SHELDON BAKERY,

OPENSHAW,

MANCHESTER,

M11 2FB

DRAINAGE STRATEGY

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1. INTRODUCTION

1.1 HBL Associates Ltd have been instructed to prepare a Drainage Strategy in support of a full planning application for a development proposed at land off Parkhouse Street in Openshaw, Manchester.

1.2 Table 1.1 below shows details of the proposed development.

Project Name	Sheldon Bakery, Openshaw
Project Description	The project includes commercial buildings, car parking with associated landscaping and infrastructure works
Location	land off Parkhouse Street, Openshaw, Manchester, Greater Manchester, England, M11 2FB.
NGR (Approximate)	387678E 397725N
Application Site Area (HA) – Red Boundary Line	21,666m^2= 2.17ha (Approximate area)
Development Type	"Greenfield" – the site is currently vacant and vegetated, with well-established dense vegetation present across part of the site. Historically the site was developed, including a dyeworks and terraced housing.
Local Planning Authority	Manchester City Council
Lead Local Flood Authority	Manchester City Council
Sewerage Undertaker	United Utilities

Table 1.1 Existing Site Details.

1.3 Sources of flooding will be assessed as part of the Drainage Strategy for the proposed development in its current context.

1.4 This document is to be read in conjunction with all associated drawings, supported reports and documentation.

1.5 The report follows advice contained in the Department for Communities and Local Government's National Planning Policy Framework (NPPF) and Planning Practice Guidance, which provides advice to planning authorities, developers, the public and Environment Agency (EA) on development and flood risk.

2. SITE LOCATION AND TOPOGRAPHY

2.1 The application site is an area of land in the east of Manchester, as indicated in Figure 2.1 below.



Figure 2.1 Site Location Plan – (Source: Google maps)

2.2 Figure 2.2 shows the aerial image of the site and the immediate surrounding area.



Figure 2.2 Satellite imagery – (Source: Google maps)

2.3 The site is greenfield undeveloped land, with vegetation present.

2.4 The eastern site boundary is Kelbrook Road, the southern boundary is Parkhouse Street, and the southern part of the western boundary is Clayton Lane. The remainder of the western boundary and the northern boundary is formed by commercial developments.

2.5 The site is within the Manchester District of the Greater Manchester Combined Authority area.

2.6 The proposed development is a large commercial bakery and includes HGV loading docks, service yard, vehicle parking with associated landscaping and infrastructure works.

Site Topography

2.7 The site can be identified by approximate National Grid Reference 387688 , 397722.

2.8 A topographical survey has been undertaken by The CAD Room in March 2021, reference 01-S-1038 (**Appendix 1)**.

2.9 The topographical survey shows that there is a general trend of levels falling down to the west across the site. however, large parts of the site were unable to be surveyed due to the dense vegetation, so existing levels are unconfirmed across much of the site.

2.10 Levels around 60.30m AOD are present in the southeast corner, falling to around 58m AOD in the southwest corner. The northwest corner is around 60.70m AOD, and the northwestern point is approximately 61m AOD.

2.11 Levels are in the region of 60 – 61m AOD in the centre of the site.

Geology Hydrogeology

2.12 LK Consult undertook a Phase 2 Geo-Environmental Investigation, Risk Assessment and Remediation Strategy report, dated September 2021.

2.13 This report should be referred to for information relating to the existing ground conditions of the site.

2.14 The report advises that made ground is present across parts of the development site and a mixture of other strata was also recorded. Made Ground to 1.2mbgl to greater than 3mbgl and comprised gravelly sand or clay with ash, clinker, brick and other anthropogenic inclusions (slightly silty gravelly sand with ash, clinker, brick, occasional metal, cloth, ceramics).

Groundwater

2.15 The Phase 2 Ground Investigation Interpretative Report states groundwater and groundwater seepages were encountered within several of the exploratory holes at a number of locations across the site, at depths of between 1.8m and 9.0mbgl.

2.16 Excavation/drilling and the Made Ground and natural deposits included granular strata containing perched groundwater.

2.17 The report notes shallow groundwater identified on the site may present a constraint to the development and that suitable drainage should be considered in the proposed development layout. It is assumed that “shallow groundwater” is referring to the groundwater noted at a minimum of 1.8m depths at certain locations within the site.

Soil infiltration rates

2.18 Infiltration to ground is not considered suitable due to the ground conditions identified within the Ground Investigation Report, including variable Made Ground, underlying clay and shallow/perched groundwater. Consequently, infiltration testing has not been undertaken and infiltration drainage is not proposed.

Hydrogeology/Hydrology

2.19 The nearest watercourse is Clayton Brook, which is culverted through the site.

2.20 The culvert is recorded on the United Utilities sewer records as being 1200mm in diameter and shown to cross the site from the northeast to southwest. It is thought to run broadly east – west across the site, with a gentle curvature shown on the records.

2.21 The maintenance of ordinary watercourses is the responsibility of the landowner. This culverted watercourse is expected to be a Lead Local Flood Authority asset, who has a power to regulate i.e., powers associated with the prevention, mitigation and remedying of flood damage associated with ordinary watercourses.

2.22 The culvert is not shown on the online Flood Map for Planning, however, shows the Ashton Canal as the nearest canal to the site, as below within Figure 2.3.

2.23 There are no other known watercourses within the immediate vicinity of the Site.

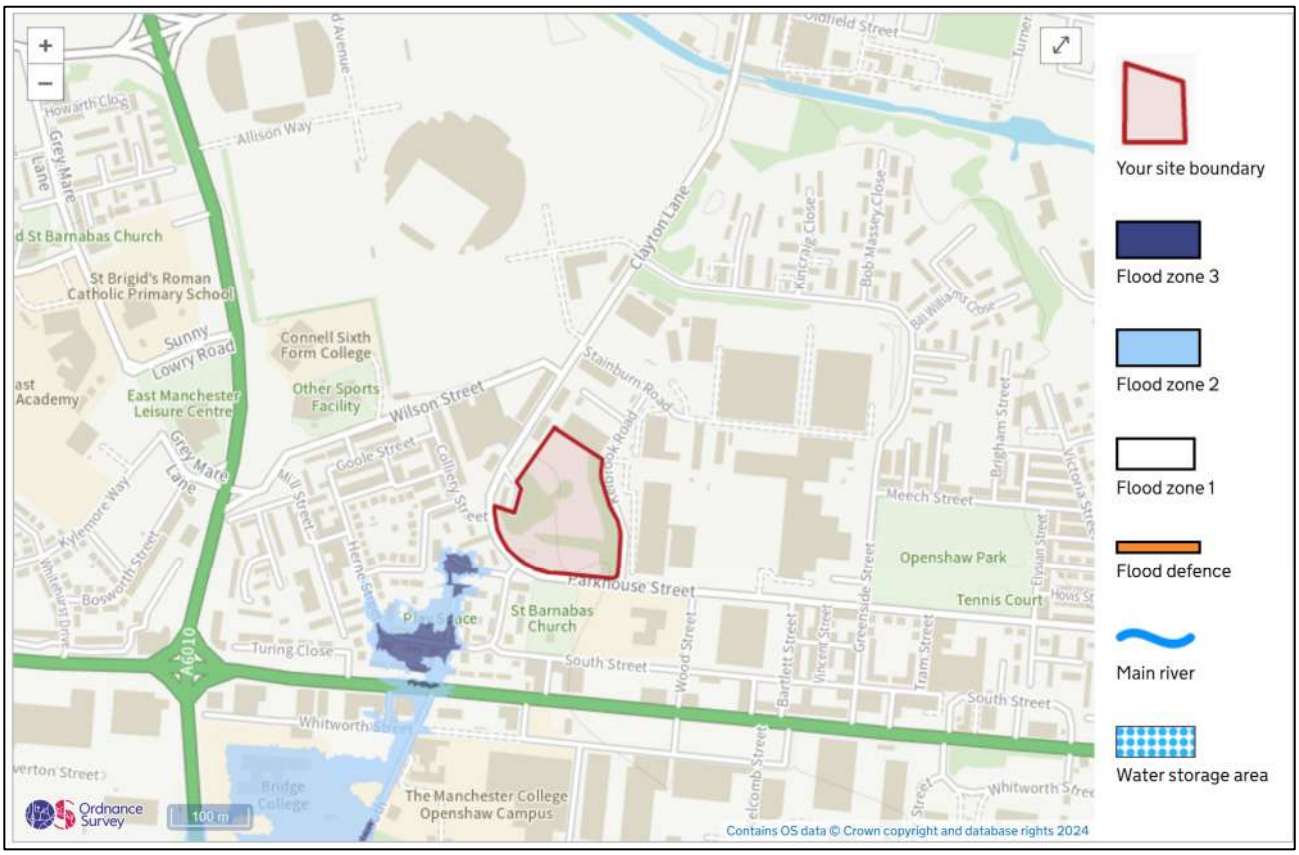


Figure 2.3 Extract from Flood Map for Planning. Source Environment Agency online mapping.

3. EXISTING DRAINAGE CHARACTERISTICS

Public sewers

3.1 Public sewer records have been obtained from United Utilities, who is the Water Authority for the area. A summary of the drainage is provided below and indicated in **Appendix 4** and Figure 3.1.

- The buildings close to the northwest corner of the site have a network of combined public sewers present, which include a 150mm sewer at the rear of the properties which runs close to the site boundary at this location.
- There are combined public sewers within the highways to the west and south of the site.
- A 750mm public surface water sewer is within Clayton Lane to the west of the site.
- A 300mm public surface water sewer is within Parkhouse Street to the southwest of the site.
- As noted above, a 1200mm diameter culvert is shown to cross the site from the northeast to southwest. It is expected this is a LLFA asset.

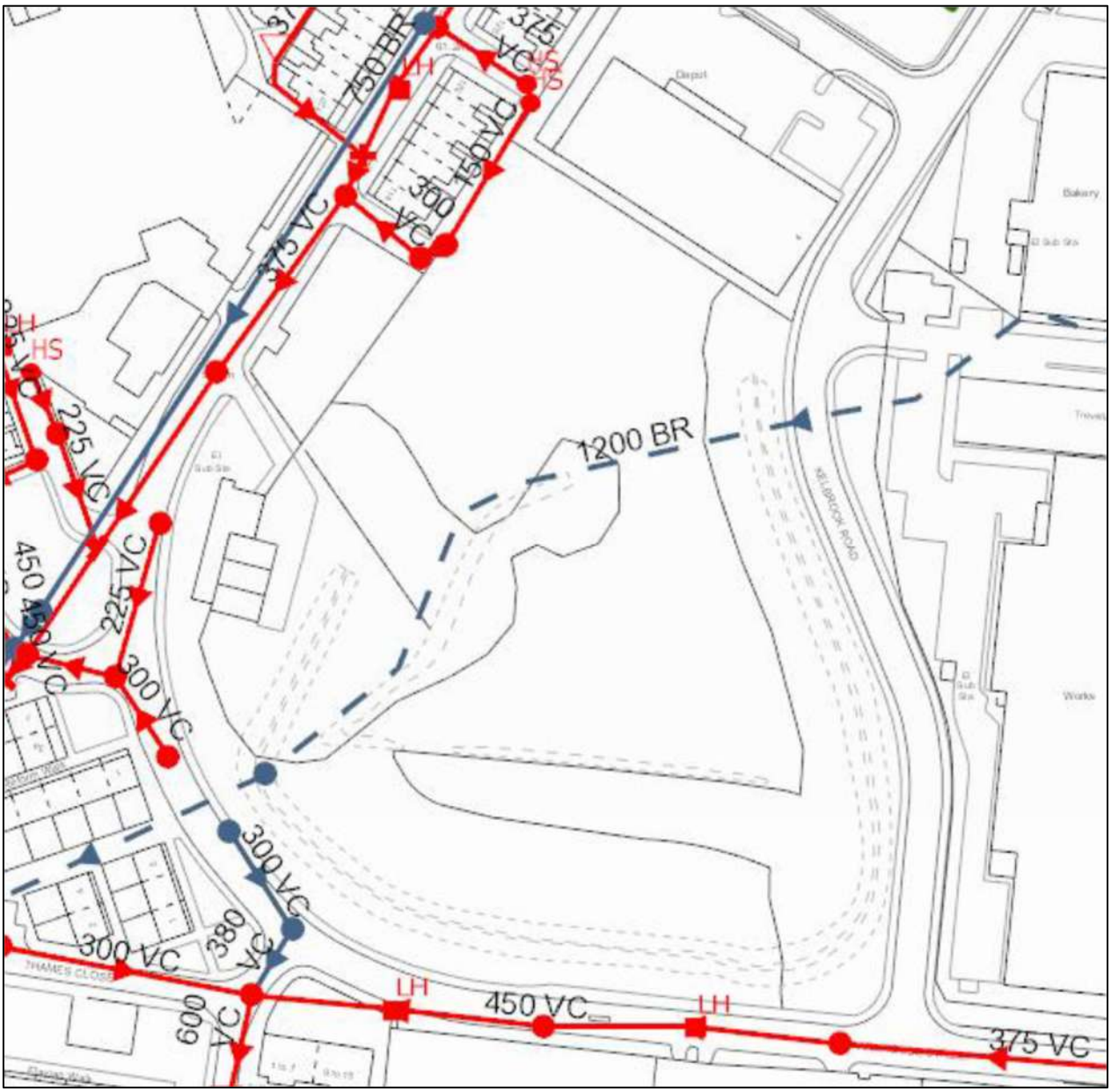


Figure 3.1 Extract from United Utilities sewer records. (Source: United Utilities).

Site Drainage

3.2 The site was historically developed and dye works and terraced housing were present. There would have been drainage systems present to accommodate the historic developments. However, the former developments have been demolished and removed, and the site is presently vacant and densely vegetated. The previous drainage systems would be expected to have been removed as part of the demolition, and any remnants would be unexpected to be functional. Therefore, the site is expected to be undrained in the present scenario.

3.3 The presence of existing field drains or other drainage infrastructure cannot be ruled out.

3.4 Highway drainage is present within the highway network adjacent to the site.

3.5 Further investigation would be required to determine the extent of any existing drainage within the site. However, the Phase 2 Geo-Environmental Investigation included intrusive investigation and does not suggest finding any functioning drainage system.

Foul Drainage

3.6 No existing foul drainage is expected on site, as previous drainage systems would be expected to have been removed as part of the demolition of the former developments.

4. PROPOSED DEVELOPMENT DETAILS

4.1 The proposed development is a large commercial bakery and includes HGV loading docks, service yard, vehicle parking with associated landscaping and infrastructure works.

4.2 A copy of the latest proposed site plan has been included within **Appendix 2** and an excerpt is below in Figure 4.1.

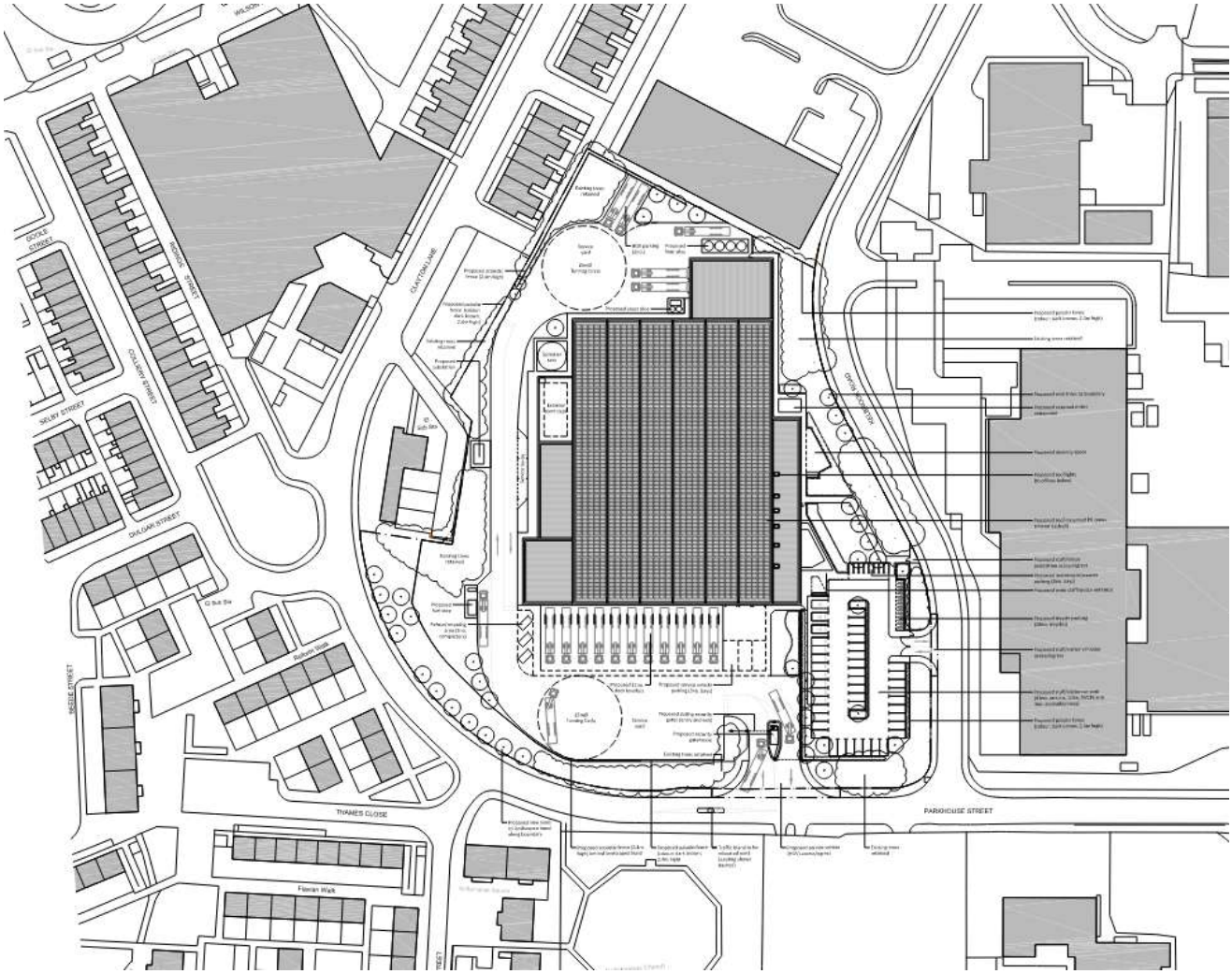


Figure 4.1 Proposed Preliminary Site Layout

4.3 An assessment of existing permeable/ impermeable areas is included in Figures 4.2 below and shown in **Appendix 3**. Existing/proposed site areas are summarised in Table 4.1 below.

Area	m^2	ha
Application Site Area Total	21,666	2.17
Existing Drained Impermeable areas	0	0.00
Proposed Impermeable Areas.	15,821	1.58
Percentage of (additional) Proposed Impermeable (PIMP) within application site	100%	

Table 4.1 Existing / proposed site areas.

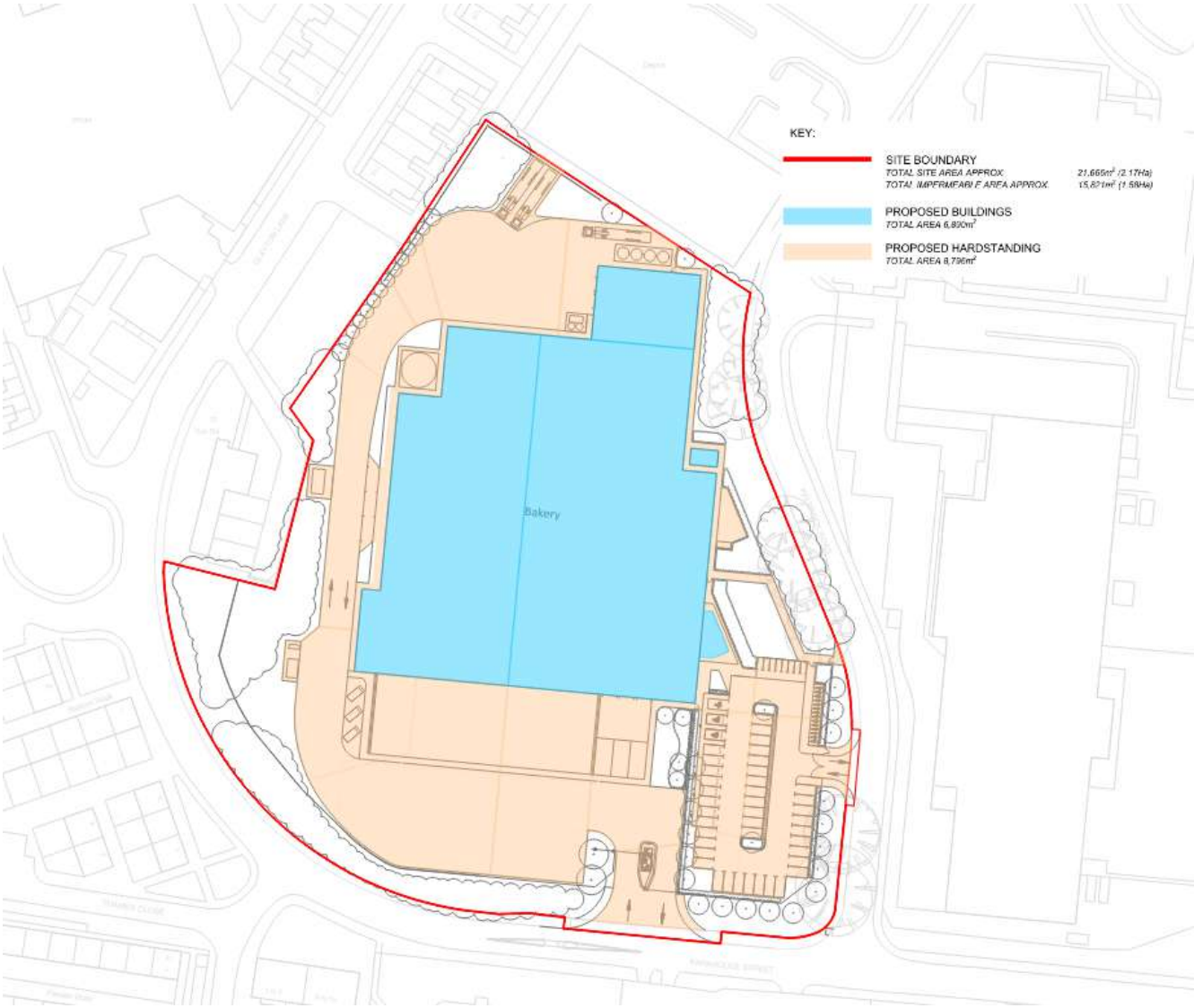


Figure 4.2 Proposed Impermeable Areas (to be drained).

4.4 Comparison of existing and proposed site areas presented in Table 4.2 and Figure 4.2 indicates an increase in impermeable areas post development.

Area	m^2	ha
Application Site Area Total	21,666	2.17
Existing Drained Impermeable areas	0	0.0
Percentage of Impermeable (PIMP) within application site	0%	
Total proposed impermeable areas.	15,821	1.58
Percentage of Impermeable (PIMP) within application site post-development	100%	
Increase in impermeable areas post development	15,821	1.58

Table 4.2 Proposed site areas.

5. CONSULTATION AND DATA REVIEW

Water Authority

5.1 A pre-planning consultation has been undertaken with the Water Authority, United Utilities. A response was received by email on 29/10/2024, reference **UU REF 06538060,** and is included in **Appendix 4** for reference.

5.2 The Water Authority advised foul flow from this site will be allowed to drain into the public 375dia or 450dia combined sewers running adjacent to the site.

5.3 They advised all surface water flow from the proposed development should drain in-line with the drainage hierarchy. They noted they would support the proposed surface water drainage strategy to drain to the culvert, and confirmed the requirement to discuss the diversion, connection points and flow rates with the riparian owner and local authority.

5.4 Further consultation will be acquired at planning, and the general principles will be followed from their standard guidance and consultation responses in due course.

Lead Local Flood Authority

5.5 A formal consultation has not been formally undertaken with the Lead Local Flood Authority for the area, Manchester City Council, at the time of writing this report.

5.6 Further consultation will be acquired at planning, and the general principles will be followed from their standard guidance and consultation responses in due course.

5.7 It is expected that a sustainable drainage system will need to be undertaken as part of a detailed drainage strategy.

Internal Drainage Board District

5.8 The Site is not located within an Internal Drainage Board (IDB) District.

6. EXISTING RUNOFF RATE

Existing Greenfield Runoff Rate

6.1 The existing site is considered fully developable, with an existing greenfield area assessed as 2.17ha, as shown in Table 5.2 above.

