins. The water will then discharge at the equivalent greenfield rate up to the 1 in 100-year storm with a 40% allowance for climate change via a vortex flow control into the receiving surface water network.

Foul Water

5.11 United Utilities have confirmed in their Pre-Development Enquiry response that foul will be allowed to drain to the public combined sewer network. Their preferred connection would be to the existing 225mm public combined sewer in Ryebank Road, to the north of the site.

5.12 A formal application will have to be made to United Utilities, at the appropriate juncture in order to make a formal sewer connection.

APPENDICES

APPENDIX 1: Topographic Survey

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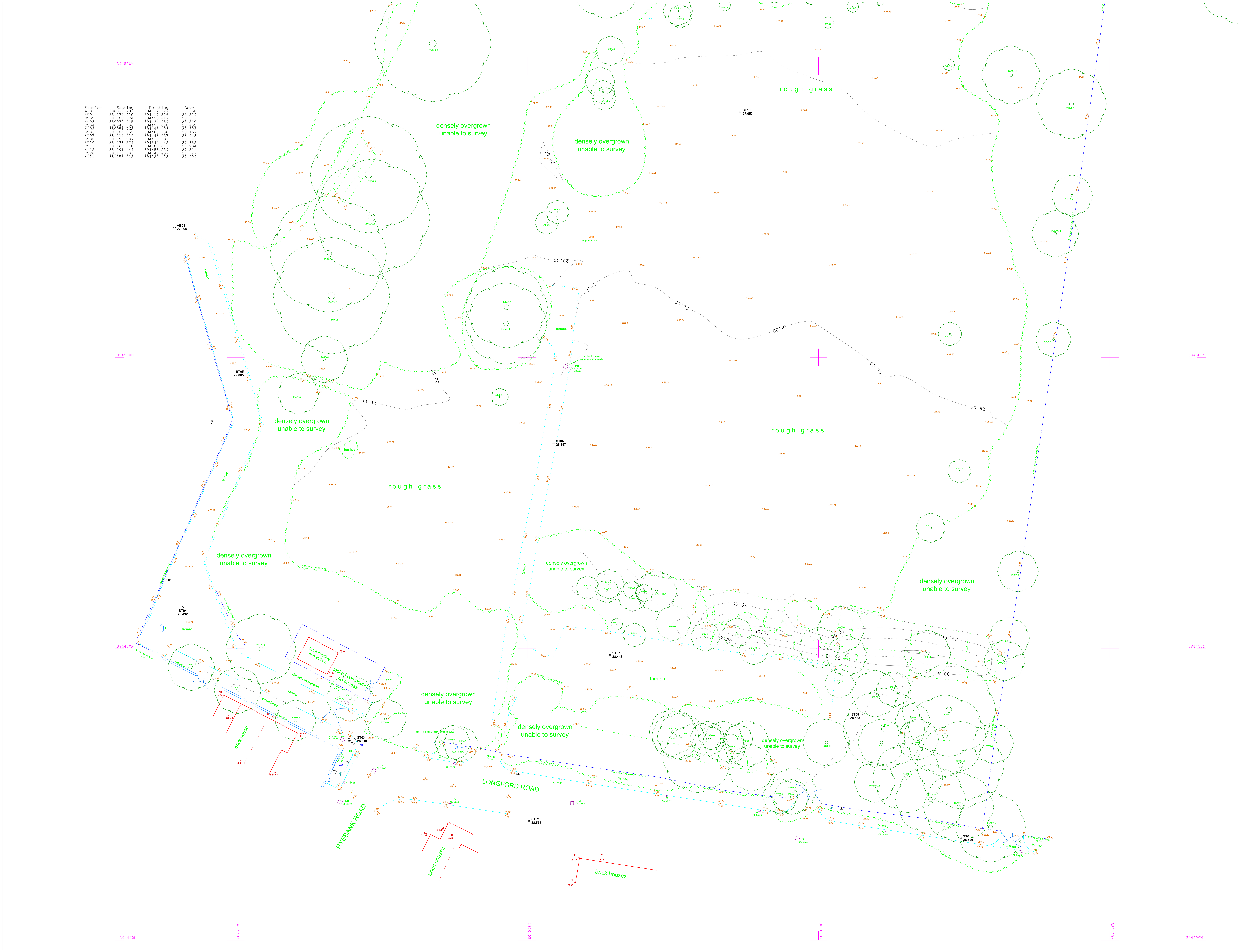

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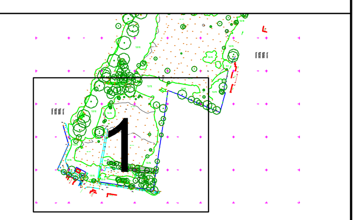


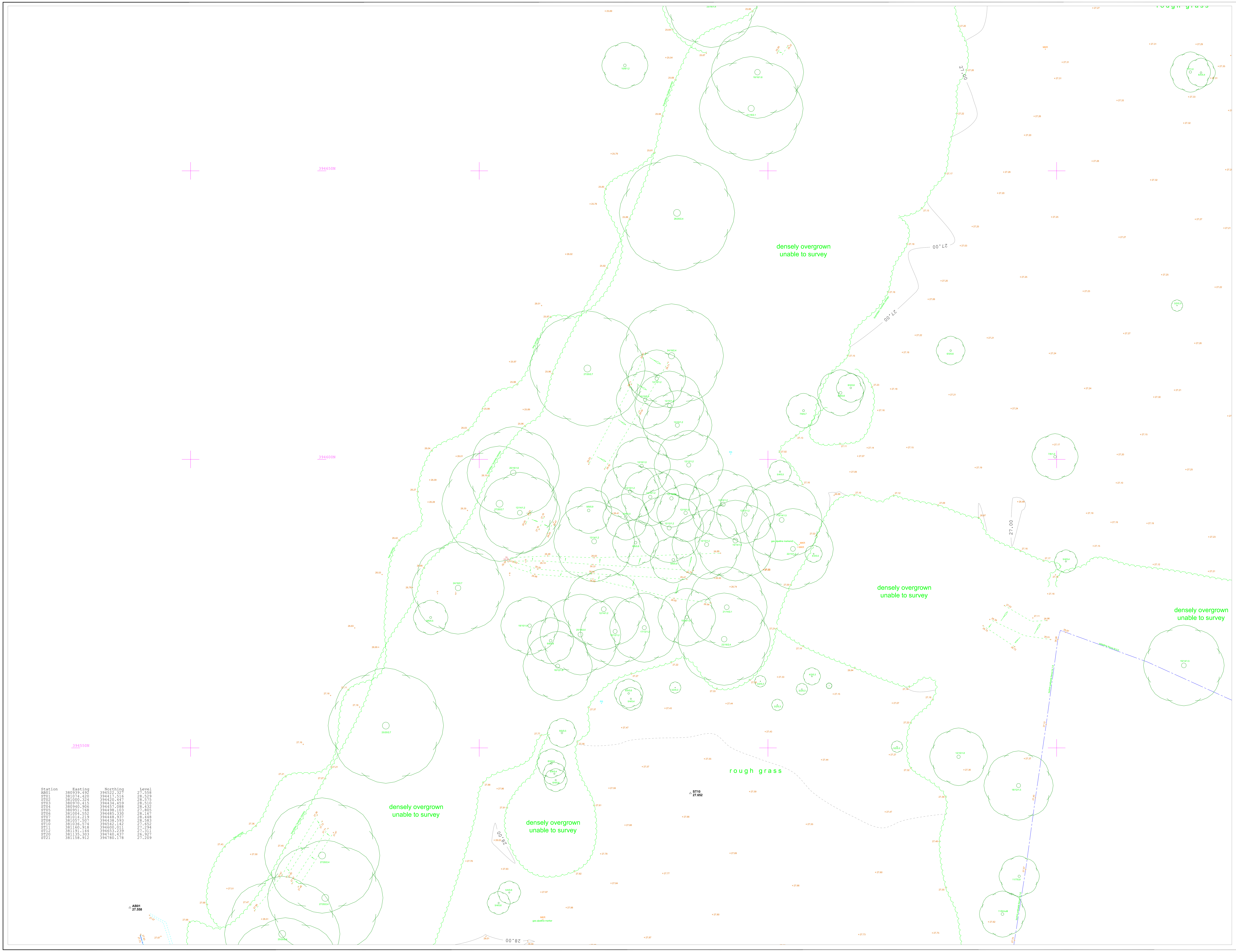
CLIENT:
Cushman & Wakefield

PROJECT TITLE:
Land off Ryebank Rd/Langford Rd, Manchester, M21 9WW

DRAWING NUMBER:
4692AB/1

INDICATIVE

SCALE: 1:200 @ A0	SURVEY DATE: November 2019	
LEVEL DATUM: OSGB by GPS	GRID DATUM: OSGB fixed at ST06	
BENCH MARK USED: Nail at ST06 surveyed by GPS	BM VALUE: 28.167m	SHEET NUMBER: 1 of 5



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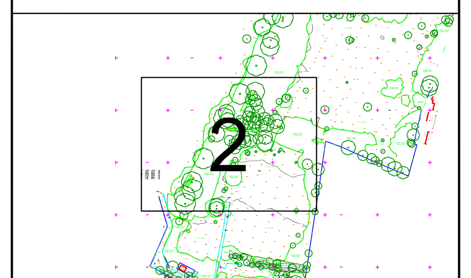

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Cushman & Wakefield

PROJECT TITLE:

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DRAWING NUMBER:

4692AB/2

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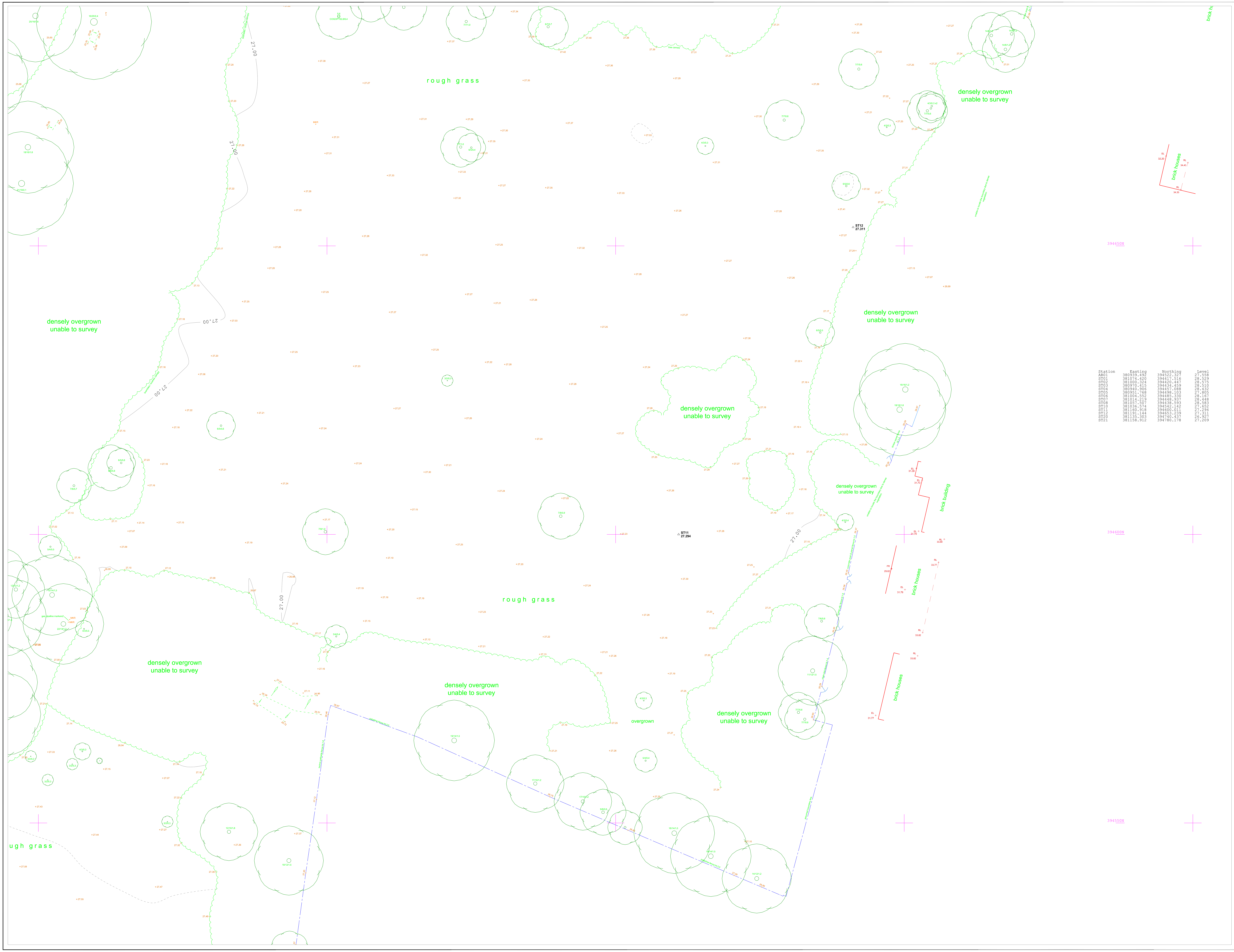

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REVISION NOTES:

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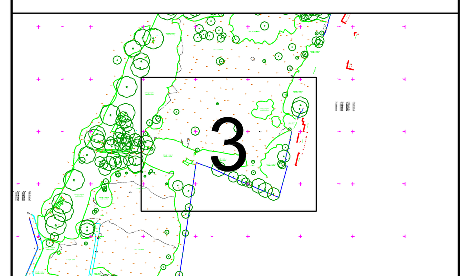

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PROJECT TITLE:

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DRAWING NUMBER:

4692AB/3

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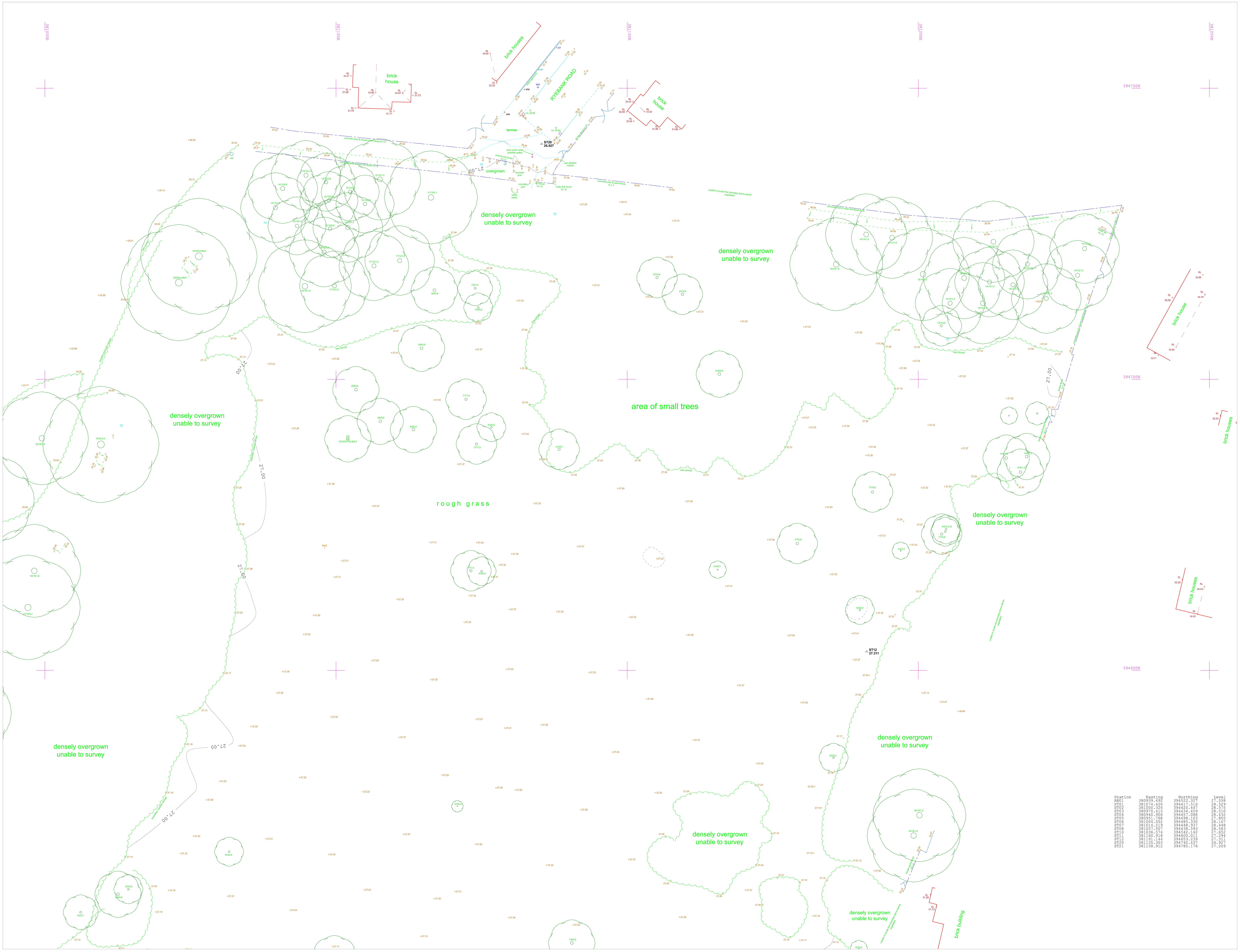

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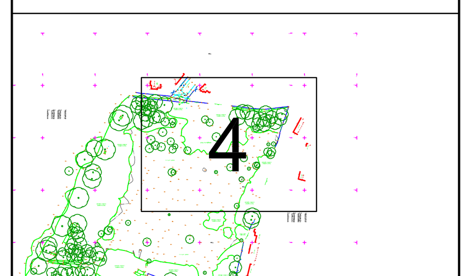

CLIENT:

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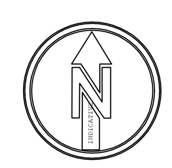
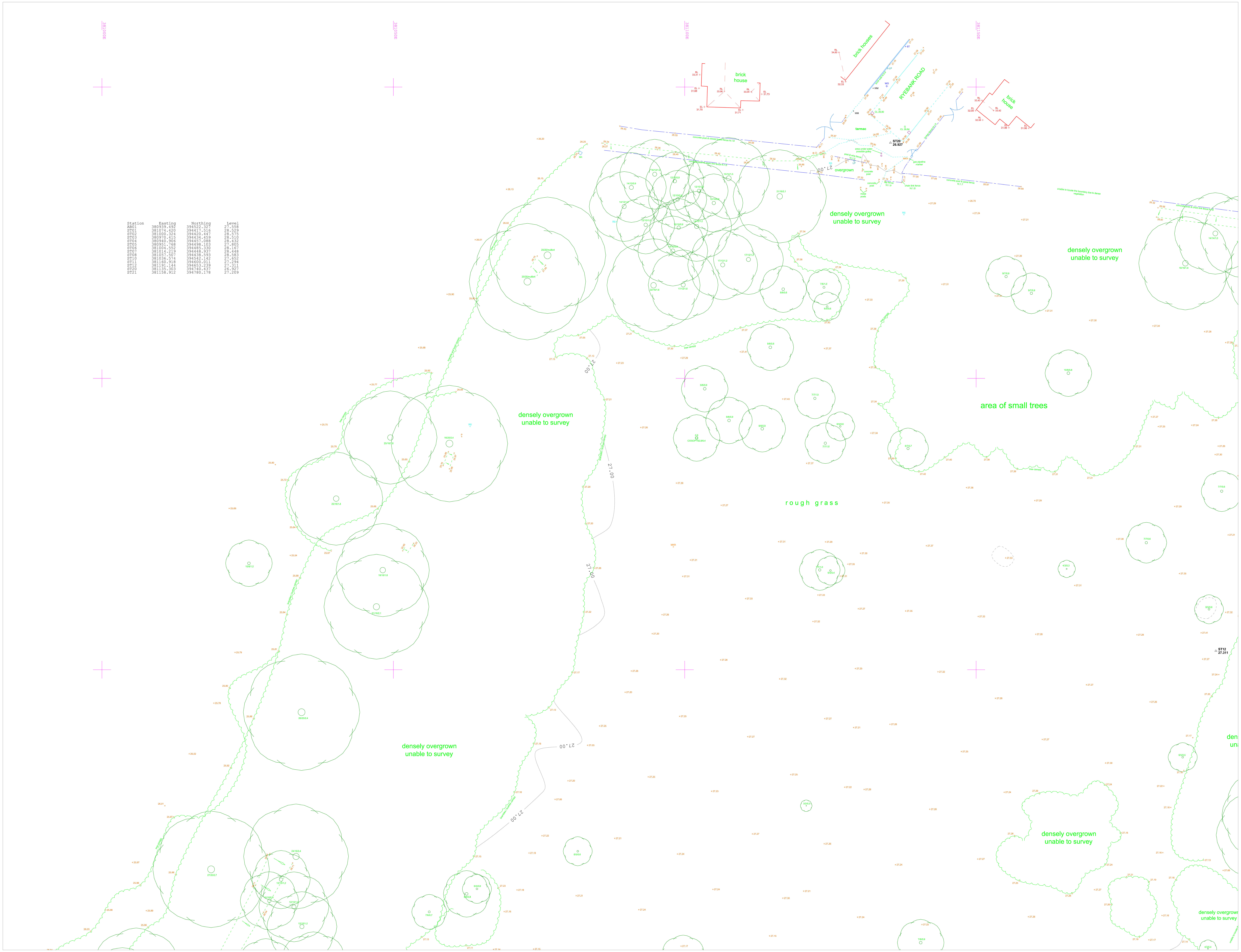
DRAWING NUMBER:

4692AB/4



SCALE: 1:200 @ A0	SURVEY DATE: November 2019	
LEVEL DATUM: OSGB by GPS	GRID DATUM: OSGB fixed at ST06	
BENCH MARK USED: Nail at ST06 surveyed by GPS	BM VALUE: 28.167m	SHEET NUMBER: 4 of 5



Station	Easting	Northing	Level
AB01	380939.492	394522.327	27.558
ST01	381074.420	394417.516	28.529
ST02	381000.324	394420.447	28.575
ST03	380970.415	394434.459	28.510
ST04	380940.906	394457.088	28.432
ST05	380951.768	394498.103	27.805
ST06	381004.552	394485.330	28.167
ST07	381014.219	394448.937	28.448
ST08	381057.507	394438.593	28.583
ST10	381036.574	394542.142	27.652
ST11	381160.918	394600.011	27.294
ST12	381191.144	394653.239	27.311
ST20	381135.303	394740.437	26.927
ST21	381158.912	394780.178	27.209

CT SURVEYS
Topographic, Building & Laser Scanning Surveys

THE OLD MILL
HIGHFIELD, TINGLEY
WAKEFIELD
WF3 1LA

Tel : 0113 259 7023
Mob : 07949 195764
email : mail@ct-surveys.com
Web Site : www.ct-surveys.com

ABBREVIATIONS

AR	ASSUMED ROUTE	OSA	OUTSIDE SURVEY AREA
AV	AIR VALVE	P	POST / POLE
B	BOLLARD	RL	RIDGE LEVEL
BH	BOREHOILE	RE	RODDING EYE
BT	BRITISH TELECOM CHAMBER	RS	ROAD SIGN
CATV	CABLE TV	RWP	RAINWATER PIPE
CP	CABLE PIT	S	STAY
CL	COVER LEVEL	SC	STOP COCK
CR	CABLE RISER	ST	STOP TAP
DP	DOWN PIPE	SV	STOP VALVE
EL	EAVES LEVEL	SVP	SOIL VENT PIPE
EP	ELECTRICITY POLE	TC	TRAFFIC CONTROL
ER	EARTH ROD	TCB	TELEPHONE CALL BOX
FH	FIRE HYDRANT	TFR	TAKEN FROM RECORDS
FL	FLOOR LEVEL or FENCE LEVEL	TH	THRESHOLD LEVEL
FR	FLAT ROOF LEVEL	TL	TRAFFIC LIGHTS
G	GULLY	TP	TELEGRAPH POLE
GPR	TRACED BY G.P.R.	UTGA	UNABLE TO GAIN ACCESS
GV	GAS VALVE	UTL	UNABLE TO LOCATE
IC	INSPECTION CHAMBER	UTR	UNABLE TO RAISE
IL	INVERT LEVEL	UTS	UNABLE TO SURVEY
JB	JUNCTION BOX	UTT	UNABLE TO TRACE
KW	KERB WIER	WL	WATER LEVEL or WALL LEVEL
LB	LITTER BIN or LETTER BOX	VP	VENT PIPE
LP	LAMP POST	WM	WATER METER
MH	MANHOLE	WO	WASH OUT VALVE
NL	NOT LOCATED	WP	WATER PIPE
NT	NO TRACE		

b	BEAM HEIGHT
c	CILL HEIGHT
cht	CEILING HEIGHT
dht	DOOR HEIGHT
fcht	FALSE CEILING HEIGHT
+10.26	FLOOR LEVEL
+[10.26]	BEAM/OVERHEAD LEVEL
h	HEAD HEIGHT
p	PURLIN HEIGHT
r	RIDGE BOARD HEIGHT
sp	SPRING POINT
←	STEPS / STAIRS UP

FENCE LINETYPES

ALL SERVICES TO BE FIELD VERIFIED.
ALL DRAWINGS REMAIN THE PROPERTY OF CT SURVEYS LTD UNTIL ALL PAYMENTS HAVE BEEN MADE.

CT SURVEYS IS A MEMBER OF:

THE SURVEY ASSOCIATION

constructionline
U.K. REGISTER OF PRE-QUALIFIED CONSTRUCTION SERVICES

SURVEY NOTES:
The survey is fitted to National Grid and Datum using GPS, and has been drawn at a scale factor of 1.000

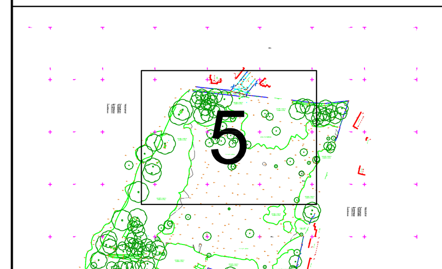
Due to the scale factor any setting out or design works should strictly use the control co-ordinates as shown on the drawing.

SURVEY REVISIONS

PREVIOUS DWG NO:	-
REVISION NO:	-
ORIGINAL SURVEY DATE:	-

REVISION NOTES:

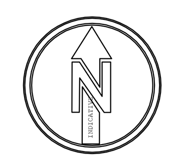
LAYOUT VIEWS



CLIENT:
Cushman & Wakefield

PROJECT TITLE:
Land off Ryebank Rd/Langford Rd, Manchester, M21 9WW

DRAWING NUMBER:
4692AB/5



SCALE: 1:200 @ A0	SURVEY DATE: November 2019	
LEVEL DATUM: OSGB by GPS	GRID DATUM: OSGB fixed at ST06	
BENCH MARK USED: Nail at ST06 surveyed by GPS	BM VALUE: 28.167m	SHEET NUMBER: 5 of 5

APPENDIX 2: Development Framework

3.2 Summary of Opportunities

Key

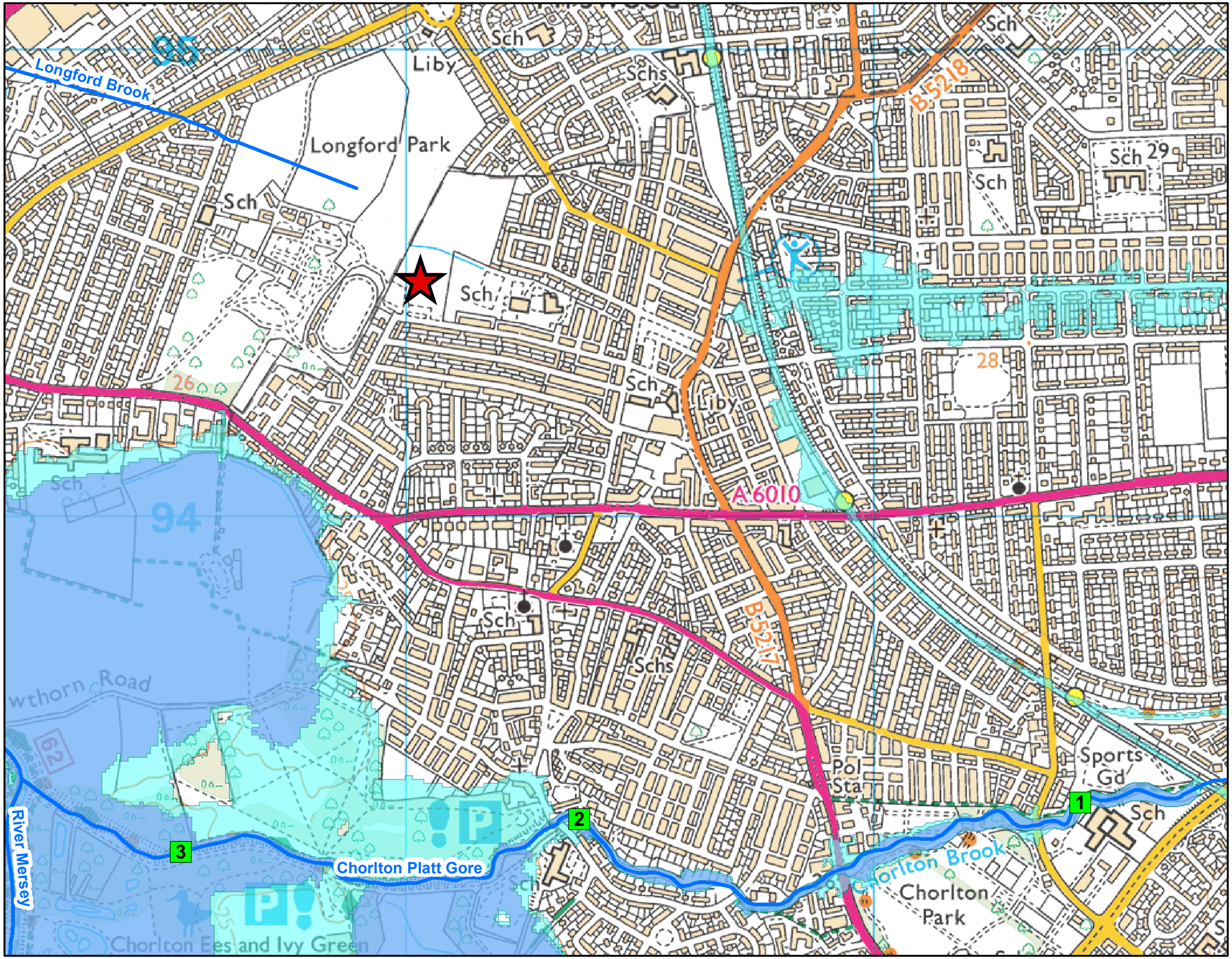
Site Boundary

1. Improve Quality of Existing Open Space within any new development
2. Increase Biodiversity with Use of SUDS
3. Improve Pedestrian
4. Park Access, Permeability and Safety Enhanced Pedestrian and Cycle Connectivity for the Benefit of Existing Neighbourhoods. Potential to introduce vehicle access from the North.
5. Increased Safety around Development
6. Potential Traffic Management

A summary of the site's opportunities are depicted adjacent.

APPENDIX 3: EA Correspondence

Detailed Flood Map centred on Ryebank Road, Chorlton, M21 9SN. Created on 31/10/2019 [GMMC147886AB]



Environment Agency

1:12,001

N

Legend

- Site Location
- Model measurements
- Main River
- Flood Zone 3
- Flood Zone 2

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 08708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

					Undefended								Defended							
Map Reference	Model Node Reference	Easting	Northing	Data	10 % AEP (1 in 10 year)	4 % AEP (1 in 25 year)	1.33 % AEP (1 in 75 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year) + 30yr Climate Change	1 % AEP (1 in 100 year) + 35yr Climate Change	1 % AEP (1 in 100 year) + 70yr Climate Change	0.1 % AEP (1 in 1000 year)	10 % AEP (1 in 10 year)	4 % AEP (1 in 25 year)	1.33 % AEP (1 in 75 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year) + 30yr Climate Change	1 % AEP (1 in 100 year) + 35yr Climate Change	1 % AEP (1 in 100 year) + 70yr Climate Change	0.1 % AEP (1 in 1000 year)
1	ea013_Model_CHOP01_00034	382443	393388	Modelled Water Level (m aodN)	26.03	26.39	26.78	26.86	27.29	27.35	27.46	27.48	26.03	26.39	26.79	26.87	27.33	27.37	27.46	27.49
				Modelled Flow (cumecs)	10.79	13.53	16.12	16.67	19.52	19.99	21.02	21.18	10.79	13.54	16.14	16.68	19.83	20.19	21.12	21.24
2	ea013_Model_CHOP01_00054	381376	393354	Modelled Water Level (m aodN)	24.44	24.51	24.58	24.59	24.70	24.71	24.75	24.78	24.44	24.51	24.58	24.59	24.70	24.72	24.75	24.78
				Modelled Flow (cumecs)	10.87	13.30	15.63	16.06	18.56	18.92	20.15	20.79	10.87	13.31	15.65	16.07	18.80	19.09	20.23	20.99
3	ea013_Model_CHOP01_00062	380518	393278	Modelled Water Level (m aodN)	24.34	24.35	24.36	24.36	24.39	24.39	24.40	24.38	24.34	24.35	24.36	24.36	24.39	24.39	24.40	24.38
				Modelled Flow (cumecs)	8.99	10.79	12.55	12.85	11.30	11.54	12.39	16.63	8.99	10.80	12.56	12.86	11.44	11.64	12.43	16.79

Model data taken from Chorlton Platt Gore 2012

AEP - Annual Exceedence Probability

m aodN - metres above ordnance datum Newlyn

cumecs - cubic metres per second

Notes: *Climate Change Scenario - 30%, 35% and 70% increases in flow calculated for the 2080's (2070 - 2115). Please see https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances for more information regarding the new climate change guidance. The location of the site and the type (vulnerability) of development determine the climate change allowances to consider in any flood risk assessment.

Reservoir Flood Map

Note - this map provides a general indication of the largest area that might be flooded if a reservoir were to fail and release the water it holds. It is taken from a national assessment and displays a worst case scenario. The map is only intended as a guide and is not a prediction of what will happen.

Important

- This map has been produced for emergency planning purposes and displays a worst case scenario.
- It is not suitable for use at an individual property scale due to the method used.
- This map does not give any information on the likelihood of reservoir flooding or on the depth or speed of floodwaters. It also does not include any smaller reservoirs (which hold less than 25,000 cubic metres of water) or reservoirs commissioned or registered after Spring 2009.
- The information should not be interpreted as stating that the location you are interested in will or won't actually flood, but simply that it is in or not in an area that could be affected by reservoir flooding as shown on the maps.

Maximum extent of flood

1:10,000

The area within the red circle could be at risk of flooding from the following reservoirs:

Reservoir Name	Reservoir Owner	Location	Local Authority	Environment Agency Office
Gorton Upper	United Utilities Water plc	389893, 396254	Manchester	Environment Agency - Greater Manchester, Merseysid
Audenshaw No. 3	United Utilities Water plc	390934, 396835	Tameside	Environment Agency - Greater Manchester, Merseysid
Audenshaw No.2	United Utilities Water plc	391643, 396093	Tameside	Environment Agency - Greater Manchester, Merseysid
Audenshaw No.1	United Utilities Water plc	391852, 396483	Tameside	Environment Agency - Greater Manchester, Merseysid

Reservoir Flood Map

This text must be read with the extract from the Reservoir Flood Map which we have sent to you

How to use the maps

Reservoir flood maps are available to help you find out if you could be affected by reservoir flooding. Even though reservoir flooding is very unlikely it may be helpful to you to find out if you live or work in an area that could be affected. If you do, you might want to think about what you would do if an emergency did happen.

For more information on what to do if you live or work near a reservoir, including some frequently asked questions, visit our website at http://www.environment-agency.gov.uk/flood.

The maps have been prepared for emergency planning purposes and for this reason they reflect a credible worst case scenario – this means that if a reservoir failure did occur it would most likely be far less severe than the scenario shown in the maps. We've mapped a credible worst case scenario so that emergency planners have all the information they might need to increase public safety.

Reservoir safety

Reservoirs in the UK have an extremely good safety record with no failures resulting in the loss of life since 1925. Reservoirs are more carefully maintained now. This means reservoir flooding is very unlikely to happen.

The Environment Agency is the enforcement authority for the Reservoirs Act 1975 in England. All large reservoirs that we think could endanger human life must be inspected and supervised by reservoir engineers. We ensure that reservoirs are regularly inspected and essential safety work is carried out.

For more information on reservoir safety visit our website at:

https://www.gov.uk/guidance/reservoirs-owner-and-operator-requirements.

Emergency planning

Lead Local flood authorities are responsible for coordinating emergency plans for reservoir flooding and ensuring communities are well prepared. Lead Local flood authorities work with other members of the Local Resilience Forum (LRF) to develop generic and site-specific emergency plans, depending on local circumstances and priorities.

If you want to find out about local emergency plans you should contact the responsible lead local flood authority as identified on the map.

APPENDIX 4: Manchester City Council Correspondence

Lucy Reeves

From:	[redacted] on behalf of floodriskmanagement@manchester.gov.uk
Sent:	30 October 2019 12:13
To:	Lucy Reeves
Cc:	floodriskmanagement@manchester.gov.uk
Subject:	Re: Request for Flood Risk Information (Ryebank Road, Chorlton)
Attachments:	We found suspicious links; Indicative Site Boundary.png

Good afternoon

We do not have record of any flooding on the site or in immediate vicinity of the site.
From the OS maps it is visible that there is a drain that crosses the site - its connectivity and function needs to be investigated as part of the flood risk assessment.
Information on sewer flooding could be obtained from United Utilities.
information on surface water and ground water flooding and mapping of their extent is available from the Environment Agency website.

We are attaching guidance for developers on requirements related to surface water management that you might useful if you are also developing a drainage strategy for the site.

Regards

Flood Risk Management
Highways Service, Growth and Neighbourhoods Directorate
Manchester City Council
Tel: 0161 219 6295
Email: floodriskmanagement@manchester.gov.uk
Web: http://www.manchester.gov.uk/

POSTAL ADDRESS: Manchester City Council, Public Realm, The Neighbourhood Service, PO Box 532, Town Hall, Manchester M60 2LA

Lead Local Flood Authority - Manchester City Council

SuDS Requirements for New Developments
Update 2019

The Government has strengthened planning policy on the provision of sustainable drainage systems (SuDS) for 'major' planning applications which is being introduced from 6 April 2015 (Paragraph 103 of National Planning Policy Framework and Ministerial Statement on SuDS).

Changes were made to the Town and Country Planning Policy and Guidance to give Local Authority Planning Departments the responsibility for ensuring that new developments are drained in a sustainable way, through the planning process, in consultation with the Lead Local Flood Authorities. As per the guidance issued by the Department of Communities and Local Government (DCLG), all 'major' planning applications being determined from 6 April 2015, must consider sustainable drainage systems.

Decisions about the suitability of sustainable drainage provision are made by the Local Planning Authority. However, under the new consultation arrangements Manchester City Council, in its role as Lead Local Flood Authority, is a statutory consultee for all major applications with regards to sustainable drainage. All 'major' planning applications submitted from 15 April 2015 are required to include a Surface Water Drainage Statement.

Developers submitting the planning application to Manchester City Council are advised to:

- Assess the suitability of sustainable drainage systems in accordance with: paragraphs 051, 079 and 080 of the revised NPPF Planning Practice Guidance (PPG) for Flood Risk and Coastal Change.

- Design sustainable drainage systems in line with national Non-Statutory Technical Standards for SuDS: *https://www.gov.uk/government/publications/sustainable-drainage-systems-non-statutory-technical-standards* and local policies DM1, EN08, EN14 and EN17 of the Core Strategy.

- Implement strategy that supports surface water runoff control as near to its source as possible through a sustainable drainage approach to surface water management, preferably through green types of SuDS wherever practicable.

- Maximise use of Green Infrastructure to manage surface water runoff (sustainable drainage systems – SuDS) as feasibility of use of green types of SuDS will be evaluated by LLFA during planning application stage. Even on sites where infiltration is not possible due to the unfavourable soil conditions, utilisation of attenuating types of SuDS should be maximised as part of green infrastructure in order to bring surface water runoff peak and volume reduction but also provide additional environmental and social benefits in line with Policies DM1, EN08, EN14 and EN17 of the Core Strategy. Developers are encouraged to look into CIRIA SuDS Manual 2015 for details of these systems to manage surface water runoff.

- Assess surface water attenuation requirements that offer a reduction in surface water runoff rate in line with the 'Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA, User Guide, Final, dated May 2010'. (Section 3.4.1 Critical Drainage Areas, page 31). Please note that all new connections to the watercourses shall comply with reduction of flows to Greenfield runoff rates.

http://www.manchester.gov.uk/downloads/download/3871/strategic_flood_risk_assessment-manchester_salford_trafford

- Submit hydraulic calculations and drawings to support the design along with proposed standards of operation and maintenance in accordance with paragraph 081 of NPF (PPG).

- It will be essential that the type of sustainable drainage system for a site, along with details of its extent/position, is identified at the design stage of the whole scheme. This information will be required for both outline and full applications so it is clearly demonstrated that the SuDS can be accommodated within the development that is proposed. It will no longer be acceptable to leave the design of SuDS to a later stage to be dealt with by planning conditions.

Applicants are strongly advised to discuss their proposals with relevant planning officers at the pre-application stage to ensure that an acceptable SuDS scheme is submitted.

Minimum requirements for approval

In order to avoid objection, the following three elements of evidence are required:

- Surface Water Management Statement for the site is submitted that is in line with requirement of NPPF PPG Paragraph 079:

    - "New development should only be considered appropriate in areas at risk of flooding if priority has been given to the use of green types of sustainable drainage systems as a primary mean of surface water management that could be accompanied by traditional attenuation systems if volumes required. Additionally, and more widely, when considering major development, as defined in the Town and Country Planning (Development Management Procedure) (England) Order 2015, sustainable drainage systems should be provided unless demonstrated to be inappropriate".

    - The strategy should be accompanied by at least an outline layout of the proposed drainage systems with space allocation for the proposed attenuation in line with relevant flow reduction requirements.

- Evidence that drainage hierarchy has been applied in line with NPPF PPG Paragraph 080. The aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable:

    - into the ground (infiltration);
    - to a surface water body;
    - to a surface water sewer, highway drain, or another drainage system;
    - to a combined sewer.

- Evidence that one viable solution for draining the site is secured and agreed in principle with relevant authority:

    - Results of ground investigation carried out under Building Research Establishment Digest 365. Site investigations should be undertaken in locations and at proposed depths of the proposed infiltration devices. Proposal of the attenuation that is achieving half emptying time within 24 hours. If no ground investigations are possible or infiltration is not feasible on site, evidence of alternative surface water disposal routes (as follows) is required.

- Where surface water is connected to Main River, any works within or adjacent to the river that would affect it would require consent from Environment Agency. An email of acceptance of proposed flows and/or new connection will suffice.

- Where surface water is connected to the public sewer, agreement in principle from United Utilities is required that there is adequate spare capacity in the existing system taking future development requirements into account. An email of acceptance of proposed flows and/or new connection will suffice.

  Where surface water is connected to the ordinary watercourse, agreement in principle from Manchester City Council as Lead Local Flood Authority is required. Please note that all new connections to the watercourses shall comply with reduction of flows to Greenfield runoff rates. An email of acceptance of proposed flows and/or new connection will suffice.

- Where surface water is connected to ordinary watercourse, any works within or adjacent to the watercourse that would affect it would require consent from Manchester City Council as Lead Local Flood Authority. Consent forms can be obtained on the website at:

http://www.manchester.gov.uk/downloads/download/5567/land_drainage_consent_and_guidance.com

Avoiding or discharging drainage condition

- Evidence of consideration of green SuDS solution wherever practicable and viable in line with NPPF PPG Paragraph 051. SuDS should be designed to:
  - reduce the causes and impacts of flooding;
  - remove pollutants from urban run-off at source;
  - combine water management with green space with benefits for amenity, recreation and wildlife wherever practicable.

- For Greenfield site developments, details of surface water attenuation that offers a reduction in surface water runoff rate in line with the Manchester Trafford and Salford Strategic Flood Risk Assessment, i.e. to the Greenfield runoff rates;

- For Brownfield site developments, for all sites located within Conurbation Core Critical Drainage Areas, details of surface water attenuation that offers a reduction in surface water runoff rate in line with the Manchester Trafford and Salford Strategic Flood Risk Assessment, i.e. at least a 50% reduction in runoff rate compared to the existing rates with an aim to reduce to Greenfield runoff rates wherever practicable;

- Where surface water runoff is to be disposed through infiltration, details of surface water attenuation that is adequate for infiltration capacity of the underlying soil is required. This capacity has to be assessed through site investigation carried out in line with Building Research Establishment Digest 365. Site investigations should be undertaken in locations and at proposed depths of the proposed infiltration devices. Half emptying time of proposed attenuation within 24 hours should be achieved.

- Evidence that the drainage system has been designed (unless an area is designated to hold and/or convey water as part of the design) so that flooding does not occur during a 1 in 100 year rainfall event in any part of a building; The NPPF suggests that 'for events with a return-period in excess of 30 years, surface flooding of open spaces such as landscaped areas or car parks is acceptable for short periods, but the layout and landscaping of the site should aim to route water away from any vulnerable property, and avoid creating hazards to access and egress routes. No flooding of property should occur as a result of a one in 100 year storm event (including an appropriate allowance for climate change)'.

- Assessment of overland flow routes for extreme events that is diverted away from buildings providing long and cross sections for the proposed drainage system and finished floor levels;

- Evidence that runoff volume in the 1 in 100 year, 6 hours rainfall shall be constrained to a value as close as is reasonably practical to the Greenfield runoff volume for the same event, but never to exceed the runoff volume from the development site prior to redevelopment;

- Hydraulic calculation of the proposed drainage system;

- Design construction drawings of proposed SuDS elements and flow controls;

- For sites where proposed development would cause unusual pollution risk to surface water (large car park areas (>50 parking spaces) or industrial estates), evidence of pollution control measures (preferably through SuDS) is required.

- Where an application is part of a larger site which already has planning permission it is essential that the new proposal does not compromise the drainage scheme already approved.

SuDS Maintenance

Maintenance of SuDS is essential for its proper operation and a clear management and maintenance plan for the lifetime of the development is required as part of the planning application.

In considering a development that includes a sustainable drainage system, Manchester City Council as local planning authority will want to be satisfied that the proposed minimum standards of operation are appropriate and that there are clear arrangements in place for ongoing maintenance. Information sought by Manchester City Council would be no more than necessary, having regard to the nature and scale of the development concerned in line with NPPF Paragraph 081.

In some instances where no clear adoption of the drainage system is proposed, a drainage maintenance condition could be attached to the planning applications. In order to discharge this condition, the following evidence should be provided following *construction:*

- Verification report providing photographic evidence of construction as per design drawings;

- As built construction drawings if different from design construction drawings;

- Management and maintenance plan for the lifetime of the development which shall include the arrangements for adoption by any public body or statutory undertaker, or any other arrangements to secure the operation of the sustainable drainage scheme throughout its lifetime.

Applicants are strongly advised to discuss their proposals with relevant planning officers at the pre-application stage to ensure that an acceptable SuDS scheme is submitted.

APPENDIX 5: Sewer Records

How to contact us:

United Utilities Water Limited
Property Searches
Haweswater House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

BWB Consulting Ltd

5th Floor, Waterfront House
Station Street,
Nottingham,
NG23DQ

FAO:

Your Ref: MCW2136_POR028705
Our Ref: UUPS-ORD-131189
Date: 28/10/2019

Dear Sirs

Location: Ryebank Fields

I acknowledge with thanks your request dated 25/10/2019 for information on the location of our services.

Please find enclosed plans showing the approximate position of United Utilities' apparatus known to be in the vicinity of this site.

The enclosed plans are being provided to you subject to the United Utilities terms and conditions for both the wastewater and water distribution plans which are shown attached.

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

I trust the above meets with your requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please contact us .