6.2 An assessment of the existing greenfield runoff rates has been undertaken using online HR Wallingford IH124 Methodology and the results are summarised in Table 7.1 below and the calculations are included within **Appendix 5.**

6.3 The assessment below includes rates for the full area of the existing site.

Return Period	Run-off Rates		
	Greenfield per 50 hectare (l/s/ha)	Greenfield per hectare (l/s/ha)	For total Developable area of Site (2.17ha)
1 in 1	281.80	5.64	12.2
Qbar	323.91	6.48	14.0
1 in 30	550.65	11.01	23.9
1 in 100	673.73	13.47	29.2

Table 6.1. Greenfield run off rate for a range of areas and return periods

Existing Greenfield Runoff Volume

6.4 An assessment of the existing greenfield runoff volume has been undertaken using Causeway Flow, and the results are summarised below in Figure 6.1.

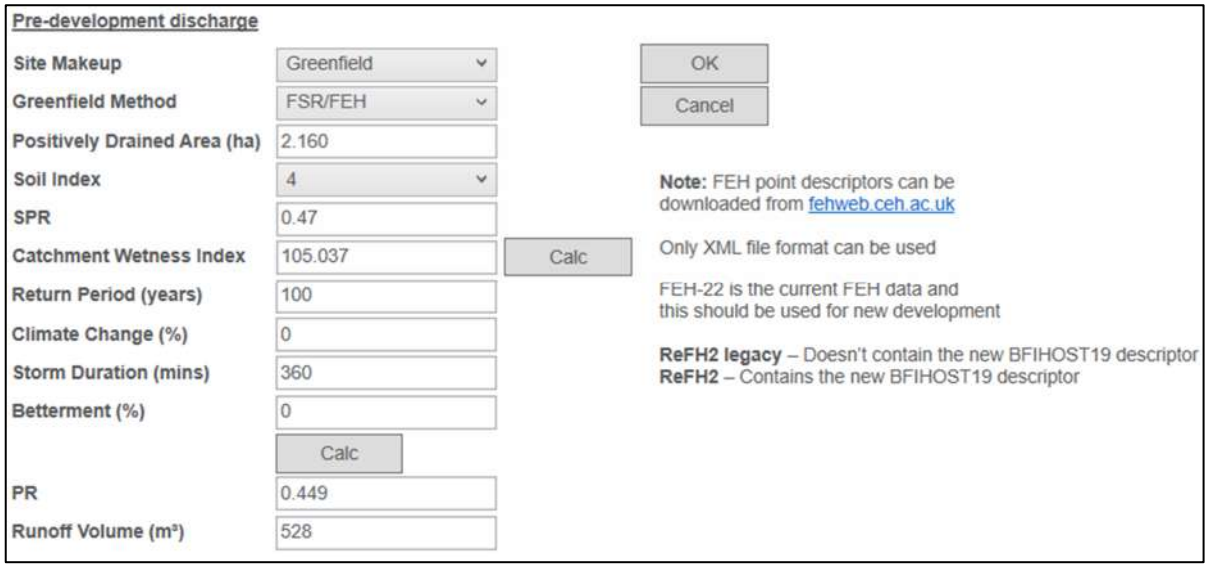


Figure 6.1 Pre-Development "Greenfield "run-off volume

Existing Brownfield Runoff Rate

6.5 The site is considered to be greenfield in terms of existing drainage systems and land use, therefore, no Pre-development (Brownfield) Runoff Volume has been calculated.

7. PROPOSED DRAINAGE RUN-OFF

Proposed Runoff Rate

7.1 As the site is considered to be fully greenfield and permeable, the proposed development will introduce additional impermeable/contributing areas.

7.2 It may therefore be necessary for surface water discharge from the site to be limited to the equivalent greenfield runoff rate.

7.3 The Regulatory Authorities will need to confirm the allowable discharge rates.

7.4 The National Standards for Sustainable Drainage systems (NSSDS 2011) and Non-Statutory Technical Standards for Sustainable Drainage (NSTSSD 2015) require that:

- *For greenfield developments, the peak runoff rate from the development to any highway drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100-year rainfall event should never exceed the peak greenfield runoff rate for the same event. (S2 NSTSSD 2015).*
- *'For developments which were previously developed, the peak runoff rate from the development to any drain, sewer, or surface water body for the 1 in 1 year rainfall event and the 1 in 100-year rainfall event must be as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event but should never exceed the rate of discharge from the development prior to redevelopment for that event'. (S3 NSTSSD 2015).*

7.5 For this development, therefore, it is proposed that the drainage system should be designed with a proposed discharge rate as close as reasonably practicable to the existing Qbar greenfield runoff rate.

7.6 The existing greenfield rates are shown above within Table 6.1. On the assumption that the entire development is to be considered greenfield, this range of rates can be set as proposed discharge rates for the same rainfall events and are summarised below in Table 8.1.

Return Period	Run-off Rates
	For total Developable area of Site (2.16ha)
1 in 1	12.2
Qbar	14.0
1 in 30	23.9
1 in 100	29.2

Table 8.1. Greenfield run off rate for range of return periods

7.7 On the above basis, it is proposed that the proposed maximum discharge rate for the development be set at the existing QBar greenfield rate of **14l/s.**

7.8 The proposed development will introduce an additional 15,821m^2 of impermeable/contributing areas positively drained. This is based on Table 4.2 above, which, as stated, assumes all proposed buildings and all surfacing are impermeable. This is to ensure a robust analysis is undertaken, and is considered "worst case scenario".

Proposed Runoff Volume

7.9 'Where reasonably practicable, for developments which have been previously developed, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100-year, 6 hour rainfall event must be constrained to a value as close as is reasonably practicable to the greenfield runoff volume for the same

event, but should never exceed the runoff volume from the development site prior to redevelopment for that event.' **(S5 NSTSSD 2015)**

7.10 An assessment of the proposed storage volume required has been undertaken using Causeway Flow as a surface water storage estimate, both with and without an allowance for climate change, and the results are summarised below in Figure 7.1 and 7.2.

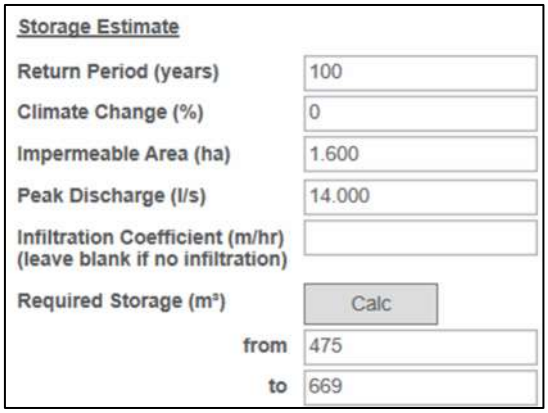


Figure 7.1. Surface Water Storage Volume Estimate (no climate change)

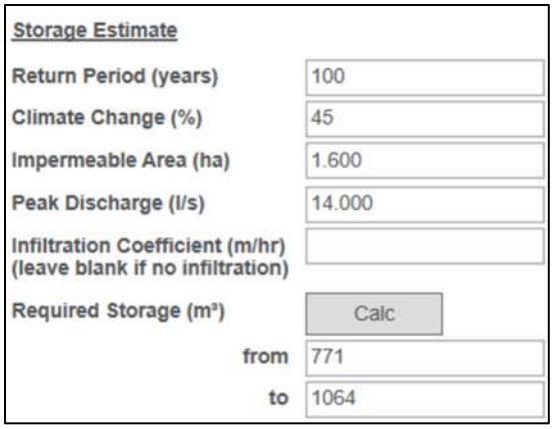


Figure 7.2. Surface Water Storage Volume Estimate (including 45% climate change)

7.11 The assessment above suggests the proposed storage volume without an allowance for climate change would be between 475 m^3 and 669 m^3, giving an average value of 572m^3.

7.12 The assessment above suggests the proposed storage volume would be between 771 m^3 and 1064 m^3, including an allowance of 45% for climate change, giving an average value of 918m^3.

7.13 The comparison of greenfield, brownfield and proposed runoff volumes has been included within the table below.

	Application Site 21,589m²
Proposed impermeable/contributing areas (m^2)	15,821
Existing Greenfield Runoff Volume (m^3)	528
Existing Brownfield Runoff Volume (m^3)	0
Total Existing Runoff Volume (m^3)	528
Proposed Runoff Volume from proposed impermeable areas (m^3) – not including Climate Change factor	572
Difference in Runoff volume post development (m^3)	Increase by 44
Proposed Runoff Volume including 45% Climate Change factor	918
Difference in Runoff Volume post development (m^3) including 45% Climate Change Factor	Increase by 390

TABLE 8.2. Greenfield, Brownfield and Proposed run-off volume - YR 100 (1% AEP) 6-hour rainfall event.

7.14 Where it is not reasonably practicable to constrain the volume of runoff to any drain, sewer or surface water body to brownfield runoff volume, S6 NSTSSD 2015 states that the runoff volume must be discharged at a rate that does not adversely affect flood risk.

7.15 The proposed discharge rate 14.0l/s. is considered meeting the above standard.

8. PROPOSED SURFACE WATER RUNOFF DESTINATION

8.1 According to National Standards for sustainable drainage systems Part II Section A – the following order of preference must be considered in respect of the Surface Water Runoff destination:

- Discharge into the ground,
- Discharge to surface water body,
- Discharge to a surface water sewer, drain,
- Discharge to a combined sewer,

8.2 Subject to complying with these National standards, different destinations may apply for different parts of the site.

Discharge into the ground - infiltration expectations

8.3 The proposed means of managing surface water runoff from the proposed development has been considered with respect to the hierarchy set out in Building Regulations Part H (2010) as follows.

8.4 Consideration of the proposed means of surface water drainage should firstly be given to infiltration techniques (to ground).

8.5 The findings of the Ground Investigation indicate that infiltration to ground is not considered suitable for the proposed development due to the ground conditions encountered across the site. The ground investigation identified variable Made Ground, locally extending to significant depths, underlain by firm to stiff variably sandy, gravelly clay associated with the Glacial Till. In addition, shallow/perched groundwater has previously been

encountered at approximately 2–4m below ground level, with a deeper groundwater strike recorded within the Glacial Till.

8.6 The presence of significant and variable Made Ground, together with the relatively low-permeability clay strata and the presence of shallow groundwater, means that the ground conditions are not considered conducive to the reliable and controlled infiltration of surface water. The Ground Investigation also identifies the shallow groundwater as a potential constraint to the development and recommends that suitable drainage is considered within the proposed development layout.

8.7 On this basis, infiltration testing has not been carried out, as infiltration to ground has been discounted as an appropriate means of surface water disposal based on the ground conditions established by the Ground Investigation. Accordingly, infiltration systems are not proposed as part of the surface water drainage strategy.

8.8 The Ground Investigation Addendum Report, Additional Ground Investigation – Addendum Report (LKC261139-B1-GI-Addendum-Kelbrook Road-R0, dated 30 April 2026), has been used to inform this assessment. The report confirms that the supplementary investigation identified ground conditions generally consistent with the previous investigation, including Made Ground overlying natural clay/Glacial Till.

8.9 On this basis, discharge into the ground via infiltration is not considered viable for the development and alternative surface water disposal methods are therefore considered below.

Discharge to surface water body.

8.10 The nearest watercourse is Clayton Brook, which is culverted through the site.

8.11 The culvert is recorded on the United Utilities sewer records as being 1200mm in diameter and shown to cross the site from the northeast to southwest. It is thought to run east – west across the site.

8.12 There are no other watercourses within the immediate vicinity of the Site.

8.13 On the above basis, discharge to the culverted surface water body crossing the site is recommended for the proposed development.

8.14 At this stage, the existing invert levels are unconfirmed, and therefore the requirement of a pumped solution cannot be ruled out.

Discharge to Surface Water Sewer

8.15 As above, a proposed connection to the existing surface water culvert within the site is considered feasible, therefore, at this stage, a proposed connection to public sewer is not considered further at this time.

9. SuDS COMPONENTS

9.1 It is policy for all surface water systems for development sites to be designed using SuDS wherever possible.

9.2 Initial assessment of the SuDS techniques is summarised in Table 10.1 below.

TABLE: 10.1. Types of SuDS Components – Ciria SuDS Manual 2015.

Component Type	Description and Proposed Development Suitability	
	Description	Rainwater is collected from the roof of a building or from other paved surfaces in an over ground or underground tank for use on site. Depending on its intended use, the system may include treatment elements. The system should include specific storage provision if it is to be used to manage runoff to a design standard.

Rainwater harvesting	Suitability	Rainwater butts should be considered.
Green Roofs/ Blue Roofs	Description	A planted soil layer constructed on the roof of a building to create a living surface. Water is stored in the soil layer and absorbed by the vegetation. Blue roofs store water at roof level, without the use of vegetation.
	Suitability	Not suitable due to the development layout.
Infiltration systems	Description	These systems collect and store runoff allowing it to infiltrate into the ground. Overlaying vegetation and underlaying unsaturated solid can offer protection to ground water from pollution risks.
	Suitability	Infiltration rates are unconfirmed therefore the viability of proposing surface water disposal via infiltration is not known at this time. This will be investigated further to determine the suitability of infiltration systems.
Filter Strips	Description	Runoff from impermeable area is allowed to flow across a grassed or otherwise planted area to promote sedimentation and filtration.
	Suitability	Shedding water to landscaped areas will be encouraged where site layout and external levels permit.
Filter drains	Description	Runoff is temporarily stored below the surface in a shallow trench filled with stone/gravel, providing attenuation, conveyance and treatment (via filtration).
	Suitability	Not suitable due to the development layout and soil infiltration properties.
Swales	Description	A vegetation channel is used to convey and treat runoff via shallow naturally landscaped channels that convey and/or infiltrate the runoff (via infiltration). These can be 'wet', where water is designed to remain permanently at the base of the swale, or 'dry' where water is only present in the channel after rainfall events. It can be lines, or unlined to allow infiltration.
	Suitability	Not suitable due to the development layout.
Bioretention systems	Description	A shallow landscaped depression allows runoff to pond temporarily on the surface, before filtering though vegetation and underlying soils prior to collection or infiltration. In its simplest form it is often referred to as a rain garden. Engineered soils (gravel and sand layers) and enhanced vegetation can be used to improve treatment performance.
	Suitability	Small rain gardens could be incorporated within landscaping. Proprietary systems suggested below.
Trees	Description	Trees can be planted within a range of infiltration SuDS components to improve their performance, as root growth and decomposition increase soil infiltration capacity. Alternatively, they can be used as standalone features within soil-filled tree pits, tree planters or structural soils, collection and storing runoff and providing treatment (via infiltration and phytoremediation).
	Suitability	Existing trees will be retained where possible. See ecologist report for details.
	Description	Runoff is allowed to soak through structural paving. This can be paving blocks with gaps between solid blocks, or porous paving where water filters though the block itself. Water can be stored in the sub-base and potentially allowed to infiltrate into the ground.

Pervious Pavements	Suitability	The vehicle parking areas have potential for pervious/porous pavement systems, as shown on the attached Proposed Drainage Plan.
Attenuation storage tanks	Description	Below ground voided spaces can be used to temporarily store runoff before infiltration, controlled release or use. The storage structure is often constructed using geocellular or other modular storage systems, concrete tanks or oversized pipes.
	Suitability	Attenuation storage tanks could be utilised as part of the drainage proposal via Proprietary systems suggested below. See attached Proposed Drainage Plan.
Detention Basin	Description	During a rainfall event, runoff drains to a landscaped depression with an outlet that restricts flows, so that the basin fills and provides attenuation. Generally, basins are dry, except during and immediately following the rainfall events. If vegetated, runoff will be treated as it is conveyed and filtered across the base of the basin. Naturally, vegetated depressions designed to store runoff temporarily.
	Suitability	Not suitable for the Proposed Development Layout.
Ponds and wetlands	Description	Features with a permanent pool of water can be used to provide attenuation and treatment of runoff, where outflows are controlled, and water levels are allowed to increase following rainfall. They can support emergent and submerged vegetation along their shoreline and in shallow. Marshy zones, which enhance treatment processes and biodiversity.
	Suitability	Small ponds are not proposed on this development.

9.3 It is proposed to adopt appropriate SuDS throughout the new development wherever possible, with specific target areas being:

- Source Control SuDS techniques, such as rain gardens with broad leaves high water interception species. Permeable surfaces with overflow to next stage of drainage system will be encouraged where possible.
- Site - control - reduction in peak flows to outfall, thereby not increasing flood risk downstream of connection.
- Improvement of water quality arriving at outfall (passive removal of pollutants), thereby reducing potential for pollution downstream of the connection point.

9.4 Based on the assessment of the hierarchy of discharge, the proposed site layout and topography, the following SuDS elements have been included within the proposed surface water management on site:

- **Surface Water Storage and Attenuation: Geocellular Attenuation System**
- **Proprietary Treatment System: GreenBlue HydroPlanter System**

9.5 Indicative information of the HydroPlanter system is shown below:

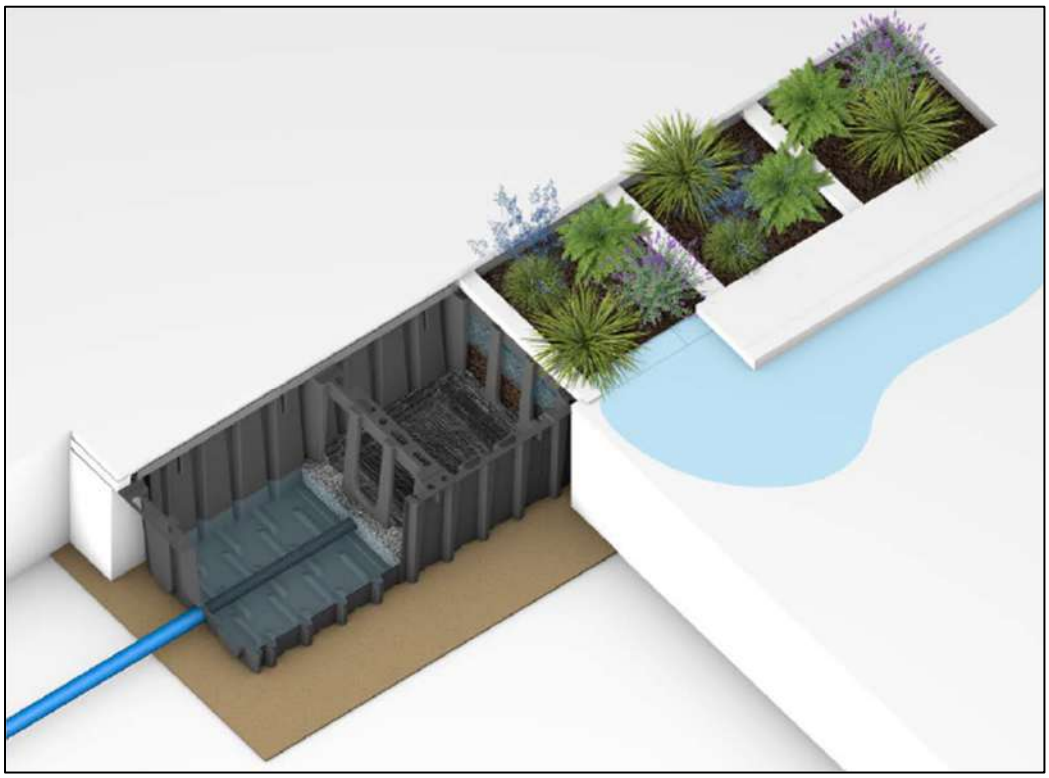


Figure 10.1 Proposed GreenBlue HydroPlanter System (Source: GreenBlue)



Figure 10.2 Proposed GreenBlue HydroPlanter System (Source: GreenBlue)

10. CLIMATE CHANGE ALLOWANCE

10.1 It is anticipated that climate change will bring an increase in rainfall intensity in the future and therefore an allowance for climate change should be included to help minimise vulnerability and provide resilience to flooding and coastal change in the future. Both the 'central' and 'upper end' allowance should be assessed to understand the range of impact.

10.2 The 'Central' allowance should be applied to the surface water drainage network/design to assess its performance and ability to contain critical events. The 'Upper End' allowance should be applied to assess the potential flood risk implications to the site and to ensure that flooding is wholly contained onsite.

10.3 New Environment Agency guidance "Flood risk assessments: climate change allowances" issued in August 2022 provides up to date information on expected changes in rainfall, river flows and sea level rise as a consequence of climate change based on a 1981-2000 baseline.

10.4 The Environment Agency Guidance in Figure 11.1 and Table 11.1 show a summary of the anticipated changes in extreme rainfall intensity within in the Irwell Management Catchment.

Table 11.1 Peak rainfall intensity allowance in small and urban catchments.

Applies across all of England	Total potential change anticipated for the 2050s (2040-2069)	Potential Change anticipated for the 2080s (2070 – 2115)
Upper End	+40%	**+45%**
Central	+25%	**+30%**

https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances#table-2

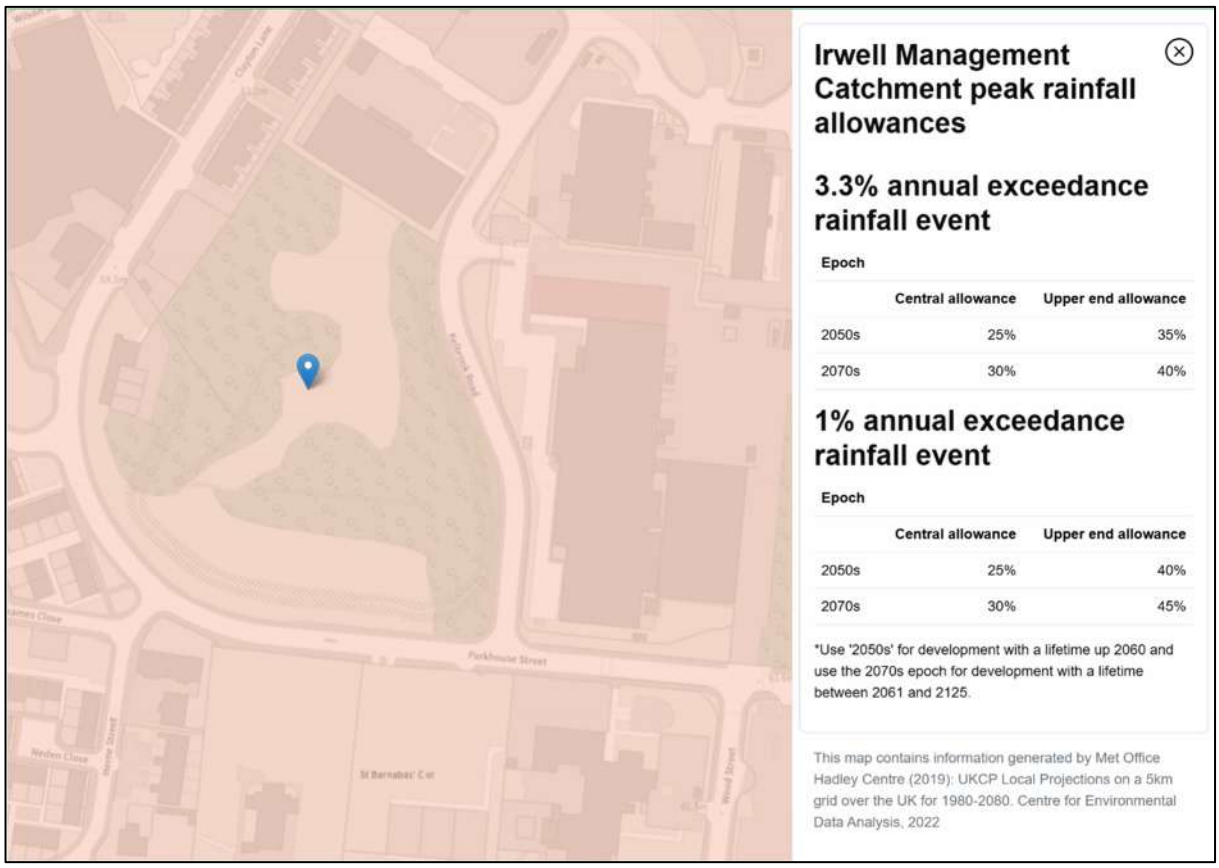


Figure 11. 1 Peak rainfall intensity allowance in small and urban catchments

10.5 The National Planning Policy Framework (NPPF) and supporting Planning Practice Guidance (NPPG) states that the residential development should be considered for a minimum of 100 years, but that the lifetime for a nonresidential development depends on the characteristics of the development.

10.6 Drainage design methods limiting surface water disposal flows should incorporate rainfall intensities that have been increased by 45% to take account of the effects of climate change until the year 2115.