Yours Faithfully,

Karen McCormack
Property Searches Manager

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

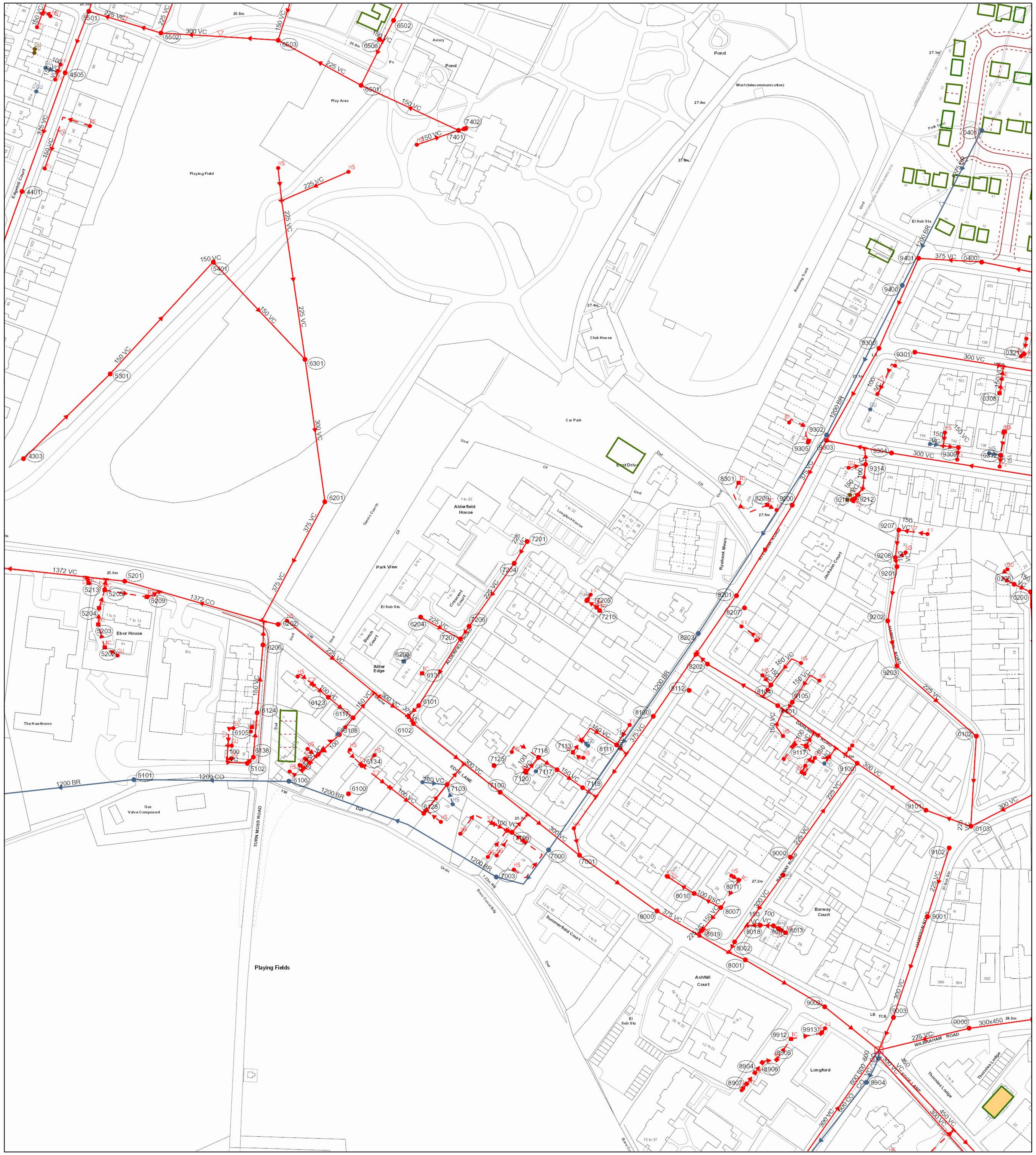
TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UUWL apparatus) of United Utilities Water Limited "(UUWL)".

TERMS AND CONDITIONS:

- This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.
- This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.
- In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only. UUWL strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UUWL apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
- The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.
- The position and depth of UUWL apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been made subsequent to issue and prior to any works being carried out.
- This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UUWL apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
- No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUWL apparatus by reason of the actual position and/or depths of UUWL apparatus being different from those shown on the Map and any information supplied with it.
- If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.
- This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUWL from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.

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



The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
9105		CO		150			VC	6.216979	
9400	28.4	SW	22.5	1200			BR	93.0215	1 in 1860
8016		CO		100			VC	3.838945	
8003	27.34	CO	24.29	300			VC	45.80393	1 in 51
6504		CO	0	150			VC	33.8778	
6206		CO		150			VC	13.15238	
7001	25.82	CO	23.46	375			VC	53.00943	1 in 279
8104		CO	0	150			VC	7.94048	
4401	26.56	CO	22.05	375			VC	76.55064	1 in 273
4401	26.56	CO	22.05	375			VC	76.55064	1 in 273
6124		CO		150			VC	37.72682	
0000	27.63	CO	25.99	300			VC	71.70077	1 in 598
0000	27.63	CO	25.99	300			VC	71.70077	1 in 598
6204	26.58	CO	24.87	225			VC	25.05993	1 in 46
9202	27.85	CO	26.93	225			VC	25.4951	1 in 425
9001	28.01	CO	23.51	300			VC	59.13544	1 in 191
9001	28.01	CO	23.51	300			VC	59.13544	1 in 191
9000	27.49	CO	26.15	225			VC	63.82006	1 in 95
6128		CO		100			VC	2.280625	
6201	26.41	CO	23.89	375			VC	74.70609	
8019		CO		225			VC	3.505505	
8001	26.45	CO	23.14	375			VC	51.10773	
6138		CO		150			VC	24.62677	
8002	26.38	CO	23.36	300			VC	6.708204	1 in 35
6506		CO		150			VC	2.13211	
6506		CO		150			VC	2.13211	
9203	27.66	CO	26.85	225			VC	58.79626	1 in 190
9309		CO		150			VC	6.587931	
9309		CO		150			VC	6.587931	
9201	28.01	CO	27.15	225			VC	30.41381	1 in 152
0000	27.63	CO	0	225			VC	51.46304	
0000	27.63	CO	0	225			VC	51.46304	
7207	26.39	CO	24.3	300			VC	43.56604	1 in 168
7119		CO		150			VC	9.092158	
7204	26.64	CO	24.79	225			VC	43.01163	1 in 88
0402	28.52	CO	25.29	375			VC	40.79216	1 in 157
6202	25.21	CO	21.1	1372			CO	88.33971	1 in 252
6108		CO		150			VC	12.15817	
6301	24.4	CO	0	300			VC	79.76215	
5101		SW	0	1200			BR	82.49242	
8202	27.19	CO	24.22	300			VC	8.485281	1 in 22
4505	26.51	CO	22.26	375			VC	70.2282	1 in 334
4505	26.51	CO	22.26	375			VC	70.2282	1 in 334
6502	26.91	CO	25.05	225			VC	40.24929	1 in 149
6502	26.91	CO	25.05	225			VC	40.24929	1 in 149
9208		CO		150			VC	5.252632	
6123		CO		100			VC	17.95239	
8201	27.38	CO	23.95	375			VC	81.27116	1 in 353
9314		CO		100			VC	9.127409	
9904	27.14	SW	22.61	600			CO	82.61961	
6117		CO		150			VC	18.24966	
7106		CO		100			VC	13.47575	
0400	28.56	CO	24.98	375			VC	35.05709	1 in 167
0400	28.56	CO	24.98	375			VC	35.05709	1 in 167
7203		CO		100			VC	4.002229	
6101	25.94	CO	24.04	300			VC	8.485281	
7103		CO		100			VC	15.02507	
8017		CO		100			VC	7.308312	
7206	26.45	CO	24.3	300			VC	8.602325	
8007		CO		100			PSC	16.76758	
9101	28.35	CO	25.81	300			VC	46.04346	1 in 128
9101	28.35	CO	25.81	300			VC	46.04346	1 in 128
0103	28.4	CO	25.93	300			VC	26.57066	1 in 62
0103	28.4	CO	25.93	300			VC	26.57066	1 in 62
7201	26.69	CO	24.94	225			VC	13.89244	1 in 107
0101	28.33	CO	26.1	300			VC	39.35734	1 in 262
9100	27.93	CO	25.43	300			VC	54.40588	1 in 67
8101	27.52	CO	24.6	300			VC	45.27692	1 in 137
5301	26.52	CO	25.17	150			VC	84.21995	1 in 241
8100	27.07	CO	23.7	375			VC	76.02631	
6503	26.87	CO	24.37	225			VC	32.06244	
6503	26.87	CO	24.37	225			VC	32.06244	
9200	27.68	CO	24.17	375			VC	58.83027	1 in 294
8018		CO		150			VC	7.638902	
0200	28.08	CO	26.52	300			VC	56.0803	1 in 255
0200	28.08	CO	26.52	300			VC	56.0803	1 in 255
8007		CO		150			VC	15.1719	
0308		CO	0	150			VC	8.0146	
0308		CO	0	150			VC	8.0146	
7117		CO		150			VC	17.36484	
6102	25.83	CO	23.94	300			VC	61.22091	1 in 211
5502	26.82	CO	23.9	300			VC	20.88061	1 in 29
5502	26.82	CO	23.9	300			VC	20.88061	1 in 29
7003		SW	0	1200			BR	127.1668	
0312		CO		150			VC	6.286277	
0312		CO		150			VC	6.286277	
8010		CO		100			PSC	14.73944	
0102	27.93	CO	26.52	225			VC	50.08992	1 in 135
0102	27.93	CO	26.52	225			VC	50.08992	1 in 135
4303	26.41	CO	25.51	150			VC	67.17886	1 in 198
9303	27.94	CO	24.28	375			VC	40.70626	1 in 452
9401	28.52	CO	24.8	375			VC	54.626	1 in 166
9401	28.52	CO	24.8	375			VC	54.626	1 in 166
7000	25.79	SW	0	1200			BR	39.12502	
9304	27.99	CO	24.87	300			VC	36.67424	1 in 64
8000	25.97	CO	23.25	375			VC	55.98994	1 in 622
9300	28.33	CO	24.44	375			VC	58.66856	1 in 419
9117		CO		100			VC	8.815329	
9211		CO		150			VC	8.697612	
5401	26.5	CO	24.82	150			VC	74.27651	
6106		SW	0	1200			CO	86.00581	
0202		CO		150			VC	15.37267	
9003	27.3	CO	23.2	300			VC	19.76473	
9207		CO		150			VC	15.33975	
9002	26.94	CO	22.96	375			VC	38.43286	1 in 320
8111		CO		150			VC	7.608085	
9102	28.41	CO	25.71	225			VC	39.84972	1 in 100
9102	28.41	CO	25.71	225			VC	39.84972	1 in 100
7100	25.73	CO	23.64	300			VC	56.22277	1 in 351
6501	27.02	CO	24.78	225			VC	52.35456	1 in 128
6501	27.02	CO	24.78	225			VC	52.35456	1 in 128
7118		CO		150			VC	12.33419	
9212		CO		150			VC	7.397016	
8203	27.08	SW	22.34	1200			BR	145.9075	1 in 2084
5102		CO		150			VC	4.727551	
7401	27.4	CO	26.02	150			VC	59.5063	1 in 48
7401	27.4	CO	26.02	150			VC	59.5063	1 in 48
7604	26.49	CO	25.23	225			VC	48.30114	1 in 268
5201	25.41	CO	21.45	1372			VC	128.764	1 in 322
5601	26.37	CO	23.17	300			VC	73.46227	
0401	27.97	SW	22.54	1275			BR	48.30114	1 in 4830
0401	27.97	SW	22.54	1275			BR	48.30114	1 in 4830
0401	27.97	SW	22.54	1275			BR	48.30114	1 in 4830
0401	27.97	SW	22.54	1275			BR	48.30114	1 in 4830
9302	27.92	SW	22.43	1200			BR	130.9236	1 in 1870
0206		CO		150			VC	9.937974	
0206		CO		150			VC	9.937974	
7402	27.3	CO	26.08	150			VC	4.123106	1 in 69
7402	27.3	CO	26.08	150			VC	4.123106	1 in 69
5603	26.91	CO	24.46	225			VC	108.6324	1 in 205
9301	28.35	CO	26.96	300			VC	95.18929	1 in 154
9301	28.35	CO	26.96	300			VC	95.18929	1 in 154
0301	28.08	CO	0	300			VC	89.10667	
5501	26.45	CO	22.44	375			VC	36.40055	1 in 202
5501	26.45	CO	22.44	375			VC	36.40055	1 in 202

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad

LEGEND

Abandoned · Foul · Surface Water · Combined

- Public Sewer
- Private Sewer
- Section 104
- Rising Main
- Sludge Main
- Overflow
- Water Course
- Highway Drain

All point assets follow the standard colour convention:
red - combined, blue - surface water, brown - foul, purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

MANHOLE FUNCTION

- FO Foul
- SW Surface Water
- CO Combined
- OV Overflow

SEWER SHAPE

- CI Circular
- EG Egg
- OV Oval
- FT Flat Top
- RE Rectangular
- SQ Square
- TR Trapezoidal
- AR Arch
- BA Barrel
- HO HorseShoe
- UN Unspecified

SEWER MATERIAL

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

Address or Site Reference:

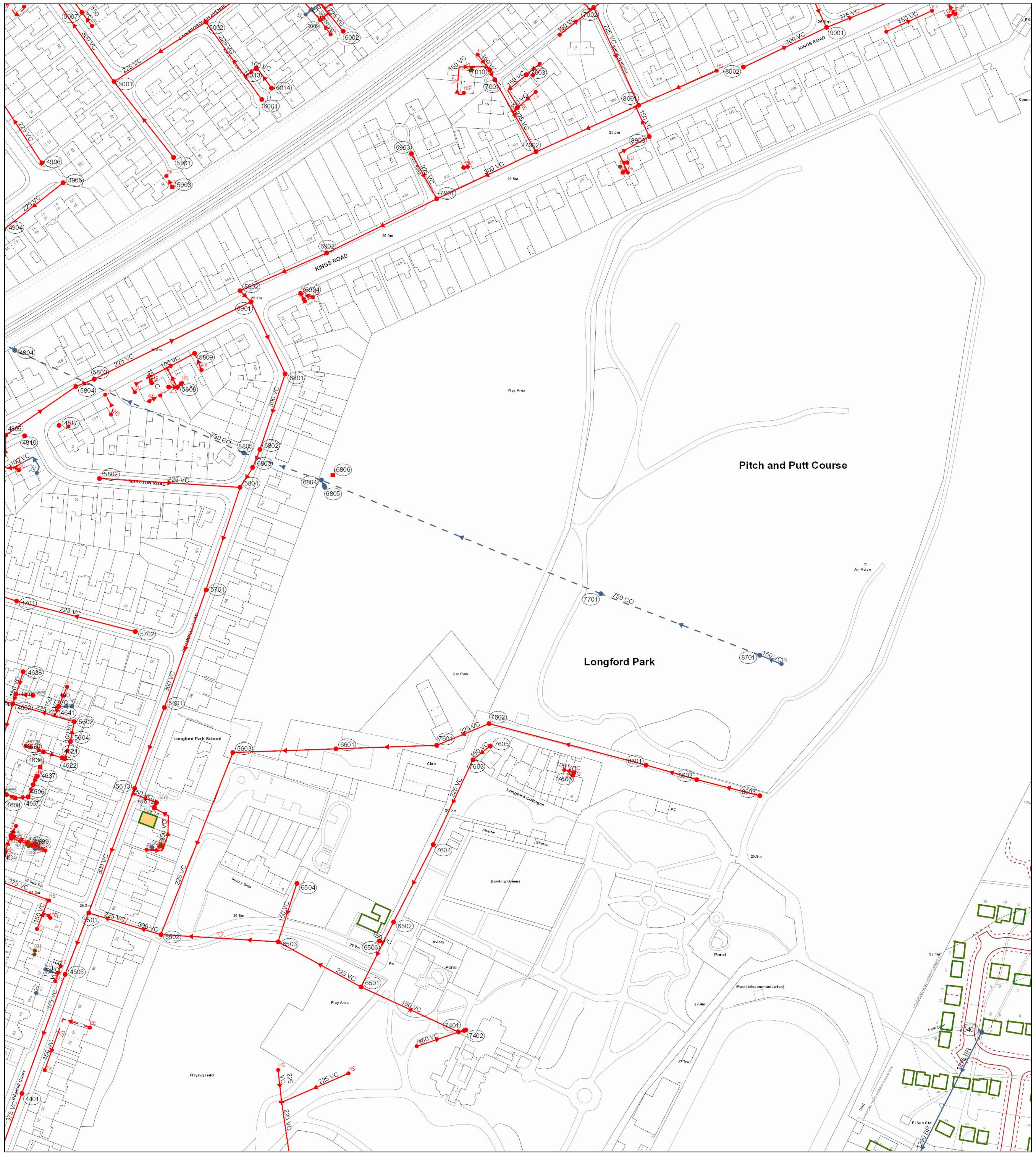
Ryebank Fields,

OS sheet Number: SJ8094SE
Scale: 1:1250 **Date:** 28/10/2019
Nodes: 135
Sheet: 1 of 6

Printed by: Property Searches

SEWER RECORDS

United Utilities
helping life flow smoothly



The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
5702	26.48	CO	24.89	225			VC	68.15424	1 in 158
5801	25.61	CO	23.47	300			VC	60.08327	1 in 462
5604		CO		100			VC	11.15891	
6013		CO		100			VC	7.442599	
8601	26.2	CO	24.87	225			VC	89.98889	
4638		CO		150			VC	13.03242	
6504		CO	0	150			VC	33.8778	
4640		CO		150			VC	5.560431	
5611		CO		150			VC	14.06757	
7601	26.55	CO	24.56	225			VC	57.1664	1 in 572
4401	26.56	CO	22.05	375			VC	76.55064	1 in 273
4401	26.56	CO	22.05	375			VC	76.55064	1 in 273
4805	25.83	CO	24.39	225			VC	47.39987	1 in 190
6001	26.2	CO	24.9	225			VC	53.00943	1 in 133
5601	26.37	CO		300			VC	48.02848	
4701	26.39	CO	24.46	225			VC	78.74643	1 in 54
7901	26.22	CO	24.04	300			VC	67.97794	1 in 971
6002	26.53	CO	25.33	225			VC	50.44799	1 in 126
6506		CO		150			VC	2.13211	
6506		CO		150			VC	2.13211	
5002	26.1	CO	24.5	225			VC	60.74537	1 in 148
8602	26.18	CO	24.87	225			VC	29.12044	
4628		CO		100			PVC	3.765324	
7602	25.89	CO	24.63	225			VC	31.38471	1 in 448
7601	26.55	CO	24.56	225			VC	55.90437	1 in 559
5007		CO		150			VC	18.22238	
8701		SW		750			CO	94.33981	
6902	25.86	CO	23.97	300			VC	52.39275	1 in 476
4602	26.17	CO	24.42	225			VC	25	1 in 25
4620		CO		100			VC	10.83014	
4505	26.51	CO	22.26	375			VC	70.2282	1 in 334
4505	26.51	CO	22.26	375			VC	70.2282	1 in 334
5902	25.85	CO	23.86	300			VC	8.485281	1 in 85
6502	26.91	CO	25.05	225			VC	40.24929	1 in 149
6502	26.91	CO	25.05	225			VC	40.24929	1 in 149
4607		CO		150			VC	7.311554	
8603	26.14	CO	25.35	225			VC	36.13862	1 in 75
5001	25.87	CO		300			VC	76.77871	
5804	25.77	CO	24.14	225			VC	10.77033	1 in 215
4905	25.65	CO	24.62	225			VC	42.0119	
6014		CO		100			VC	13.98761	
5802	25.79	CO	24.05	225			VC	78.1601	1 in 147
6804	25.13	SW	23.81	750			CO	45.54119	1 in 651
7002	26.65	CO	24.95	225			VC	59.5063	1 in 165
5612		CO		150			VC	3.252226	
5805	25.55	SW	23.74	750			CO	139.2049	
7001	26.44	CO	24.79	225			VC	46.14109	1 in 76
7701		SW		750			CO	167.3141	
6009		CO		150			VC	5.806613	
4804		SW		1000			CO	36.35932	
6503	26.87	CO	24.37	225			VC	32.06244	
6503	26.87	CO	24.37	225			VC	32.06244	
7902	26.43	CO	24.13	300			VC	60.83585	
7605		CO		150			VC	12.07717	
4622		CO		100			VC	9.939145	
7010		CO		150			VC	6.006557	
4617		CO		100			PVC	1.631608	
6801	25.64	CO	23.63	300			VC	44.27189	
4608		CO		150			VC	5.174318	
5502	26.82	CO	23.9	300			VC	20.88061	1 in 29
5502	26.82	CO	23.9	300			VC	20.88061	1 in 29
5803	25.74	CO	24.09	225			VC	97.04638	1 in 313
4616		CO		100			PVC	6.155486	
6805	25.78	SW	24.44	225			VC	4.472136	1 in 7
4639		CO		100			VC	9.56617	
8002	26.87	CO	25.13	300			VC	50.9902	1 in 59
6903	25.9	CO	24.43	225			VC	28.6531	1 in 92
4621		CO		100			VC	1.535719	
4606		CO		100			VC	7.202488	
7003		CO		150			VC	24.46837	
7603	26.6	CO	25.65	225			VC	51.89412	1 in 124
8001	26.81	CO	24.59	300			VC	62.64982	1 in 142
6901	25.91	CO	23.76	300			VC	44.28318	1 in 738
5808		CO		100			VC	12.09247	
5701	26.01	CO	23.34	300			VC	68.94926	1 in 406
6501	27.02	CO	24.78	225			VC	52.35456	1 in 128
6501	27.02	CO	24.78	225			VC	52.35456	1 in 128
4904		CO	0	225			VC	45.48626	
6803	25.48	CO	23.56	300			VC	13.0384	1 in 145
7401	27.4	CO	26.02	150			VC	59.5063	1 in 48
7401	27.4	CO	26.02	150			VC	59.5063	1 in 48
7604	26.49	CO	25.23	225			VC	48.30114	1 in 268
6802	25.53	CO		300			VC	10.77033	
9001	27.04	CO	24.26	375			VC	29.15476	1 in 208
8903		CO		150			VC	18.24082	
5601	26.37	CO	23.17	300			VC	73.46227	
0401	27.97	SW	22.54	1275			BR	48.30114	1 in 4830
0401	27.97	SW	22.54	1275			BR	48.30114	1 in 4830
0401	27.97	SW	22.54	1275			BR	48.30114	1 in 4830
0401	27.97	SW	22.54	1275			BR	48.30114	1 in 4830
4609		CO		150			VC	7.228205	
5901	25.77	CO	24.67	225			VC	53.41348	1 in 92
7402	27.3	CO	26.08	150			VC	4.123106	1 in 69
7402	27.3	CO	26.08	150			VC	4.123106	1 in 69
4906	25.63	CO	24.38	225			VC	54.91812	
5603	26.91	CO	24.46	225			VC	108.6324	1 in 205
4641		CO		150			VC	5.848379	
5602	26.22	CO	24.83	225			VC	35.44009	1 in 93
5501	26.45	CO	22.44	375			VC	36.40055	1 in 202
5501	26.45	CO	22.44	375			VC	36.40055	1 in 202

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad

LEGEND

Abandoned | Foul | Surface Water | Combined

- Public Sewer
- Private Sewer
- Section 104
- Rising Main
- Sludge Main
- Overflow
- Water Course
- Highway Drain

All point assets follow the standard colour convention:
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- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

MANHOLE FUNCTION

- FO Foul
- SW Surface Water
- CO Combined
- OV Overflow

SEWER SHAPE

- CI Circular
- EG Egg
- OV Oval
- FT Flat Top
- RE Rectangular
- SQ Square
- TR Trapezoidal
- AR Arch
- BA Barrel
- HO HorseShoe
- UN Unspecified

SEWER MATERIAL

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

Address or Site Reference:

Ryebank Fields,

OS sheet Number: SJ8094NE
Scale: 1:1250
Date: 28/10/2019
Nodes: 100
Sheet: 2 of 6