10.7 It is recommended that for the proposed development the drainage is designed to make sure there is no increase in the rate of runoff discharge from the site for the upper end allowance of 45% CC (Climate Change).

11. SURFACE WATER DRAINAGE STRATEGY

11.1 A preliminary drainage strategy has been undertaken to establish principles of the design for foul and surface water drainage for the proposed development.

11.2 All drained areas will be designed to meet the Statutory Requirements as follows:

- Source Control SuDS techniques such as rain gardens planted with broad-leafed shrubs/plants with high rainfall interception and water demand allowing interception of surface water runoff from adjoining surfaces.
- Site control - All SuDS features will be designed for the critical 100-year (1%) rainfall event with an allowance for climate change and therefore there will be no risk of uncontrolled flooding on site for all rainfall events up to 100-year return with 45% climate change.
- All exceedance flows beyond those for which the drainage system is designed will be directed thought the site, as such that there will be no risk of flooding of vulnerable or critical areas. See attached Exceedance Route Plan in **Appendix 6.**

11.3 Via proprietary systems, permeable surfaced SuDS features will be encouraged throughout the development to provide interception and pollution removal, storage and disposal via partial infiltration at source with overflow from the sub-base storage layer to next element of drainage system i.e. attenuation structures.

11.4 All recommendations will be investigated/developed further during the detailed design stage.

11.5 The Phase 2 Geo-Environmental Investigation advises that the presence of substantial depths of Made Ground across the site may result in settlement and recommends that drain runs are designed using steeper gradients and flexible joints to allow for some differential settlement. This will need to be considered further at detailed design stage.

11.6 Current drainage strategy includes:

- GreenBlue HydroPlanter system, a modular bioretential rain garden system.
- Geocellular Attenuation Tank

11.7 All recommendations will be investigated/developed further during the detailed design stage and are subject to amendment.

Surface Water Network

11.8 All surface water runoff arising from the proposed building, parking, service yard, access road, ponds and any other impermeable areas (approximate contributing area of 15,821sqm) will be directed by underground gravity pipes

to attenuation storage structures. Proprietary treatment systems are proposed to satisfy the SuDS requirements of the system.

11.9 Discharge from attenuation structures will be via flow control devices set to the agreed discharge rate to the proposed discharge location.

11.10 See attached Outline Drainage Strategy plan in **Appendix 7.**

11.11 See attached hydraulic surface water calculations in **Appendix 8.**

11.12 Proposed systems to be installed in strict accordance with manufacturers' design and instructions. Systems to include maintenance access features / ventilation pipes as required.

11.13 In order to accommodate the 1 in 100 year plus 45% climate change event, based on the proposed discharge rate, approximately 918m^3 of storage would be required.

11.14 It is proposed that the majority of the attenuation will be provided within a geocellular attenuation tank system with isolator row.

11.15 The configuration, depths and layout of the attenuation features will need to be calculated in more detail when the existing and proposed details are clarified further.

12. FOUL WATER DRAINAGE STRATEGY

Foul Water Network

12.1 The foul water records noted above indicate that there are combined public sewers within the highways to the west and south of the site. United Utilities has advised that foul flow from this site will be allowed to drain into the public 375dia or 450dia combined sewers running adjacent to the site.

12.2 Foul Water flows associated with the proposed development will therefore be directed into the existing public combined drainage network. See attached Outline Drainage Strategy plan in **Appendix 7**.

12.3 Therefore, a connection into the existing public drainage system is recommended as the point of discharge for Foul Water from the site.

12.4 At this stage, the existing invert levels are unconfirmed, and therefore the requirement of a pumped solution cannot be ruled out.

12.5 Any proposed private foul drainage will be designed in accordance with Building Regulations Document H1.

12.6 Any connections are to be approved by United Utilities prior to any works being undertaken on the existing network.

13. DESIGN FOR EXCEEDANCE

13.1 The drainage system will be designed so that, unless an area is designed to hold/or convey water as part of the design, flooding does not occur on any part of the site for 1 in 100-year rainfall event plus 45% climate change.

13.2 The design has considered flows resulting from rainfall in excess of the 1 in 100-year rainfall event plus 45% climate change and site surfaces will be modelled so that flood flows generated on site from events beyond the stipulated drainage design criteria will be directed away from vulnerable areas and contained on site where possible.

13.3 Following measures have been considered:

- Slope of footpaths/driveways to direct surface water away from buildings where possible,

- Raised and dropped kerb details to direct flow,
- Raised door threshold, dpc height 150mm around the proposed buildings

13.4 See attached Exceedance Route Plan in **Appendix 6.**

14. WATER QUALITY

14.1 Runoff quality from various land use is classed as Very Low, Low, Medium, and High Hazard depending on its source.

14.2 Pollution hazard from non-residential car parking is classed as **low.** Removal of gross solids and sediments is required. Silt chambers to be installed upstream of attenuation tanks.

14.3 Pollution hazard from commercial yard and delivery yards , low traffic roads, (e.g. general access road) is classed as **medium** and simple index approach will be used to deliver adequate treatment.

Land Use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydrocarbons
Other roofs (typically commercial/ industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, **roofs (excluding residential),** residential car parks, low traffic roads, (e.g. cul de sacs, home zones, **general access road), non-residential**	Low	0.5	0.4	0.4
Commercial yard and delivery yard, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways	Medium	0.7	0.6	0.7

Table 15.1. Minimum water quality management requirements for discharge to receiving surface waters and groundwater – *Extract from* Ciria SuDS Manual 2015 Table 26.2

14.4 Bespoke products are proposed to be incorporated as part of the drainage network, to provide a suitable system configuration to accommodate the required on-site storage to attenuate the calculated runoff and manage the treatment train to provide appropriate pollution mitigation.

14.5 Where run off cannot be intercepted by treatment SuDS, other forms of treatment such as petrol interceptors will be used to ensure water quality is managed appropriately.

The Proposed SuDS Components -

14.6 Pollution Mitigation Indices for Proprietary Treatment System: GreenBlue HydroPlanter System / TreePits

- Pollution Mitigation Index - Suspended Solids TSS = 0.8
- Pollution Mitigation Index - Metals = 0.8
- Pollution Mitigation Index - Hydrocarbons = 0.8

14.7 Following assessment of the pollution indices for the development (**Low** and **Medium**) Hazard and the pollution mitigation indices for the proposed SuDS Components, it is considered that the total mitigation level of proposed SuDS components exceeds the development pollution risk and therefore comply with the Water Framework Directives.

14.8 Additional Silt trap units or silt filters can be specified for surface water inspection chambers throughout the system to minimize silt accumulation in the proposed drainage network.

14.9 Manufacturer of Proprietary Treatment Systems noted above to confirm whether additional oil interceptors need to be incorporated into the proposed system to assist intercepting suspended solids, metals and hydrocarbons.

14.10 Channel drains and road gullies can also be specified with silt sump units.

15. EXECUTIVE SUMMARY

15.1 The site development lies within Flood Zone 1, there is no requirement to satisfy either the Sequential Test or the Exception Test.

15.2 A surface water drainage strategy has been prepared for the site providing interception, attenuation, and controlled disposal for all rainfall events up to and including the 100-year critical rainfall event with an increase of 45% to allow for increases in rainfall intensities due to climate change.

15.3 Infiltration to ground is not considered suitable due to the ground conditions identified within the Ground Investigation Report, including variable Made Ground, underlying clay and shallow/perched groundwater. Consequently, infiltration testing has not been undertaken and infiltration drainage is not proposed.

15.4 It is proposed in accordance with the drainage hierarchy that surface water runoff will be directed into the existing culverted watercourse that passes through the site as the point of discharge for Surface Water from the site.

15.5 The existing culverted watercourse currently sits within the proposed building footprint. Therefore the watercourse will need to be diverted to mitigate the potential for it to be damaged during construction works and to allow for easier maintenance access.

15.6 All surface water runoff arising from the existing building extension, parking, service yard and access road (approximate contributing area of 15,821 m sq.) will be directed by underground gravity pipes to attenuation storage structures.

15.7 Discharge from attenuation structures will be via flow control devices set to the agreed discharge rate to the proposed discharge location.

15.8 Drainage design considers flows resulting from rainfall in excess of the 1 in 100-year rainfall event plus 45% climate change. Site surfaces should be modelled so that flood flows generated on site from events beyond the stipulated drainage design criteria will flow away from buildings and other sensitive areas and will be contained on site as reasonably practicable.

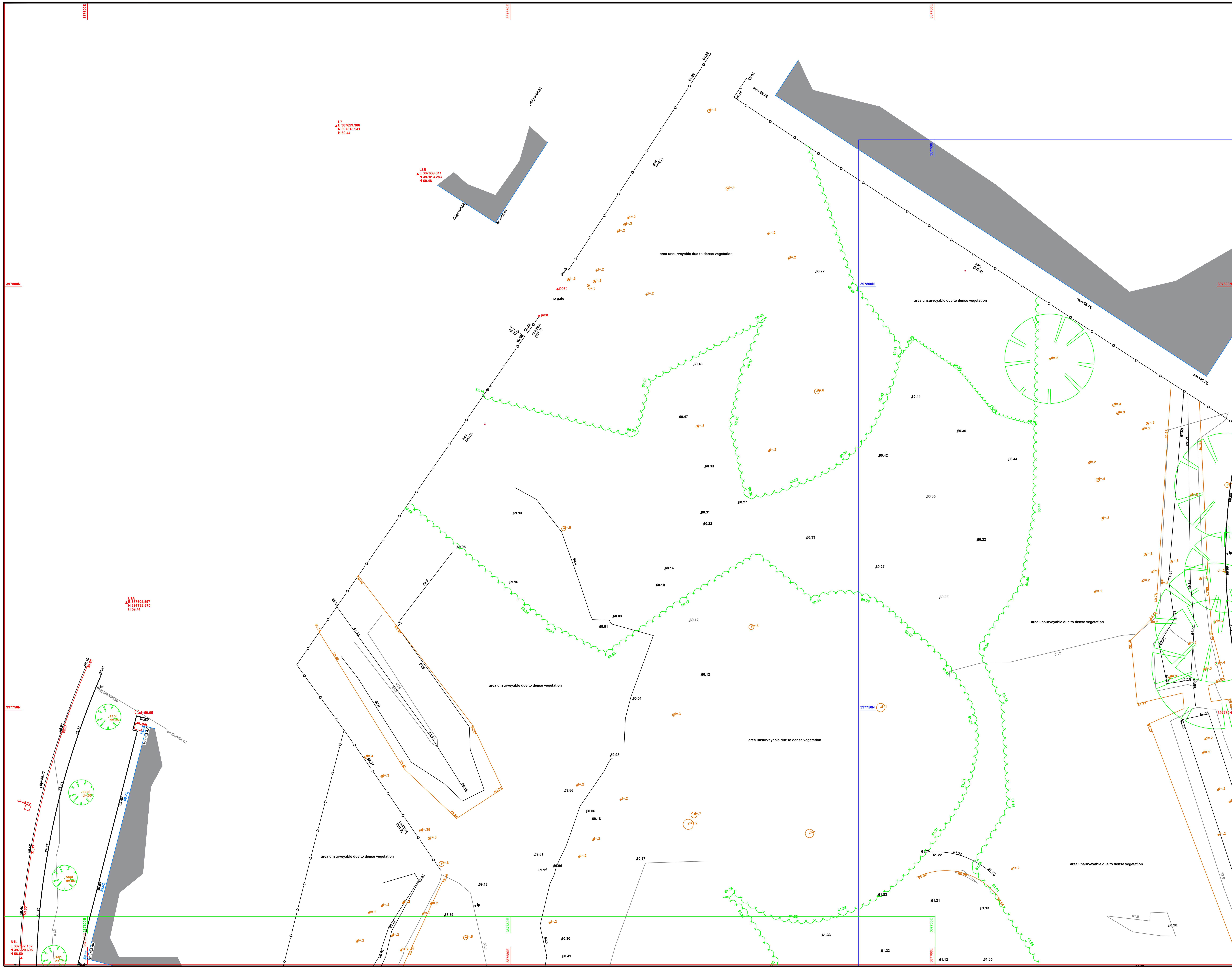
15.9 Connection into the existing combined sewers neighboring the site is recommended as the point of discharge for Foul Water from the site.

15.10 At this stage, the existing invert levels are unconfirmed, and therefore the requirement of a pumped solution cannot be ruled out for both foul and surface water.

15.11 All SuDS on site will be installed with full consideration for long term maintenance.

15.12 Any proposed on-site drainage will be designed and constructed in accordance with current best practice, Lead Local Flood Authority and Regulatory Authority requirements and Building Regulations as appropriate.

APPENDIX 1 – TOPOGRAPHICAL SURVEY



GRID
To local grid based on ostn15/osgm15

control point

C1
E 1000.000
N 1000.000
H 100.000

spot level
60.11

All linework described by layering system or nearby text

wall (see text for height / width / type)

fence (see text nearby for height / type)

gate

hedge scaled to width

Canopy/Vegetation line

deciduous tree

defined by trunk & one point on canopy

d=.5

(girth size and position +/- 50mm)

conifer tree

defined by trunk & one point on canopy

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(girth size and position +/- 50mm)

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sur. drain - surface drain
st.tap - stop tap
sv. - sluice valve
trel - trellis
ts. - traffic signal
utility - utility (unknown)

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top conc=60.11 - top of concrete
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t.st.=60.11 - top of step
twl=60.11 - top of wall
wal=60.11 - water level

FENCE ABBREVIATIONS

b/w - barbed wire
c/l - chain link
cl/b - close boarded
c/i - corrugated iron
con/pan - concrete panel
cr/ba - crash barrier
h/r - hand rail
i/r - iron rail
pal - palisade
panel - panel
p/b - public barrier
pick - picket
p/r - post & rail
p/w - post & wire
sec. - security fence
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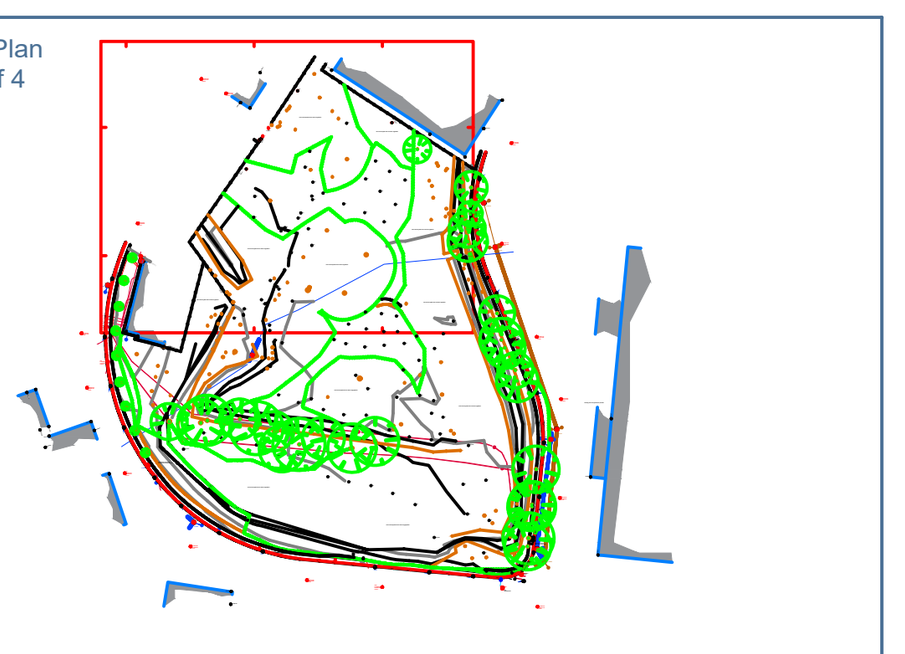
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Location Plan
Sheet 1 of 4



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Horsfield Way
Bredbury Ind. Estate
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SK6 2SU
T: 0161 427 0348
E: www.thecadroom.com

Client :
Sheldons Bakery

Location:
Kellbrook Road Openshaw

N

Comments:
Detail and levels surveyed where possible in dense vegetation some may be missing

Drawing Number:	01-S-1038-Kellbrook Road Openshaw	Revision: A	
Date:	09.03.2021	Scale:	1:200 @ A1
Drawn By:	LK	Checked By:	CG

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N 397720.695
H 58.60

FL1
E 387582.668
N 397719.792
H 58.67

N2L
E 387592.847
N 397708.826
H 58.21

N3L
E 387584.820
N 397698.541
H 58.04

L1B
E 387599.571
N 397665.201
H 57.55

L2
E 387626.186
N 397636.652
H 57.81

L2A
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N 397623.502
H 58.08

L2B
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N 397620.829
H 58.21

electric fence (not to scale)

area unsurveyable due to dense vegetation

overgrown

top of bund overgrown, levels taken where possible

brambles

jline hidden

GRID
To local grid based on ostn15/osgm15

control point
E 1000.000
N 1000.000
H 100.000

spot level
+0.11

All linework described by layering system or nearby text

wall (see text for height / width / type)

fence (see text nearby for height / type)

gate

hedge scaled to width

Canopy/Vegetation line

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defined by trunk & one point on canopy

(girth size and position +/- 50mm)

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Sheet 2 of 4

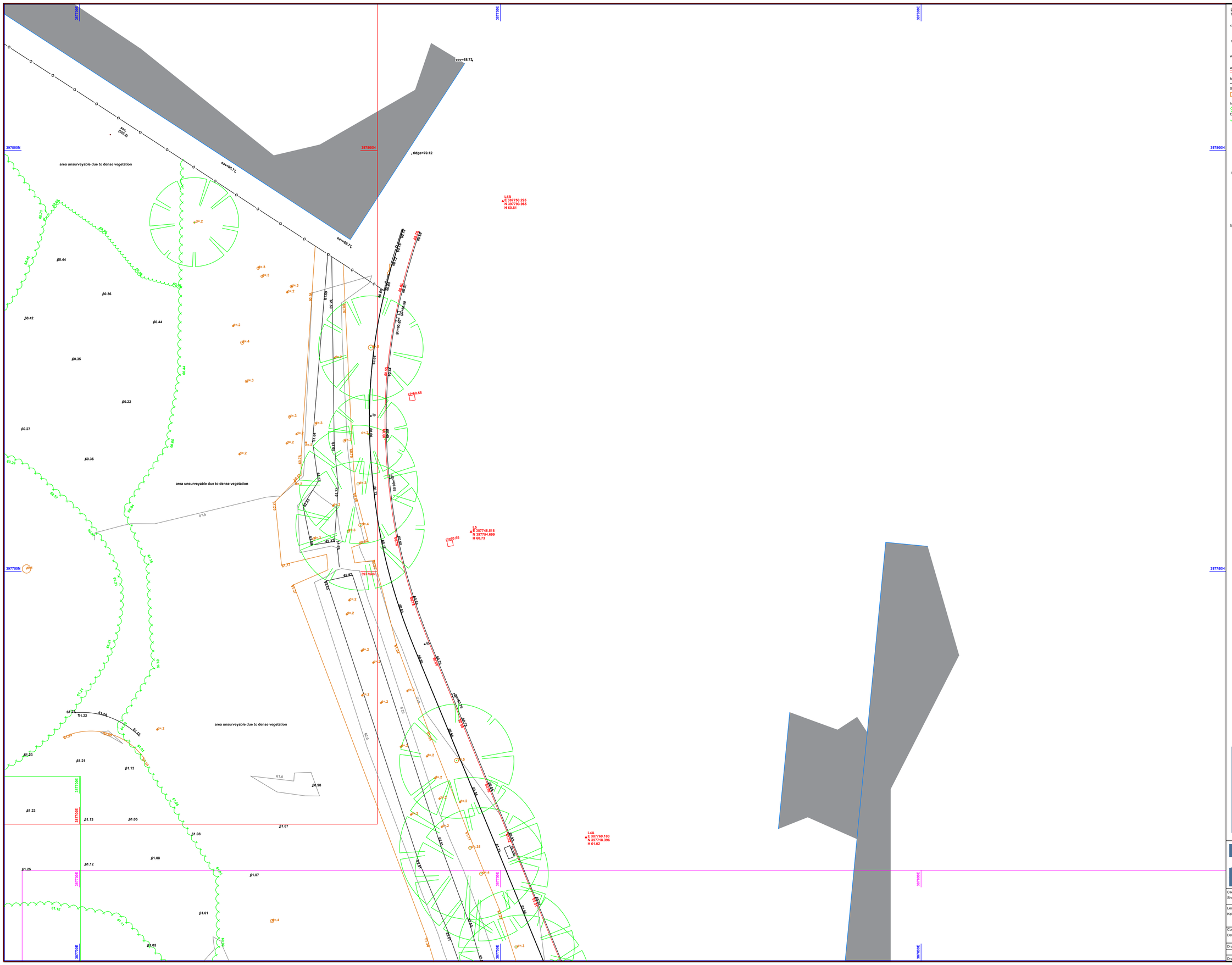
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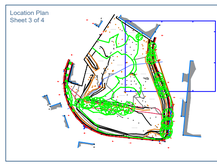
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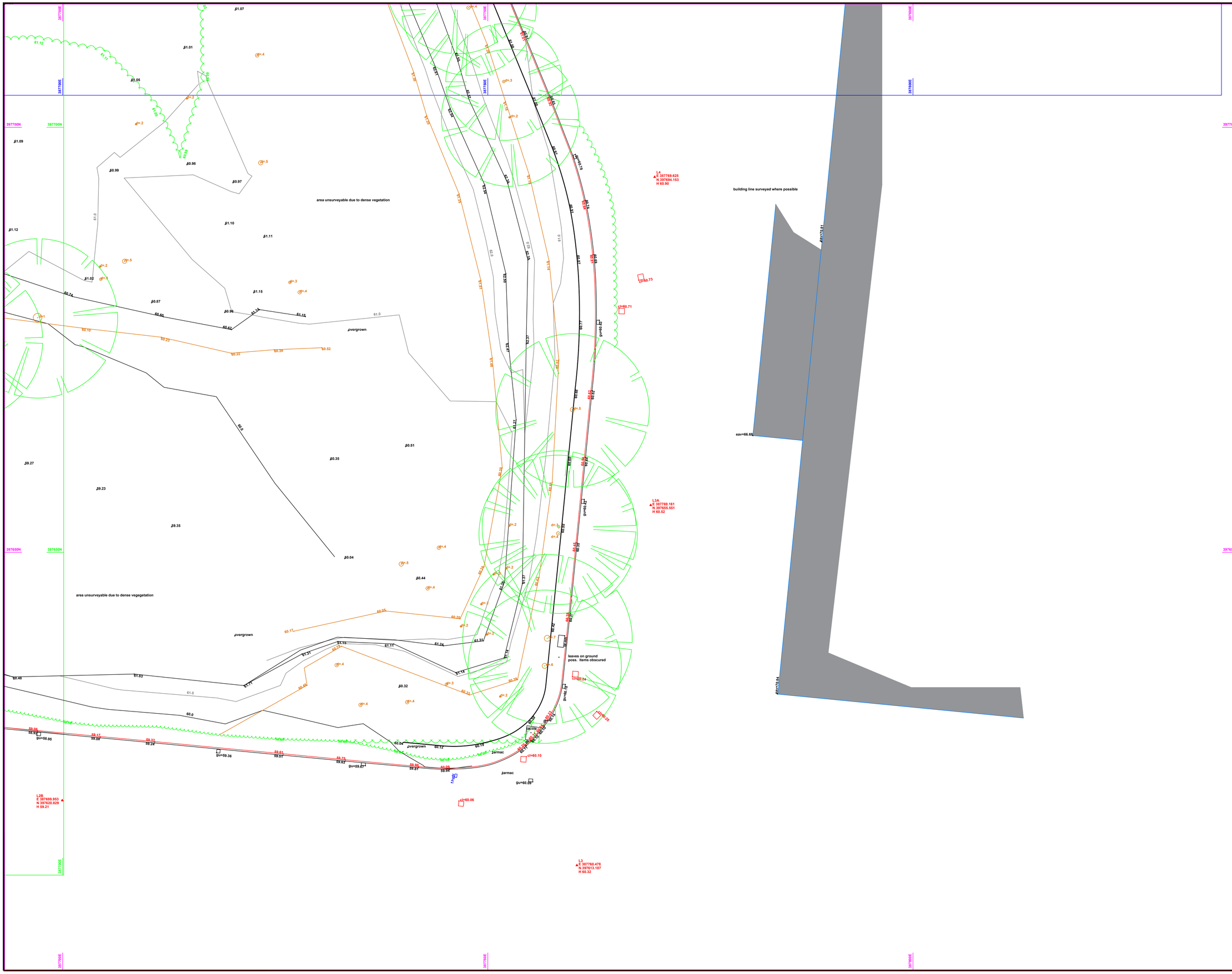
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salt - salt box
si - sign - with indicative text
sur. drain - surface drain
st.tap - stop tap
sv. - sluice valve
trel - trellis
ts. - traffic signal
utility - utility (unknown)