Printed by: Property Searches

SEWER RECORDS

United Utilities
helping life flow smoothly

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
3008		CO		100			VC	10.23342	
1100	28.17	CO	26.63	300			VC	62.03225	
0904		CO		150			VC	10.66911	
1037		CO		150			VC	3.856456	
4002	29.21	CO	22.65	450			VC	69.28925	1 in 1732
9001	28.01	CO	23.51	300			VC	59.13544	1 in 191
9001	28.01	CO	23.51	300			VC	59.13544	1 in 191
4410	26.86	CO	25.46	225			VC	24.16609	1 in 62
4302	28.23	CO	24.95	450			VC	60.20797	1 in 2.81345667
4302	28.23	CO	24.95	450			VC	60.20797	1 in 2.81345667
2000	28.64	CO	25.53	300			VC	51	1 in 319
0903		CO		150			VC	6.751257	
3303	28.34	CO	25.79	225			VC	15.52417	1 in 119
5509	26.97	CO	24.34	300			VC	47.01064	1 in 131
5509	26.97	CO	24.34	300			VC	47.01064	1 in 131
5509	26.97	CO	24.34	300			VC	47.01064	1 in 131
5509	26.97	CO	24.34	300			VC	47.01064	1 in 131
4416		CO		150			VC	8.378669	
4416		CO		150			VC	8.378669	
1214		CO		150			VC	11.02041	
3357		CO		150			VC	5.094173	
4404	27.78	CO	26.51	225			VC	59.90826	1 in 80
4404	27.78	CO	26.51	225			VC	59.90826	1 in 80
1401	28.45	CO	27.31	225			VC	38.63936	1 in 88
0000	27.63	CO	0	225			VC	51.46304	
0000	27.63	CO	0	225			VC	51.46304	
5409	2.34	CO	23.53	225			VC	12.31334	
5409	2.34	CO	23.53	225			VC	12.31334	
5409	2.34	CO	23.53	225			VC	12.31334	
5409	2.34	CO	23.53	225			VC	12.31334	
0338		CO		150			VC	19.81876	
2200	28.27	CO	25.51	375			VC	91.92388	1 in 328
2400	28.45	CO	26.85	225			VC	86.34869	1 in 81
4503	26.76	CO	25.1	300			VC	86.12201	1 in 121
4503	26.76	CO	25.1	300			VC	86.12201	1 in 121
3024		CO		150			VC	8.565517	
2311	28.35	CO	25.67	375			VC	91.44397	1 in 268.952861
1201	28.19	CO	27.01	300			VC	60.00833	1 in 171
0400	28.56	CO	24.98	375			VC	35.05709	1 in 167
0400	28.56	CO	24.98	375			VC	35.05709	1 in 167
3207		CO		150			VC	6.572594	
3200	28.55	CO	25.03	375			VC	61.39218	1 in 361
1204		CO		150			VC	8.377253	
3401	27.8	CO	26.41	225			VC	74.72617	1 in 125
3401	27.8	CO	26.41	225			VC	74.72617	1 in 125
2202	28.3	CO	25.21	375			VC	89.28606	1 in 308
4502	26.37	CO	25.1	225			VC	36.67424	1 in 183
4502	26.37	CO	25.1	225			VC	36.67424	1 in 183
4412	27.01	CO	25.62	300			VC	75.46169	1 in 137
4412	27.01	CO	25.62	300			VC	75.46169	1 in 137
2104	28.22	CO	27.1	150			VC	7.071068	1 in 59
4000	29.19	CO	23.96	375			VC	5.385165	1 in 5
4401	26.5	CO	25.14	225			VC	10.19804	1 in 73
4401	26.5	CO	25.14	225			VC	10.19804	1 in 73
5307	28.53	CO	26.2	225			VC	23.4094	1 in 49
5307	28.53	CO	26.2	225			VC	23.4094	1 in 49
4402	26.81	CO	24.97	300			VC	36.23534	1 in 518
4402	26.81	CO	24.97	300			VC	36.23534	1 in 518
3306	28.17	CO	25.74	225			VC	18.02776	1 in 120
3101	28.11	CO	26.78	225			VC	66.37017	1 in 96
3502	26.63	CO	24	300			VC	73.1642	1 in 116
3502	26.63	CO	24	300			VC	73.1642	1 in 116
3301	28.42	CO	25.71	300			VC	25.70992	1 in 135
1036		CO		150			VC	12.56793	
3504	26.51	CO	24.23	300			VC	67.91171	1 in 323
3504	26.51	CO	24.23	300			VC	67.91171	1 in 323
3309	28.33	CO	26.15	225			VC	38.07887	1 in 97.6381167
0308		CO	0	150			VC	8.0146	
0308		CO	0	150			VC	8.0146	
1010		CO		150			VC	5.127506	
1011		CO		100			VC	2.51497	
1325		CO		150			VC	7.881699	
1038		CO		150			VC	4.779582	
3304	28.26	CO	25.47	300			VC	12.64911	
1045		FO		100			VC	11.22494	
1012		CO		100			VC	24.34508	
2900	28.51	CO	26.8	225			VC	38.32754	1 in 50
2103	28.29	CO	26.49	150			VC	7	1 in 9
2909		CO		150			VC	34.11781	
4411	27.73	CO	25.68	300			VC	45.39685	1 in 175
2300	28.5	CO	25.77	375			VC	82.96987	1 in 332
9401	28.52	CO	24.8	375			VC	54.626	1 in 166
9401	28.52	CO	24.8	375			VC	54.626	1 in 166
3305	28.17	CO	25.64	225			VC	10.19804	1 in 204
5304	28.32	CO	25.71	225			VC	47.85394	1 in 129
5304	28.32	CO	25.71	225			VC	47.85394	1 in 129
1001	28.4	CO	26.73	300			VC	54.00001	1 in 53
5509	26.97	CO	0	300			VC	65.87685	
5509	26.97	CO	0	300			VC	65.87685	
5509	26.97	CO	0	300			VC	65.87685	
5509	26.97	CO	0	300			VC	65.87685	
1039		CO		150			VC	6.526964	
4202	28.3	CO	24.73	450			VC	62.96825	1 in 3.02295949
5105	28.53	CO	22.73	1400			BR	111.018	1 in 653
9102	28.41	CO	25.71	225			VC	39.84972	1 in 100
9102	28.41	CO	25.71	225			VC	39.84972	1 in 100
5404	26.9	CO	24.4	300			VC	87.72685	1 in 124
5404	26.9	CO	24.4	300			VC	87.72685	1 in 124
1002	28.61	CO	25.7	300			VC	11.04536	1 in 552
4406	26.74	CO	24.98	225			VC	10.19804	1 in 204
4406	26.74	CO	24.98	225			VC	10.19804	1 in 204
4406	26.74	CO	24.98	225			VC	10.19804	1 in 204
4406	26.74	CO	24.98	225			VC	10.19804	1 in 204
2101	27.91	CO	25.98	225			VC	23.02173	1 in 128
4101	28.77	CO	24.25	375			VC	94.54099	1 in 350
0401	27.97	SW	22.54	1275			BR	48.30114	1 in 4830
0401	27.97	SW	22.54	1275			BR	48.30114	1 in 4830
0401	27.97	SW	22.54	1275			BR	48.30114	1 in 4830
0401	27.97	SW	22.54	1275			BR	48.30114	1 in 4830
4201	28.43	CO	25.49	225			VC	30.36868	1 in 62
2106	28.32	CO	27.47	150			VC	11.04536	1 in 74
4407	26.77	CO	25.05	225			VC	8.602325	1 in 72
4407	26.77	CO	25.05	225			VC	8.602325	1 in 72
0206		CO		150			VC	9.937974	
0206		CO		150			VC	9.937974	
1102	28.19	CO	26.03	300			VC	8	1 in 267
4022		CO		225			VC	15.24357	
4022		CO		225			VC	15.24357	
3023		CO		100			VC	7.167441	
3308	28.4	CO	25.33	375			VC	53.36666	1 in 334
3402	27.76	CO	25.83	300			VC	66.21933	1 in 184
3402	27.76	CO	25.83	300			VC	66.21933	1 in 184
1904		CO		100			VC	8.221057	
2003	29.13	CO	25.23	375			VC	65.06919	1 in 296
4004	29	CO	22.73	450			VC	38.01316	1 in 9
4004	29	CO	22.73	450			VC	38.01316	1 in 9
1300	28.51	CO	25.97	300			VC	72.83543	1 in 197
4301	28.13	CO	25.57	225			VC	8	1 in 267
4013		CO		150			VC	6.236591	
1027		FO		100			VC	28.80388	
0000	27.63	CO	25.99	300			VC	71.70077	1 in 598
0000	27.63	CO	25.99	300			VC	71.70077	1 in 598
3403	28.34	CO	25.99	300			VC	21.18962	1 in 81
0100	28.12	CO	26.28	300			VC	56.00893	1 in 350
4300	28.2	CO	25.41	300			VC	28.63564	1 in 119
3302	28.5	CO	25.5	375			VC	48.76474	1 in 325
1006		SW		150			VC	17.10554	
4005	29	CO	22.52	1400			BR	111.0044	1 in 1009
4005	29	CO	22.52	1400			BR	111.0044	1 in 1009
9203	27.66	CO	26.85	225			VC	58.79626	1 in 190
9309		CO		150			VC	6.587931	
9309		CO		150			VC	6.587931	
4205	28.34	CO	27.28	225			VC	35.51102	1 in 78.9133683
3105	28.24	CO	26.24	300			VC	84.5281	1 in 73
5400	26.69	CO	23.53	225			VC	24.45621	
5400	26.69	CO	23.53	225			VC	24.45621	
3319		CO		150			VC	9.311253	
1300	28.51	CO	25.99	375			VC	46.38965	1 in 232
2501	26.28	CO	25.03	300			VC	92.89241	1 in 186
2501	26.28	CO	25.03	300			VC	92.89241	1 in 186
4023		CO		225			VC	35.13172	
0402	28.52	CO	25.29	375			VC	40.79216	1 in 157
3310	28.53	CO	25.31	375			VC	63.32456	1 in 243.556003
1301	28.37	CO	25.98	300			VC	35.51056	1 in 254
4405	26.81	CO	24.89	300			VC	31.38471	1 in 314
4405	26.81	CO	24.89	300			VC	31.38471	1 in 314
4405	26.81	CO	24.89	300			VC	31.38471	1 in 314
4405	26.81	CO	24.89	300			VC	31.38471	1 in 314
4021		CO		225			VC	8.140792	
4021		CO		225			VC	8.140792	
4408	26.95	CO	24.77	225			VC	32.64965	1 in 121
4408	26.95	CO	24.77	225			VC	32.64965	1 in 121
4408	26.95	CO	24.77	225			VC	32.64965	1 in 121
4408	26.95	CO	24.77	225			VC	32.64965	1 in 121
1009		CO		100			VC	3.744806	
2201	28.35	CO	27.14	225			VC	65.80344	1 in 82
2504		CO		150			VC	0.9679947	
2504		CO		150			VC	0.9679947	
3900	27.86	CO	22.59	450			VC	67.76286	1 in 3388
1202	27.77	CO	26.59	300			VC	86.02325	1 in 146
0907		CO		150			VC	6.671555	
4200	28.53	CO	24.84	450			VC	34	1 in 378
3328		CO		0			UN	8.44431	
2109		CO		100			VC	17.80459	
3368		CO		150			VC	5.401829	
4409	26.9	CO	24.88	225			VC	22.36068	1 in 248
4409	26.9	CO	24.88	225			VC	22.36068	1 in 248
1103	28.18	CO	25.98	300			VC	63.07139	1 in 350
3501	26.49	CO	24.79	300			VC	56.2943	1 in 217
4325		CO		0			UN	9.881638	
3026		CO		100			PSC	4.035851	
1101	28.32	CO	26.41	300			VC	74.00676	1 in 255
0907		CO		150			VC	12.08099	
3025		CO		100			VC	4.561532	
9101	28.35	CO	25.81	300			VC	46.04346	1 in 128
9101	28.35	CO	25.81	300			VC	46.04346	1 in 128
1003	28.74	CO	25.55	375			VC	131.0273	1 in 437
0103	28.4	CO	25.93	300			VC	26.57066	1 in 62
0103	28.4	CO	25.93	300			VC	26.57066	1 in 62
1400	28.5	CO	25.58	300			VC	70.71068	1 in 262
4303	28.48	CO	25.42	225			VC	26.1725	1 in 62
1043		CO		100			VC	2.047768	
0101	28.33	CO	26.1	300			VC	39.35734	1 in 262
2500	26.31	CO	25.06	225			VC	6.324555	1 in 632
2500	26.31	CO	25.06	225			VC	6.324555	1 in 632
5104	28.32	CO	24.91	225			VC	61	1 in 185
5104	28.32	CO	24.91	225			VC	61	1 in 185
3307	28.2	CO	26.29	150			VC	16.49242	1 in 31
2002	29.03	CO	25.36	300			VC	13.34166	1 in 222
2910		CO		150			VC	9.293959	
4500	26.48	CO	24.88	225			VC	47.07441	1 in 523

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
3021		CO		100			PSC	8.754257	
2102	28.18	CO	25.78	300			VC	58.04492	1 in 252
2100	27.76	CO	26.36	225			VC	40.31129	1 in 112
0200	28.08	CO	26.52	300			VC	56.0803	1 in 255
0200	28.08	CO	26.52	300			VC	56.0803	1 in 255
3028		CO		100			VC	5.814689	
0104		CO		150			VC	43.67634	
1007		SW		150			VC	8.680884	
3002		CO		150			VC	36.03256	
0312		CO		150			VC	6.286277	
0312		CO		150			VC	6.286277	
0102	27.93	CO	26.52	225			VC	50.08992	1 in 135
0102	27.93	CO	26.52	225			VC	50.08992	1 in 135
3201	28.41	CO	26.32	225			VC	61.84658	1 in 76
3400	26.59	CO	24.63	300			VC	38.48376	1 in 101
3400	26.59	CO	24.63	300			VC	38.48376	1 in 101
3503	26.29	CO	24.51	300			VC	67.54258	1 in 338
3503	26.29	CO	24.51	300			VC	67.54258	1 in 338
3382		CO		150			VC	1.012609	
1303		CO		150			VC	8.20201	
4001	29.23	CO	24.77	600			BR	93.13431	1 in 41
1005		CO		150			VC	9.221152	
4009		SW		150			VC	5.776637	
4009		SW		150			VC	5.776637	
0202		CO		150			VC	15.37267	
0331		CO		150			VC	8.546508	
0001	28.35	CO	25.85	375			VC	58.96003	1 in 268
1000	28.3	CO	26.74	225			VC	20	1 in 111
4415		CO		150			VC	6.062428	
4415		CO		150			VC	6.062428	
4403	26.91	CO	25.88	225			VC	34.88553	1 in 87
4403	26.91	CO	25.88	225			VC	34.88553	1 in 87
2105	28.21	CO	27.3	150			VC	19	1 in 106
1335		CO		150			VC	7.888249	
3300	28.38	CO	26.06	225			VC	15.52417	1 in 62
5002	28.86	CO	22.55	1400			BR	34.66987	1 in 3467
5002	28.86	CO	22.55	1400			BR	34.66987	1 in 3467
1212		CO		150			VC	7.330797	
4504	26.66	CO	25.16	225			VC	28.63564	1 in 260
4504	26.66	CO	25.16	225			VC	28.63564	1 in 260
4504	26.66	CO	25.16	225			VC	28.63564	1 in 260
4504	26.66	CO	25.16	225			VC	28.63564	1 in 260
3115		CO		150			VC	7.194111	
3204	28.41	CO	24.9	450			VC	39.62323	1 in 1.85501991
0300	28.47	CO	26.33	300			VC	86.97823	1 in 264
0301	28.08	CO	0	300			VC	89.10667	
4126		CO		150			VC	19.02614	
4203	28.5	CO	24.58	375			VC	17.26268	
3027		CO		150			VC	22.80482	
0341		CO		150			VC	7.295718	
1200	28.14	CO	25.78	300			VC	41.4367	1 in 318.743836
3032		CO		150			VC	12.58928	
4204	28.29	CO	24.73	450			VC	36.23534	1 in 259
4100	28.5	CO	24.45	375			VC	70.40884	1 in 391
4501	26.77	CO	24.84	225			VC	48.83646	1 in 109
4501	26.77	CO	24.84	225			VC	48.83646	1 in 109
4501	26.77	CO	24.84	225			VC	48.83646	1 in 109
4501	26.77	CO	24.84	225			VC	48.83646	1 in 109
4504	26.66	CO	25.59	225			VC	54.81788	1 in 93
4504	26.66	CO	25.59	225			VC	54.81788	1 in 93
4504	26.66	CO	25.59	225			VC	54.81788	1 in 93
4504	26.66	CO	25.59	225			VC	54.81788	1 in 93
0301	28.08	CO	26.07	300			VC	84.85281	1 in 314
9301	28.35	CO	26.96	300			VC	95.18929	1 in 154
9301	28.35	CO	26.96	300			VC	95.18929	1 in 154
0209		CO		150			VC	7.308389	

LEGEND

Abandoned | Foul | Surface Water | Combined

- Public Sewer
- Private Sewer
- Section 104
- Rising Main
- Sludge Main
- Overflow
- Water Course
- Highway Drain

All point assets follow the standard colour convention:
red - combined | blue - surface water
brown - foul | purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

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
- SQ Square

SEWER MATERIAL

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

Address or Site Reference:

Ryebank Fields,

OS sheet Number: SJ8194SW

Scale: 1:1250 **Date:** 28/10/2019

Nodes: 267

Sheet: 3 of 6

Printed by: Property Searches

SEWER RECORDS

United Utilities
helping life flow smoothly

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
4010		CO		150			VC	10.57607	
4010		CO		150			VC	10.57607	
2801	26.99	CO	24.02	225			VC	7.071068	1 in 141
1901	26.98	CO	24.52	225			VC	82.76472	1 in 207
4707		CO		100			VC	1.116908	
1012		CO		150			VC	6.178461	
3600	26.81	CO	24.37	300			VC	65	1 in 191
4410	26.86	CO	25.46	225			VC	24.16609	1 in 62
1007		CO		150			VC	10.02487	
3802	27.25	CO	24.48	225			VC	64.89993	1 in 232
5509	26.97	CO	24.34	300			VC	47.01064	1 in 131
5509	26.97	CO	24.34	300			VC	47.01064	1 in 131
5509	26.97	CO	24.34	300			VC	47.01064	1 in 131
5509	26.97	CO	24.34	300			VC	47.01064	1 in 131
4416		CO		150			VC	8.378669	
4416		CO		150			VC	8.378669	
4404	27.78	CO	26.51	225			VC	59.90826	1 in 80
4404	27.78	CO	26.51	225			VC	59.90826	1 in 80
2702		OV	0	950			VC	159.7449	
5409	2.34	CO	23.53	225			VC	12.31334	
5409	2.34	CO	23.53	225			VC	12.31334	
5409	2.34	CO	23.53	225			VC	12.31334	
5409	2.34	CO	23.53	225			VC	12.31334	
2704	26.97	CO	25.37	225			VC	38.98238	1 in 93
5722		CO		150			VC	6.603725	
5722		CO		150			VC	6.603725	
4601	27.13	CO	24.88	300			VC	61.78304	1 in 126
4601	27.13	CO	24.88	300			VC	61.78304	1 in 126
5602	27.7	CO	24.65	300			VC	76.0482	1 in 185
4503	26.76	CO	25.1	300			VC	86.12201	1 in 121
4503	26.76	CO	25.1	300			VC	86.12201	1 in 121
4610		CO	0	150			VC	7.910811	
4610		CO	0	150			VC	7.910811	
3907		CO		150			VC	9.919235	
3807		CO	0	150			VC	5.708568	
1902	27.04	CO	24.67	300			VC	88.50989	1 in 216
4702	27.02	CO	25.63	225			VC	24.73863	1 in 353
5514	27.1	CO	23.95	525			CO	9.413107	1 in 157
5514	27.1	CO	23.95	525			CO	9.413107	1 in 157
3401	27.8	CO	26.41	225			VC	74.72617	1 in 125
3401	27.8	CO	26.41	225			VC	74.72617	1 in 125
4502	26.37	CO	25.1	225			VC	36.67424	1 in 183
4502	26.37	CO	25.1	225			VC	36.67424	1 in 183
3703	26.92	CO	25.05	225			VC	78.3147	1 in 230
4401	26.5	CO	25.14	225			VC	10.19804	1 in 73
4401	26.5	CO	25.14	225			VC	10.19804	1 in 73
4805	27.34	CO	24.39	225			VC	13.41641	1 in 75
3803	27.37	CO	24.17	225			VC	62.76942	1 in 123
4402	26.81	CO	24.97	300			VC	36.23534	1 in 518
4402	26.81	CO	24.97	300			VC	36.23534	1 in 518
3608		CO		150			VC	7.332582	
3502	26.63	CO	24	300			VC	73.1642	1 in 116
3502	26.63	CO	24	300			VC	73.1642	1 in 116
3504	26.51	CO	24.23	300			VC	67.91171	1 in 323
3504	26.51	CO	24.23	300			VC	67.91171	1 in 323
4003	27.9	CO	26.3	225			VC	27.01851	1 in 19
4003	27.9	CO	26.3	225			VC	27.01851	1 in 19
3500	26.52	CO	24.81	300			VC	4	1 in 400
1701	27.01	CO	25.27	225			VC	33.24154	1 in 104
3604		CO		150			VC	17.23052	1 in
4002	27.9	CO	24.62	300			VC	36.94918	1 in 616
2601	26.49	CO	24.75	300			VC	57.27129	1 in 358
3603	26.61	CO	24.61	300			VC	47.07441	1 in 214
5509	26.97	CO	0	300			VC	65.87685	
5509	26.97	CO	0	300			VC	65.87685	
5509	26.97	CO	0	300			VC	65.87685	
5509	26.97	CO	0	300			VC	65.87685	
3901	27.25	CO	23.3	300			VC	77.38863	1 in 228
4801		OV	0	1500			VC	203.4561	
4801		OV	0	1500			VC	203.4561	
1707		CO		150			VC	8.526428	
4902	27.31	CO	23.72	300			VC	80.49844	1 in 201
2803	26.96	CO	22.53	300			VC	5.830952	
5515	27.11	CO	23.25	500			DI	5.951582	1 in 40
5515	27.11	CO	23.25	500			DI	5.951582	1 in 40
4804	27.39	CO	25.06	225			VC	51.47815	1 in 147
4804	27.39	CO	25.06	225			VC	51.47815	1 in 147
3602	26.95	CO	23.35	300			VC	5.09902	1 in 2
4406	26.74	CO	24.98	225			VC	10.19804	1 in 204
4406	26.74	CO	24.98	225			VC	10.19804	1 in 204
4406	26.74	CO	24.98	225			VC	10.19804	1 in 204
4406	26.74	CO	24.98	225			VC	10.19804	1 in 204
3903	27.31	CO	24.92	225			VC	56.4358	1 in 38
5904		CO		150			VC	15.77581	
5904		CO		150			VC	15.77581	
4603	26.94	CO	24.36	300			VC	51.05301	
0003		CO		150			VC	1.617551	
0401	27.97	SW	22.54	1275			BR	48.30114	1 in 4830
0401	27.97	SW	22.54	1275			BR	48.30114	1 in 4830
0401	27.97	SW	22.54	1275			BR	48.30114	1 in 4830
0401	27.97	SW	22.54	1275			BR	48.30114	1 in 4830
4407	26.77	CO	25.05	225			VC	8.602325	1 in 72
4407	26.77	CO	25.05	225			VC	8.602325	1 in 72
2001	27.5	CO	25.44	225			VC	68.0294	1 in 272
3621		CO		100			VC	9.319727	
3402	27.76	CO	25.83	300			VC	66.21933	1 in 184
3402	27.76	CO	25.83	300			VC	66.21933	1 in 184
4604	26.79	CO	24.77	225			VC	8.246211	1 in 24
2602	26.43	CO	25.19	300			VC	89.26926	1 in 229
2802	26.99	CO	22.54	300			VC	2.236068	
6510	27.44	CO	20.57	2800			BR	243.7594	1 in 530
6510	27.44	CO	20.57	2800			BR	243.7594	1 in 530
4705	27.26	CO	25.59	300			VC	77.88762	1 in 1558
4705	27.26	CO	25.59	300			VC	77.88762	1 in 1558
4901	27.44	CO	24.68	225			VC	52.3259	1 in 194
0001	27.11	CO	24.23	300			VC	37.57659	
5901	27.6	CO	26.05	225			VC	91.21951	1 in 175
4007	27.75	CO	26.36	150			VC	14.4222	
2705		CO	0	2800			BR	114.0749	
5400	26.69	CO	23.53	225			VC	24.45621	
5400	26.69	CO	23.53	225			VC	24.45621	
2501	26.28	CO	25.03	300			VC	92.89241	1 in 186
2501	26.28	CO	25.03	300			VC	92.89241	1 in 186
4608		CO	0	150			VC	19.39074	
4605	26.93	CO	24.74	225			VC	5.153556	
5001	27.84	CO	24.27	300			VC	77.27323	1 in 149
5001	27.84	CO	24.27	300			VC	77.27323	1 in 149
2901	27.28	CO	25.43	225			VC	68.03054	1 in 106
3618		CO		150			VC	26.73102	
4405	26.81	CO	24.89	300			VC	31.38471	1 in 314
4405	26.81	CO	24.89	300			VC	31.38471	1 in 314
4405	26.81	CO	24.89	300			VC	31.38471	1 in 314
4405	26.81	CO	24.89	300			VC	31.38471	1 in 314
4408	26.95	CO	24.77	225			VC	32.64965	1 in 121
4408	26.95	CO	24.77	225			VC	32.64965	1 in 121
4408	26.95	CO	24.77	225			VC	32.64965	1 in 121
4408	26.95	CO	24.77	225			VC	32.64965	1 in 121
2906		CO		150			VC	25.85175	
3619		CO		150			VC	7.160704	
4001	27.86	CO	24.55	300			VC	45	1 in 346
4001	27.86	CO	24.55	300			VC	45	1 in 346
2504		CO		150			VC	0.9679947	
2504		CO		150			VC	0.9679947	
2703		CO		150			VC	5.927334	
4409	26.9	CO	24.88	225			VC	22.36068	1 in 248
4409	26.9	CO	24.88	225			VC	22.36068	1 in 248
3501	26.49	CO	24.79	300			VC	56.2943	1 in 217
3601	26.8	CO	24.29	300			VC	4.472136	1 in 1
1908	27.18	CO	0	300			VC	7.071068	
3001	26.97	CO	24.96	225			VC	62.13633	1 in 2071
1002	27.12	CO	25.67	225			VC	65.30697	1 in 251
4803	27.38	CO	25.27	225			VC	40.24922	1 in 212
4803	27.38	CO	25.27	225			VC	40.24922	1 in 212
2701	26.69	CO	24.53	225			VC	104.2017	1 in 213
2500	26.31	CO	25.06	225			VC	6.324555	1 in 632
2500	26.31	CO	25.06	225			VC	6.324555	1 in 632
5802	27.69	OV	23.06	1220			BR	81.32035	
4500	26.48	CO	24.88	225			VC	47.07441	1 in 523
4500	26.48	CO	24.88	225			VC	47.07441	1 in 523
3614		CO		150			VC	28.2029	
2904		CO		150			VC	11.32372	
3705		CO		150			VC	7.449035	
3902	27.28	CO	24.77	225			VC	16.76305	
4704	27.23	CO	25.9	225			VC	77.2074	1 in 129
4704	27.23	CO	25.9	225			VC	77.2074	1 in 129
1702	27.05	CO	24.95	225			VC	67.20863	1 in 73
4627		CO		150			VC	17.27874	
4802	27.17	CO	24.59	225			VC	73.43024	1 in 188
5002	28.5	CO	24.57	300			VC	57.48913	1 in 221
4806	27.12	CO	24.68	225			VC	18.27374	1 in 305
3625		CO		150			VC	18.61763	
5905		CO		150			VC	7.672368	
5905		CO		150			VC	7.672368	
3400	26.59	CO	24.63	300			VC	38.48376	1 in 101
3400	26.59	CO	24.63	300			VC	38.48376	1 in 101
4503	26.76	CO	0	300			VC	53.93515	
4503	26.76	CO	0	300			VC	53.93515	
3503	26.29	CO	24.51	300			VC	67.54258	1 in 338
3503	26.29	CO	24.51	300			VC	67.54258	1 in 338
2804	27.04	CO	22.93	300			VC	70.60453	1 in 186
4708		CO		100			VC	8.396721	
2807		CO		150			VC	7.45977	
4415		CO		150			VC	6.062428	
4415		CO		150			VC	6.062428	
4403	26.91	CO	25.88	225			VC	34.88553	1 in 87
4403	26.91	CO	25.88	225			VC	34.88553	1 in 87
3507		CO		150			VC	7.307869	
4701	26.91	CO	25.7	225			VC	51.92302	1 in 1038
3605		CO	20.85	2800			BR	5.385165	
3801	27.11	CO	25.31	225			VC	12.94048	
4504	26.66	CO	25.16	225			VC	28.63564	1 in 260
4504	26.66	CO	25.16	225			VC	28.63564	1 in 260
4504	26.66	CO	25.16	225			VC	28.63564	1 in 260
4504	26.66	CO	25.16	225			VC	28.63564	1 in 260
4602	26.96	CO	20.09	2800			BR	75.40103	1 in 99
2707		CO		150			VC	22.57265	
4501	26.77	CO	24.84	225			VC	48.83646	1 in 109
4501	26.77	CO	24.84	225			VC	48.83646	1 in 109
4501	26.77	CO	24.84	225			VC	48.83646	1 in 109
4501	26.77	CO	24.84	225			VC	48.83646	1 in 109
4634		CO		150			VC	8.75919	
3701		CO	20.86	2800			BR	46.26851	
4635		CO		150			VC	13.14616	
4504	26.66	CO	25.59	225			VC	54.81788	1 in 93
4504	26.66	CO	25.59	225			VC	54.81788	1 in 93
4504	26.66	CO	25.59	225			VC	54.81788	1 in 93
4504	26.66	CO	25.59	225			VC	54.81788	1 in 93
3606		CO	20.85	2800			BR	103.1712	1 in 10317
2600	26.72	CO	24.57	300			VC	54.3783	1 in 139
3710		CO		150			VC	10.72151	
4600	26.88	CO	24.64	300			VC	40.8534	1 in 124