LEVEL ABBREVIATIONS

cl=60.11 - cover level
dpc=60.11 - dpc level
eav=60.11 eaves level
ffl=60.11 finished floor level
gu=60.11 - gulley top level
gutter=60.11 - gutter level
hip=60.11 - hip level
il=60.11 - invert level
oh=60.11 - overhead level
ramp=60.11 - ramp level
rid=60.11- ridge level
sill l=60.11 - sill level
sill=60.11 - sill level
top conc=60.11 - top of concrete
tpi=60.11 dia.10 - top of pipe
t.st.l=60.11 - top of step
twl=60.11 - top of wall
wat=60.11 - water level

FENCE ABBREVIATIONS

b/w - barbed wire
c/l - chain link
c/b - close boarded
c/i - corrugated iron
con/pan - concrete panel
cr/ba - crash barrier
h/r - hand rail
i/r - iron rail
pal - palisade
panel - panel
p/b - public barrier
pick - picket
p/r - post & rail
p/w - post & wire
sec. - security fence
wood - wooden fence

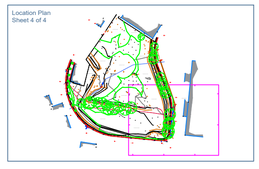
FLOOR PLAN ABBREVIATIONS

ffl - finished floor level
FC - floor to cill
CH - cill to head
CH - ceiling height
LP - low point
HP - high point
BH - Beam height
DH - Door height
SKY - skylight
AH - access hatch

Disclaimer

Only manholes that were accessible on site during survey
other manholes may be present but covered
all invert levels taken where possible at main channel
Man Entry to sewers has not been undertaken. Depths, Pipesizes etc
are measured from the ground. All sewers and inverts to be checked
prior to any works commencing on site. The CAD Room Ltd are
not resposible for manholes, services, information not surveyed which
may have an impact on site development.
Boundaries shown are physical and may not represent legally conveyed

Location Plan
Sheet 4 of 4



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Location:
Kellbrook Road Openshaw

N

Comments:
Detail and levels surveyed where possible in dense vegetation some may be missing

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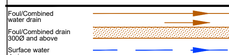
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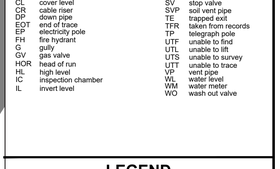
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		WO	wash out valve

LEGEND

Foul/Combined water drain	
Foul/Combined drain 300Ø and above	
Surface water drain	
Surface water drain 300Ø and above	
End of trace	EOT
Electric cables	E E E E E
HV cables	HV HV HV HV
Gas	GAS GAS GAS
Water	W W W W W
Telephone	BT BT BT BT
Catv	CATV CATV CATV
CCTV	CCTV CCTV CCTV
Comms	COM COM COM
Fibre Optics	FO FO FO FO
Pipe	PIPE PIPE PIPE
Vents	V V V V V
Fuel	F F F F F
Offsets	O O O O O
Vapour Recovery	VR VR VR VR
Gauge Lines	G G G G G
Unidentified GPR	U-GPR U-GPR U-GPR
Unidentified EML	U-EML U-EML U-EML
Taken From Records	E-TFR E-TFR E-TFR
Assumed Routes	GAS-AR GAS-AR GAS-AR
Empty Ducts	ED ED ED ED
Earth Rod	ER ER ER ER
Rising Main	RM RM RM RM
Overhead	O/H O/H O/H
Heating Pipes	HP HP HP HP
Traffic Signals	TS TS TS TS

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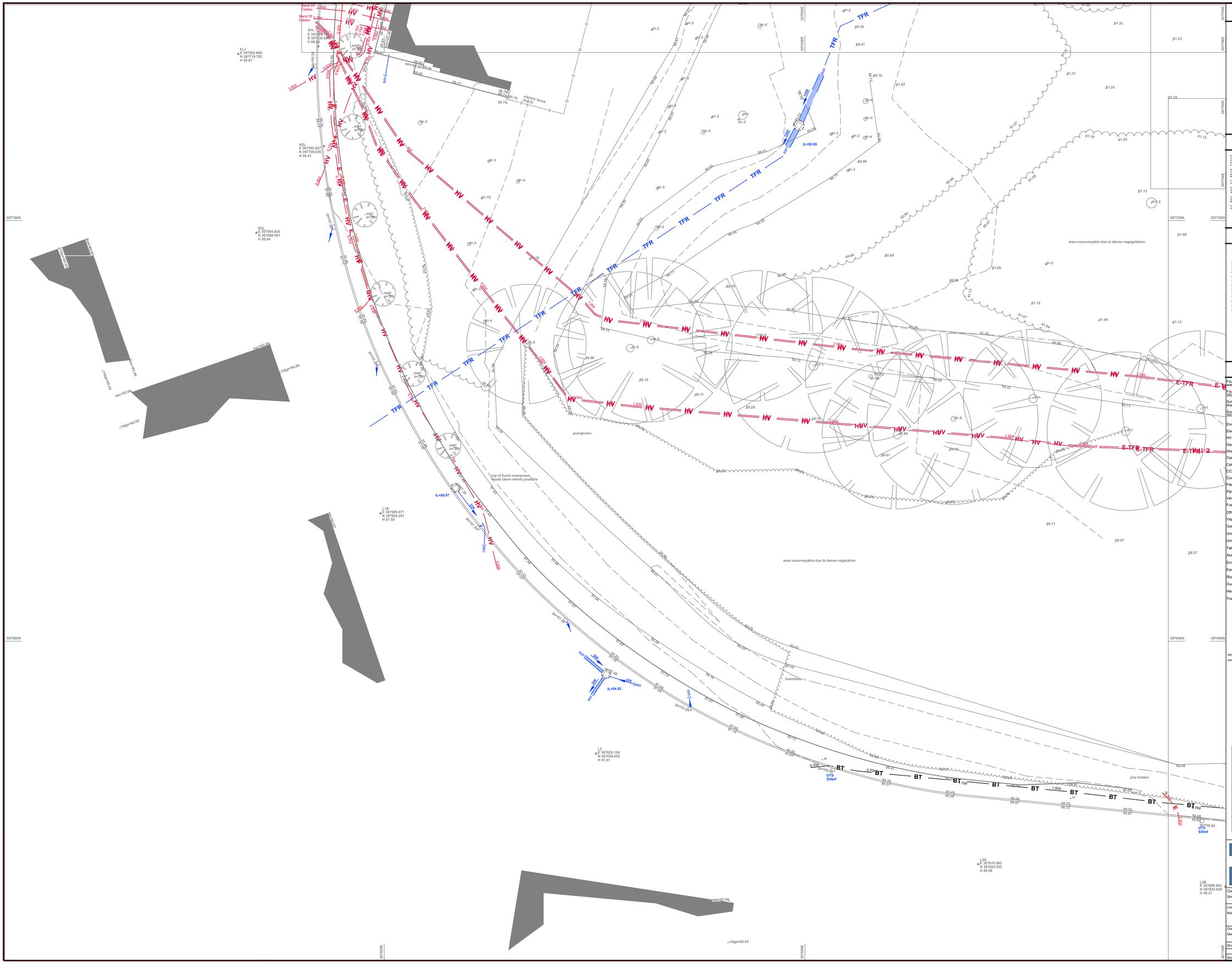
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ABBREVIATIONS

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BD	base bend	PR	pipe riser
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IL	invert level	WM	water meter
		WO	wash out valve

LEGEND

Foul/Combined water drain	
Foul/Combined drain 300Ø and above	
Surface water drain	
Surface water drain 300Ø and above	
End of trace	EOT
Electric cables	E E E E E E
HV cables	HV HV HV HV
Gas	GAS GAS GAS
Water	W W W W W
Telephone	BT BT BT BT
Catv	CATV CATV CATV
CCTV	CCTV CCTV CCTV
Comms	COM COM COM
Fibre Optics	FO FO FO FO
Pipe	PIPE PIPE PIPE
Vents	V V V V V
Fuel	F F F F F
Offsets	O O O O O
Vapour Recovery	VR VR VR VR
Gauge Lines	G G G G G
Unidentified GPR	U-GPR U-GPR U-GPR
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Assumed Routes	GAS-AR GAS-AR GAS-AR
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Rising Main	RM RM RM RM
Overhead	O/H O/H O/H
Heating Pipes	HP HP HP HP
Traffic Signals	TS TS TS TS

Where chamber extents are significantly greater than the cover size, their approximate extents are shown thus;

Location Plan
Sheet 2 of 4

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397800N

397760E

397800E

397750N

area unsurveyable due to dense vegetation

area unsurveyable due to dense vegetation

area unsurveyable due to dense vegetation

,ridge=70.12

esv=68.71

esv=68.71

esv=68.71

esv=68.71

Spot (NC)

L5B
E 397750.295
N 397793.965
H 60.81

L5
E 397746.518
N 397754.699
H 60.73

L4A
E 397760.183
N 397718.396
H 61.02

Silted

Empty

IL=57.40

IL=57.33

TFR

BT

E

W

G

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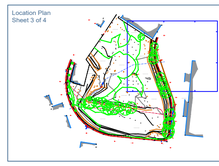
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LEGEND

Foul/Combined water drain	
Foul/Combined drain 300Ø and above	
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Comms	COM
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Sheet 3 of 4



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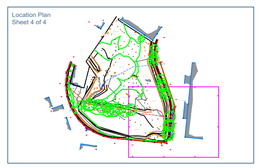
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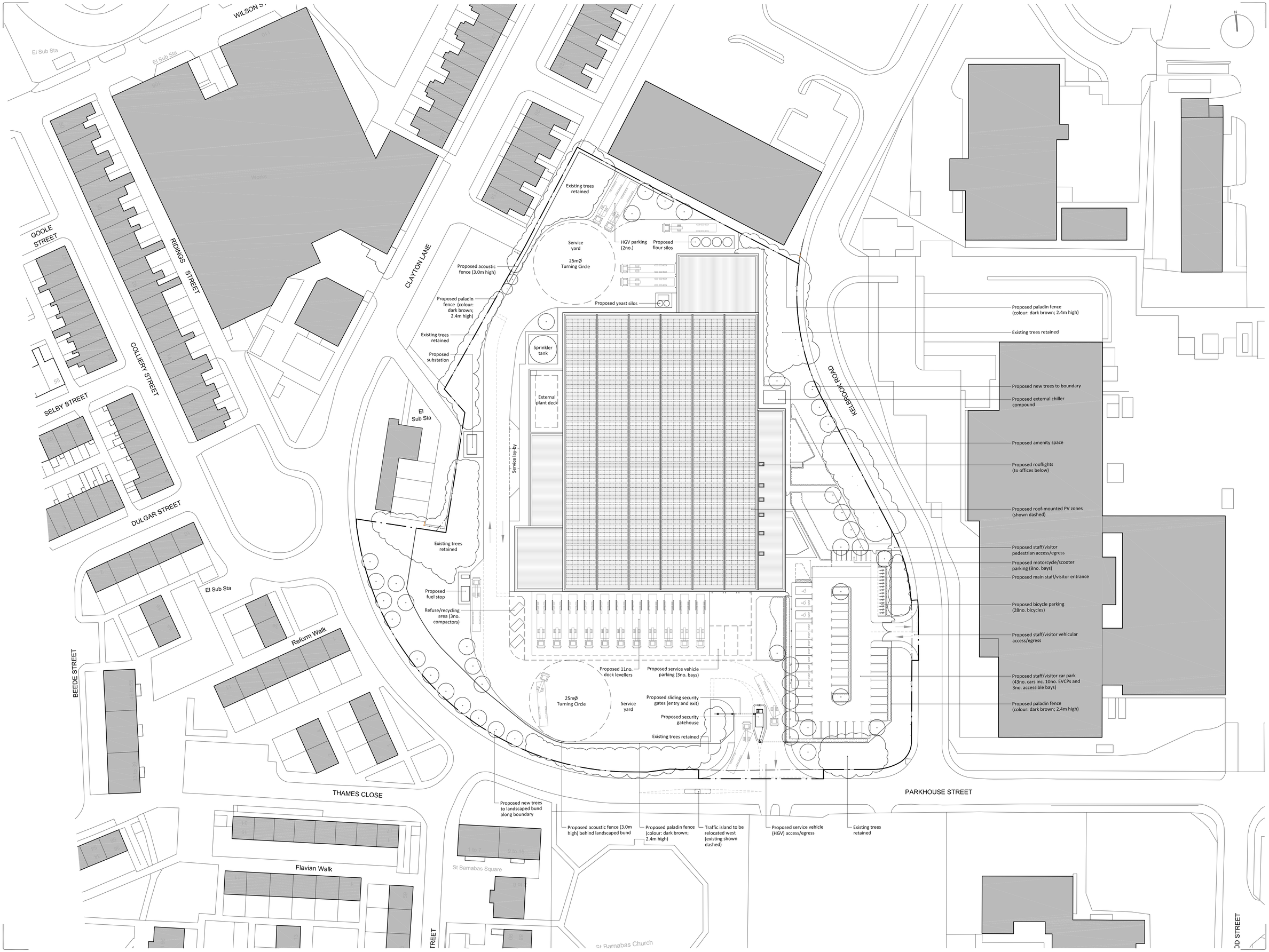
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Scale:	1:200 @ A1
Drawn By:	LK
Checked By:	CG

APPENDIX 2 – PROPOSED SITE PLAN



Scale

0 5 10 15 20m

1:500 @ A1

Notes

Figured dimensions are to be used in all case.

Dimensions should not be scaled from drawing unless for planning application purposes.

Land Registry and ownership boundaries are produced by Studio KMA using all reasonable endeavours. Studio KMA cannot be held responsible for scale discrepancies in plans supplied by others.

Any discrepancies in dimensions should be clarified with the Architect at the address below prior to commencement of the works.

No deviation from this drawing will be permitted without the prior written consent of the Architect.

This drawing is to be read in conjunction with all the relevant Mechanical and Electrical drawings.

This drawing is to be read in conjunction with the relevant Structural Engineer's drawings, structural calculations and recommendations.

This drawing is to be read in conjunction with the relevant Fire Safety Strategy drawings.

Please note that the use of any quantification data is done so at the users own risk.

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Revision Notes

Rev	Date	Revision Description	Drawn	Checked
P3	03.11.25	Acoustic fence height increased to 3.0m	CTW	AT
P2	20.07.25	General amendment	CTW	AT
P1	04.04.25	Initial Issue	CTW	AT

KMA

Project Name
Openshaw
Kelbrook Road

Drawing Title
Proposed
Site Plan

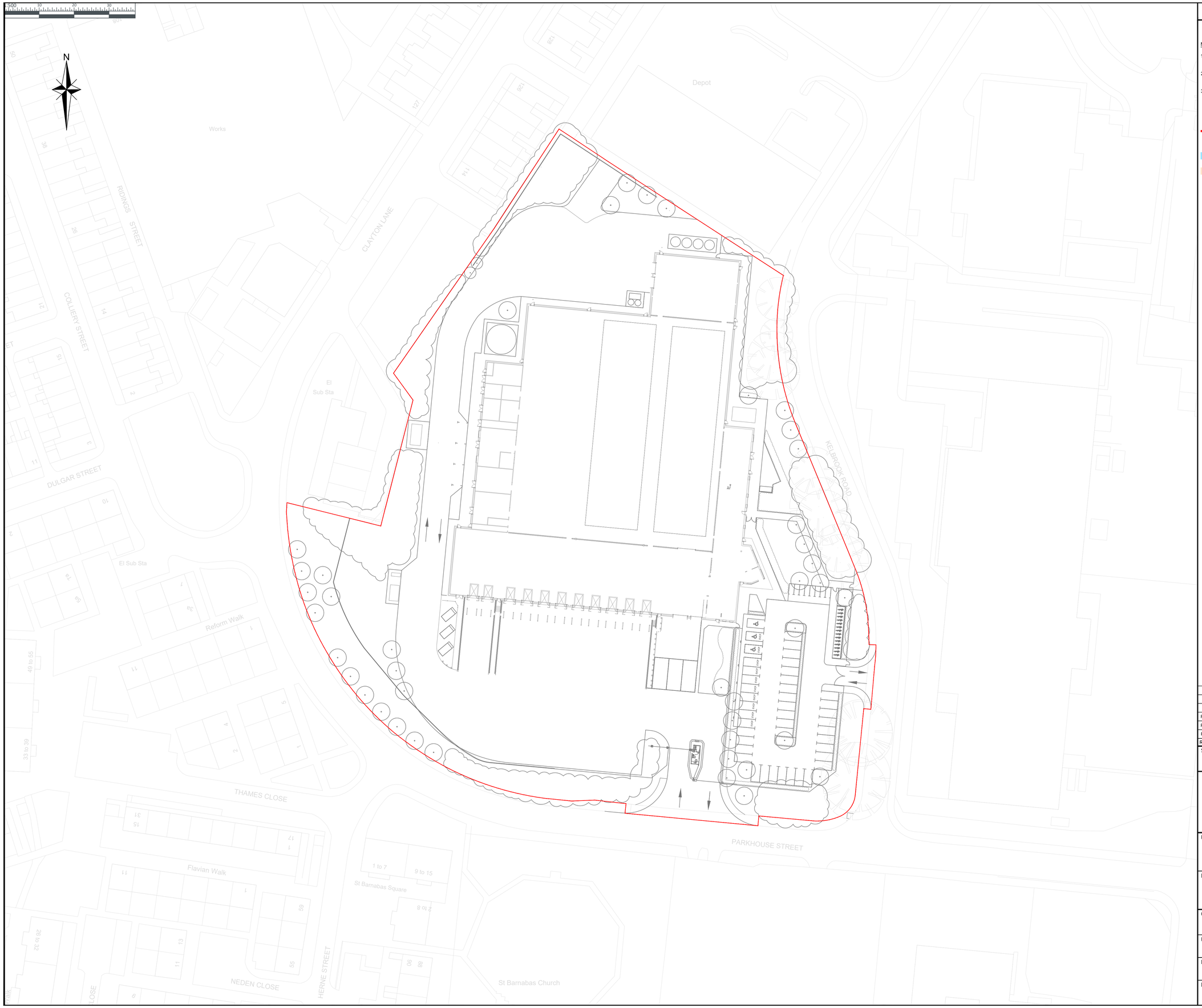
Drawing Number
OKR-KMA-XX-XX-DR-A-7005

Project Number	Status	Revision
T1179	A3 Planning	P3

Drawn by	Authorised by	Date
CTW	AT	05.11.25

Studio KMA
Clarence Arcade | Stamford Street | Ashton-under-Lyne | OL6 7PT
T: 01457 873563
E: info@studiokma.co.uk www.studiokma.co.uk

APPENDIX 3 – PROPOSED IMPERMEABLE AREAS PLAN



DO NOT SCALE FROM THIS DRAWING

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH
ALL OTHER HBL DRAWINGS ISSUED FOR THIS PROJECT

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS IN METERS UNLESS OTHERWISE SPECIFIED.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELATED DRAWINGS AND SPECIFICATIONS.
3. THE DESIGN IS BASED ON THE INFORMATION AVAILABLE ON THE DATE OF ISSUE FROM OTHER PARTIES (E.G. ARCHITECT AND M&E ENGINEER). IT IS SUBJECT TO CHANGE RESULTING FROM UPDATES TO THE AVAILABLE INFORMATION FROM OTHERS.

KEY:

SITE BOUNDARY
TOTAL SITE AREA APPROX. *21,666m² (2.17Ha)*
TOTAL IMPERMEABLE AREA APPROX. *15,821m² (1.58Ha)*

PROPOSED BUILDINGS
TOTAL AREA 6,890m²

PROPOSED HARDSTANDING
TOTAL AREA 8,796m²

REV.	DATE	DRAWN	DESCRIPTION	CHKD	APPRD
P03	07.09.26	AC	ISSUED FOR DISCHARGE OF CONDITION 16	AC	AC
P02	31.07.25	RJ	REVISED TO REMOVE PONDS	RJ	RJ
P01	06.06.25	AC	ISSUED FOR INFORMATION	AC	AC

STATUS DESCRIPTION: FOR INFORMATION
STATUS: S2

HBL
Brook House
Weybrook Road,
Manchester M19 2QD
+44 (0)161 432 9977 | www.hbl.ltd
Consulting Civil & Structural Engineers

PROJECT
SHELDON BAKERY
OPENSHAW, MANCHESTER

DRAWING TITLE
PROPOSED CONTRIBUTING AREAS

CLIENT
S.H. SHELDON WHOLESALE BAKERY

HBL REF.	DATE	SCALE(S)	
8885	13.05.25	1:500	A1

DRAWN	CHECKED	APPROVED
AC	AC	AC

DRAWING No.: 8885-HBL-XX-XX-DR-C-5105
REV.: P03



DO NOT SCALE FROM THIS DRAWING

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH
ALL OTHER HBL DRAWINGS ISSUED FOR THIS PROJECT

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS IN METERS UNLESS OTHERWISE SPECIFIED.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELATED DRAWINGS AND SPECIFICATIONS.
3. THE DESIGN IS BASED ON THE INFORMATION AVAILABLE ON THE DATE OF ISSUE FROM OTHER PARTIES (E.G. ARCHITECT AND M&E ENGINEER). IT IS SUBJECT TO CHANGE RESULTING FROM UPDATES TO THE AVAILABLE INFORMATION FROM OTHERS.

KEY:

SITE BOUNDARY
TOTAL SITE AREA APPROX. *21,666m² (2.17Ha)*
TOTAL DRAINED EXISTING IMPERMEABLE AREA APPROX. *0m² (0.00Ha)*

REV.	DATE	DRAWN	DESCRIPTION	CHKD	APPRD
P01	07.09.26	AC	ISSUED FOR DISCHARGE OF CONDITION 16	AC	AC

STATUS DESCRIPTION: FOR INFORMATION
STATUS: S2

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PROJECT
SHELDON BAKERY
OPENSHAW, MANCHESTER

DRAWING TITLE
EXISTING CONTRIBUTING AREAS

CLIENT
S.H. SHELDON WHOLESALE BAKERY

HBL REF.	DATE	SCALE(S)	
8885	13.05.25	1:500	A1

DRAWN	CHECKED	APPROVED
AC	AC	AC

DRAWING No.: 8885-HBL-XX-XX-DR-C-5106
REV.: P01

APPENDIX 4 – UNITED UTILITIES PRE-DEVELOPMENT RESPONSE

United Utilities
Water for the North West

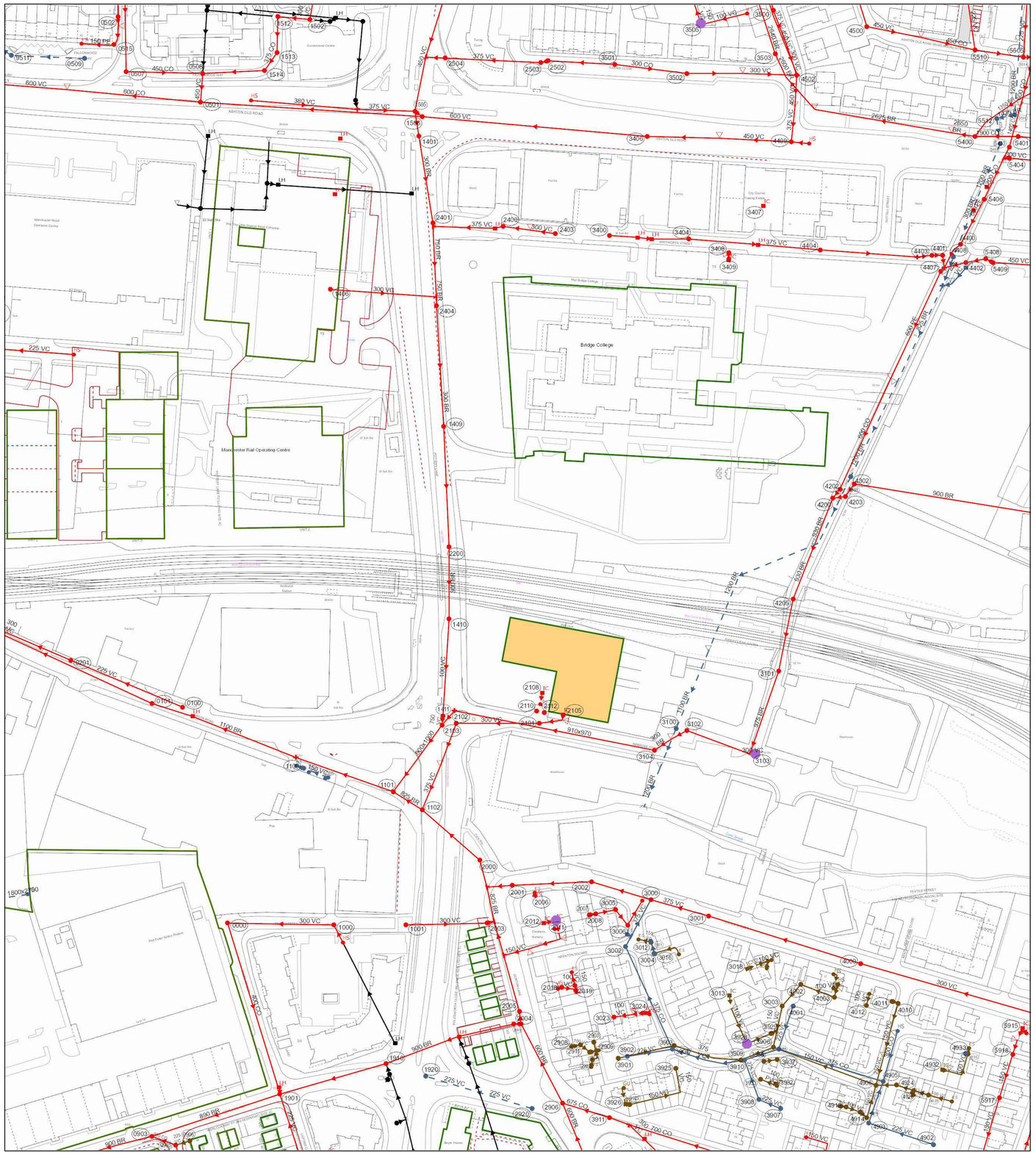
TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

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



Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
2820	54.62	SW		225			VC	61.68468	
0906	54	FO	50.87	225			VC	8.162408	1 in 3
4501	56.13	CO	53.28	225			VC	55.57877	1 in 116
4501	56.13	CO	53.28	225			VC	55.57877	1 in 116
3002		SW	0	375			VC	29.52965	
3005		CO	0				VC	10.88641	
2403	55.13	CO	52.12	300			VC	14.14214	1 in 74
2403	55.13	CO	52.12	300			VC	14.14214	1 in 74
2004	53.18	CO	47.96	900			BR	74.50052	
4401	54.56	CO	51.5	225			CI	7.071068	
4401	54.56	CO	51.5	225			CI	7.071068	
2200	51.38	CO	49.75	300			BR	40	1 in 125
2009	53.2	CO		900			BR	4	
2002	51.36	CO	45.49	375			VC	44.04543	1 in 294
4904	56.53	CO	53.76	150			VC	18.68154	1 in 23
4011		FO		150			VC	3.468214	
2404	53.93	CO	50.48	300			BR	67.11929	1 in 186
4925		FO		150			VC	11.31272	
4925		FO		150			VC	11.31272	
4502	56.11	CO	50.96	450			VC	18.02776	1 in 78
4502	56.11	CO	50.96	450			VC	18.02776	1 in 78
1411		CO	46.65	750			VC	5.145364	1 in 2
3902	54.56	SW	52.98	225			VC	25.31798	1 in 65
3003	55.17	FO	53.16	150			VC	23.53721	1 in 91
2000	51.01	CO	45.01	825			BR	42.52058	1 in 118
0508	53.85	CO	0	450			VC	16.04283	
0508	53.85	CO	0	450			VC	16.04283	
3406	55.32	CO	47.53	600			VC	125.4831	
3406	55.32	CO	47.53	600			VC	125.4831	
2003	51.76	CO	48.42	300			VC	4.123106	
3400	55.39	CO	52.47	375			VC	44.09555	1 in 735
3400	55.39	CO	52.47	375			VC	44.09555	1 in 735
4409	55.64	CO	48.14	450			VC	40.04977	1 in 138
4409	55.64	CO	48.14	450			VC	40.04997	1 in 138
5406	54.69	CO	53.01	600			PE	28.17801	1 in 7
5406	54.69	CO	53.01	600			PE	28.17801	1 in 7
5406	54.69	CO	53.01	600			PE	28.17801	1 in 7
3911	54.91	CO	49.89	675			CO	27.20294	
0000	51.5	CO	48.04	450			CO	97.44630	1 in 184
5510	56.78	CO	52.57	450			CO	27.29469	1 in 16
5510	56.78	CO	52.57	450			CO	27.29469	1 in 16
5510	56.78	CO	52.57	450			CO	27.29469	1 in 16
5510	56.78	CO	52.57	450			CO	27.29469	1 in 16
0501	54.25	CO	46.13	600			CO	74.33035	1 in 206
0501	54.25	CO	46.13	600			CO	74.33035	1 in 206
0903	53.31	CO	47	900			BR	49.86615	
2503	55.58	CO	0	375			VC	53.22537	
2503	55.58	CO	0	375			VC	53.22537	
1910	54.36	CO	0	900			BR	61.40033	
2103	51.45	CO	44.15	900			BR	22.2036	
5917		CO		150			VC	42.79165	
5917		CO		150			VC	42.79165	
3404	55.5	CO	52.49	375			VC	73.24657	1 in 146
3404	55.5	CO	52.49	375			VC	73.24657	1 in 146
2400	54.95	CO	51.72	375			VC	39.11372	
2400	54.95	CO	51.72	375			VC	39.11372	
4003		FO		100			VC	19.93245	
1409		CO	50.12	300			BR	67.06713	1 in 186
3006		CO		0			VC	15.83933	
5409	54.74	CO	51.41	450			VC	4.472136	1 in 224
5409	54.74	CO	51.41	450			VC	4.472136	1 in 224
3505		CO		150			VC	12.71919	
3505		CO		150			VC	12.71919	
3907	55.78	SW	54.34	225			VC	13	1 in 45
3501	55.65	CO	52.62	300			CO	37.05402	1 in 132
3501	55.65	CO	52.62	300			CO	37.05402	1 in 132
4010		FO		150			VC	16.06926	
4914		FO		100			VC	4.90963	
4202	52.7	CO	46.53	900			BR	6.403124	
3936		FO		100			VC	7.407859	
1410		CO	0	100			VC	53.9961	
5404	55	CO	51.92	300			VC	3	
5404	55	CO	51.92	300			VC	3	
5404	55	CO	51.92	300			VC	3	
5404	55	CO	51.92	300			VC	3	
1901	53.74	CO	47.35	890			BR	74.82594	1 in 214
3000	51.89	CO	45.74	375			VC	34.48188	1 in 144
2500	55.3	CO	51.61	450			VC	80.88328	1 in 231
5433	53.32	CO	49.22	1200			CO	32.2033	
5433	53.32	CO	49.22	1200			CO	32.2033	
5433	53.32	CO	49.22	1200			CO	32.2033	
5433	53.32	CO	49.22	1200			CO	32.2033	
2101	51.19	CO	0	300			VC	46	
3603	56.19	CO	51.49	450			VC	108.8974	
2401	54.42	CO	50.7	750			BR	46.04694	1 in 0.97433221
2401	54.42	CO	50.7	750			BR	46.04694	1 in 0.97433221
4402	54.6	CO	51.08	225			VC	12.36932	
4402	54.6	CO	51.08	225			VC	12.36932	
3905	55.31	SW	52.98	375			CO	19.92486	1 in 166
0502		CO		150			VC	4.97045	
0502		CO		150			VC	4.97045	
4200	52.68	CO	46.53	930			BR	60.16644	
1109		SW		150			VC	4.406995	
1506	54.94	CO	0	600			VC	123.2599	
1506	54.94	CO	0	600			VC	123.2599	
5506	55.47	CO		600			VC	6.929076	
5506	55.47	CO		600			VC	6.929076	
3500	55.95	CO	52.35	375			VC	19.31321	1 in 176
3500	55.95	CO	52.35	375			VC	19.31321	1 in 176
4407	54.47	CO	48.93	600			PE	66.21178	1 in 105
4407	54.47	CO	48.93	600			PE	66.21178	1 in 105
2502	55.52	CO	52.3	300			CO	4.123106	
2502	55.52	CO	52.3	300			CO	4.123106	
0507	53.67	CO	49.36	450			CO	42.51274	1 in 354
0507	53.67	CO	49.36	450			CO	42.51274	1 in 354
5408	54.69	CO	0	450			VC	11.18034	
5408	54.69	CO	0	450			VC	11.18034	
4903	56.57	SW	54.13	225			CO	12.64911	1 in 32
3909	55.14	SW	52.84	375			CO	22.36356	
3100	50.79	SW	49.39	1100			BR	23.76973	1 in 38
3928		FO		100			VC	14.55322	
5400	55.39	CO	0	2650			BR	13.15295	
5400	55.39	CO	0	2650			BR	13.15295	
5400	55.39	CO	0	2650			BR	13.15295	
5400	55.39	CO	0	2650			BR	13.15295	
3910	55.14	FO	52.34	150			VC	38.12009	1 in 152
4002		FO		150			VC	15.73354	
0100	51.27	CO	49.75	225			VC	67.23094	1 in 88
3101	51.82	CO	0	975			BR	86.03949	
1512	54.48	CO	51.19	375			CO	20.07582	1 in 32
1512	54.48	CO	51.19	375			CO	20.07582	1 in 32
0515		CO		150			PE	18.00208	
0515		CO		150			PE	18.00208	
3004		FO		100			VC	6.414191	
3503	56.24	CO	51.94	2640			BR	204.9244	
3503	56.24	CO	51.94	2640			BR	204.9244	
3908	55.53	SW	54.03	225			VC	23.4094	1 in 23
3906	55.35	FO	52.47	150			VC	19.31321	1 in 176
4205		CO	0	975			BR	40.79216	
2008		CO		0			VC	11.23455	
5918		CO		150			VC	25.21101	
5918		CO		150			VC	25.21101	
5402	56.43	CO	53.48	300			VC	71.34424	1 in 46
5402	56.43	CO	53.48	300			VC	71.34424	1 in 46
3016		SW		100			VC	7.17342	
6200	59	CO	52.62	900			BR	260.8395	1 in 77
2007		CO		0			VC	3.588186	
4404	55.05	CO	51.95	375			VC	54.14795	
4404	55.05	CO	51.95	375			VC	54.14795	
2906	54.99	CO	0	600			BR	49.64877	
4203	52.84	CO	46.64	1200			CO	7.071068	
5410	55.28	CO	52.08	450			VC	44.10215	1 in 70
1500	54.6	CO	51.99	300			VC	19.32215	1 in 52
0101	51.38	CO	43.24	1100			BR	131.0954	1 in 71
4400	54.58	CO	49.16	600			PE	16.18034	
4400	54.58	CO	49.16	600			PE	16.18034	
4400	54.58	CO	49.16	600			PE	16.18034	
4400	54.58	CO	49.16	600			PE	16.18034	
1513	54.32	CO	50.57	375			CO	12.0455	1 in 46
1513	54.32	CO	50.57	375			CO	12.0455	1 in 46
4925		FO		150			VC	8.671379	
4925		FO		150			VC	8.671379	
1505	54.87	CO	51.19	450			BR	5	
1505	54.87	CO	51.19	450			BR	5	
3103	50.81	CO	49.1	300			VC	3	1 in 7
2009	53.2	CO		0			BR	7.071068	
3901	54.6	FO	52.9	150			VC	31.7805	1 in 39
5505	55.32	CO	50.83	450			CO	6	1 in 40
5505	55.32	CO	50.83	450			CO	6	1 in 40
5505	55.32	CO	50.83	450			CO	6	1 in 40
5505	55.32	CO	50.83	450			CO	6	1 in 40
0506	54.55	CO	49.52	450			CO	67.94147	1 in 425
0905	53.4	CO	47.18	600			CO	14.11456	
3501	55.65	CO	52.57	300			CO	40.31129	1 in 149
3501	55.65	CO	52.57	300			CO	40.31129	1 in 149
4000	54.2	CO	46.56	375			VC	88.568	1 in 145
5513	55.93	CO	48.41	1350			BR	53.14634	
5513	55.93	CO	48.41	1350			BR	53.14634	
2102	51.79	CO	48.69	300			VC	25.63201	1 in 171
0503		CO		150			VC	18.11238	
3929		FO		100			VC	3.536595	
5514	55.69	CO	49.84	600			CO	22.19577	1 in 74
5514	55.69	CO	49.84	600			CO	22.19577	1 in 74
5514	55.69	CO	49.84	600			CO	22.19577	1 in 74
5514	55.69	CO	49.84	600			CO	22.19577	1 in 74
1000	51.54	CO	48.92	300			VC	59.00847	1 in 70
5512	56.23	SW	51.31	1425			CO	14.14214	1 in 236
5512	56.23	SW	51.31	1425			CO	14.14214	1 in 236
5512	56.23	SW	51.31	1425			CO	14.14214	1 in 236
5512	56.23	SW	51.31	1425			CO	14.14214	1 in 236
4902	57.11	SW	55.05	225			VC	37.94733	1 in 42
4902	57.11	SW	55.05	225			VC	37.94733	1 in 42
4913		FO		100			VC	8.304728	
1502	54.51	CO	51.5	375			CO	17.89169	1 in 58
1502	54.51	CO	51.5	375			CO	17.89169	1 in 58
1401		CO	0	300			BR	48.7729	
1401		CO	0	300			BR	48.7729	
4408	54.6	SW	50.71	300			BR	8.544003	
4408	54.6	SW	50.71	300			BR	8.544003	
1505	54.87	CO	0	300			BR	14.02838	
1505	54.87	CO	0	300			BR	14.02838	
4500	55.67	CO	51.52	450			VC	30.59412	
4500	55.67	CO	51.52	450			VC	30.59412	
1102	50.57	CO	44.65	825			BR	18.86796	1 in 59
1001	51.79	CO	48.43	300			VC	45.01111	
4403	54.47	CO	51.52	375			VC	6	1 in 600
4403	54.47	CO	51.52	375			VC	6	1 in 600
5401	56.28	CO	0	1900			CO	24	
5401	56.28	CO	0	1900			CO	24	
5401	56.28	CO	0	1900			CO	24	

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
3001	52.66	CO	45.9	375			VC	33.24154	1 in 222
4926		FO		150			VC	10.06354	
4926		FO		150			VC	10.06354	
3102	50.8	CO	45.06	975			BR	10.29963	
4302	52.8	SW	49.21	1200			BR	41.14608	
3104	50.76	CO	45.05	910			BR	113.1592	
4303	52.78	CO	48.06	1200			CO	8.602325	1 in 86
1101	50.54	CO	44.2	1100			BR	57.24509	
0201	51.22	CO	48.97	225			VC	38.07887	1 in 115
4928		FO		150			VC	1.564621	
4928		FO		150			VC	1.564621	
4906	56.31	FO	52.92	150			VC	60.74537	1 in 141
8402	62.02	CO	49.08	1900			CO	278.2175	
8402	62.02	CO	49.08	1900			CO	278.2175	
2504		CO	0	375			VC	10.8449	
2504		CO	0	375			VC	10.8449	
4001	55.14	SW	53.43	225			VC	25.29522	1 in 90
4905	56.18	SW	53.27	375			CO	60.7289	1 in 234
1406	54.49	CO	51.49	300			VC	59.03743	
1514	54.21	CO	50.31	375			CO	34.39141	1 in 34
1514	54.21	CO	50.31	375			CO	34.39141	1 in 34
5000	55.13	CO	49.69	300			VC	5.145364	1 in 87
3012		FO		150			VC	7.104712	
5502	55.92	CO	52.27	225			VC	33.06055	1 in 174
5502	55.92	CO	52.27	225			VC	33.06055	1 in 174
2001	51.1	CO	45.29	375			VC	14.03567	
3502	55.84	CO	52.3	300			CO	31	
3502	55.84	CO	52.3	300			CO	31	
5511	56.78	SW	51.33	1425			BR	5.09502	1 in 510
5511	56.78	SW	51.33	1425			BR	5.09502	1 in 510
5511	56.78	SW	51.33	1425			BR	5.09502	1 in 510
5511	56.78	SW	51.33	1425			BR	5.09502	1 in 510
9511		SW		0			UN	8.593509	
9511		SW		0			UN	8.593509	
0509		SW		0			UN	40.72351	
0509		SW		0			UN	40.72351	
2910		FO		100			VC	3.77478	
2909		FO		100			VC	1.287014	
3903	54.44	SW	52.39	375			CO	62.64982	
2019		CO		0			VC	7.529607	
5403	55.32	SW	51.25	1200			BR	33.61547	1 in 134
5403	55.32	SW	51.25	1200			BR	33.61547	1 in 134
5403	55.32	SW	51.25	1200			BR	33.61547	1 in 134
5403	55.32	SW	51.25	1200			BR	33.61547	1 in 134
4933		FO		100			VC	3.450489	
4933		FO		100			VC	3.450489	
2005	52.94	CO	45.71	825			BR	86.86369	1 in 126
3923		FO		150			VC	42.52991	
2902		FO		100			VC	12.07177	
2911		FO		100			VC	6.637273	
2908		FO		100			VC	4.799049	
5605	56.5	SW	52.65	1200			BR	132.3065	1 in 100
5605	56.5	SW	52.65	1200			BR	132.3065	1 in 100
2018		CO		100			VC	7.903583	

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
- DNM Network Monitoring Point
- 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 Reinforecd 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:

Sheldon's Bakery 8885 Kelbrook Road,
Manchester,
M11 2GW

OS sheet Number: SJ8797SW

Scale: 1:1250 **Date:** 24/02/2026

Nodes: 255

Sheet: 1 of 5

Printed by: Property Searches

SEWER RECORDS

United Utilities
Water for the North West

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.

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Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
5701	58.58	CO	56.48	225			VC	23.76973	
5701	58.58	CO	56.48	225			VC	23.76973	
4501	56.13	CO	53.28	225			VC	55.57877	1 in 116
4501	56.13	CO	53.28	225			VC	55.57877	1 in 116
4708	57.95	CO	55.53	300			VC	70.2282	
4708	57.95	CO	55.53	300			VC	70.2282	
2903	58.2	CO	54.05	300			VC	30.36445	1 in 202
2403	55.13	CO	52.12	300			VC	14.14214	1 in 74
2403	55.13	CO	52.12	300			VC	14.14214	1 in 74
3607	55.93	CO	52.85	375			VC	25	1 in 125
3702	57.24	CO	54.38	300			VC	20.88061	1 in 44
9601	53.91	CO	50.28	450			CO	26.4811	1 in 54
2705		CO	55.09	375			VC	55.65968	1 in 75
4502	56.11	CO	50.96	450			VC	18.02776	1 in 78
4502	56.11	CO	50.96	450			VC	18.02776	1 in 78
2004		CO	0	2400			BR	212.8497	
1603	55.15	CO	49.93	450			CO	3.097386	1 in 28
0701	55.92	CO	53.47	300			VC	46.04561	1 in 192
9000	59.07	CO	57.35	300			VC	53.15073	1 in 152
0508	53.85	CO	0	450			VC	16.04283	
0508	53.85	CO	0	450			VC	16.04283	
5803	59	CO	55.65	300			VC	19.92486	
5803	59	CO	55.65	300			VC	19.92486	
3406	55.32	CO	47.53	600			VC	125.4831	
3406	55.32	CO	47.53	600			VC	125.4831	
3710		CO	0	600			VC	4.543244	
3400	55.39	CO	52.47	375			VC	44.09555	1 in 735
3400	55.39	CO	52.47	375			VC	44.09555	1 in 735
4409	55.64	CO	48.14	450			VC	40.04997	1 in 138
4409	55.64	CO	48.14	450			VC	40.04997	1 in 138
3707	56.55	CO	54.01	375			VC	115.4352	1 in 101
5406	54.69	CO	53.01	600			PE	28.17801	1 in 7
5406	54.69	CO	53.01	600			PE	28.17801	1 in 7
5406	54.69	CO	53.01	600			PE	28.17801	1 in 7
5406	54.69	CO	53.01	600			PE	28.17801	1 in 7
3609		CO		150			VC	5.709042	
2610	55.44	CO	53.34	225			VC	35.51056	1 in 47
1701	56.18	CO	53.13	375			VC	11.31371	
3703	57.02	CO	0	375			VC	40.80441	
5711	58.18	CO	56.73	225			VC	20.61553	
5711	58.18	CO	56.73	225			VC	20.61553	
4700	57.95	CO	0	300			VC	41.10961	
5510	56.78	CO	52.57	450			CO	27.29469	1 in 16
5510	56.78	CO	52.57	450			CO	27.29469	1 in 16
5510	56.78	CO	52.57	450			CO	27.29469	1 in 16
5510	56.78	CO	52.57	450			CO	27.29469	1 in 16
1601	55.13	CO	52.73	300			VC	77.17513	1 in 107
0501	54.25	CO	46.13	600			CO	74.33035	1 in 206
0501	54.25	CO	46.13	600			CO	74.33035	1 in 206
2503	55.58	CO	0	375			VC	53.22537	
2503	55.58	CO	0	375			VC	53.22537	
4701	57.95	CO	55.53	300			VC	10.44031	1 in 15
1809		CO	0	450			CO	48.8774	
3404	55.5	CO	52.49	375			VC	73.24657	1 in 146
3404	55.5	CO	52.49	375			VC	73.24657	1 in 146
3704	57.26	CO	53.9	300			VC	21.54066	1 in 57
2400	54.95	CO	51.72	375			VC	39.11372	
2400	54.95	CO	51.72	375			VC	39.11372	
3705	56.73	CO	52.23	450			VC	42.84267	1 in 171.741230
3505		CO		150			VC	12.71919	
3505		CO		150			VC	12.71919	
3501	55.65	CO	52.62	300			CO	37.05402	1 in 132
3501	55.65	CO	52.62	300			CO	37.05402	1 in 132
2605	55.57	CO	52.57	300			VC	14.76482	1 in 246
1703	56.01	CO	53.14	375			VC	25.80698	1 in 72
5721		CO		100			VC	2.212632	
5721		CO		100			VC	2.212632	
5404	55	CO	51.92	300			VC	3	
5404	55	CO	51.92	300			VC	3	
5404	55	CO	51.92	300			VC	3	
5404	55	CO	51.92	300			VC	3	
9606	55.33	FO	53.85	150			VC	16.12265	1 in 39
0800	57.06	CO	0	450			VC	31.86092	
2601	55.98	CO	0	450			VC	41.19466	
0505	54.91	CO	49.71	450			CO	56.70102	1 in 298
2500	55.3	CO	51.61	450			VC	80.88328	1 in 231
5433	53.32	CO	49.22	1200			CO	32.2033	
5433	53.32	CO	49.22	1200			CO	32.2033	
5433	53.32	CO	49.22	1200			CO	32.2033	
5433	53.32	CO	49.22	1200			CO	32.2033	
4705	57.96	CO	56.69	225			VC	69.26038	1 in 60
2702	55.97	CO	52.99	300			VC	4.123106	
3603	56.19	CO	51.49	450			VC	108.8974	
2401	54.42	CO	50.7	750			BR	46.04694	1 in 0.97433221
2401	54.42	CO	50.7	750			BR	46.04694	1 in 0.97433221
4602	56.43	CO	52.68	300			VC	37.48333	1 in 250
3802		CO	0	600			VC	7.005426	
2905	58.06	CO	53.36	450			VC	25.29822	
0502		CO		150			VC	4.97045	
0502		CO		150			VC	4.97045	
0603		CO		150			VC	6.608773	
2603	55.88	CO	52.33	450			CO	13.41641	1 in 192
2904	58.11	CO	53.79	300			VC	31.62278	1 in 93
2800	57.86	CO	54.34	600			VC	57.36372	1 in 441
1506	54.94	CO	0	600			VC	123.2599	
1506	54.94	CO	0	600			VC	123.2599	
5506	55.47	CO		600			VC	6.929076	
5506	55.47	CO		600			VC	6.929076	
9602	54.95	SW	52.8	600			CO	25.76129	1 in 30
3723	1200	CO		150			VC	12.24998	
3500	55.95	CO	52.35	375			VC	19.31321	1 in 176
3500	55.95	CO	52.35	375			VC	19.31321	1 in 176
0817		CO	0	225			VC	24.04163	
1803	56.94	CO	53.67	375			VC	19.31782	1 in 97
2900	58.37	CO	56.04	375			VC	40.5216	1 in 43
2502	55.52	CO	52.3	300			CO	4.123106	
2502	55.52	CO	52.3	300			CO	4.123106	
0507	53.67	CO	49.36	450			CO	42.51274	1 in 354
0507	53.67	CO	49.36	450			CO	42.51274	1 in 354
1804	56.62	CO	53.44	375			VC	41.61731	1 in 154
2606	55.68	CO	52.04	450			VC	52.7731	1 in 129
4603	56.83	CO	53.09	300			VC	42.04759	1 in 81
4603	56.83	CO	53.09	300			VC	42.04759	1 in 81
1001	58.82	CO	54.89	375			VC	66.79153	1 in 62
5400	55.39	CO	0	2650			BR	13.15295	
5400	55.39	CO	0	2650			BR	13.15295	
5400	55.39	CO	0	2650			BR	13.15295	
5400	55.39	CO	0	2650			BR	13.15295	
4801	57.65	CO	54.86	300			VC	43.02822	
9701	55.59	SW	53.73	600			CO	29.28345	1 in 31
0703	56.24	CO	53.89	225			VC	18.24829	1 in 73
2600	56.23	CO	54.37	225			VC	39.31921	1 in 68
4600	56.63	CO	53.22	300			VC	58.82177	1 in 111
1512	54.48	CO	51.19	375			CO	20.07582	1 in 32
1512	54.48	CO	51.19	375			CO	20.07582	1 in 32
2602		CO		150			VC	5.914902	
0515		CO		150			PE	18.00208	
0515		CO		150			PE	18.00208	
4709	57.45	CO	53.95	300			VC	35.73514	1 in 83
3722	1500	CO		150			VC	12.84701	
1802	57.67	CO	56.02	150			VC	3.605551	
4401	65.23	CO	59.05	450			VC	580.7794	
3503	56.24	CO	51.94	2640			BR	204.9244	
3503	56.24	CO	51.94	2640			BR	204.9244	
3700	57.05	CO	54.43	300			VC	37.94733	1 in 82
2002	58.45	CO	0	300			VC	80.70442	
5700	68.39	CO	55.51	375			VC	21.18962	1 in 424
5700	68.39	CO	55.51	375			VC	21.18962	1 in 424
2805	57.34	CO	53.68	300			VC	72.50965	
5402	56.43	CO	53.48	300			VC	71.34424	1 in 46
5402	56.43	CO	53.48	300			VC	71.34424	1 in 46
5606		SW	0	750			BR	25.49712	
4404	55.05	CO	51.95	375			VC	54.14795	
4404	55.05	CO	51.95	375			VC	54.14795	
2701	56.32	CO	53.56	300			VC	37.64306	
1702	56.36	CO	0	450			VC	33.42155	
1604	55.05	CO	49.82	450			CO	16.91685	1 in 154
3509		CO		150			VC	6.834737	
3801	57.4	CO	0	375			VC	40.49691	
1500	54.6	CO	51.99	300			VC	19.32215	1 in 52
3604	55.91	CO	52.23	375			VC	19.67195	1 in 104
1600	55.6	CO	50.55	300			VC	70.50344	1 in 95
4400	54.58	CO	49.16	600			PE	16.18034	
4400	54.58	CO	49.16	600			PE	16.18034	
4400	54.58	CO	49.16	600			PE	16.18034	
4400	54.58	CO	49.16	600			PE	16.18034	
1513	54.32	CO	50.57	375			CO	12.0455	1 in 46
1513	54.32	CO	50.57	375			CO	12.0455	1 in 46
4704	58.02	CO	54.83	300			VC	57.87219	1 in 66
0900	58.87	CO	58.87	375			VC	56.3697	1 in 19
5805	58.58	CO	43.7	1350			BR	3.162278	
5805	58.58	CO	43.7	1350			BR	3.162278	
1705	55.71	CO	52.76	375			VC	38.60052	1 in 90
0702	56.04	CO	54.26	150			VC	5.385165	
4802	57.55	CO	46.79	1200			BR	84.19498	1 in 63
1505	54.87	CO	51.19	450			BR	5	
1505	54.87	CO	51.19	450			BR	5	
2803	57.8	CO	52.94	450			VC	37.52962	1 in 107
3606		CO		150			VC	25.91584	
0900	58.87	CO	56.65	300			VC	72.34836	
3701	57.19	CO	54.19	375			VC	28.16026	
5806	58.49	CO	0	450			BR	5.385165	
5806	58.49	CO	0	450			BR	5.385165	
0815	56.31	CO	51.92	450			VC	38.83298	1 in 59
3608	56.12	CO	52.04	450			CO	25.7775	1 in 99
1002		CO	0	375			VC	53.60037	
5505	55.32	CO	50.83	450			CO	6	1 in 40
5505	55.32	CO	50.83	450			CO	6	1 in 40
5505	55.32	CO	50.83	450			CO	6	1 in 40
5505	55.32	CO	50.83	450			CO	6	1 in 40
0506	54.55	CO	49.52	450			CO	67.94147	1 in 425
3803	57.54	CO	45.46	2400			BR	230.2216	
3706	57.11	CO	53.51	300			VC	43.68069	1 in 151
0803	57.16	CO	52.48	450			VC	37.44329	1 in 208
3501	55.65	CO	52.57	300			CO	40.31129	1 in 149
3501	55.65	CO	52.57	300			CO	40.31129	1 in 149
5804	58.61	CO	0	300			VC	9.055386	
5804	58.61	CO	0	300			VC	9.055386	
3506		CO		150			VC	36.84445	
5513	55.93	CO	48.41	1350			BR	53.14634	
5513	55.93	CO	48.41	1350			BR	53.14634	
0503		CO		150			VC	18.11238	
5514	55.69	CO	49.84	600			CO	22.19577	1 in 74
5514	55.69	CO	49.84	600			CO	22.19577	1 in 74
5514	55.69	CO	49.84	600			CO	22.19577	1 in 74
5514	55.69	CO	49.84	600			CO	22.19577	1 in 74
9609	54.23	CO	51.61	225			VC	4.293986	1 in 5
5512	56.23	SW	51.31	1425			CO	14.14214	1 in 236
5512	56.23	SW	51.31	1425			CO	14.14214	1 in 236
5512	56.23	SW	51.31	1425			CO	14.14214	1 in 236
5512	56.23	SW	51.31	1425			CO	14.14214	1 in 236