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
3704	26.86	CO	23.32	300			VC	5.385165	1 in 2

LEGEND

Abandoned	Foul	Surface Water	Combined	
				Public Sewer
				Private Sewer
				Section 104
				Rising Main
				Sludge Main
				Overflow
				Water Course
				Highway Drain

All point assets follow the standard colour convention:
red - combined, blue - surface water
brown - foul, purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

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
- SQ Square

SEWER MATERIAL

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

Address or Site Reference:

Ryebank Fields,

OS sheet Number: SJ8194NW
Scale: 1:1250
Date: 28/10/2019
Nodes: 202
Sheet: 4 of 6

Printed by: Property Searches

SEWER RECORDS

United Utilities
helping life flow smoothly

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
5903		CO	0	225			VC	10.4339	
9003		CO		150			VC	6.286562	
5305	26.99	CO	24.37	225			VC	30.8707	1 in 44
8406		CO		150			VC	10.37555	
6105	28.14	CO	0	300			VC	72.09022	
7300	27.35	CO	22.25	225			VC	6.324555	
7509		CO	0	150			VC	1.815255	
7509		CO	0	150			VC	1.815255	
0907		CO		150			VC	11.48206	
6508	27.47	CO	23.46	450			VC	67.26812	1 in 841
6508	27.47	CO	23.46	450			VC	67.26812	1 in 841
4302	28.23	CO	24.95	450			VC	60.20797	1 in 2.81345667
4302	28.23	CO	24.95	450			VC	60.20797	1 in 2.81345667
8505		CO		150			VC	6.072417	
8505		CO		150			VC	6.072417	
6000	28.04	CO	24.33	600			BR	82.1523	1 in 483
5509	26.97	CO	24.34	300			VC	47.01064	1 in 131
5509	26.97	CO	24.34	300			VC	47.01064	1 in 131
5509	26.97	CO	24.34	300			VC	47.01064	1 in 131
5509	26.97	CO	24.34	300			VC	47.01064	1 in 131
6109	28.12	CO	22.81	1400			BR	36.49657	1 in 608
6004	27.91	CO	21.94	375			CO	3.605551	1 in 10
5409	2.34	CO	23.53	225			VC	12.31334	
5409	2.34	CO	23.53	225			VC	12.31334	
5409	2.34	CO	23.53	225			VC	12.31334	
5409	2.34	CO	23.53	225			VC	12.31334	
9104		CO		150			VC	5.869556	
5303	28.21	CO	26.98	225			VC	29.42788	1 in 16
5904	27.83	CO	25.35	225			VC	10.29563	
7304	28.63	CO	25.92	300			VC	90.47099	1 in 206
5403	26.86	CO	25.26	225			VC	23.70654	1 in 14
5403	26.86	CO	25.26	225			VC	23.70654	1 in 14
7307		CO		150			VC	5.740404	
9917		CO		150			VC	9.029199	
8000	27.88	CO	24.91	600			BR	75	1 in 123
6303	27.11	CO	23.33	450			VC	34.48188	1 in 493
6501	29.04	CO	23.55	450			VC	71.57917	1 in 1023
7303	28.2	CO	25.85	225			VC	46.38965	1 in 86
9002	28.55	CO	25.59	225			VC	56	
8202	28.33	CO	26.82	300			VC	55.4617	1 in 222
6923		SW		225			VC	6.601936	
6005	27.55	CO	24.14	600			BR	38.94868	
9900	28.19	CO	26.27	225			VC	15.06717	
8501	27.94	CO	26.05	300			VC	62.00806	1 in 270
8501	27.94	CO	26.05	300			VC	62.00806	1 in 270
8500	27.98	CO	26.28	300			VC	61.03278	1 in 291
8500	27.98	CO	26.28	300			VC	61.03278	1 in 291
6901	27.38	CO	21.11	2800			BR	181.7854	
6940		SW		100			VC	5.842115	
6313		CO	23.26	450			VC	3.605551	
8311		CO		150			VC	9.384974	
4412	27.01	CO	25.62	300			VC	75.46169	1 in 137
4412	27.01	CO	25.62	300			VC	75.46169	1 in 137
8301	30.53	CO	28.76	225			VC	22.2036	1 in 58
5307	28.53	CO	26.2	225			VC	23.4094	1 in 49
5307	28.53	CO	26.2	225			VC	23.4094	1 in 49
6402	27.02	CO	24.6	225			VC	15.23155	1 in 36
7305	29.91	CO	26.34	225			VC	32.98484	1 in 103
8411		CO		150			VC	8.588594	
4402	26.81	CO	24.97	300			VC	36.23534	1 in 518
4402	26.81	CO	24.97	300			VC	36.23534	1 in 518
5302	28.12	CO	26.8	225			VC	15.26434	1 in 33
7903	27.34	CO	24.04	600			BR	42.94355	1 in 27
8404	27.69	CO	25.76	300			VC	52	1 in 306
8404	27.69	CO	25.76	300			VC	52	1 in 306
8200	28.11	CO	26.55	300			VC	53.66563	1 in 282
6002	28.03	CO	25.02	375			VC	89	
7107	27.83	CO	25.35	375			VC	13.60147	1 in 57
5101		CO		150			VC	13.26658	
8008		CO		150			VC	9.822713	
6924		SW		225			VC	9.884576	
5900	28.03	CO	25.38	225			VC	4.123106	1 in 206
8003	28.89	CO	24.95	600			BR	24.02082	1 in 2402
8500	27.98	CO	26.57	300			VC	73.4983	1 in 127
8500	27.98	CO	26.57	300			VC	73.4983	1 in 127
5505	27.15	CO	24.06	300			VC	90.47336	1 in 206
5505	27.15	CO	24.06	300			VC	90.47336	1 in 206
8300	27.26	CO	24.23	225			VC	39.05125	
5201	28.04	CO	23.17	450			VC	103.6382	1 in 1295
5925		CO		100			VC	4.187606	
5308	28.37	CO	26.8	225			VC	28.96925	1 in 17
7013		CO		225			VC	7.640379	
5102		CO		150			VC	20.94891	
9903		CO	0	225			VC	9.3308	
7513		CO		150			VC	32.32411	
7201	27.23	CO	25.59	300			VC	9.055386	1 in 181
9401	27.59	CO	25.82	300			VC	67.06713	1 in 292
8439		CO		150			VC	9.180546	
8439		CO		150			VC	9.180546	
5406		CO		150			VC	27.56323	
5406		CO		150			VC	27.56323	
7103	27.91	CO	25	450			CO	57.93962	1 in 138
5202	28.1	CO	21	2750			BR	113.9878	
8304	28.35	CO	26.24	300			VC	109.2016	1 in 287
5003	28.49	CO	24.47	600			BR	64.03124	1 in 534
5304	28.32	CO	25.71	225			VC	47.85394	1 in 129
5304	28.32	CO	25.71	225			VC	47.85394	1 in 129
7105	28.04	CO	25	450			CO	14.76482	
7302	27.94	CO	26.14	225			VC	46.92991	1 in 23
5509	26.97	CO	0	300			VC	65.87685	
5509	26.97	CO	0	300			VC	65.87685	
5509	26.97	CO	0	300			VC	65.87685	
5509	26.97	CO	0	300			VC	65.87685	
0204	28.64	CO	25.18	300			VC	55.03635	
9400	27.77	CO	25.93	300			VC	72.02777	1 in 655
9400	27.77	CO	25.93	300			VC	72.02777	1 in 655
8412		CO		150			VC	10.47715	
8412		CO		150			VC	10.47715	
7306	30.58	CO	28.74	225			VC	22.36068	1 in 93
9100	28.39	CO	26.54	225			VC	79.75587	1 in 97
5105	28.53	CO	22.73	1400			BR	111.018	1 in 653
6408	26.95	CO	25.11	225			VC	7.211102	1 in 15
6300	26.98	CO	24.1	225			VC	10.19804	1 in 27
5404	26.9	CO	24.4	300			VC	87.72685	1 in 124
5404	26.9	CO	24.4	300			VC	87.72685	1 in 124
7006		CO		150			VC	21.83426	
6301	27.03	CO	23.63	300			VC	34.88553	1 in 125
4406	26.74	CO	24.98	225			VC	10.19804	1 in 204
4406	26.74	CO	24.98	225			VC	10.19804	1 in 204
4406	26.74	CO	24.98	225			VC	10.19804	1 in 204
4406	26.74	CO	24.98	225			VC	10.19804	1 in 204
7102	27.94	CO	24.58	525			CO	76.6942	1 in 63
5300	27.55	CO	25.32	225			VC	9.899495	
4407	26.77	CO	25.05	225			VC	8.602325	1 in 72
4407	26.77	CO	25.05	225			VC	8.602325	1 in 72
8911		CO		300			VC	2.729233	
4022		CO		225			VC	15.24357	
4022		CO		225			VC	15.24357	
6309	27.34	CO	25.28	300			VC	12.80625	
5401	26.94	CO	24.1	225			VC	5.385165	1 in 45
5401	26.94	CO	24.1	225			VC	5.385165	1 in 45
6405	27.11	CO	23.49	300			VC	4.123106	
6405	27.11	CO	23.49	300			VC	4.123106	
8302	29.78	CO	26.71	225			VC	36.49657	1 in 78
4004	29	CO	22.73	450			VC	38.01316	1 in 9
4004	29	CO	22.73	450			VC	38.01316	1 in 9
5301	27.59	CO	24.96	225			VC	3.605551	1 in 26
0002	28.84	CO	25.04	450			VC	78.40918	
6101	28.01	CO	25.97	225			VC	21.18962	1 in 42
0001	28.59	CO	25.14	225			VC	74.06078	1 in 109
5200	28.45	CO	25.22	225			VC	26.92582	1 in 19
6510	27.44	CO	20.57	2800			BR	243.7594	1 in 530
6510	27.44	CO	20.57	2800			BR	243.7594	1 in 530
8400	27.68	CO	25.97	300			VC	54.03703	1 in 284
8400	27.68	CO	25.97	300			VC	54.03703	1 in 284
8201	28.13	CO	25.82	300			VC	64.03124	1 in 194
8511		CO		225			VC	16.66444	
8511		CO		225			VC	16.66444	
5911		CO	0	150			VC	11.52323	
5922		CO		100			VC	5.181225	
4005	29	CO	22.52	1400			BR	111.0044	1 in 1009
4005	29	CO	22.52	1400			BR	111.0044	1 in 1009
6409	27.06	CO	24.58	225			VC	9.486833	
6110	28.17	CO	22.76	1400			BR	20	
5103	28.17	CO	24.56	225			VC	24.69818	
5400	26.69	CO	23.53	225			VC	24.45621	
5400	26.69	CO	23.53	225			VC	24.45621	
6902		CO	0	150			VC	9.848858	
8401	27.69	CO	26.08	300			VC	19.41649	1 in 216
8401	27.69	CO	26.08	300			VC	19.41649	1 in 216
7514		CO		150			VC	9.484708	
7514		CO		150			VC	9.484708	
4405	26.81	CO	24.89	300			VC	31.38471	1 in 314
4405	26.81	CO	24.89	300			VC	31.38471	1 in 314
4405	26.81	CO	24.89	300			VC	31.38471	1 in 314
4405	26.81	CO	24.89	300			VC	31.38471	1 in 314
4021		CO		225			VC	8.140792	
4021		CO		225			VC	8.140792	
9200	28.35	CO	25.47	300			VC	76.00658	
4408	26.95	CO	24.77	225			VC	32.64965	1 in 121
4408	26.95	CO	24.77	225			VC	32.64965	1 in 121
4408	26.95	CO	24.77	225			VC	32.64965	1 in 121
4408	26.95	CO	24.77	225			VC	32.64965	1 in 121
9109		CO		150			VC	8.061049	
7506		CO	0	150			VC	9.860068	
7506		CO	0	150			VC	9.860068	
0908		CO		150			VC	23.12121	
7603	28.51	CO	27.17	300			VC	93.14505	1 in 107
6504	27.29	CO	25.06	225			VC	10.77033	1 in 9
6504	27.29	CO	25.06	225			VC	10.77033	1 in 9
8506		CO		150			VC	5.539054	
8506		CO		150			VC	5.539054	
4409	26.9	CO	24.88	225			VC	22.36068	1 in 248
4409	26.9	CO	24.88	225			VC	22.36068	1 in 248
9300	27.49	CO	26.15	300			VC	63.07139	1 in 203
8424		CO		150			VC	5.427768	
8424		CO		150			VC	5.427768	
6413	27.23	CO	23.36	450			VC	74.73286	1 in 7473
6413	27.23	CO	23.36	450			VC	74.73286	1 in 7473
6008		CO		150			VC	2.723396	
8304	28.35	CO	26.44	300			VC	77.41447	1 in 287
5310	28.04	CO	25.11	225			VC	28.3196	1 in 40
5924		CO		100			VC	5.557762	
5104	28.32	CO	24.91	225			VC	61	1 in 185
5104	28.32	CO	24.91	225			VC	61	1 in 185
0007		CO		225			VC	38.7559	
8305	27.97	CO	26.35	300			VC	54.75273	
8403	27.84	CO	21.89	1550			BR	7.81025	
6401	27.04	CO	25.49	225			VC	26	1 in 74
6401	27.04	CO	25.49	225			VC	26	1 in 74
7507		CO	0	150			VC	2.277081	

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
7904	27.57	CO	26.15	150			VC	15	1 in 33
7301	27.76	CO	26.18	300			VC	47.12749	1 in 196
8907	500	CO		150			VC	7.368119	
5926		CO		150			VC	6.009024	
6307	27.31	CO	25.82	300			VC	29.69848	1 in 58
9001	28.59	CO	25.7	225			VC	5	1 in 56
5918		CO		100			VC	16.74941	
7200	28.34	CO	25.45	375			VC	72.81627	1 in 260
7000	27.58	CO	24.28	600			BR	66.00758	1 in 22
5311	27.49	CO	24.31	300			VC	30.41381	1 in 29
6506	27.27	CO	23.61	300			VC	29.59675	
6506	27.27	CO	23.61	300			VC	29.59675	
6202	28.02	CO	26.22	225			VC	20.24846	1 in 88
0110		CO		100			VC	15.98783	
7101	27.93	CO	24.72	375			VC	119.6347	1 in 285
9101	28.48	CO	26.56	300			VC	45	1 in 37
8402	27.72	CO	26.66	300			VC	107.4559	1 in 336
8402	27.72	CO	26.66	300			VC	107.4559	1 in 336
5921		CO		100			VC	4.553661	
5907		CO	0	150			VC	15.26434	
8001	27.74	CO	25.02	300			VC	16.12452	1 in 179
4001	29.23	CO	24.77	600			BR	93.13431	1 in 41
4009		SW		150			VC	5.776637	
4009		SW		150			VC	5.776637	
6308	27.39	CO	25.29	300			VC	62.64982	1 in 418
8429		CO		150			VC	6.22284	
8429		CO		150			VC	6.22284	
6414	27.07	CO	24.63	225			VC	37.69616	1 in 108
6916		CO		150			VC	10.3887	
5306	28.27	CO	27.25	225			VC	6.082763	1 in 38
0101	28.97	CO	26.05	225			VC	29.09758	
5910		CO	0	150			VC	18.43035	
7108	27.73	CO	25.46	375			VC	15.81139	1 in 198
6311		CO	23.26	450			VC	48.54894	1 in 694
6903	27.31	CO	24.73	225			VC	10	
5002	28.86	CO	22.55	1400			BR	34.66987	1 in 3467
5002	28.86	CO	22.55	1400			BR	34.66987	1 in 3467
0401	27.61	CO	25.29	300			VC	79.1012	1 in 152
0401	27.61	CO	25.29	300			VC	79.1012	1 in 152
8002	27.89	CO	25.34	300			VC	66.85058	1 in 231
9202		CO		150			VC	9.960206	
9108		CO		150			VC	68.96543	
6400	27.02	CO	25.22	225			VC	33.62909	1 in 21
6400	27.02	CO	25.22	225			VC	33.62909	1 in 21
5507	27.05	CO	25.55	225			VC	45.85139	1 in 1528
5507	27.05	CO	25.55	225			VC	45.85139	1 in 1528
6111		CO	0	150			VC	25.09674	
4501	26.77	CO	24.84	225			VC	48.83646	1 in 109
4501	26.77	CO	24.84	225			VC	48.83646	1 in 109
4501	26.77	CO	24.84	225			VC	48.83646	1 in 109
4501	26.77	CO	24.84	225			VC	48.83646	1 in 109
4504	26.66	CO	25.59	225			VC	54.81788	1 in 93
4504	26.66	CO	25.59	225			VC	54.81788	1 in 93
4504	26.66	CO	25.59	225			VC	54.81788	1 in 93
4504	26.66	CO	25.59	225			VC	54.81788	1 in 93
5414		CO		100			VC	2.459239	
5414		CO		100			VC	2.459239	
4504	26.66	CO	25.16	225			VC	28.63564	1 in 260
4504	26.66	CO	25.16	225			VC	28.63564	1 in 260
4504	26.66	CO	25.16	225			VC	28.63564	1 in 260
4504	26.66	CO	25.16	225			VC	28.63564	1 in 260
5513	27.05	CO	26.03	225			VC	54.66415	1 in 46
5513	27.05	CO	26.03	225			VC	54.66415	1 in 46
7906	26.7	CO	24.18	225			VC	55.94645	1 in 165
9500	28.02	CO	25.8	300			VC	69.00725	1 in 383
9500	28.02	CO	25.8	300			VC	69.00725	1 in 383
7100	27.68	CO	24.81	300			VC	70.93659	1 in 591
5506	27.14	CO	24.89	225			VC	26	1 in 74
5506	27.14	CO	24.89	225			VC	26	1 in 74
6904	27.33	CO	25.74	225			VC	26.92582	1 in 79
6503	27.25	CO	25.71	225			VC	23.25941	1 in 37
6503	27.25	CO	25.71	225			VC	23.25941	1 in 37
5501	27.07	CO	25.18	225			VC	6.708204	1 in 18
6502	27.07	CO	25.34	225			VC	51.89412	1 in 133
6201	27.54	CO	25.1	300			VC	69.07967	1 in 256
6104	27.96	CO	25.38	300			VC	63.09765	1 in 115
5507	27.05	CO	25.77	225			VC	49.29506	1 in 57
5507	27.05	CO	25.77	225			VC	49.29506	1 in 57
6102	27.94	CO	25.45	225			VC	9.486833	
5504	27.12	CO	24.52	225			VC	8.544003	1 in 21
5504	27.12	CO	24.52	225			VC	8.544003	1 in 21

LEGEND

Abandoned	Foul	Surface Water	Combined	
				Public Sewer
				Private Sewer
				Section 104
				Rising Main
				Sludge Main
				Overflow
				Water Course
				Highway Drain

All point assets follow the standard colour convention:
red - combined   blue - surface water
brown - foul   purple - overflow

- Manhole
- HS Head of System
- ES Extent of Survey
- RE Rodding Eye
- IN Inlet
- DP Discharge Point
- HY Vortex
- PE Penstock
- WO Washout Chamber
- VA Valve
- AV Air Valve
- NRV Non Return Valve
- SO Soakaway
- GU Gully
- CA Cascade
- FM Flow Meter
- HA Hatch Box
- OI Oil Interceptor
- SM Summit
- DS Drop Shaft
- OP Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- IC Inspection Chamber
- Bifurcation Chamber
- LH Lamp Hole
- T Junction / Saddle
- CA Catchpit
- VC Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- T Network Storage Tank
- V Sewer Overflow
- WwTW Ww Treatment Works
- Ww Pumping Station
- ST Septic Tank
- CK Control Kiosk
- Change of Characteristic

MANHOLE FUNCTION

FO Foul
SW Surface Water
CO Combined
OV Overflow

SEWER SHAPE

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

SEWER MATERIAL

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

Address or Site Reference:

Ryebank Fields,

OS sheet Number: SJ8194SE
Scale: 1:1250
Date: 28/10/2019
Nodes: 282
Sheet: 5 of 6