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
9608	54.17	CO	50.62	450			CO	31.96555	1 in 94
0707	55.33	CO	52.32	375			VC	35.76783	1 in 102
1502	54.51	CO	51.5	375			CO	17.89169	1 in 58
1502	54.51	CO	51.5	375			CO	17.89169	1 in 58
1401		CO	0	300			BR	48.7729	
1401		CO	0	300			BR	48.7729	
0804	57.03	CO	52.28	450			VC	52.15362	1 in 145
3614	56.08	CO	51.56	450			CO	7.795266	1 in 111
0607		CO		150			VC	5.472658	
4803	58.47	CO	55.43	300			VC	41.10961	
4803	58.47	CO	55.43	300			VC	41.10961	
4500	55.67	CO	51.52	450			VC	30.59412	
4500	55.67	CO	51.52	450			VC	30.59412	
1706	55.97	CO	51.57	300			VC	72.2076	1 in 71
1800	57.94	CO	53.09	450			VC	45.87652	1 in 79
2001	59	CO	55.73	375			VC	76.55064	
2700	56.57	CO	53.96	300			VC	44.27189	1 in 114
5401	56.28	CO	0	1900			CO	24	
5401	56.28	CO	0	1900			CO	24	
5401	56.28	CO	0	1900			CO	24	
5401	56.28	CO	0	1900			CO	24	
5808	58.59	CO	56.92	375			VC	45.54119	1 in 32
5808	58.59	CO	56.92	375			VC	45.54119	1 in 32
3600	56.15	CO	54.75	225			VC	38.8973	1 in 0.73949240
2804	57.61	CO	0	300			VC	32.28003	
0001	59.22	CO	57.88	225			VC	45.01111	1 in 90
0601	54.23	SW		0			UN	0.2678217	
8402	62.02	CO	49.08	1900			CO	278.2175	
8402	62.02	CO	49.08	1900			CO	278.2175	
2504		CO	0	375			VC	10.8449	
2504		CO	0	375			VC	10.8449	
5802	58.66	CO	0	300			VC	33.24154	
3613	56.25	CO	51.78	450			CO	21.51805	1 in 98
5600	57.2	CO	54.9	300			VC	54.45181	1 in 30
5600	57.2	CO	54.9	300			VC	54.45181	1 in 30
9607	54.93	FO	53.44	150			VC	25.9411	1 in 14
3612		CO	52.23	450			VC	65.45018	1 in 88
1514	54.21	CO	50.31	375			CO	34.39141	1 in 34
1514	54.21	CO	50.31	375			CO	34.39141	1 in 34
4702	57.58	CO	54.68	300			VC	35.73514	1 in 199
0602	54.97	CO	52.01	450			CO	70.05147	1 in 50
5502	55.92	CO	52.27	225			VC	33.06055	1 in 174
5502	55.92	CO	52.27	225			VC	33.06055	1 in 174
1704	56.1	CO	0	450			VC	59.16925	
3502	55.84	CO	52.3	300			CO	31	
3502	55.84	CO	52.3	300			CO	31	
0611		CO		150			VC	9.790865	
5403	55.32	SW	51.25	1200			BR	33.61547	1 in 134
5403	55.32	SW	51.25	1200			BR	33.61547	1 in 134
5403	55.32	SW	51.25	1200			BR	33.61547	1 in 134
5403	55.32	SW	51.25	1200			BR	33.61547	1 in 134
4508		CO		150			VC	6.717767	
0609		SW		0			UN	7.632698	
5511	56.78	SW	51.33	1425			BR	5.09902	1 in 510
5511	56.78	SW	51.33	1425			BR	5.09902	1 in 510
5511	56.78	SW	51.33	1425			BR	5.09902	1 in 510
5511	56.78	SW	51.33	1425			BR	5.09902	1 in 510
9511		SW		0			UN	8.593509	
9511		SW		0			UN	8.593509	
0509		SW		0			UN	40.72351	
0509		SW		0			UN	40.72351	
4601	56.09	CO	52.46	450			CO	38.8973	1 in 85
5605	56.5	SW	52.65	1200			BR	132.3065	1 in 100
5605	56.5	SW	52.65	1200			BR	132.3065	1 in 100
4706	58.17	CO	57.03	225			VC	22.36068	1 in 66
4706	58.17	CO	57.03	225			VC	22.36068	1 in 66
4703	58.27	CO	56.68	225			VC	24.69818	1 in 73
4703	58.27	CO	56.68	225			VC	24.69818	1 in 73
5604	56.18	SW	52.76	1200			BR	4.123106	1 in 37
0608		CO		150			VC	3.706257	

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
- Catchpit
- Valve Chamber
- Vent Column
- Vortex Chamber
- Penstock Chamber
- Network Storage Tank
- Sewer Overflow
- Ww Treatment Works
- Ww Pumping Station
- Septic Tank
- Control Kiosk
- DNM Network Monitoring Point
- 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 Reinforecd 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:

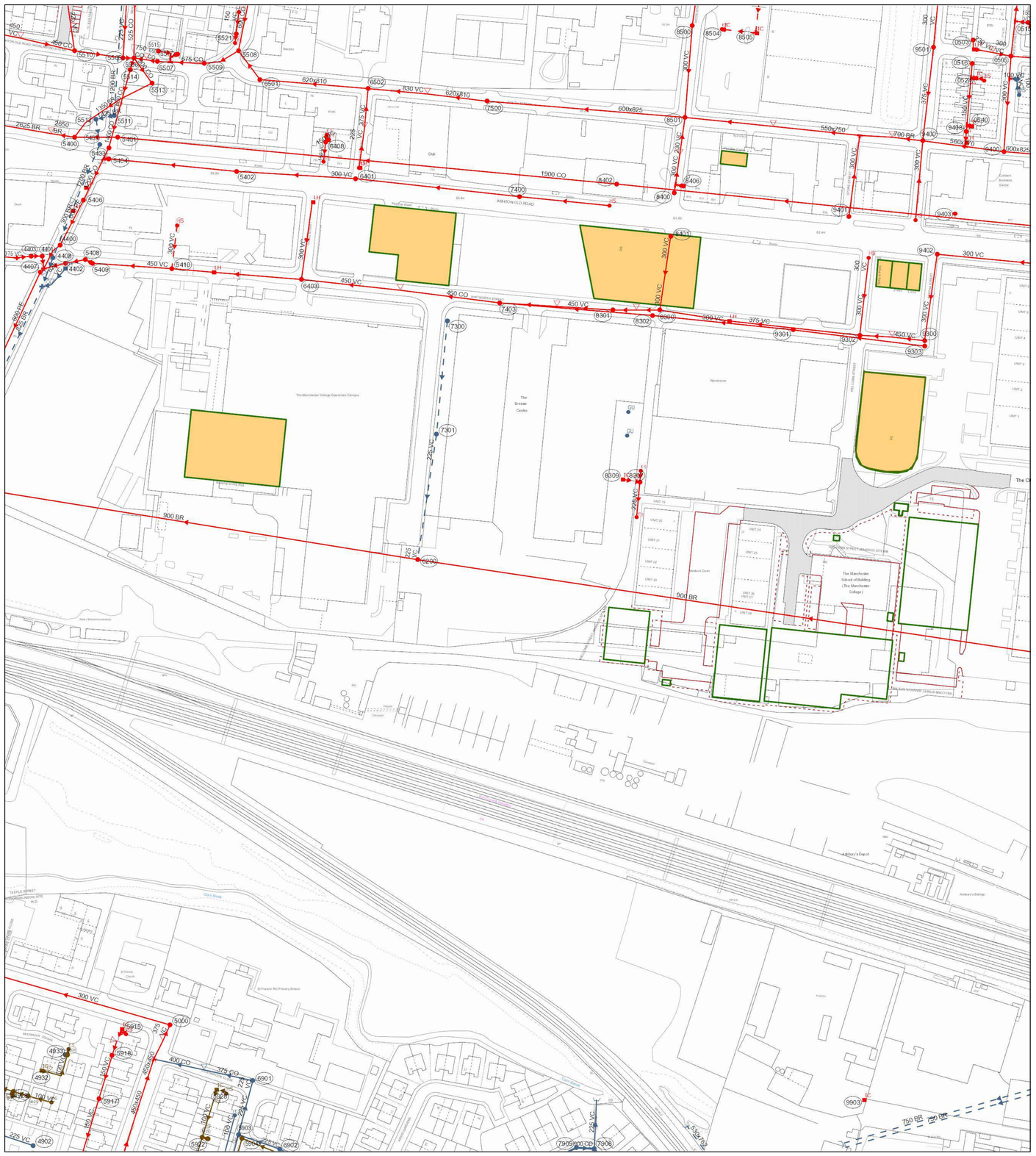
Sheldon's Bakery 8885 Kelbrook Road,
Manchester,
M11 2GW

OS sheet Number: SJ8797NW
Scale: 1:1250 **Date:** 24/02/2026
Nodes: 271
Sheet: 2 of 5

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SEWER RECORDS

United Utilities
Water for the North West



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.

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Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
8403	61.39	CO	0	300			VC	41.4367	
8401	61.39	CO	0	300			VC	41.4367	
4501	56.13	CO	53.28	225			VC	55.57877	1 in 116
4501	56.13	CO	53.28	225			VC	55.57877	1 in 116
7500	60.03	CO	55.73	620			BR	33.24154	1 in 83
7500	60.03	CO	55.73	620			BR	33.24154	1 in 83
0516		CO		150			VC	38.06688	
0516		CO		150			VC	38.06688	
9301	62.16	CO	57.06	300			VC	78.40918	1 in 154
9403	63.4	CO	49.97	1900			CO	188.9577	1 in 212
9403	63.4	CO	49.97	1900			CO	188.9577	1 in 212
4401	54.56	CO	51.5	225			CI	7.071068	
4401	54.56	CO	51.5	225			CI	7.071068	
7301	59.03	SW	57.03	225			VC	70.41175	1 in 110
5923		FO		100			VC	28.80299	
0503	63.59	CO	61.59	230			VC	16.18034	
0503	63.59	CO	61.59	230			VC	16.18034	
6502	58.58	CO	54.93	620			BR	60.20797	1 in 72
6502	58.58	CO	54.93	620			BR	60.20797	1 in 72
7400	60.15	CO	56.31	300			VC	91.5478	1 in 86
7400	60.15	CO	56.31	300			VC	91.5478	1 in 86
5918		CO		150			VC	25.21101	
5918		CO		150			VC	25.21101	
7403	59.75	CO	55.86	450			CO	55.44366	1 in 43
5402	56.43	CO	53.48	300			VC	71.34424	1 in 46
5402	56.43	CO	53.48	300			VC	71.34424	1 in 46
6200	59	CO	52.62	900			BR	260.8395	1 in 77
9500	63.41	CO	59.74	300			VC	52.23983	1 in 653
4404	55.05	CO	51.95	375			VC	54.14795	
4404	55.05	CO	51.95	375			VC	54.14795	
5509	56.59	CO	52.84	675			CO	26.01922	1 in 34
5509	56.59	CO	52.84	675			CO	26.01922	1 in 34
5515		CO		150			VC	11.88443	
5515		CO		150			VC	11.88443	
5410	55.28	CO	52.08	450			VC	44.10215	1 in 70
7909	58.49	SW	56.26	900			CO	9.947579	1 in 497
0400	64.03	CO	57.04	560			VC	45.39824	1 in 22
0400	64.03	CO	57.04	560			VC	45.39824	1 in 22
8302	60.94	CO	56.54	300			VC	85.28775	1 in 140
4400	54.58	CO	49.16	600			PE	16.18034	
4400	54.58	CO	49.16	600			PE	16.18034	
4400	54.58	CO	49.16	600			PE	16.18034	
4400	54.58	CO	49.16	600			PE	16.18034	
5508	57.07	CO	53.32	675			CO	20.71729	1 in 67
5508	57.07	CO	53.32	675			CO	20.71729	1 in 67
9400	63.48	CO	59.06	700			BR	17.11724	
9400	63.48	CO	59.06	700			BR	17.11724	
4925		FO		150			VC	8.671379	
4925		FO		150			VC	8.671379	
5406	54.69	CO	53.01	600			PE	28.17801	1 in 7
5406	54.69	CO	53.01	600			PE	28.17801	1 in 7
5406	54.69	CO	53.01	600			PE	28.17801	1 in 7
5406	54.69	CO	53.01	600			PE	28.17801	1 in 7
5904	57.59	FO	55.54	150			VC	43.68066	1 in 112
5505	55.32	CO	50.83	450			CO	6	1 in 40
5505	55.32	CO	50.83	450			CO	6	1 in 40
5505	55.32	CO	50.83	450			CO	6	1 in 40
5505	55.32	CO	50.83	450			CO	6	1 in 40
5506	55.47	CO	49.89	900			CO	17.20465	1 in 12
5506	55.47	CO	49.89	900			CO	17.20465	1 in 12
5510	56.78	CO	52.57	450			CO	27.29469	1 in 16
5510	56.78	CO	52.57	450			CO	27.29469	1 in 16
5510	56.78	CO	52.57	450			CO	27.29469	1 in 16
5510	56.78	CO	52.57	450			CO	27.29469	1 in 16
8301	60.86	CO	57.16	450			VC	31.06445	1 in 48
7908	58.53	SW		0			UN	0.2976321	
5917		CO		150			VC	42.79165	
5917		CO		150			VC	42.79165	
5513	55.93	CO	48.41	1350			BR	53.14634	
5513	55.93	CO	48.41	1350			BR	53.14634	
0505	64.19	CO	60.33	300			VC	53.33854	1 in 356
0505	64.19	CO	60.33	300			VC	53.33854	1 in 356
9408		CO		150			VC	8.250587	
9408		CO		150			VC	8.250587	
5514	55.69	CO	49.84	600			CO	22.19577	1 in 74
5514	55.69	CO	49.84	600			CO	22.19577	1 in 74
5514	55.69	CO	49.84	600			CO	22.19577	1 in 74
5514	55.69	CO	49.84	600			CO	22.19577	1 in 74
6500	57.08	CO	53.69	600			CO	34.71311	1 in 112
5409	54.74	CO	51.41	450			VC	4.472136	1 in 224
5409	54.74	CO	51.41	450			VC	4.472136	1 in 224
8501	61.65	CO	57.48	600			BR	110.3676	1 in 69
8501	61.65	CO	57.48	600			BR	110.3676	1 in 69
5512	56.23	SW	51.31	1425			CO	14.14214	1 in 236
5512	56.23	SW	51.31	1425			CO	14.14214	1 in 236
5512	56.23	SW	51.31	1425			CO	14.14214	1 in 236
5512	56.23	SW	51.31	1425			CO	14.14214	1 in 236
5518	55.85	CO	50.48	525			CO	58.00862	1 in 132
4902	57.11	SW	55.05	225			VC	37.94733	1 in 42
4902	57.11	SW	55.05	225			VC	37.94733	1 in 42
9302	62.37	CO	56.17	375			VC	111.9078	1 in 153
5903	57.48	SW	55.2	225			VC	31.04835	1 in 24
5404	55	CO	51.92	300			VC	3	
5404	55	CO	51.92	300			VC	3	
5404	55	CO	51.92	300			VC	3	
5404	55	CO	51.92	300			VC	3	
7300	59.33	SW	57.63	225			VC	63.28507	1 in 105
6401	58.44	CO	55.22	300			VC	66.1211	1 in 38
6401	58.44	CO	55.22	300			VC	66.1211	1 in 38
5433	53.32	CO	49.22	1200			CO	32.2033	
5433	53.32	CO	49.22	1200			CO	32.2033	
5433	53.32	CO	49.22	1200			CO	32.2033	
5433	53.32	CO	49.22	1200			CO	32.2033	
4408	54.6	SW	50.71	300			BR	8.544003	
4408	54.6	SW	50.71	300			BR	8.544003	
4500	55.67	CO	51.52	450			VC	30.59412	
4500	55.67	CO	51.52	450			VC	30.59412	
6408		CO		150			VC	10.99818	
6408		CO		150			VC	10.99818	
6501	57.66	CO	53.87	675			CO	20	1 in 38
6501	57.66	CO	53.87	675			CO	20	1 in 38
5517		CO		150			VC	4.050791	
5517		CO		150			VC	4.050791	
4402	54.6	CO	51.08	225			VC	12.36932	
4402	54.6	CO	51.08	225			VC	12.36932	
4403	54.47	CO	51.52	375			VC	6	1 in 600
4403	54.47	CO	51.52	375			VC	6	1 in 600
5401	56.28	CO	0	1900			CO	24	
5401	56.28	CO	0	1900			CO	24	
5401	56.28	CO	0	1900			CO	24	
5401	56.28	CO	0	1900			CO	24	
9402	63.25	CO	60.73	300			VC	48.50773	1 in 25
0515		CO		150			VC	7.361735	
0515		CO		150			VC	7.361735	
4926		FO		150			VC	10.06354	
4926		FO		150			VC	10.06354	
9303	62.6	CO	57.17	300			VC	73.5527	1 in 736
8500	61.45	CO	58.42	300			VC	51.15662	1 in 54
8500	61.45	CO	58.42	300			VC	51.15662	1 in 54
0505	64.19	CO	57.48	300			VC	53.15073	1 in 332
0505	64.19	CO	57.48	300			VC	53.15073	1 in 332
5506	55.47	CO		600			VC	6.929076	
5506	55.47	CO		600			VC	6.929076	
5922		FO		100			VC	3.460616	
8400	61.57	CO	58.59	300			VC	21.2132	1 in 39
8400	61.57	CO	58.59	300			VC	21.2132	1 in 39
4407	54.47	CO	48.93	600			PE	66.21178	1 in 105
4407	54.47	CO	48.93	600			PE	66.21178	1 in 105
8300	60.99	CO	57.41	375			VC	13	1 in 108
5408	54.69	CO	0	450			VC	11.18034	
5408	54.69	CO	0	450			VC	11.18034	
9401	62.67	CO	60.12	300			VC	45.39824	
9401	62.67	CO	60.12	300			VC	45.39824	
4928		FO		150			VC	1.564621	
4928		FO		150			VC	1.564621	
6902	57.63	SW	55.7	225			VC	24.35159	1 in 52
9501	63.33	CO	59.66	375			VC	52.34501	1 in 145
9501	63.33	CO	59.66	375			VC	52.34501	1 in 145
8402	62.02	CO	49.08	1900			CO	278.2175	
8402	62.02	CO	49.08	1900			CO	278.2175	
8406		CO		225			VC	4.587996	
8406		CO		225			VC	4.587996	
8307		CO		225			VC	19.43437	
5400	55.39	CO	0	2650			BR	13.15295	
5400	55.39	CO	0	2650			BR	13.15295	
5400	55.39	CO	0	2650			BR	13.15295	
5400	55.39	CO	0	2650			BR	13.15295	
6901	56.64	SW	53.69	375			CO	27.65863	
5000	55.13	CO	49.69	300			VC	121.2099	1 in 87
5502	55.92	CO	52.27	225			VC	33.06055	1 in 174
5502	55.92	CO	52.27	225			VC	33.06055	1 in 174
9300	62.63	CO	56.66	450			VC	18.11077	1 in 82
5507	55.67	CO	50.48	650			CO	6.082763	
5507	55.67	CO	50.48	650			CO	6.082763	
5403	55.32	SW	51.25	1200			BR	33.61547	1 in 134
5403	55.32	SW	51.25	1200			BR	33.61547	1 in 134
5403	55.32	SW	51.25	1200			BR	33.61547	1 in 134
5403	55.32	SW	51.25	1200			BR	33.61547	1 in 134
6403	57.3	CO	53.15	450			VC	72.24979	1 in 68
4933		FO		100			VC	3.450489	
4933		FO		100			VC	3.450489	
5511	56.78	SW	51.33	1425			BR	5.09902	1 in 510
5511	56.78	SW	51.33	1425			BR	5.09902	1 in 510
5511	56.78	SW	51.33	1425			BR	5.09902	1 in 510
5511	56.78	SW	51.33	1425			BR	5.09902	1 in 510
5605	56.5	SW	52.65	1200			BR	132.3065	1 in 100
5605	56.5	SW	52.65	1200			BR	132.3065	1 in 100