Printed by: Property Searches

SEWER RECORDS

United Utilities
helping life flow smoothly

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
9608		CO		100			VC	6.147519	
7509		CO	0	150			VC	1.815255	
7509		CO	0	150			VC	1.815255	
7806		CO		150			VC	8.045107	
8505		CO		150			VC	6.072417	
8505		CO		150			VC	6.072417	
5403	26.86	CO	25.26	225			VC	23.70654	1 in 14
5403	26.86	CO	25.26	225			VC	23.70654	1 in 14
5722		CO		150			VC	6.603725	
5722		CO		150			VC	6.603725	
7609		CO		150			VC	6.234646	
7606		CO		150			VC	10.21211	
4610		CO	0	150			VC	7.910811	
4610		CO	0	150			VC	7.910811	
6501	29.04	CO	23.55	450			VC	71.57917	1 in 1023
0012		CO	0	300			VC	9.586926	
8500	27.98	CO	26.28	300			VC	61.03278	1 in 291
8500	27.98	CO	26.28	300			VC	61.03278	1 in 291
7901	28.37	CO	26.37	300			VC	65.06919	1 in 167
0918		CO		150			VC	11.31347	
8901	28.4	CO	25.98	300			VC	45.01111	1 in 250
8500	27.98	CO	26.57	300			VC	73.4983	1 in 127
8500	27.98	CO	26.57	300			VC	73.4983	1 in 127
7007		CO		150			VC	4.083642	
0835		CO		150			VC	9.175847	
5717		CO		150			VC	6.829964	
8002	28.76	CO	25.13	300			VC	33.06055	
7513		CO		150			VC	32.32411	
5700	27.72	CO	25.4	300			VC	64.53681	1 in 215
9401	27.59	CO	25.82	300			VC	67.06713	1 in 292
8802	27.93	CO	26.11	375			VC	60.10823	1 in 334
5602	27.7	CO	24.65	300			VC	39.39543	1 in 246
9810		CO		225			VC	35.66322	
7804		CO		150			VC	8.102075	
5509	26.97	CO	0	300			VC	65.87685	
5509	26.97	CO	0	300			VC	65.87685	
5509	26.97	CO	0	300			VC	65.87685	
5509	26.97	CO	0	300			VC	65.87685	
7801	28.19	CO	26.42	225			VC	29.61419	1 in 247
9400	27.77	CO	25.93	300			VC	72.02777	1 in 655
9400	27.77	CO	25.93	300			VC	72.02777	1 in 655
5515	27.11	CO	23.25	500			DI	5.951582	1 in 40
5515	27.11	CO	23.25	500			DI	5.951582	1 in 40
5904		CO		150			VC	15.77581	
5904		CO		150			VC	15.77581	
8905	28.38	OV	24.51	1020			BR	132.0081	
6405	27.11	CO	23.49	300			VC	4.123106	
6405	27.11	CO	23.49	300			VC	4.123106	
7002	28.82	CO	26.45	300			VC	33.13608	
9700	28.48	CO	25.93	300			VC	69.11584	1 in 16
9007		CO		150			VC	28.6992	
8400	27.68	CO	25.97	300			VC	54.03703	1 in 284
8400	27.68	CO	25.97	300			VC	54.03703	1 in 284
4705	27.26	CO	25.59	300			VC	77.88762	1 in 1558
4705	27.26	CO	25.59	300			VC	77.88762	1 in 1558
6004	28.55	CO	27.1	225			VC	69.0507	1 in 187
5901	27.6	CO	26.05	225			VC	91.21951	1 in 175
9657		CO		0			VC	7.008992	1 in
5400	26.69	CO	23.53	225			VC	24.45621	
5400	26.69	CO	23.53	225			VC	24.45621	
7904		CO	0	150			VC	39.75714	
0712		CO		150			VC	19.4976	
4608		CO	0	150			VC	19.39074	
8604		CO		150			VC	7.005288	
7514		CO		150			VC	9.484708	
7514		CO		150			VC	9.484708	
9803	28.37	SW	0	1350			BR	11.79775	
4405	26.81	CO	24.89	300			VC	31.38471	1 in 314
4405	26.81	CO	24.89	300			VC	31.38471	1 in 314
4405	26.81	CO	24.89	300			VC	31.38471	1 in 314
4405	26.81	CO	24.89	300			VC	31.38471	1 in 314
4408	26.95	CO	24.77	225			VC	32.64965	1 in 121
4408	26.95	CO	24.77	225			VC	32.64965	1 in 121
4408	26.95	CO	24.77	225			VC	32.64965	1 in 121
4408	26.95	CO	24.77	225			VC	32.64965	1 in 121
6701	27.6	CO	25.75	225			VC	58.98388	1 in 179
9503		CO		150			VC	2.654411	
7506		CO	0	150			VC	9.860068	
7506		CO	0	150			VC	9.860068	
7700	28.12	CO	26.5	225			VC	23.85372	1 in 341
8506		CO		150			VC	5.539054	
8506		CO		150			VC	5.539054	
7501		CO	0	150			VC	10.76573	
8424		CO		150			VC	5.427768	
8424		CO		150			VC	5.427768	
5800	27.79	CO	25.82	300			VC	81.02469	1 in 203
6801	27.56	CO	26.79	150			VC	31.57531	1 in 197
6500	28.15	CO	24.12	300			VC	29.54657	1 in 54
7707		CO		150			VC	15.56215	
7706		CO		150			VC	3.53469	
9905	28.74	CO	25.39	300			VC	11.04536	
9011		CO		100			VC	8.740223	
6905		CO		150			VC	8.123777	
9003	28.9	CO	25.6	300			VC	10	
0604		CO		150			VC	7.013109	
0030		CO		150			VC	14.22577	
6802	27.63	CO	26.34	225			VC	55.7315	1 in 398
4704	27.23	CO	25.9	225			VC	77.2074	1 in 129
4704	27.23	CO	25.9	225			VC	77.2074	1 in 129
6903		CO	0	150			VC	7.990863	
9802	28.11	CO	26.85	300			VC	18.78829	1 in 22
6506	27.27	CO	23.61	300			VC	29.59675	
6506	27.27	CO	23.61	300			VC	29.59675	
8001	28.72	CO	25.4	300			VC	31.257	1 in 174
9901	28.48	CO	25.53	375			VC	13.41914	
7703	27.9	CO	26.05	375			VC	56.56854	1 in 471
8005		CO		150			VC	1.103301	
7003	28.66	CO	25.79	300			VC	40.04997	1 in 105
9703	28.51	CO	25.7	450			VC	88.09492	1 in
									3.87060256
9906		CO		150			VC	12.23528	
9024		CO		150			VC	6.553856	
8918		CO		150			VC	10.02218	
7800	28.34	CO	27.08	225			VC	90.42677	1 in 161
9002	28.89	CO	24.34	600			CO	78.40918	1 in 167
5607		CO		150			VC	7.495168	
8429		CO		150			VC	6.22284	
8429		CO		150			VC	6.22284	
9620		CO		100			VC	5.945517	
9400	27.77	CO	25.57	300			VC	77.02597	
9400	27.77	CO	25.57	300			VC	77.02597	
6902		CO	0	150			VC	31.35515	
7702	28.26	CO	26.72	225			VC	46.66905	1 in 151
9019		CO		150			VC	13.15051	
8003	28.84	CO	26.78	300			VC	9	
7715		CO		150			VC	3.945037	
8902	28.8	CO	27.27	300			VC	3.319649	
4010		CO		150			VC	10.57607	
4010		CO		150			VC	10.57607	
9621		CO		100			VC	5.690561	
5801	28.38	OV	24.65	1020			BR	154.1272	1 in 1427
0029		CO		150			VC	6.198842	
5703	27.6	CO	25.45	150			VC	10.35849	
6508	27.47	CO	23.46	450			VC	67.26812	1 in 841
6508	27.47	CO	23.46	450			VC	67.26812	1 in 841
7825		CO		150			VC	6.414743	
6700	27.6	CO	0	150			VC	13.34523	
7001	28.72	CO	27.01	225			VC	93.39165	1 in 153
6001	28.98	SW	26.95	225			VC	25.31798	1 in 94
5509	26.97	CO	24.34	300			VC	47.01064	1 in 131
5509	26.97	CO	24.34	300			VC	47.01064	1 in 131
5509	26.97	CO	24.34	300			VC	47.01064	1 in 131
5509	26.97	CO	24.34	300			VC	47.01064	1 in 131
5409	2.34	CO	23.53	225			VC	12.31334	
5409	2.34	CO	23.53	225			VC	12.31334	
5409	2.34	CO	23.53	225			VC	12.31334	
5409	2.34	CO	23.53	225			VC	12.31334	
7719		CO		150			VC	6.617956	
4601	27.13	CO	24.88	300			VC	61.78304	1 in 126
4601	27.13	CO	24.88	300			VC	61.78304	1 in 126
5602	27.7	CO	24.65	300			VC	76.0482	1 in 185
8801	28.06	CO	26.11	375			VC	59.64059	1 in 331
7600	28.32	CO	26.27	375			VC	47.63402	1 in 238
8501	27.94	CO	26.05	300			VC	62.00806	1 in 270
8501	27.94	CO	26.05	300			VC	62.00806	1 in 270
4702	27.02	CO	25.63	225			VC	24.73863	1 in 353
5514	27.1	CO	23.95	525			CO	9.413107	1 in 157
5514	27.1	CO	23.95	525			CO	9.413107	1 in 157
4402	26.81	CO	24.97	300			VC	36.23534	1 in 518
4402	26.81	CO	24.97	300			VC	36.23534	1 in 518
8404	27.69	CO	25.76	300			VC	52	1 in 306
8404	27.69	CO	25.76	300			VC	52	1 in 306
9805	28.04	CO	26.3	375			VC	29.96665	1 in 272
6003	28.97	CO	26.55	225			VC	27.07397	1 in 677
4003	27.9	CO	26.3	225			VC	27.01851	1 in 19
4003	27.9	CO	26.3	225			VC	27.01851	1 in 19
5505	27.15	CO	24.06	300			VC	90.47336	1 in 206
5505	27.15	CO	24.06	300			VC	90.47336	1 in 206
8903	28.55	CO	25.8	300			VC	64.12488	1 in 164
8021		CO		150			VC	6.879947	
7006		CO	0	300			VC	8	
7503		CO	0	150			VC	2.341466	
6800	27.54	CO	0	150			VC	11.04536	
8439		CO		150			VC	9.180546	
8439		CO		150			VC	9.180546	
5406		CO		150			VC	27.56323	
5406		CO		150			VC	27.56323	
4002	27.9	CO	24.62	300			VC	36.94918	1 in 616
8672		CO	0	150			VC	8.347729	
5805		CO		150			VC	8.554056	
9903	28.58	CO	25.28	375			CO	102.3347	1 in 144
8813		CO		100			VC	16.3937	
8412		CO		150			VC	10.47715	
8412		CO		150			VC	10.47715	
4801		OV	0	1500			VC	203.4561	
4801		OV	0	1500			VC	203.4561	
5704	27.64	CO	25.08	300			VC	67.91171	1 in 166
4804	27.39	CO	25.06	225			VC	51.47815	1 in 147
4804	27.39	CO	25.06	225			VC	51.47815	1 in 147
4406	26.74	CO	24.98	225			VC	10.19804	1 in 204
4406	26.74	CO	24.98	225			VC	10.19804	1 in 204
4406	26.74	CO	24.98	225			VC	10.19804	1 in 204
4406	26.74	CO	24.98	225			VC	10.19804	1 in 204
0849		CO		225			VC	2.864681	
5603	27.65	CO	24.48	300			VC	102.4597	1 in 301
7902		OV	0	1450			BR	124.7487	
4407	26.77	CO	25.05	225			VC	8.602325	1 in 72
4407	26.77	CO	25.05	225			VC	8.602325	1 in 72
9618	28.38	CO	0	150			VC	6.616336	
5401	26.94	CO	24.1	225			VC	5.385165	1 in 45
5401	26.94	CO	24.1	225			VC	5.385165	1 in 45
9904	28.56	CO	25.56	150			VC	11.07253	

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
6510	27.44	CO	20.57	2800			BR	243.7594	1 in 530
6510	27.44	CO	20.57	2800			BR	243.7594	1 in 530
9807	28.38	SW	23.53	825			BR	37.19619	
5713		CO		150			VC	7.631248	
6002	28.59	CO	26.73	225			VC	14.86607	
9601	28.36	CO	26.37	225			VC	74.06078	1 in 107
7716		CO		150			VC	3.896043	
7810		CO		150			VC	8.432718	
8511		CO		225			VC	16.66444	
8511		CO		225			VC	16.66444	
4007	27.75	CO	26.36	150			VC	14.4222	
6601	27.82	CO	25.73	300			VC	60.00833	
8401	27.69	CO	26.08	300			VC	19.41649	1 in 216
8401	27.69	CO	26.08	300			VC	19.41649	1 in 216
9001	28.88	CO	24.95	300			VC	3.605551	1 in 26
6901	28.2	CO	27.2	225			VC	98.47842	1 in 214
5001	27.84	CO	24.27	300			VC	77.27323	1 in 149
5001	27.84	CO	24.27	300			VC	77.27323	1 in 149
9656		CO		100			VC	9.260281	
4001	27.86	CO	24.55	300			VC	45	1 in 346
4001	27.86	CO	24.55	300			VC	45	1 in 346
7603	28.51	CO	27.17	300			VC	93.14505	1 in 107
6504	27.29	CO	25.06	225			VC	10.77033	1 in 9
6504	27.29	CO	25.06	225			VC	10.77033	1 in 9
9603		CO	0	150			VC	7.457657	
4409	26.9	CO	24.88	225			VC	22.36068	1 in 248
4409	26.9	CO	24.88	225			VC	22.36068	1 in 248
6413	27.23	CO	23.36	450			VC	74.73286	1 in 7473
6413	27.23	CO	23.36	450			VC	74.73286	1 in 7473
4803	27.38	CO	25.27	225			VC	40.24922	1 in 212
4803	27.38	CO	25.27	225			VC	40.24922	1 in 212
7701	28.07	CO	26.39	300			VC	39.05125	1 in 300
6401	27.04	CO	25.49	225			VC	26	1 in 74
6401	27.04	CO	25.49	225			VC	26	1 in 74
7507		CO	0	150			VC	2.277081	
7507		CO	0	150			VC	2.277081	
5802	27.69	OV	23.06	1220			BR	81.32035	
7814		CO		150			VC	11.06916	
5801	27.73	OV	23.13	1080			BR	29.73214	1 in 991
9809		CO		225			VC	4.389818	
7802	28.11	CO	26.28	300			VC	41.7732	1 in 278
5604	27.52	CO	25.52	225			VC	8.944272	1 in 29
7608		CO		150			VC	12.72082	
9006		CO		300			VC	9.699761	
5002	28.5	CO	24.57	300			VC	57.48913	1 in 221
5905		CO		150			VC	7.672368	
5905		CO		150			VC	7.672368	
8402	27.72	CO	26.66	300			VC	107.4559	1 in 336
8402	27.72	CO	26.66	300			VC	107.4559	1 in 336
9804	28.37	CO	26.48	225			VC	82.03658	1 in 155
0819		CO		150			VC	16.48415	
9909	28.6	CO	25.53	375			VC	38.34796	1 in 256
7803	28.11	CO	26.24	300			VC	14.03567	1 in 128
8804		CO		225			VC	9.031275	
0610		CO		100			VC	9.797693	
6600	27.7	CO	0	300			VC	59.62399	
0401	27.61	CO	25.29	300			VC	79.1012	1 in 152
0401	27.61	CO	25.29	300			VC	79.1012	1 in 152
8673		CO	0	150			VC	8.571267	
9619	28.38	CO	26.88	150			VC	6.34418	
6400	27.02	CO	25.22	225			VC	33.62909	1 in 21
6400	27.02	CO	25.22	225			VC	33.62909	1 in 21
5507	27.05	CO	25.55	225			VC	45.85139	1 in 1528
5507	27.05	CO	25.55	225			VC	45.85139	1 in 1528
8671		CO	0	150			VC	8.137087	
9701	28.41	CO	25.75	450			VC	42.10701	1 in 2105
5702	27.51	CO	25.87	150			VC	23.5372	1 in 59
8674		CO	0	150			VC	8.244399	
6502	27.07	CO	25.57	225			VC	43.46263	1 in 290
4605	26.93	CO	24.37	300			VC	59.5337	1 in 59
8608		CO	0	150			VC	7.640903	
5506	27.14	CO	24.89	225			VC	26	1 in 74
5506	27.14	CO	24.89	225			VC	26	1 in 74
6503	27.25	CO	25.71	225			VC	23.25941	1 in 37
6503	27.25	CO	25.71	225			VC	23.25941	1 in 37
6602	27.71	CO	25.76	150			VC	50.16288	1 in 80
5501	27.07	CO	25.18	225			VC	6.708204	1 in 18
8600	28.3	CO	26.38	225			VC	69.02898	1 in 117
6603	27.72	CO	26.68	150			VC	67.62396	1 in 74
5500	27.22	CO	25.22	225			VC	27.313	1 in 1366
8607		CO	0	150			VC	6.228846	
8669		CO	0	150			VC	8.232614	
8700	27.91	CO	25.91	450			VC	81.27115	1 in 581
5504	27.12	CO	24.52	225			VC	8.544003	1 in 21
5504	27.12	CO	24.52	225			VC	8.544003	1 in 21
9600	28.35	CO	26.35	225			VC	63.78872	
7601	28.34	CO	26.39	225			VC	25	1 in 71
9602	28.38	CO	25.51	300			VC	155.541	1 in 259
6702	27.72	CO	26.3	150			VC	47.80167	1 in 117
8675		CO	0	150			VC	8.327185	
4501	26.77	CO	24.84	225			VC	48.83646	1 in 109
4501	26.77	CO	24.84	225			VC	48.83646	1 in 109
4501	26.77	CO	24.84	225			VC	48.83646	1 in 109
4501	26.77	CO	24.84	225			VC	48.83646	1 in 109
7602	28.55	CO	26	300			VC	76.29548	1 in 305
4504	26.66	CO	25.59	225			VC	54.81788	1 in 93
4504	26.66	CO	25.59	225			VC	54.81788	1 in 93
4504	26.66	CO	25.59	225			VC	54.81788	1 in 93
4504	26.66	CO	25.59	225			VC	54.81788	1 in 93
5414		CO		100			VC	2.459239	
5414		CO		100			VC	2.459239	
8601	28.34	CO	25.73	300			VC	76.29548	1 in 381
5600	27.69	CO	25.11	225			VC	37.16181	1 in 155
4504	26.66	CO	25.16	225			VC	28.63564	1 in 260
4504	26.66	CO	25.16	225			VC	28.63564	1 in 260
4504	26.66	CO	25.16	225			VC	28.63564	1 in 260
4504	26.66	CO	25.16	225			VC	28.63564	1 in 260
5513	27.05	CO	26.03	225			VC	54.66415	1 in 46
5513	27.05	CO	26.03	225			VC	54.66415	1 in 46
9500	28.02	CO	25.8	300			VC	69.00725	1 in 383
9500	28.02	CO	25.8	300			VC	69.00725	1 in 383
8670		CO	0	150			VC	8.509562	
8645		CO	0	150			VC	6.846779	
9702	28.42	CO	25.7	450			VC	31.40064	
8676		CO	0	150			VC	8.576915	
6502	27.07	CO	25.34	225			VC	51.89412	1 in 133
5507	27.05	CO	25.77	225			VC	49.29506	1 in 57
5507	27.05	CO	25.77	225			VC	49.29506	1 in 57

LEGEND

Abandoned	Foul	Surface Water	Combined	
				Public Sewer
				Private Sewer
				Section 104
				Rising Main
				Sludge Main
				Overflow
				Water Course
				Highway Drain

All point assets follow the standard colour convention:
red - combined blue - surface water
brown - foul purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

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
SQ Square

SEWER MATERIAL

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

Address or Site Reference:

Ryebank Fields,

OS sheet Number: SJ8194NE
Scale: 1:1250 Date: 28/10/2019
Nodes: 319
Sheet: 6 of 6

Printed by: Property Searches

SEWER RECORDS

United Utilities
helping life flow smoothly

APPENDIX 6: Drain Alert Report

DRAIN ALERT
Cripplegate Lane, Hoghton, Preston. PR5 0RR
Tel: 01254 851500 Fax: 01254854004 service@drain-alert.co.uk

BWB Consulting Ltd
11 Portland Street
Manchester
M1 3HU

3rd March 2020

Dear Keith,

Reference: - JN29928, Ryebank Fields.

May we thank you for your valued custom. As requested, we have conducted a CCTV inspection at the above premises. We have emailed a link to you to access the Wincan VX video clips and documents via the cloud.

We trust that the report is to your satisfaction; however, should you have any queries then please do not hesitate to contact me.

Yours sincerely,

Mr S W Ormisher, B.A.(Hons.),
Technical Services Consultant

Plan of the drainage system, not to scale
Enclosed

Conclusion

As requested, a CCTV survey and investigation of United Utilities surface water drainage lines was carried out. Upon arrival visible inspection found various manholes to be in light road, footpath and field areas, further investigation found silt debris to be minimal in manholes, therefore no jetting was carried out prior to the survey.

The survey was conducted upstream and downstream from manholes marked and identified on plan accordingly. Evidence from the survey found drainage lines to be of 1275mm brick construction throughout.

The general condition of lines surveyed was found to ne reasonable and in expected working order throughout although one fault was seen which will require remedial work to be carried out to prevent problems occurring in the future.

Faults Found:

Section 1 UUMH1704-UUMH0401

Obstruction seen at 63.60mtrs causing reduced efficiency within the drain, restricting the survey.

Recommendation is to use the high-pressure tanker wagon to remove the debris allowing the CCTV to be carried out successfully.

We trust that the above is acceptable; however, should you require any further information, please do not hesitate to contact me.

Yours sincerely,

Mr S W Ormisher,
Technical Services Consultant

Disclaimer - Please note that any dimensions, levels and drainage layout drawings that are provided by Drain Alert, should be checked before being relied upon. All updated drawings are not to scale. It is the responsibility of the client to verify all information given with regards to the drainage prior to commencing any design or work site.

Project

Project Name:	29928 Ryebank Fields
Project Description:	Converted project from v8 project
Project Number:	1
Project Date:	26/02/2020
Inspection Standard:	MSCC3 Sewers & Drainage GB (SRM4 Scoring)

Drain Alert
Cripplegate Barn, Cripplegate Lane
Tel. 01254 851500
www.drain-alert.co.uk

Table of Contents

Project Name	Project Number	Project Date
29928 Ryebank Fields	1	26/02/2020

Project Information P-1
Section: 1; UUMH1704 > UUMH0401 1
Section: 2; UUMH0401 > UUMH9400 3

Drain Alert
Cripplegate Barn, Cripplegate Lane
Tel. 01254 851500
www.drain-alert.co.uk

Project Information

Project Name	Project Number	Project Date
29928 Ryebank Fields	1	26/02/2020

Client

Company: BWB Consulting Limited
Street: Ryebank Road
Town or City: Chorlton

Site

Company: Ryebank Fields
Street: Ryebank Road
Town or City: Chorlton

Contractor

Company: Drain Alert
Contact: Stephen Ormisher
Department: Director
Street: Cripplegate Barn
Town or City: Cripplegate Lane
County: Hoghton
Post Code: Preston PR5 0RR
Phone: 01254 851500
Fax: 01254 854004
Email: www.drain-alert.co.uk

Drain Alert
Cripplegate Barn, Cripplegate Lane
Tel. 01254 851500
www.drain-alert.co.uk

Section Inspection - 26/02/2020

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
1	1	26/02/20	10:27	Not Specified	Showers	Not Specified	Not Specified
Operator		**Vehicle**		**Camera**	**Preset Length**	**Legal Status**	**Alternative ID**
L Hilton		PK65 HFB		P235 Tractor	Not Specified	Not Specified	1

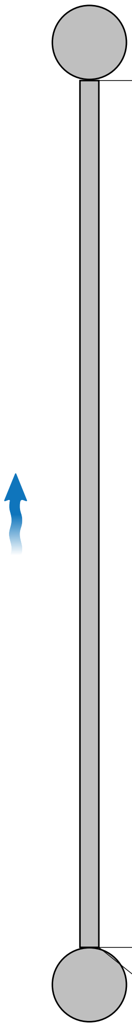
Town or Village:		**Inspection Direction:**	Upstream	**Upstream Node:**	UU MH 1704
Road:	Ryebank Road	**Inspected Length:**	63.60 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	63.60 m	**Downstream Node:**	UU MH 0401
Surface Type:		**Joint Length:**	0.00 m	**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:		**Dia/Height:**	1,275 mm
Year Constructed:		**Pipe Material:**	Brick
Flow Control:		**Lining:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:554

Depth: m
UU MH 0401



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	ST	Start of survey	00:00:23		
63.60	OB	Obstruction, from 9 to 5 o'clock, 30% height loss: Heavy Debris	00:03:31	_2f6700ca-1ec4-4ca3-8fb1-c54	5
63.60	FH	Finish survey: Limit of CCTV Due to Debris	00:03:37		

UU MH 1704
Depth: m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	1	10.0	0.2	10.0	5.0

Drain Alert
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Tel. 01254 851500
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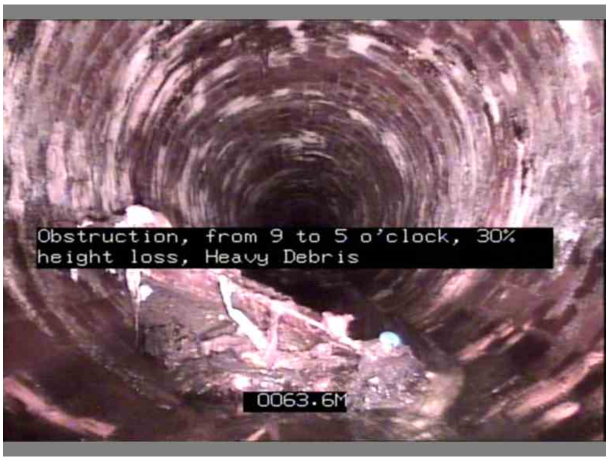
Section Pictures - 26/02/2020

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
1	Upstream			



_2f6700ca-1ec4-4ca3-8fb1-c542ec392b47.jpg, 00:03:31, 63.60 m
Obstruction, from 9 to 5 o'clock, 30% height loss, Heavy Debris

Drain Alert
Cripplegate Barn, Cripplegate Lane
Tel. 01254 851500
www.drain-alert.co.uk