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
- DNM Network Monitoring Point
- 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:

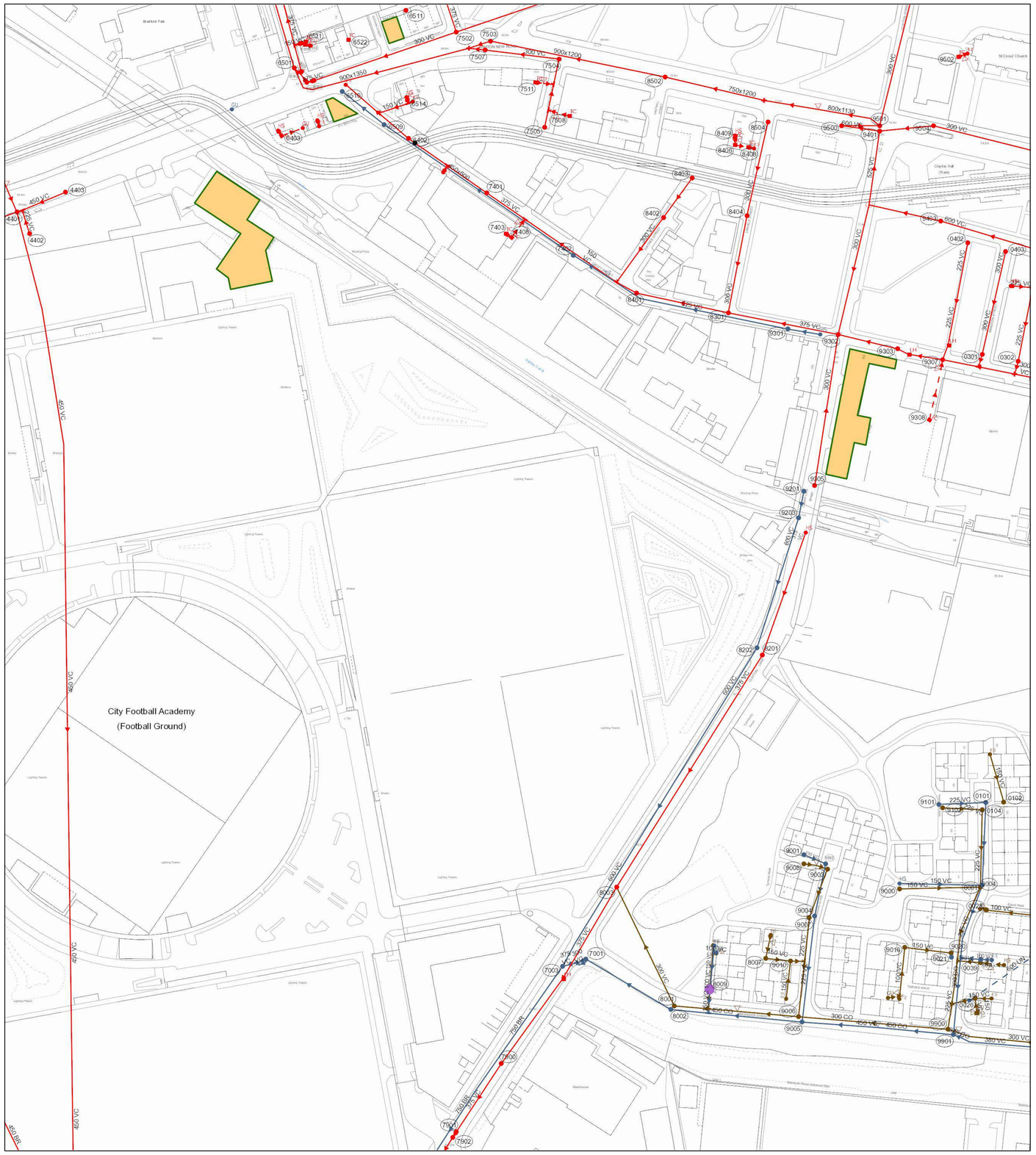
Sheldon's Bakery 8885 Kelbrook Road,
Manchester,
M11 2GW

OS sheet Number: SJ8797SE
Scale: 1:1250 **Date:** 24/02/2026
Nodes: 177
Sheet: 3 of 5

Printed by: Property Searches

SEWER RECORDS

United Utilities
Water for the North West



Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
8402	69.75	CO	66.42	300			VC	44.40721	1 in 18
7902	62.96	CO	58.96	375			VC	15.26434	1 in 90
7902	62.96	CO	58.96	375			VC	15.26434	1 in 90
4401	65.23	CO	59.05	450			VC	580.7794	
0004	67.29	FO	63.13	150			VC	54.48005	
8009		FO		150			VC	10.78265	
8009		FO		150			VC	10.78265	
9203		SW	0	600			VC	75.58439	
0402	73	CO	71.75	225			VC	66.5957	1 in 12
6501	67.92	CO	60.64	900			BR	138.6001	1 in 495
9005	64.54	SW	61.37	450			CO	73.33485	1 in 111
9005	64.54	SW	61.37	450			CO	73.33485	1 in 111
9008	68.46	FO	66.62	100			VC	7.071068	1 in 14
0039		FO		150			VC	12.87452	
0039		FO		150			VC	12.87452	
0001	67.32	SW	63.59	225			VC	31.95309	
8202		SW	0	600			VC	207.3706	
9901	65.04	SW	62.02	450			CO	42.19004	1 in 132
9901	65.04	SW	62.02	450			CO	42.19004	1 in 132
0026		FO		150			VC	13.34482	
0026		FO		150			VC	13.34482	
9307	71.27	CO	66.23	375			VC	25.94359	1 in 59
7003	64.45	SW	58.91	750			BR	219.9747	
7003	64.45	SW	58.91	750			BR	219.9747	
9201		SW	0	600			VC	15.29706	
0302	72.11	CO	70.37	225			VC	7.28011	1 in 2
7001	64.63	SW	60.48	225			VC	5.385165	
7001	64.63	SW	60.48	225			VC	5.385165	
9003	67.81	FO	65.54	225			VC	28.79236	1 in 63
9004	66.26	SW	62.94	225			VC	59.4138	1 in 38
9004	66.26	SW	62.94	225			VC	59.4138	1 in 38
8404	70.6	CO	67.3	300			VC	54.91138	1 in 22
7507	69.07	CO	0	300			VC	9.055386	
7401	68.21	CO	63.59	375			VC	53.00878	1 in 279
9102	68.42	FO	65.04	225			VC	22.02271	
7503	68.91	CO	61.38	900			BR	12.64911	1 in 158
9401	72.9	CO	66.78	600			VC	21.2132	
8003	65.53	CO	61.93	375			VC	117.1779	1 in 49
8002	64.17	SW	60.71	450			CO	54.70832	1 in 119
8002	64.17	SW	60.71	450			CO	54.70832	1 in 119
9403	72.72	CO	67.99	600			VC	40.83913	1 in 68
8301	69.91	CO	64.76	375			VC	52.17279	1 in 80
9303	70.98	CO	65.79	375			VC	33.95585	1 in 136
7502	68.68	CO	66.28	300			VC	83.48653	1 in 60
9010		FO		150			VC	7.828168	
9010		FO		150			VC	7.828168	
8201	68.02	CO	64.5	375			VC	152.322	1 in 59
0403	73.41	CO	70.2	300			VC	58.46367	1 in 44
0101	67.92	SW	65.49	225			VC	46.04346	1 in 65
7900	63.59	CO	59.55	375			VC	45.48626	1 in 95
7900	63.59	CO	59.55	375			VC	45.48626	1 in 95
6502	67.91	CO	64.38	375			VC	58.94065	
8504	71.57	CO	67.76	300			VC	53.35995	1 in 116
9302	70.82	CO	65.54	375			VC	62.16912	1 in 80
0041		SW		100			VC	11.20007	
0041		SW		100			VC	11.20007	
9101	68.53	SW	65.64	225			VC	26.01922	1 in 200
7505	69.04	CO	66.08	300			VC	38.83298	1 in 125
4402	65.23	CO	61.38	225			VC	13.60147	
4403	65.67	CO	0	450			VC	29.16228	
6503	67.92	CO	61.52	620			BR	5	1 in 17
9007	66.15	FO	62.97	225			VC	55.32631	1 in 108
9007	66.15	FO	62.97	225			VC	55.32631	1 in 108
9501	72.87	CO	64.59	800			BR	35.831	
9504	73.69	CO	74.36	300			VC	30.14993	1 in 4
7402	68.85	SW	66.27	450			BR	127.7403	1 in 2.01801349
6402	68.04	CO	63.52	375			VC	45.82906	
0301	71.76	CO	68.82	300			VC	7.28011	1 in 3
9006	64.53	FO	62.34	300			CO	34.1321	1 in 427
9006	64.53	FO	62.34	300			CO	34.1321	1 in 427
9001	68.51	SW	66.37	150			VC	13	1 in 11
6519		CO		150			VC	3.968268	
7504	69.5	CO	65.77	300			VC	41.30375	
9002	67.85	SW	65.07	225			VC	29.61419	1 in 102
8007		FO		150			VC	13.79509	
8007		FO		150			VC	13.79509	
6504	67.94	CO	64.8	375			VC	4.123106	1 in 37
8502	70.67	CO	61.94	900			BR	99.0404	1 in 177
9000		FO	0	150			VC	45.01111	
0028		FO		100			VC	3.880873	
0028		FO		100			VC	3.880873	
8401	69.31	CO	64.11	375			VC	99.99117	1 in 136.974194
0104	67.9	FO	65.02	225			VC	43.01163	1 in 64
7001	64.63	SW	60.16	300			VC	7.421371	
7001	64.63	SW	60.16	300			VC	7.421371	
9500	72.94	CO	66.85	450			VC	21	1 in 9
8001	64.22	FO	62.18	300			VC	73.34848	1 in 293
8001	64.22	FO	62.18	300			VC	73.34848	1 in 293
9900	65.04	FO	62.66	300			CO	83.29465	1 in 278
9900	65.04	FO	62.66	300			CO	83.29465	1 in 278
7901	63	CO	59.07	375			VC	3.605551	1 in 33
7901	63	CO	59.07	375			VC	3.605551	1 in 33
9305		CO	0	300			VC	85	
8403	70.27	CO	66.97	300			VC	27.20294	1 in 49
6509		SW		450			BR	29.6649	
9301	70.45	SW	67.71	525			VC	105.377	
9016		FO		150			VC	25.89956	
9016		FO		150			VC	25.89956	

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 Vaive
- 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
- DNM Network Monitoring Point
- 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 Reinforecd 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:

Sheldon's Bakery 8885 Kelbrook Road,
Manchester,
M11 2GW

OS sheet Number: SJ8798SE

Scale: 1:1250 **Date:** 24/02/2026

Nodes: 98

Sheet: 4 of 5

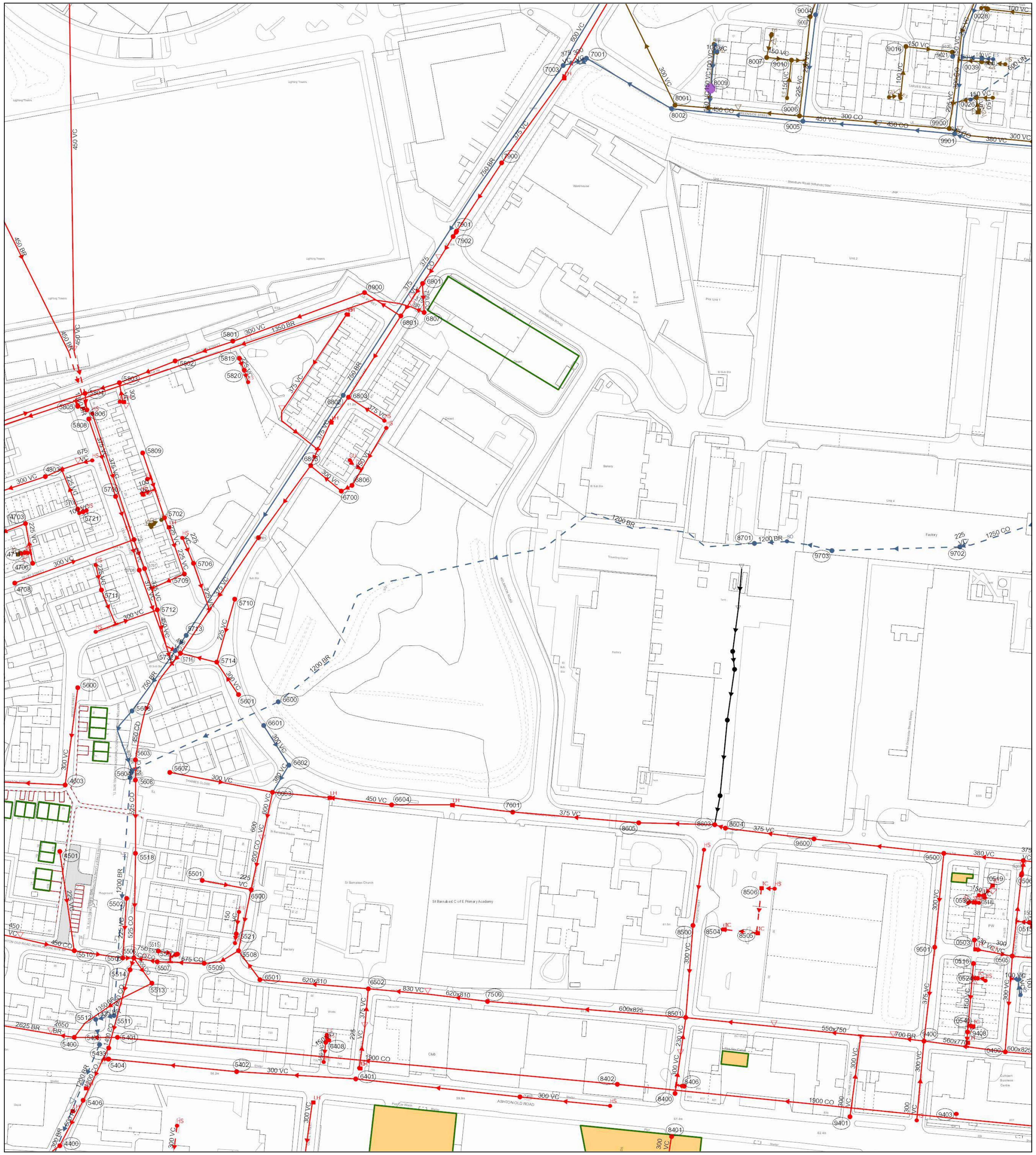
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SEWER RECORDS

United Utilities
Water for the North West

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.

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Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
5701	58.58	CO	56.48	225			VC	23.76973	
5701	58.58	CO	56.48	225			VC	23.76973	
6603	57.43	CO	54.38	600			VC	27.65863	1 in 111
0004	67.29	FO	63.13	150			VC	54.48005	
5716	57.83	CO	54.46	450			VC	7.601276	
4501	56.13	CO	53.28	225			VC	55.57877	1 in 116
4501	56.13	CO	53.28	225			VC	55.57877	1 in 116
4708	57.95	CO	55.53	300			VC	70.2282	
4708	57.95	CO	55.53	300			VC	70.2282	
6801	62.17	CO	58.34	375			VC	53.53503	1 in 61
6601	57.3	SW	55	300			VC	26.07681	1 in 87
5708	58.2	CO	55.45	375			VC	44.61159	1 in 165
5603	56.15	CO	53.89	525			CI	11.26511	1 in 7
6502	58.58	CO	54.93	620			BR	60.20797	1 in 72
6502	58.58	CO	54.93	620			BR	60.20797	1 in 72
9005	64.54	SW	61.37	450			CO	73.33485	1 in 111
9005	64.54	SW	61.37	450			CO	73.33485	1 in 111
9500	63.41	CO	59.74	300			VC	52.23983	1 in 653
9703	63.96	SW		1200			BR	25.52226	
8202		SW	0	600			VC	207.3706	
5515		CO		150			VC	11.88443	
5515		CO		150			VC	11.88443	
0026		FO		150			VC	13.34482	
0026		FO		150			VC	13.34482	
5706	58.73	CO	56.31	225			VC	27.51363	
7001	64.63	SW	60.48	225			VC	5.385165	
7001	64.63	SW	60.48	225			VC	5.385165	
5803	59	CO	55.65	300			VC	19.92486	
5803	59	CO	55.65	300			VC	19.92486	
9004	66.26	SW	62.94	225			VC	59.4138	1 in 38
9004	66.26	SW	62.94	225			VC	59.4138	1 in 38
5406	54.69	CO	53.01	600			PE	28.17801	1 in 7
5406	54.69	CO	53.01	600			PE	28.17801	1 in 7
5406	54.69	CO	53.01	600			PE	28.17801	1 in 7
5406	54.69	CO	53.01	600			PE	28.17801	1 in 7
5705	58.24	CO	54.91	375			VC	17.08801	1 in 131
5801	60.36	CO	0	300			VC	33.83785	
8003	65.53	CO	61.93	375			VC	117.1779	1 in 49
6900	61.97	CO	57.17	300			VC	77.83315	
5711	58.18	CO	56.73	225			VC	20.61553	
5711	58.18	CO	56.73	225			VC	20.61553	
5510	56.78	CO	52.57	450			CO	27.29469	1 in 16
5510	56.78	CO	52.57	450			CO	27.29469	1 in 16
5510	56.78	CO	52.57	450			CO	27.29469	1 in 16
5510	56.78	CO	52.57	450			CO	27.29469	1 in 16
5732		SW		750			BR	41.09809	
5702	58.71	CO	56.96	225			VC	32.8988	1 in 43
0518		CO		150			VC	2.842929	
0505	64.19	CO	60.33	300			VC	53.33854	1 in 356
0505	64.19	CO	60.33	300			VC	53.33854	1 in 356
9408		CO		150			VC	8.250587	
9408		CO		150			VC	8.250587	
6803	61.21	CO	57.46	375			VC	33.7576	
0041		SW		100			VC	11.20007	
0041		SW		100			VC	11.20007	
5518	55.85	CO	50.48	525			CO	58.00862	1 in 132
5721		CO		100			VC	2.212632	
5721		CO		100			VC	2.212632	
5607	56.18	CO	54.79	300			VC	58.0517	1 in 142
5404	55	CO	51.92	300			VC	3	
5404	55	CO	51.92	300			VC	3	
5404	55	CO	51.92	300			VC	3	
5404	55	CO	51.92	300			VC	3	
5809	58.79	CO	57.6	225			VC	37.94733	1 in 59
5433	53.32	CO	49.22	1200			CO	32.2033	
5433	53.32	CO	49.22	1200			CO	32.2033	
5433	53.32	CO	49.22	1200			CO	32.2033	
5433	53.32	CO	49.22	1200			CO	32.2033	
6408		CO		150			VC	10.99818	
6408		CO		150			VC	10.99818	
6901	62.52	CO	0	375			VC	10.81665	
6501	57.66	CO	53.87	675			CO	20	1 in 38
6501	57.66	CO	53.87	675			CO	20	1 in 38
5819		CO		225			VC	7.081903	
0515		CO		150			VC	7.361735	
0515		CO		150			VC	7.361735	
9002	67.85	SW	65.07	225			VC	29.61419	1 in 102
8007		FO		150			VC	13.79509	
8007		FO		150			VC	13.79509	
8500	61.45	CO	58.42	300			VC	51.15662	1 in 54
8500	61.45	CO	58.42	300			VC	51.15662	1 in 54
0505	64.19	CO	57.48	300			VC	53.15073	1 in 332
0505	64.19	CO	57.48	300			VC	53.15073	1 in 332
5506	55.47	CO		600			VC	6.929076	
5506	55.47	CO		600			VC	6.929076	
5601	57.52	CO	55.54	300			VC	21.63331	1 in 70
7001	64.63	SW	60.16	300			VC	7.421371	
7001	64.63	SW	60.16	300			VC	7.421371	
4603	56.83	CO	53.09	300			VC	42.04759	1 in 81
4603	56.83	CO	53.09	300			VC	42.04759	1 in 81
6700	60.14	CO	57.16	300			VC	22.02271	1 in 44
5400	55.39	CO	0	2650			BR	13.15295	
5400	55.39	CO	0	2650			BR	13.15295	
5400	55.39	CO	0	2650			BR	13.15295	
5400	55.39	CO	0	2650			BR	13.15295	
8001	64.22	FO	62.18	300			VC	73.34848	1 in 293
8001	64.22	FO	62.18	300			VC	73.34848	1 in 293
6801	62.17	CO	0	300			VC	23.85372	
5507	55.67	CO	50.48	650			CO	6.082763	
5507	55.67	CO	50.48	650			CO	6.082763	
7902	62.96	CO	58.96	375			VC	15.26434	1 in 90
7902	62.96	CO	58.96	375			VC	15.26434	1 in 90
4401	65.23	CO	59.05	450			VC	580.7794	
8401	61.39	CO	0	300			VC	41.4367	
8401	61.39	CO	0	300			VC	41.4367	
7500	60.03	CO	55.73	620			BR	33.24154	1 in 83
7500	60.03	CO	55.73	620			BR	33.24154	1 in 83
0516		CO		150			VC	38.06688	
0516		CO		150			VC	38.06688	
9403	63.4	CO	49.97	1900			CO	188.9577	1 in 212
9403	63.4	CO	49.97	1900			CO	188.9577	1 in 212
5700	68.39	CO	55.51	375			VC	21.18962	1 in 424
5700	68.39	CO	55.51	375			VC	21.18962	1 in 424
8009		FO		150			VC	10.78265	
8009		FO		150			VC	10.78265	
9500	63.41	CO	59.74	375			VC	72.44308	1 in 60
0503	63.59	CO	61.59	230			VC	16.18034	
0503	63.59	CO	61.59	230			VC	16.18034	
6901	62.52	CO	57.79	750			CO	16.03122	1 in 2
7400	60.15	CO	56.31	300			VC	91.5478	1 in 86
7400	60.15	CO	56.31	300			VC	91.5478	1 in 86
5707	58.14	CO	54.78	375			VC	24.07402	
5402	56.43	CO	53.48	300			VC	71.34424	1 in 46
5402	56.43	CO	53.48	300			VC	71.34424	1 in 46
5606		SW	0	750			BR	25.49712	
0039		FO		150			VC	12.87452	
0039		FO		150			VC	12.87452	
0001	67.32	SW	63.59	225			VC	31.95309	
5509	56.59	CO	52.84	675			CO	26.01922	1 in 34
5509	56.59	CO	52.84	675			CO	26.01922	1 in 34
9901	65.04	SW	62.02	450			CO	42.19004	1 in 132
9901	65.04	SW	62.02	450			CO	42.19004	1 in 132
9600	62.44	CO	58.54	375			VC	49.36598	1 in 69
0400	64.03	CO	57.04	560			VC	45.39824	1 in 22
0400	64.03	CO	57.04	560			VC	45.39824	1 in 22
7003	64.45	SW	58.91	750			BR	219.9747	
7003	64.45	SW	58.91	750			BR	219.9747	
4400	54.58	CO	49.16	600			PE	16.18034	
4400	54.58	CO	49.16	600			PE	16.18034	
4400	54.58	CO	49.16	600			PE	16.18034	
4400	54.58	CO	49.16	600			PE	16.18034	
5508	57.07	CO	53.32	675			CO	20.71729	1 in 67
5508	57.07	CO	53.32	675			CO	20.71729	1 in 67
9400	63.48	CO	59.06	700			BR	17.11724	
9400	63.48	CO	59.06	700			BR	17.11724	
9003	67.81	FO	65.54	225			VC	28.79236	1 in 63
5805	58.58	CO	43.7	1350			BR	3.162278	
5805	58.58	CO	43.7	1350			BR	3.162278	
6602	57.4	SW	54.7	380			VC	17.49286	1 in 55
0506	64.03	CO	60.91	300			VC	4.123106	1 in 19
6802	61.18	SW	57.36	750			BR	158.9277	1 in 46
5806	58.49	CO	0	450			BR	5.385165	
5806	58.49	CO	0	450			BR	5.385165	
8604	61.45	CO	57.82	375			VC	6.324555	1 in 57
6701	59.46	CO	55.81	375			VC	77.10413	1 in 68
8002	64.17	SW	60.71	450			CO	54.70832	1 in 119
8002	64.17	SW	60.71	450			CO	54.70832	1 in 119
5505	55.32	CO	50.83	450			CO	6	1 in 40
5505	55.32	CO	50.83	450			CO	6	1 in 40
5505	55.32	CO	50.83	450			CO	6	1 in 40
5505	55.32	CO	50.83	450			CO	6	1 in 40
5506	55.47	CO	49.89	900			CO	17.20465	1 in 12
5506	55.47	CO	49.89	900			CO	17.20465	1 in 12
5804	58.61	CO	0	300			VC	9.055386	
5804	58.61	CO	0	300			VC	9.055386	
9010		FO		150			VC	7.828168	
9010		FO		150			VC	7.828168	
5513	55.93	CO	48.41	1350			BR	53.14634	
5513	55.93	CO	48.41	1350			BR	53.14634	
7900	63.59	CO	59.55	375			VC	45.48626	1 in 95
7900	63.59	CO	59.55	375			VC	45.48626	1 in 95
5514	55.69	CO	49.84	600			CO	22.19577	1 in 74
5514	55.69	CO	49.84	600			CO	22.19577	1 in 74
5514	55.69	CO	49.84	600			CO	22.19577	1 in 74
5514	55.69	CO	49.84	600			CO	22.19577	1 in 74
6500	57.08	CO	53.69	600			CO	34.71311	1 in 112
8501	61.65	CO	57.48	600			BR	110.3676	1 in 69
8501	61.65	CO	57.48	600			BR	110.3676	1 in 69
5512	56.23	SW	51.31	1425			CO	14.14214	1 in 236
5512	56.23	SW	51.31	1425			CO	14.14214	1 in 236
5512	56.23	SW	51.31	1425			CO	14.14214	1 in 236
5512	56.23	SW	51.31	1425			CO	14.14214	1 in 236
6604	58.62	CO	55.2	450			VC	66.37265	1 in 81
6806	60.15	CO	58.75	150			VC	6.708204	1 in 4
5608		CO	52.19	525			CO	40.73497	1 in 24
8603	61.35	CO	57.69	375			VC	42.0119	1 in 63
6401	58.44	CO	55.22	300			VC	66.1211	1 in 38
6401	58.44	CO	55.22	300			VC	66.1211	1 in 38
6807	62.42	CO	49.48	375			BR	7.615773	
5501	56.02	CO	54.78	225			VC	27.45906	1 in 50
4803	58.47	CO	55.43	300			VC	41.10961	
4803	58.47	CO	55.43	300			VC	41.10961	
4500	55.67	CO	51.52	450			VC	30.59412	
4500	55.67	CO	51.52	450			VC	30.59412	
9007	66.15	FO	62.97	225			VC	55.32631	1 in 108
9007	66.15	FO	62.97	225			VC	55.32631	1 in 108
5517		CO		150			VC	4.050791	
5517		CO		150			VC	4.050791	
5714	57.87	CO	55.23	300			VC	20.61553	1 in 79
5401	56.28	CO	0	1900			CO	24	
5401	56.28	CO	0	1900			CO	24	