Section Inspection - 26/02/2020

Section	Inspection	Date	Time	Client`s Job Ref	Weather	Pre Cleaned	PLR
2	1	26/02/20	11:27	Not Specified	Showers	Not Specified	Not Specified

Operator	Vehicle	Camera	Preset Length	Legal Status	Alternative ID
L Hilton	PK65 HFB	P235 Tractor	Not Specified	Not Specified	2

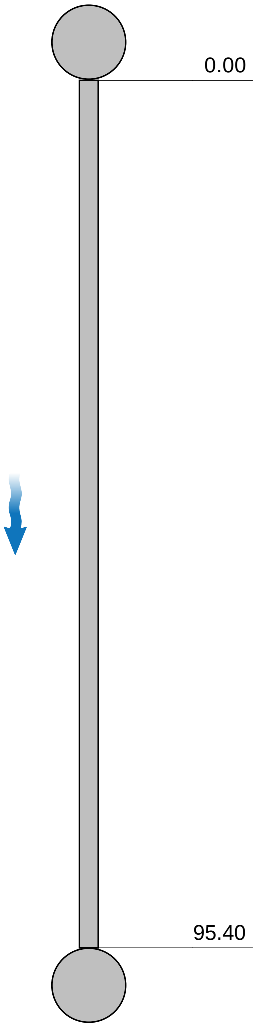
Town or Village:		**Inspection Direction:**	Downstream	**Upstream Node:**	UU MH 0401
Road:	Ryebank Road	**Inspected Length:**	95.40 m	**Upstream Pipe Depth:**	
Location:		**Total Length:**	95.40 m	**Downstream Node:**	UU MH 9400
Surface Type:		**Joint Length:**	0.00 m	**Downstream Pipe Depth:**	

Use:	Surface water	**Pipe Shape:**	Circular
Type of Pipe:		**Dia/Height:**	1,275 mm
Year Constructed:		**Pipe Material:**	Brick
Flow Control:		**Lining:**	No Lining
Inspection Purpose:	Sample survey to determine asset condition	**Lining Material:**	No Lining

Comments:
Recommendations:

Scale: 1:830

Depth: m
UU MH 0401



Position [m]	Code	Observation	MPEG	Photo	Grade
0.00	ST	Start of survey	00:00:10		
95.40	FH	Finish survey: UU MH 9400	00:04:36	_3db50f29-7db9-4df9-83fd-ffc15	

UU MH 9400
Depth: m

Construction Features					Miscellaneous Features				
Structural Defects					Service & Operational Observations				
STR No. Def	**STR Peak**	**STR Mean**	**STR Total**	**STR Grade**	**SER No. Def**	**SER Peak**	**SER Mean**	**SER Total**	**SER Grade**
0	0.0	0.0	0.0	1.0	0	0.0	0.0	0.0	1.0

Drain Alert
Cripplegate Barn, Cripplegate Lane
Tel. 01254 851500
www.drain-alert.co.uk

Section Pictures - 26/02/2020

Section	Inspection Direction	PLR	Client`s Job Ref	Contractor`s Job Ref
2	Downstream			

_3db50f29-7db9-4df9-83fd-ffc15a0464f2.jpg, 00:04:36, 95.40 m
Finish survey, UU MH 9400

Manhole Record Card

Number	UU0401			Date Of Survey	26/02/2020
Status	PU	Function	S	Type	M

Cover Details:

Square Recta ☑ Double Triang ☑ Single Triangl ☐ Circular ☐ Multiple ☐ Hinged ☐ Lockable ☐

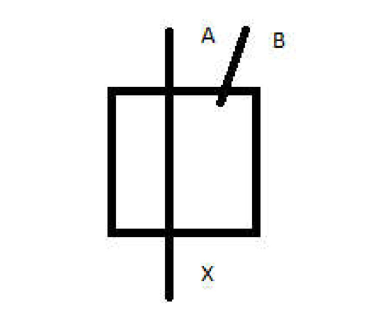
CoverLevel 0.00 Cover Load Class M

Cover 600 X 600	Chamber X 0		EvidenceOfSurcharge ☐	
Shaft 0 X 0	ShaftDepth 0		ToxicAtmosphere ☐	
Brick ☑	Precast Concrete ☐	PVC ☐	Segments ☐	No.RegCourses
Reducing Slab ☐	Taper ☐	Side Entry ☐	No.Land 0	Step Irons ☑ Ladder ☐

PlanPhoto

LocationPhoto

PlanofManhol



Chamber Conditions:

Cover	OK	Shaft	OK
Irons/Ladder	OK	Chamber	OK
Benching/Channel	OK		

PHOTOS NOT DOWLOADING, WILL RE TAKE WHEN WE GO BACK TO SITE

Pipe	Invert L	DepthFr	UpstreamRe	Downstream	Pipe Sha	SizeHeight	SizeWidth	Pipe Material	Lining Material
A	-5.400	5.40	MH1704		C		1275	B	
B	-2.730	2.73			C		150	CI	
X	-5.400	5.40		MH9400	C		1275	B	

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
4010		CO		150			VC	10.57607	
4010		CO		150			VC	10.57607	
2801	26.99	CO	24.02	225			VC	7.071068	1 in 141
1901	26.98	CO	24.52	225			VC	82.76472	1 in 207
4707		CO		100			VC	1.116908	
1012		CO		150			VC	6.178461	
3600	26.81	CO	24.37	300			VC	65	1 in 191
4410	26.86	CO	25.46	225			VC	24.16609	1 in 62
1007		CO		150			VC	10.02487	
3802	27.25	CO	24.48	225			VC	64.89993	1 in 232
5509	26.97	CO	24.34	300			VC	47.01064	1 in 131
5509	26.97	CO	24.34	300			VC	47.01064	1 in 131
5509	26.97	CO	24.34	300			VC	47.01064	1 in 131
5509	26.97	CO	24.34	300			VC	47.01064	1 in 131
4416		CO		150			VC	8.378669	
4416		CO		150			VC	8.378669	
4404	27.78	CO	26.51	225			VC	59.90826	1 in 80
4404	27.78	CO	26.51	225			VC	59.90826	1 in 80
2702		OV	0	950			VC	159.7449	
5409	2.34	CO	23.53	225			VC	12.31334	
5409	2.34	CO	23.53	225			VC	12.31334	
5409	2.34	CO	23.53	225			VC	12.31334	
5409	2.34	CO	23.53	225			VC	12.31334	
2704	26.97	CO	25.37	225			VC	38.98238	1 in 93
5722		CO		150			VC	6.603725	
5722		CO		150			VC	6.603725	
4601	27.13	CO	24.88	300			VC	61.78304	1 in 126
4601	27.13	CO	24.88	300			VC	61.78304	1 in 126
5602	27.7	CO	24.65	300			VC	76.0482	1 in 185
4503	26.76	CO	25.1	300			VC	86.12201	1 in 121
4503	26.76	CO	25.1	300			VC	86.12201	1 in 121
4610		CO	0	150			VC	7.910811	
4610		CO	0	150			VC	7.910811	
3907		CO		150			VC	9.919235	
3807		CO	0	150			VC	5.708568	
1902	27.04	CO	24.67	300			VC	88.50989	1 in 216
4702	27.02	CO	25.63	225			VC	24.73863	1 in 353
5514	27.1	CO	23.95	525			CO	9.413107	1 in 157
5514	27.1	CO	23.95	525			CO	9.413107	1 in 157
3401	27.8	CO	26.41	225			VC	74.72617	1 in 125
3401	27.8	CO	26.41	225			VC	74.72617	1 in 125
4502	26.37	CO	25.1	225			VC	36.67424	1 in 183
4502	26.37	CO	25.1	225			VC	36.67424	1 in 183
3703	26.92	CO	25.05	225			VC	78.3147	1 in 230
4401	26.5	CO	25.14	225			VC	10.19804	1 in 73
4401	26.5	CO	25.14	225			VC	10.19804	1 in 73
4805	27.34	CO	24.39	225			VC	13.41641	1 in 75
3803	27.37	CO	24.17	225			VC	62.76942	1 in 123
4402	26.81	CO	24.97	300			VC	36.23534	1 in 518
4402	26.81	CO	24.97	300			VC	36.23534	1 in 518
3608		CO		150			VC	7.332582	
3502	26.63	CO	24	300			VC	73.1642	1 in 116
3502	26.63	CO	24	300			VC	73.1642	1 in 116
3504	26.51	CO	24.23	300			VC	67.91171	1 in 323
3504	26.51	CO	24.23	300			VC	67.91171	1 in 323
4003	27.9	CO	26.3	225			VC	27.01851	1 in 19
4003	27.9	CO	26.3	225			VC	27.01851	1 in 19
3500	26.52	CO	24.81	300			VC	4	1 in 400
1701	27.01	CO	25.27	225			VC	33.24154	1 in 104
3604		CO		150			VC	17.23052	1 in
4002	27.9	CO	24.62	300			VC	36.94918	1 in 616
2601	26.49	CO	24.75	300			VC	57.27129	1 in 358
3603	26.61	CO	24.61	300			VC	47.07441	1 in 214
5509	26.97	CO	0	300			VC	65.87685	
5509	26.97	CO	0	300			VC	65.87685	
5509	26.97	CO	0	300			VC	65.87685	
5509	26.97	CO	0	300			VC	65.87685	
3901	27.25	CO	23.3	300			VC	77.38863	1 in 228
4801		OV	0	1500			VC	203.4561	
4801		OV	0	1500			VC	203.4561	
1707		CO		150			VC	8.526428	
4902	27.31	CO	23.72	300			VC	80.49844	1 in 201
2803	26.96	CO	22.53	300			VC	5.830952	
5515	27.11	CO	23.25	500			DI	5.951582	1 in 40
5515	27.11	CO	23.25	500			DI	5.951582	1 in 40
4804	27.39	CO	25.06	225			VC	51.47815	1 in 147
4804	27.39	CO	25.06	225			VC	51.47815	1 in 147
3602	26.95	CO	23.35	300			VC	5.09902	1 in 2
4406	26.74	CO	24.98	225			VC	10.19804	1 in 204
4406	26.74	CO	24.98	225			VC	10.19804	1 in 204
4406	26.74	CO	24.98	225			VC	10.19804	1 in 204
4406	26.74	CO	24.98	225			VC	10.19804	1 in 204
3903	27.31	CO	24.92	225			VC	56.4358	1 in 38
5904		CO		150			VC	15.77581	
5904		CO		150			VC	15.77581	
4603	26.94	CO	24.36	300			VC	51.05301	
0003		CO		150			VC	1.617551	
0401	27.97	SW	22.54	1275			BR	48.30114	1 in 4830
0401	27.97	SW	22.54	1275			BR	48.30114	1 in 4830
0401	27.97	SW	22.54	1275			BR	48.30114	1 in 4830
0401	27.97	SW	22.54	1275			BR	48.30114	1 in 4830
4407	26.77	CO	25.05	225			VC	8.602325	1 in 72
4407	26.77	CO	25.05	225			VC	8.602325	1 in 72
2001	27.5	CO	25.44	225			VC	68.0294	1 in 272
3621		CO		100			VC	9.319727	
3402	27.76	CO	25.83	300			VC	66.21933	1 in 184
3402	27.76	CO	25.83	300			VC	66.21933	1 in 184
4604	26.79	CO	24.77	225			VC	8.246211	1 in 24
2602	26.43	CO	25.19	300			VC	89.26926	1 in 229
2802	26.99	CO	22.54	300			VC	2.236068	
6510	27.44	CO	20.57	2800			BR	243.7594	1 in 530
6510	27.44	CO	20.57	2800			BR	243.7594	1 in 530
4705	27.26	CO	25.59	300			VC	77.88762	1 in 1558
4705	27.26	CO	25.59	300			VC	77.88762	1 in 1558
4901	27.44	CO	24.68	225			VC	52.3259	1 in 194
0001	27.11	CO	24.23	300			VC	37.57659	
5901	27.6	CO	26.05	225			VC	91.21951	1 in 175
4007	27.75	CO	26.36	150			VC	14.4222	
2705		CO	0	2800			BR	114.0749	
5400	26.69	CO	23.53	225			VC	24.45621	
5400	26.69	CO	23.53	225			VC	24.45621	
2501	26.28	CO	25.03	300			VC	92.89241	1 in 186
2501	26.28	CO	25.03	300			VC	92.89241	1 in 186
4608		CO	0	150			VC	19.39074	
4605	26.93	CO	24.74	225			VC	5.153556	
5001	27.84	CO	24.27	300			VC	77.27323	1 in 149
5001	27.84	CO	24.27	300			VC	77.27323	1 in 149
2901	27.28	CO	25.43	225			VC	68.03054	1 in 106
3618		CO		150			VC	26.73102	
4405	26.81	CO	24.89	300			VC	31.38471	1 in 314
4405	26.81	CO	24.89	300			VC	31.38471	1 in 314
4405	26.81	CO	24.89	300			VC	31.38471	1 in 314
4405	26.81	CO	24.89	300			VC	31.38471	1 in 314
4408	26.95	CO	24.77	225			VC	32.64965	1 in 121
4408	26.95	CO	24.77	225			VC	32.64965	1 in 121
4408	26.95	CO	24.77	225			VC	32.64965	1 in 121
4408	26.95	CO	24.77	225			VC	32.64965	1 in 121
2906		CO		150			VC	25.85175	
3619		CO		150			VC	7.160704	
4001	27.86	CO	24.55	300			VC	45	1 in 346
4001	27.86	CO	24.55	300			VC	45	1 in 346
2504		CO		150			VC	0.9679947	
2504		CO		150			VC	0.9679947	
2703		CO		150			VC	5.927334	
4409	26.9	CO	24.88	225			VC	22.36068	1 in 248
4409	26.9	CO	24.88	225			VC	22.36068	1 in 248
3501	26.49	CO	24.79	300			VC	56.2943	1 in 217
3601	26.8	CO	24.29	300			VC	4.472136	1 in 1
1908	27.18	CO	0	300			VC	7.071068	
3001	26.97	CO	24.96	225			VC	62.13633	1 in 2071
1002	27.12	CO	25.67	225			VC	65.30697	1 in 251
4803	27.38	CO	25.27	225			VC	40.24922	1 in 212
4803	27.38	CO	25.27	225			VC	40.24922	1 in 212
2701	26.69	CO	24.53	225			VC	104.2017	1 in 213
2500	26.31	CO	25.06	225			VC	6.324555	1 in 632
2500	26.31	CO	25.06	225			VC	6.324555	1 in 632
5802	27.69	OV	23.06	1220			BR	81.32035	
4500	26.48	CO	24.88	225			VC	47.07441	1 in 523
4500	26.48	CO	24.88	225			VC	47.07441	1 in 523
3614		CO		150			VC	28.2029	
2904		CO		150			VC	11.32372	
3705		CO		150			VC	7.449035	
3902	27.28	CO	24.77	225			VC	16.76305	
4704	27.23	CO	25.9	225			VC	77.2074	1 in 129
4704	27.23	CO	25.9	225			VC	77.2074	1 in 129
1702	27.05	CO	24.95	225			VC	67.20863	1 in 73
4627		CO		150			VC	17.27874	
4802	27.17	CO	24.59	225			VC	73.43024	1 in 188
5002	28.5	CO	24.57	300			VC	57.48913	1 in 221
4806	27.12	CO	24.68	225			VC	18.27374	1 in 305
3625		CO		150			VC	18.61763	
5905		CO		150			VC	7.672368	
5905		CO		150			VC	7.672368	
3400	26.59	CO	24.63	300			VC	38.48376	1 in 101
3400	26.59	CO	24.63	300			VC	38.48376	1 in 101
4503	26.76	CO	0	300			VC	53.93515	
4503	26.76	CO	0	300			VC	53.93515	
3503	26.29	CO	24.51	300			VC	67.54258	1 in 338
3503	26.29	CO	24.51	300			VC	67.54258	1 in 338
2804	27.04	CO	22.93	300			VC	70.60453	1 in 186
4708		CO		100			VC	8.396721	
2807		CO		150			VC	7.45977	
4415		CO		150			VC	6.062428	
4415		CO		150			VC	6.062428	
4403	26.91	CO	25.88	225			VC	34.88553	1 in 87
4403	26.91	CO	25.88	225			VC	34.88553	1 in 87
3507		CO		150			VC	7.307869	
4701	26.91	CO	25.7	225			VC	51.92302	1 in 1038
3605		CO	20.85	2800			BR	5.385165	
3801	27.11	CO	25.31	225			VC	12.94048	
4504	26.66	CO	25.16	225			VC	28.63564	1 in 260
4504	26.66	CO	25.16	225			VC	28.63564	1 in 260
4504	26.66	CO	25.16	225			VC	28.63564	1 in 260
4504	26.66	CO	25.16	225			VC	28.63564	1 in 260
4602	26.96	CO	20.09	2800			BR	75.40103	1 in 99
2707		CO		150			VC	22.57265	
4501	26.77	CO	24.84	225			VC	48.83646	1 in 109
4501	26.77	CO	24.84	225			VC	48.83646	1 in 109
4501	26.77	CO	24.84	225			VC	48.83646	1 in 109
4501	26.77	CO	24.84	225			VC	48.83646	1 in 109
4634		CO		150			VC	8.75919	
3701		CO	20.86	2800			BR	46.26851	
4635		CO		150			VC	13.14616	
4504	26.66	CO	25.59	225			VC	54.81788	1 in 93
4504	26.66	CO	25.59	225			VC	54.81788	1 in 93
4504	26.66	CO	25.59	225			VC	54.81788	1 in 93
4504	26.66	CO	25.59	225			VC	54.81788	1 in 93
3606		CO	20.85	2800			BR	103.1712	1 in 10317
2600	26.72	CO	24.57	300			VC	54.3783	1 in 139
3710		CO		150			VC	10.72151	
4600	26.88	CO	24.64	300			VC	40.8534	1 in 124

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
3704	26.86	CO	23.32	300			VC	5.385165	1 in 2

LEGEND

Abandoned | Foul | Surface Water | Combined

- Public Sewer
- Private Sewer
- Section 104
- Rising Main
- Sludge Main
- Overflow
- Water Course
- Highway Drain

All point assets follow the standard colour convention:
red - combined, blue - surface water, brown - foul, purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

MANHOLE FUNCTION

- FO Foul
- SW Surface Water
- CO Combined
- OV Overflow

SEWER SHAPE

- CI Circular
- EG Egg
- OV Oval
- FT Flat Top
- RE Rectangular
- SQ Square
- TR Trapezoidal
- AR Arch
- BA Barrel
- HO Horseshoe
- UN Unspecified

SEWER MATERIAL

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

Address or Site Reference:

Ryebank Fields,

OS sheet Number: SJ8194NW
Scale: 1:1250
Date: 28/10/2019
Nodes: 202
Sheet: 4 of 6

Printed by: Property Searches

SEWER RECORDS

United Utilities
helping life flow smoothly

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
9105		CO		150			VC	6.216979	
9400	28.4	SW	22.5	1200			BR	93.0215	1 in 1860
8016		CO		100			VC	3.838945	
8003	27.34	CO	24.29	300			VC	45.80393	1 in 51
6504		CO	0	150			VC	33.8778	
6206		CO		150			VC	13.15238	
7001	25.82	CO	23.46	375			VC	53.00943	1 in 279
8104		CO	0	150			VC	7.94048	
4401	26.56	CO	22.05	375			VC	76.55064	1 in 273
4401	26.56	CO	22.05	375			VC	76.55064	1 in 273
6124		CO		150			VC	37.72682	
0000	27.63	CO	25.99	300			VC	71.70077	1 in 598
0000	27.63	CO	25.99	300			VC	71.70077	1 in 598
6204	26.58	CO	24.87	225			VC	25.05993	1 in 46
9202	27.85	CO	26.93	225			VC	25.4951	1 in 425
9001	28.01	CO	23.51	300			VC	59.13544	1 in 191
9001	28.01	CO	23.51	300			VC	59.13544	1 in 191
9000	27.49	CO	26.15	225			VC	63.82006	1 in 95
6128		CO		100			VC	2.280625	
6201	26.41	CO	23.89	375			VC	74.70609	
8019		CO		225			VC	3.505505	
8001	26.45	CO	23.14	375			VC	51.10773	
6138		CO		150			VC	24.62677	
8002	26.38	CO	23.36	300			VC	6.708204	1 in 35
6506		CO		150			VC	2.13211	
6506		CO		150			VC	2.13211	
9203	27.66	CO	26.85	225			VC	58.79626	1 in 190
9309		CO		150			VC	6.587931	
9309		CO		150			VC	6.587931	
9201	28.01	CO	27.15	225			VC	30.41381	1 in 152
0000	27.63	CO	0	225			VC	51.46304	
0000	27.63	CO	0	225			VC	51.46304	
7207	26.39	CO	24.3	300			VC	43.56604	1 in 168
7119		CO		150			VC	9.092158	
7204	26.64	CO	24.79	225			VC	43.01163	1 in 88
0402	28.52	CO	25.29	375			VC	40.79216	1 in 157
6202	25.21	CO	21.1	1372			CO	88.33971	1 in 252
6108		CO		150			VC	12.15817	
6301	24.4	CO	0	300			VC	79.76215	
5101		SW	0	1200			BR	82.49242	
8202	27.19	CO	24.22	300			VC	8.485281	1 in 22
4505	26.51	CO	22.26	375			VC	70.2282	1 in 334
4505	26.51	CO	22.26	375			VC	70.2282	1 in 334
6502	26.91	CO	25.05	225			VC	40.24929	1 in 149
6502	26.91	CO	25.05	225			VC	40.24929	1 in 149
9208		CO		150			VC	5.252632	
6123		CO		100			VC	17.95239	
8201	27.38	CO	23.95	375			VC	81.27116	1 in 353
9314		CO		100			VC	9.127409	
9904	27.14	SW	22.61	600			CO	82.61961	
6117		CO		150			VC	18.24966	
7106		CO		100			VC	13.47575	
0400	28.56	CO	24.98	375			VC	35.05709	1 in 167
0400	28.56	CO	24.98	375			VC	35.05709	1 in 167
7203		CO		100			VC	4.002229	
6101	25.94	CO	24.04	300			VC	8.485281	
7103		CO		100			VC	15.02507	
8017		CO		100			VC	7.308312	
7206	26.45	CO	24.3	300			VC	8.602325	
8007		CO		100			PSC	16.76758	
9101	28.35	CO	25.81	300			VC	46.04346	1 in 128
9101	28.35	CO	25.81	300			VC	46.04346	1 in 128
0103	28.4	CO	25.93	300			VC	26.57066	1 in 62
0103	28.4	CO	25.93	300			VC	26.57066	1 in 62
7201	26.69	CO	24.94	225			VC	13.89244	1 in 107
0101	28.33	CO	26.1	300			VC	39.35734	1 in 262
9100	27.93	CO	25.43	300			VC	54.40588	1 in 67
8101	27.52	CO	24.6	300			VC	45.27692	1 in 137
5301	26.52	CO	25.17	150			VC	84.21995	1 in 241
8100	27.07	CO	23.7	375			VC	76.02631	
6503	26.87	CO	24.37	225			VC	32.06244	
6503	26.87	CO	24.37	225			VC	32.06244	
9200	27.68	CO	24.17	375			VC	58.83027	1 in 294
8018		CO		150			VC	7.638902	
0200	28.08	CO	26.52	300			VC	56.0803	1 in 255
0200	28.08	CO	26.52	300			VC	56.0803	1 in 255
8007		CO		150			VC	15.1719	
0308		CO	0	150			VC	8.0146	
0308		CO	0	150			VC	8.0146	
7117		CO		150			VC	17.36484	
6102	25.83	CO	23.94	300			VC	61.22091	1 in 211
5502	26.82	CO	23.9	300			VC	20.88061	1 in 29
5502	26.82	CO	23.9	300			VC	20.88061	1 in 29
7003		SW	0	1200			BR	127.1668	
0312		CO		150			VC	6.286277	
0312		CO		150			VC	6.286277	
8010		CO		100			PSC	14.73944	
0102	27.93	CO	26.52	225			VC	50.08992	1 in 135
0102	27.93	CO	26.52	225			VC	50.08992	1 in 135
4303	26.41	CO	25.51	150			VC	67.17886	1 in 198
9303	27.94	CO	24.28	375			VC	40.70626	1 in 452
9401	28.52	CO	24.8	375			VC	54.626	1 in 166
9401	28.52	CO	24.8	375			VC	54.626	1 in 166
7000	25.79	SW	0	1200			BR	39.12502	
9304	27.99	CO	24.87	300			VC	36.67424	1 in 64
8000	25.97	CO	23.25	375			VC	55.98994	1 in 622
9300	28.33	CO	24.44	375			VC	58.66856	1 in 419
9117		CO		100			VC	8.815329	
9211		CO		150			VC	8.697612	
5401	26.5	CO	24.82	150			VC	74.27651	
6106		SW	0	1200			CO	86.00581	
0202		CO		150			VC	15.37267	
9003	27.3	CO	23.2	300			VC	19.76473	
9207		CO		150			VC	15.33975	
9002	26.94	CO	22.96	375			VC	38.43286	1 in 320
8111		CO		150			VC	7.608085	
9102	28.41	CO	25.71	225			VC	39.84972	1 in 100
9102	28.41	CO	25.71	225			VC	39.84972	1 in 100
7100	25.73	CO	23.64	300			VC	56.22277	1 in 351
6501	27.02	CO	24.78	225			VC	52.35456	1 in 128
6501	27.02	CO	24.78	225			VC	52.35456	1 in 128
7118		CO		150			VC	12.33419	
9212		CO		150			VC	7.397016	
8203	27.08	SW	22.34	1200			BR	145.9075	1 in 2084
5102		CO		150			VC	4.727551	
7401	27.4	CO	26.02	150			VC	59.5063	1 in 48
7401	27.4	CO	26.02	150			VC	59.5063	1 in 48
7604	26.49	CO	25.23	225			VC	48.30114	1 in 268
5201	25.41	CO	21.45	1372			VC	128.764	1 in 322
5601	26.37	CO	23.17	300			VC	73.46227	
0401	27.97	SW	22.54	1275			BR	48.30114	1 in 4830
0401	27.97	SW	22.54	1275			BR	48.30114	1 in 4830
0401	27.97	SW	22.54	1275			BR	48.30114	1 in 4830
0401	27.97	SW	22.54	1275			BR	48.30114	1 in 4830
9302	27.92	SW	22.43	1200			BR	130.9236	1 in 1870
0206		CO		150			VC	9.937974	
0206		CO		150			VC	9.937974	
7402	27.3	CO	26.08	150			VC	4.123106	1 in 69
7402	27.3	CO	26.08	150			VC	4.123106	1 in 69
5603	26.91	CO	24.46	225			VC	108.6324	1 in 205
9301	28.35	CO	26.96	300			VC	95.18929	1 in 154
9301	28.35	CO	26.96	300			VC	95.18929	1 in 154
0301	28.08	CO	0	300			VC	89.10667	
5501	26.45	CO	22.44	375			VC	36.40055	1 in 202
5501	26.45	CO	22.44	375			VC	36.40055	1 in 202

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad

- LINES SURVEYED
- MH REF's

LEGEND

Abandoned / Foul / Surface Water / Combined

- Public Sewer
- Private Sewer
- Section 104
- Rising Main
- Sludge Main
- Overflow
- Water Course
- Highway Drain

All point assets follow the standard colour convention:
red - combined, blue - surface water, brown - foul, purple - overflow

- Manhole
- Head of System
- Extent of Survey
- Rodding Eye
- Inlet
- Discharge Point
- Vortex
- Penstock
- Washout Chamber
- Valve
- Air Valve
- Non Return Valve
- Soakaway
- Gully
- Cascade
- Flow Meter
- Hatch Box
- Oil Interceptor
- Summit
- Drop Shaft
- Orifice Plate
- Side Entry Manhole
- Outfall
- Screen Chamber
- Inspection Chamber
- Bifurcation Chamber
- Lamp Hole
- T Junction / Saddle
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- Change of Characteristic

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
SQ	Square		

SEWER MATERIAL

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

Address or Site Reference:

Ryebank Fields,

OS sheet Number: SJ8094SE
Scale: 1:1250
Date: 28/10/2019
Nodes: 135
Sheet: 1 of 6

Printed by: Property Searches

SEWER RECORDS

United Utilities — helping life flow smoothly

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

APPENDIX 7: Micro Drainage Calculations

ICP SUDS Mean Annual Flood

Input

Return Period (years)	2	Soil	0.300
Area (ha)	1.000	Urban	0.000
SAAR (mm)	851	Region Number	Region 10

Results	**l/s**
QBAR Rural	2.3
QBAR Urban	2.3
Q2 years	2.1
Q1 year	2.0
Q30 years	3.9
Q100 years	4.8

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	99.431	0.431	4.5	470.8	O K
30 min Summer	99.488	0.488	4.5	537.5	O K
60 min Summer	99.549	0.549	4.5	611.2	O K
120 min Summer	99.614	0.614	4.5	690.4	O K
180 min Summer	99.652	0.652	4.5	737.4	O K
240 min Summer	99.678	0.678	4.5	769.8	O K
360 min Summer	99.711	0.711	4.5	812.0	Flood Risk
480 min Summer	99.731	0.731	4.5	837.6	Flood Risk
600 min Summer	99.744	0.744	4.5	853.5	Flood Risk
720 min Summer	99.751	0.751	4.5	863.3	Flood Risk
960 min Summer	99.763	0.763	4.5	878.9	Flood Risk
1440 min Summer	99.764	0.764	4.5	879.7	Flood Risk
2160 min Summer	99.743	0.743	4.5	852.2	Flood Risk
2880 min Summer	99.721	0.721	4.5	823.9	Flood Risk
4320 min Summer	99.673	0.673	4.5	763.4	O K
5760 min Summer	99.625	0.625	4.5	704.3	O K
7200 min Summer	99.573	0.573	4.5	639.2	O K
8640 min Summer	99.523	0.523	4.5	579.1	O K
10080 min Summer	99.476	0.476	4.5	523.8	O K
15 min Winter	99.480	0.480	4.5	528.0	O K
30 min Winter	99.543	0.543	4.5	603.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	200.129	0.0	379.8	27
30 min Summer	114.737	0.0	379.6	41
60 min Summer	65.780	0.0	626.0	72
120 min Summer	37.713	0.0	703.0	130
180 min Summer	27.237	0.0	719.3	190
240 min Summer	21.621	0.0	716.8	250
360 min Summer	15.615	0.0	707.3	368
480 min Summer	12.396	0.0	698.2	488
600 min Summer	10.363	0.0	690.3	606
720 min Summer	8.952	0.0	683.3	726
960 min Summer	7.164	0.0	670.7	964
1440 min Summer	5.233	0.0	650.3	1442
2160 min Summer	3.823	0.0	1310.3	1868
2880 min Summer	3.059	0.0	1325.0	2256
4320 min Summer	2.223	0.0	1219.5	3036
5760 min Summer	1.772	0.0	1619.8	3880
7200 min Summer	1.486	0.0	1698.5	4680
8640 min Summer	1.288	0.0	1765.5	5440
10080 min Summer	1.140	0.0	1824.3	6160
15 min Winter	200.129	0.0	380.7	27
30 min Winter	114.737	0.0	374.7	41

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	99.611	0.611	4.5	686.8	O K
120 min Winter	99.684	0.684	4.5	776.9	O K
180 min Winter	99.726	0.726	4.5	830.9	Flood Risk
240 min Winter	99.755	0.755	4.5	868.5	Flood Risk
360 min Winter	99.794	0.794	4.5	918.6	Flood Risk
480 min Winter	99.818	0.818	4.5	950.1	Flood Risk
600 min Winter	99.834	0.834	4.5	970.9	Flood Risk
720 min Winter	99.844	0.844	4.5	984.5	Flood Risk
960 min Winter	99.862	0.862	4.5	1007.6	Flood Risk
1440 min Winter	99.871	0.871	4.5	1019.4	Flood Risk
2160 min Winter	99.854	0.854	4.5	997.2	Flood Risk
2880 min Winter	99.824	0.824	4.5	957.8	Flood Risk
4320 min Winter	99.764	0.764	4.5	879.9	Flood Risk
5760 min Winter	99.700	0.700	4.5	798.2	Flood Risk
7200 min Winter	99.631	0.631	4.5	711.6	O K
8640 min Winter	99.549	0.549	4.5	610.4	O K
10080 min Winter	99.474	0.474	4.5	521.1	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
60 min Winter	65.780	0.0	694.1	70
120 min Winter	37.713	0.0	719.6	128
180 min Winter	27.237	0.0	713.1	188
240 min Winter	21.621	0.0	706.2	246
360 min Winter	15.615	0.0	695.5	362
480 min Winter	12.396	0.0	687.8	480
600 min Winter	10.363	0.0	681.9	596
720 min Winter	8.952	0.0	677.1	712
960 min Winter	7.164	0.0	670.1	942
1440 min Winter	5.233	0.0	664.5	1394
2160 min Winter	3.823	0.0	1378.6	2040
2880 min Winter	3.059	0.0	1344.5	2368
4320 min Winter	2.223	0.0	1250.9	3252
5760 min Winter	1.772	0.0	1814.6	4208
7200 min Winter	1.486	0.0	1902.1	5120
8640 min Winter	1.288	0.0	1977.5	5888
10080 min Winter	1.140	0.0	2043.4	6656

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 380950 394650 SJ 80950 94650
C (1km)	-0.026
D1 (1km)	0.317
D2 (1km)	0.345
D3 (1km)	0.332
E (1km)	0.303
F (1km)	2.456
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 1.270

Time From:	**(mins) To:**	**Area (ha)**	**Time From:**	**(mins) To:**	**Area (ha)**	**Time From:**	**(mins) To:**	**Area (ha)**
0	4	0.423	4	8	0.423	8	12	0.423

Model Details

Storage is Online Cover Level (m) 100.000

Tank or Pond Structure

Invert Level (m) 99.000

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	1016.3	1.000	1383.6

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0100-4500-1050-4500
Design Head (m)	1.050
Design Flow (l/s)	4.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	100
Invert Level (m)	98.950
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.050	4.5
Flush-Flo™	0.310	4.5
Kick-Flo®	0.661	3.6
Mean Flow over Head Range	-	3.9

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.3	1.200	4.8	3.000	7.3	7.000	11.0
0.200	4.4	1.400	5.1	3.500	7.9	7.500	11.3
0.300	4.5	1.600	5.5	4.000	8.4	8.000	11.7
0.400	4.4	1.800	5.8	4.500	8.9	8.500	12.0
0.500	4.3	2.000	6.1	5.000	9.4	9.000	12.4
0.600	4.0	2.200	6.4	5.500	9.8	9.500	12.7
0.800	4.0	2.400	6.6	6.000	10.2		
1.000	4.4	2.600	6.9	6.500	10.6		

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	99.441	0.441	3.0	251.2	O K
30 min Summer	99.496	0.496	3.0	286.5	O K
60 min Summer	99.555	0.555	3.0	325.0	O K
120 min Summer	99.616	0.616	3.0	365.6	O K
180 min Summer	99.651	0.651	3.0	388.9	O K
240 min Summer	99.673	0.673	3.0	404.4	O K
360 min Summer	99.701	0.701	3.0	423.3	Flood Risk
480 min Summer	99.715	0.715	3.0	433.5	Flood Risk
600 min Summer	99.722	0.722	3.0	438.6	Flood Risk
720 min Summer	99.725	0.725	3.0	440.4	Flood Risk
960 min Summer	99.727	0.727	3.0	442.3	Flood Risk
1440 min Summer	99.712	0.712	3.0	431.5	Flood Risk
2160 min Summer	99.683	0.683	3.0	411.4	O K
2880 min Summer	99.656	0.656	3.0	392.2	O K
4320 min Summer	99.593	0.593	3.0	349.8	O K
5760 min Summer	99.529	0.529	3.0	307.9	O K
7200 min Summer	99.471	0.471	3.0	270.2	O K
8640 min Summer	99.417	0.417	3.0	236.3	O K
10080 min Summer	99.367	0.367	3.0	205.5	O K
15 min Winter	99.489	0.489	3.0	281.8	O K
30 min Winter	99.550	0.550	3.0	321.7	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	200.129	0.0	243.7	27
30 min Summer	114.737	0.0	250.9	41
60 min Summer	65.780	0.0	335.2	70
120 min Summer	37.713	0.0	384.5	130
180 min Summer	27.237	0.0	416.4	190
240 min Summer	21.621	0.0	440.7	248
360 min Summer	15.615	0.0	466.9	368
480 min Summer	12.396	0.0	470.4	486
600 min Summer	10.363	0.0	468.7	606
720 min Summer	8.952	0.0	465.7	724
960 min Summer	7.164	0.0	457.9	962
1440 min Summer	5.233	0.0	440.9	1368
2160 min Summer	3.823	0.0	701.6	1712
2880 min Summer	3.059	0.0	748.6	2104
4320 min Summer	2.223	0.0	811.6	2904
5760 min Summer	1.772	0.0	867.2	3688
7200 min Summer	1.486	0.0	909.7	4464
8640 min Summer	1.288	0.0	945.4	5192
10080 min Summer	1.140	0.0	976.8	5952
15 min Winter	200.129	0.0	250.7	27
30 min Winter	114.737	0.0	250.4	41

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
60 min Winter	99.616	0.616	3.0	365.6	O K
120 min Winter	99.684	0.684	3.0	412.0	O K
180 min Winter	99.723	0.723	3.0	439.1	Flood Risk
240 min Winter	99.749	0.749	3.0	457.4	Flood Risk
360 min Winter	99.781	0.781	3.0	480.6	Flood Risk
480 min Winter	99.800	0.800	3.0	493.9	Flood Risk
600 min Winter	99.810	0.810	3.0	501.5	Flood Risk
720 min Winter	99.815	0.815	3.0	505.4	Flood Risk
960 min Winter	99.823	0.823	3.0	511.2	Flood Risk
1440 min Winter	99.816	0.816	3.0	505.7	Flood Risk
2160 min Winter	99.780	0.780	3.0	479.8	Flood Risk
2880 min Winter	99.747	0.747	3.0	455.8	Flood Risk
4320 min Winter	99.668	0.668	3.0	400.5	O K
5760 min Winter	99.573	0.573	3.0	336.8	O K
7200 min Winter	99.478	0.478	3.0	275.1	O K
8640 min Winter	99.394	0.394	3.0	222.5	O K
10080 min Winter	99.320	0.320	3.0	177.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
60 min Winter	65.780	0.0	375.4	70
120 min Winter	37.713	0.0	430.6	128
180 min Winter	27.237	0.0	462.9	186
240 min Winter	21.621	0.0	471.8	244
360 min Winter	15.615	0.0	471.9	362
480 min Winter	12.396	0.0	468.6	478
600 min Winter	10.363	0.0	464.8	594
720 min Winter	8.952	0.0	461.1	708
960 min Winter	7.164	0.0	454.0	936
1440 min Winter	5.233	0.0	441.4	1378
2160 min Winter	3.823	0.0	785.9	1932
2880 min Winter	3.059	0.0	838.4	2228
4320 min Winter	2.223	0.0	831.9	3160
5760 min Winter	1.772	0.0	971.5	4040
7200 min Winter	1.486	0.0	1018.6	4768
8640 min Winter	1.288	0.0	1058.9	5536
10080 min Winter	1.140	0.0	1094.4	6256

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	GB 380950 394650 SJ 80950 94650
C (1km)	-0.026
D1 (1km)	0.317
D2 (1km)	0.345
D3 (1km)	0.332
E (1km)	0.303
F (1km)	2.456
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.680

Time From:	**(mins) To:**	**Area (ha)**	**Time From:**	**(mins) To:**	**Area (ha)**	**Time From:**	**(mins) To:**	**Area (ha)**
0	4	0.227	4	8	0.227	8	12	0.227

Model Details

Storage is Online Cover Level (m) 100.000

Tank or Pond Structure

Invert Level (m) 99.000

Depth (m)	**Area (m²)**	**Depth (m)**	**Area (m²)**
0.000	515.1	1.000	784.8

Hydro-Brake® Optimum Outflow Control

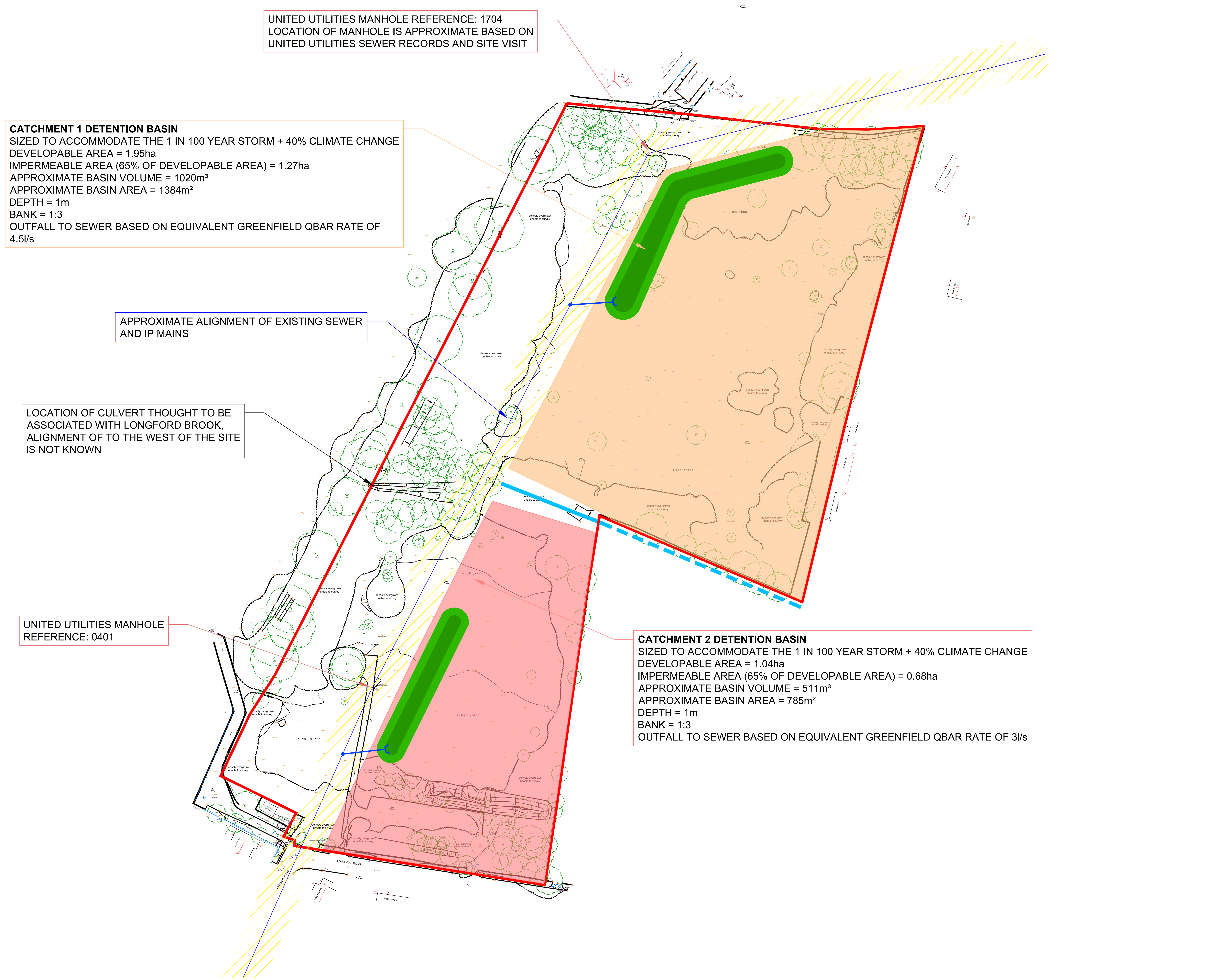
Unit Reference	MD-SHE-0082-3000-1050-3000
Design Head (m)	1.050
Design Flow (l/s)	3.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	82
Invert Level (m)	98.950
Minimum Outlet Pipe Diameter (mm)	100
Suggested Manhole Diameter (mm)	1200

Control Points	**Head (m)**	**Flow (l/s)**
Design Point (Calculated)	1.050	3.0
Flush-Flo™	0.320	3.0
Kick-Flo®	0.658	2.4
Mean Flow over Head Range	-	2.6

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	**Flow (l/s)**	**Depth (m)**	**Flow (l/s)**	**Depth (m)**	**Flow (l/s)**	**Depth (m)**	**Flow (l/s)**
0.100	2.4	1.200	3.2	3.000	4.9	7.000	7.3
0.200	2.9	1.400	3.4	3.500	5.2	7.500	7.5
0.300	3.0	1.600	3.6	4.000	5.6	8.000	7.7
0.400	3.0	1.800	3.8	4.500	5.9	8.500	8.0
0.500	2.9	2.000	4.0	5.000	6.2	9.000	8.2
0.600	2.7	2.200	4.2	5.500	6.5	9.500	8.4
0.800	2.6	2.400	4.4	6.000	6.8		
1.000	2.9	2.600	4.6	6.500	7.0		

APPENDIX 8: Conceptual Drainage Strategy



Notes

1. Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask.
2. This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
3. All dimensions in millimetres unless noted otherwise. All levels in metres unless noted otherwise.
4. Any discrepancies noted on site are to be reported to the engineer immediately.
5. Do not construct based on this drawing.
6. Location of existing surface water sewer/IP Mains is approximate and taken from Drain Alert site investigations and Fuel Solutions UK Limited Utility Assessment Report.
7. Location of the Nico Ditch is approximate.
8. Topographical Survey undertaken by CT Surveys.
9. All SuDS features are indicative and subject to further development of a masterplan, planning and detailed design.
10. Outfall to the existing surface water sewer subject to confirmation from United Utilities.

Legend

- Indicative Site Boundary
- Nico Ditch
- Existing Surface Water Sewer/IP Mains
- Existing Manhole
- 16m Easement Associated with Surface Water Sewer
- Catchment 1
- Catchment 2
- Detention Basin
- Headwall and Pipe
- Proposed Manhole

P01	05.03.20	Preliminary Issue	LR	KA
Rev	Date	Details of issue / revision	Drw	Rev

Issues & Revisions

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Client
MANCHESTER METROPOLITAN UNIVERSITY

Project Title
RYEBANK ROAD, CHORLTON

Drawing Title
CONCEPTUAL SURFACE WATER DRAINAGE STRATEGY

Drawn: L. Reeves		Reviewed: K. Alger	
BWB Ref: MCW2136	Date: 05.03.20	Scale@A1: NTS	

Drawing Status
PRELIMINARY

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
MMU-BWB-ZZ-XX-SK-CD-0001	S2	P01

\\bwbmanfs01\Manchester_Data\Data\MCW\MCW2136_Ryebank Rd, Chorlton\02. Project Delivery\01. WIP\Sketches\MMU-BWB-ZZ-XX-DR-CD-0001_Conceptual Surface Water Drainage Strategy.dwg

APPENDIX 9: Pre-Development Enquiry

Lucy Reeves

From: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Sent: 07 November 2019 13:44
To: Lucy Reeves
Cc: Wastewater Developer Services
Subject: RE: Wastewater Pre-Development Enquiry: Ryebank Road, Chorlton (MCW2136) 4200028845

Good Afternoon

We have carried out an assessment of your application which is based on the information provided; this pre development advice will be valid for 12 months

Foul

Foul will be allowed to drain to the public combined sewer network road at an unrestricted rate. Our preferred point of connection would be to the 225mm Combined sewer in Rye Bank Road, to the North of the site.

Surface Water

Surface water from this site should drain to either soak away or directly to watercourse. Discharge rates and consents must be discussed and agreed with all interested parties.

Connection Application

Although we may discuss and agree discharge points & rates in principle, please be aware that you will have to apply for a formal sewer connection. This is so that we can assess the method of construction, Health & Safety requirements and to ultimately inspect the connection when it is made. Details of the application process and the form itself can be obtained from our website by following the link below

http://www.unitedutilities.com/connecting-public-sewer.aspx

Sewer Adoption Agreement

You may wish to offer the proposed new sewers for adoption. United Utilities assess adoption application based on Sewers adoption 6th Edition and for any pumping stations our company addenda document. Please refer to link below to obtain further guidance and application pack:

http://www.unitedutilities.com/sewer-adoption.aspx

Existing Sewers Crossing the Site

A public sewer crosses this site and we will require unrestricted access to the sewer for maintenance purposes, we would ask that you maintain a minimum clearance of 6m, which is measured 3m from the centre line of the pipe. If you cannot achieve this then you may wish to consider diverting the public sewer.

Please refer to the link below to obtain full details of the processes involved in sewer diversion.

http://www.unitedutilities.com/sewer-diversion.aspx

Please be aware that on site drainage must be designed in accordance with Building Regulations, National Planning Policy, and local flood authority guidelines, we would recommend that you speak and make suitable agreements with the relevant statutory bodies.

Please note, if you intend to put forward your wastewater assets for adoption by United Utilities, the proposed detail design will be subject to a technical appraisal by an Adoption Engineer as we need to be sure that the proposals meets the requirements of Sewers for adoption and United Utilities Asset Standards. The proposed design should give consideration to long term operability and give United Utilities a cost effective proposal for the life of the assets. Therefore, further to this enquiry should you wish to progress a Section 104 agreement, we strongly recommend that no construction commences until the detailed drainage design, submitted as part of the Section 104 agreement, has been assessed and accepted in writing by United Utilities. Any works carried out prior to the technical assessment being approved is done entirely at the developers own risk and could be subject to change.

Regards

Matthew Dodd
Assistant Developer Engineer
Developer Services and Planning
Network Delivery
United Utilities
T: 01925 679369 (internal 79369)
unitedutilities.com

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