Refno	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
5808	58.59	CO	56.92	375			VC	45.54119	1 in 32
5808	58.59	CO	56.92	375			VC	45.54119	1 in 32
9006	64.53	FO	62.34	300			CO	34.1321	1 in 427
9006	64.53	FO	62.34	300			CO	34.1321	1 in 427
7601	59.99	CO	55.92	450			VC	67.23448	1 in 93
5709	58.62	CO	56.19	225			VC	19.69772	
8400	61.57	CO	58.59	300			VC	21.2132	1 in 39
8400	61.57	CO	58.59	300			VC	21.2132	1 in 39
0028		FO		100			VC	3.880873	
0028		FO		100			VC	3.880873	
9401	62.67	CO	60.12	300			VC	45.39824	
9401	62.67	CO	60.12	300			VC	45.39824	
9501	63.33	CO	59.66	375			VC	52.34501	1 in 145
9501	63.33	CO	59.66	375			VC	52.34501	1 in 145
5713	57.85	SW	53.94	750			BR	10.51833	
8402	62.02	CO	49.08	1900			CO	278.2175	
8402	62.02	CO	49.08	1900			CO	278.2175	
9702	63.96	SW	60.42	1200			CO	71.02816	
5802	58.66	CO	0	300			VC	33.24154	
8701	62.18	SW	58.98	1200			BR	311.3773	
5600	57.2	CO	54.9	300			VC	54.45181	1 in 30
5600	57.2	CO	54.9	300			VC	54.45181	1 in 30
5710	58.7	CO	56.02	225			VC	36.40055	1 in 46
8406		CO		225			VC	4.587996	
8406		CO		225			VC	4.587996	
6805	60.38	CO	56.66	375			VC	49.40648	1 in 58
5712	58	CO	54.57	450			VC	20.62838	1 in 344
9900	65.04	FO	62.66	300			CO	83.29465	1 in 278
9900	65.04	FO	62.66	300			CO	83.29465	1 in 278
7901	63	CO	59.07	375			VC	3.605551	1 in 33
7901	63	CO	59.07	375			VC	3.605551	1 in 33
5502	55.92	CO	52.27	225			VC	33.06055	1 in 174
5502	55.92	CO	52.27	225			VC	33.06055	1 in 174
8605	60.9	CO	57.02	375			VC	70.25668	1 in 64
0500	64.06	CO	60.48	380			VC	44.18144	1 in 60
6600	58.2	SW		1200			BR	89.47066	
5403	55.32	SW	51.25	1200			BR	33.61547	1 in 134
5403	55.32	SW	51.25	1200			BR	33.61547	1 in 134
5403	55.32	SW	51.25	1200			BR	33.61547	1 in 134
5403	55.32	SW	51.25	1200			BR	33.61547	1 in 134
5511	56.78	SW	51.33	1425			BR	5.09902	1 in 510
5511	56.78	SW	51.33	1425			BR	5.09902	1 in 510
5511	56.78	SW	51.33	1425			BR	5.09902	1 in 510
5511	56.78	SW	51.33	1425			BR	5.09902	1 in 510
5820		CO		225			VC	6.925054	
9016		FO		150			VC	25.89956	
9016		FO		150			VC	25.89956	
5605	56.5	SW	52.65	1200			BR	132.3065	1 in 100
5605	56.5	SW	52.65	1200			BR	132.3065	1 in 100
4706	58.17	CO	57.03	225			VC	22.36068	1 in 66
4706	58.17	CO	57.03	225			VC	22.36068	1 in 66
4703	58.27	CO	56.68	225			VC	24.69818	1 in 73
4703	58.27	CO	56.68	225			VC	24.69818	1 in 73
5604	56.18	SW	52.76	1200			BR	4.123106	1 in 37

LEGEND

Abandoned | Foul | Surface Water | Combined

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

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- Vortex
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- 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
- DNM Network Monitoring Point
- 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 Reinforecd 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:

Sheldon's Bakery 8885 Kelbrook Road,
Manchester,
M11 2GW

OS sheet Number: SJ8797NE
Scale: 1:1250 **Date:** 24/02/2026
Nodes: 255
Sheet: 5 of 5

Printed by: Property Searches

SEWER RECORDS

United Utilities
Water for the North West

paul@psc-civil-engineering.co.uk

From: seweradoptions@uuplc.co.uk
Sent: 29 October 2024 00:49
To: paul@psc-civil-engineering.co.uk
Cc: ryan.jones@hbl.ltd
Subject: UU REF 06538060 - WW PDE – Land off Parkhouse Street, Manchester

Good Morning,

Thank you for your WW PDE application, please see our reply below:

UU REF 06538060 - WW PDE – Land off Parkhouse Street, Manchester

We have carried out an assessment of your application which is based on the information provided. This pre-development advice on your drainage strategy will be valid for 12 months. Your drainage strategy will need to be reviewed by other competent authorities as part of the planning process, and we advise that you carry out the necessary site investigations to confirm the viability of your proposals.

If your investigations require access to our public sewer network, we ask that you contact our network engineers with a request for an access certificate via our main contact telephone number 0345 6723 723 or refer to the link below:

https://www.unitedutilities.com/builders-developers/working-near-our-assets/

Foul Water

Foul flow from this site will be allowed to drain into the public 375dia or 450dia combined sewers running adjacent to the site.

Surface Water

All surface water flow from the proposed development should drain in-line with the drainage hierarchy, as outlined in Paragraph 80, (Reference ID: 7-080-20150323), of the National Planning Practice Guidance. We also recommend you prioritise the use of multi-functional sustainable drainage systems for the management of surface water in accordance with national planning policy.
Generally, the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable.
This is outlined as follows, in order of priority:

1. **into the ground (infiltration);**
2. **to a surface waterbody;**
3. **to a surface water sewer or highway drain;**
4. **to a combined sewer.**

For guidance, The **North West SuDS Pro-Forma** provides information on the appropriate evidence required at each stage of the hierarchy, to demonstrate how each level has been discounted.
The Lead Local Flood Authority has responsibility for all surface water drainage concerns and their input to your proposal is critical. You should also consider whether it is necessary to discuss your proposal with the Environment Agency, or Internal Drainage Board (if operating in your area).

The Local Planning Authority are the determining authority for any application for planning permission and the appropriate authority for determining cost viability of a proposed drainage scheme, such assessments are outside of the jurisdiction of United Utilities.

I note your proposal is to drain to the watercourse which would support, however you would need to discuss the diversion, connection points and flow rates with the riparian owner and local authority.

Regards

Anthony

United Utilities
Water for the North West

Anthony Laithwaite
Ww Engineer
Developer Services & Metering
Customer Services

T: 01925 429090
unitedutilities.com

---------- Original Message ----------
From: seweradoptions@uuplc.co.uk [seweradoptions@uuplc.co.uk]
Sent: 28/10/2024 11:09
To: paul@psc-civil-engineering.co.uk
Cc: ryan.jones@hbl.ltd
Subject: Land off Parkhouse Street, M11 2FB - 06538060 - Pre Development Enquiry

Good Morning,

Thank you for your email,

Please be advised this has now been logged to Anthony who will respond or before 07/11/2024.

Please quote ref **06538060** for any further correspondence

Kind Regards

United Utilities
Water for the North West

Lewis Barr
D-MeX Lead
Developer Services & Metering
Customer Services
07827286541
unitedutilities.com

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APPENDIX 5 – GREENFIELD RUN-OFF RATES

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Paul Carter
Site name:	Sheldon Bakery
Site location:	Parkhouse Street, Openshaw, Manchester

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	53.47600° N
Longitude:	2.18704° W
Reference:	1924162580
Date:	Oct 24 2024 20:52

Runoff estimation approach

IH124

Site characteristics

Total site area (ha): 50

Methodology

Q_{BAR} estimation method:	Calculate from SPR and SAAR
SPR estimation method:	Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	4	4
HOST class:	N/A	N/A
SPR/SPRHOST:	0.47	0.47

Hydrological characteristics

	Default	Edited
SAAR (mm):	900	900
Hydrological region:	10	10
Growth curve factor 1 year:	0.87	0.87
Growth curve factor 30 years:	1.7	1.7
Growth curve factor 100 years:	2.08	2.08
Growth curve factor 200 years:	2.37	2.37

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited

Q_{BAR} (l/s):	323.91	323.91
1 in 1 year (l/s):	281.8	281.8
1 in 30 years (l/s):	550.65	550.65
1 in 100 year (l/s):	673.73	673.73
1 in 200 years (l/s):	767.66	767.66

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement , which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

APPENDIX 6 – EXCEEDANCE ROUTING PLAN



DO NOT SCALE FROM THIS DRAWING

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER HBL DRAWINGS ISSUED FOR THIS PROJECT

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS IN METERS UNLESS OTHERWISE SPECIFIED.
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KEY:

- SITE BOUNDARY — *TOTAL SITE AREA APPROX. 21,666m² (2.17Ha)*; *TOTAL IMPERMEABLE AREA APPROX. 15,821m² (1.58Ha)*
- EXCEEDANCE FLOW ROUTE ARROW
- PROPOSED GEO CELLULAR ATTENUATION SYSTEM — LEVELS AND DIMENSIONS NOTED ON PLAN.
- PROPOSED GREENBLUE HYDRO PLANTER STANDARD — REFER TO MANUFACTURER DRAWINGS FOR INSTALLATION GUIDANCE AND FINAL SIZES.
- PROPOSED PERMEABLE PAVING — LINED AND DRAINED.
- EXISTING SURFACE WATER SEWER
- EXISTING COMBINED WATER SEWER
- EXISTING CULVERT
- EXISTING CULVERT TO BE ABANDONED
- EXISTING HIGH VOLTAGE ELECTRIC CABLES
- PROPOSED CULVERT DIVERSION ROUTE
- PROPOSED SURFACE WATER DRAIN
- PROPOSED SW PERFORATED PIPE WITH RODDING EYE
- PROPOSED HYDROBRAKE FLOW CONTROL CHAMBER
- PROPOSED SIPHONIC DRAINAGE DOWNPIPE — SYSTEM TO BE DESIGNED BY OTHERS
- PROPOSED SLOT / CHANNEL DRAIN
- PROPOSED KERBDRAIN
- PROPOSED GULLY
- PROPOSED FORECOURT SEPARATOR
- PROPOSED BYPASS SEPARATOR

REV.	DATE	DRAWN	DESCRIPTION	CHKD	APPRD
P05	07.09.26	AC	ISSUED FOR DISCHARGE OF CONDITION 16	AC	AC

STATUS DESCRIPTION: FOR INFORMATION — STATUS: S2

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OPENSHAW, MANCHESTER

DRAWING TITLE
PROPOSED FLOOD EXCEEDANCE ROUTING PLAN

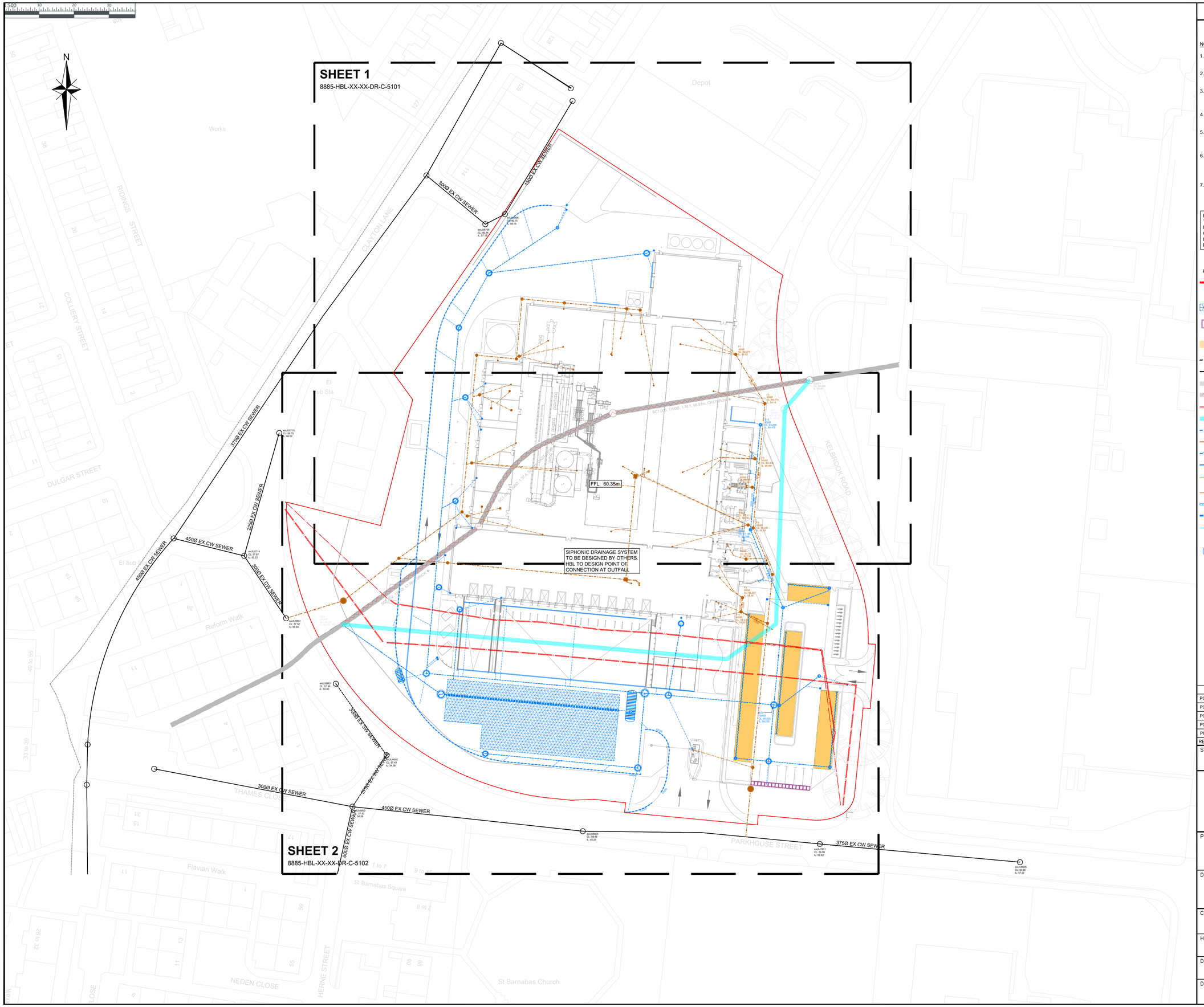
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8885	04.09.26	1:500	A1

DRAWN	CHECKED	APPROVED
AC	AC	AC

DRAWING No.: 8885-HBL-XX-XX-DR-C-5107 — REV.: P01

APPENDIX 7 – PROPOSED DRAINAGE LAYOUT



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KEY:

- SITE BOUNDARY — *TOTAL SITE AREA APPROX. 21,666m² (2.17Ha)* — *TOTAL IMPERMEABLE AREA APPROX. 15,821m² (1.58Ha)*
- PROPOSED GEO CELLULAR ATTENUATION SYSTEM — *LEVELS AND DIMENSIONS NOTED ON PLAN.*
- PROPOSED GREENBLUE HYDRO PLANTER STANDARD — *REFER TO MANUFACTURER DRAWINGS FOR INSTALLATION GUIDANCE AND FINAL SIZES.*
- PROPOSED PERMEABLE PAVING — *LINED AND DRAINED.*
- EXISTING SURFACE WATER SEWER
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- PROPOSED HYDROBRAKE FLOW CONTROL CHAMBER
- PROPOSED SIPHONIC DRAINAGE DOWNPIPE — *SYSTEM TO BE DESIGNED BY OTHERS*
- PROPOSED FOUL WATER DOWNPIPE
- PROPOSED SLOT / CHANNEL DRAIN
- PROPOSED KERBDRAIN
- PROPOSED GULLY
- PROPOSED FORECOURT SEPARATOR
- PROPOSED BYPASS SEPARATOR

REV.	DATE	DRAWN	DESCRIPTION	CHKD	APPRD
P05	07.09.26	AC	ISSUED FOR DISCHARGE OF CONDITION 16	AC	AC
P04	27.02.26	AC	ISSUED FOR TENDER	AC	AC
P03	02.10.25	RJ	DRAINAGE LEVELS AMENDED	RJ	RJ
P02	31.07.25	RJ	REVISED TO NEW LAYOUT	RJ	RJ
P01	06.06.25	AC	ISSUED FOR INFORMATION	AC	AC

STATUS DESCRIPTION: FOR INFORMATION — STATUS: S2

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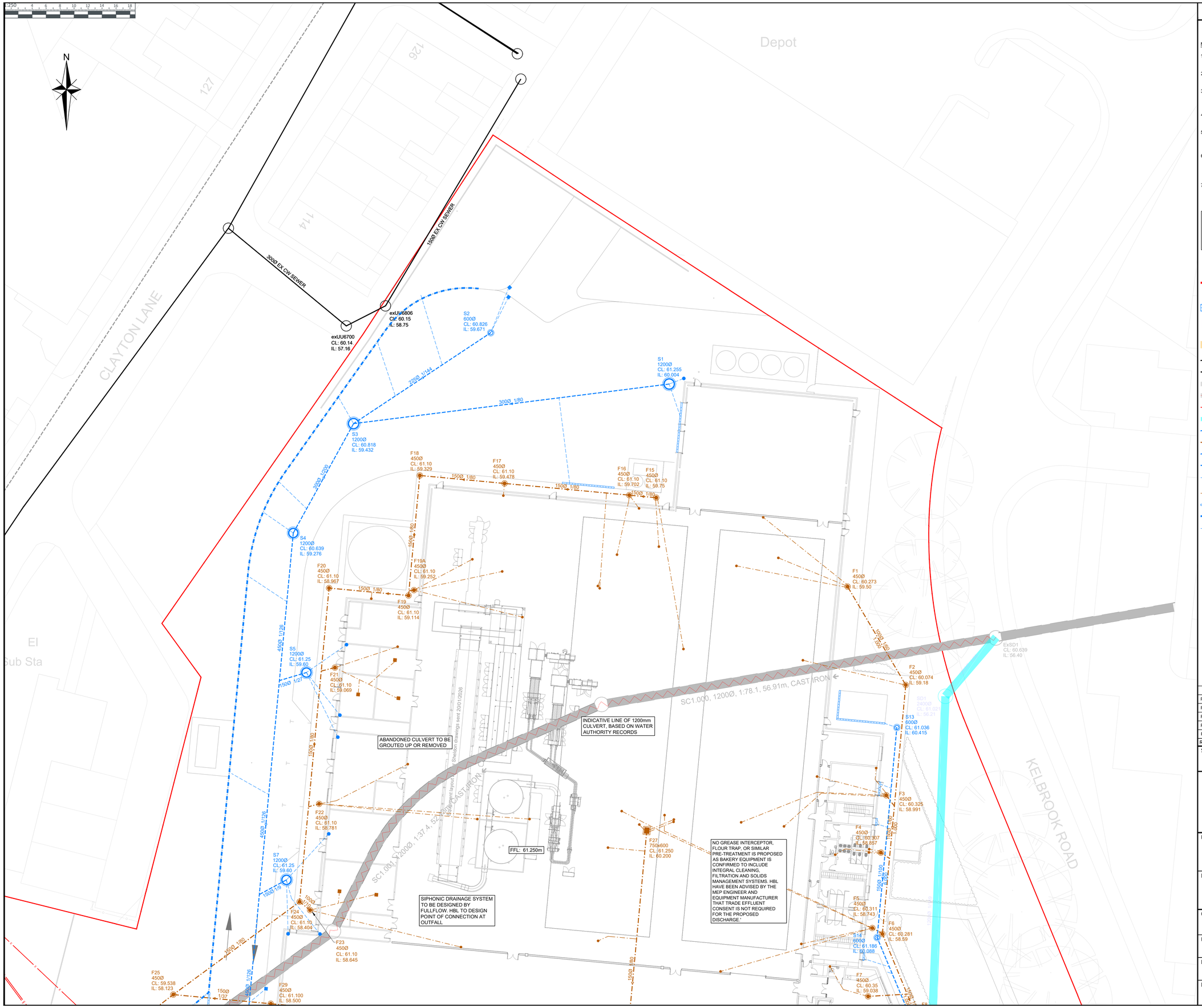
DRAWING TITLE
PROPOSED DRAINAGE STRATEGY OVERVIEW

CLIENT
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8885	13.05.25	1:500	A1

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P05	07.09.26	AC	ISSUED FOR DISCHARGE OF CONDITION 16	AC	AC
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P03	02.10.25	RJ	REVISED DRAINAGE LEVELS	RJ	RJ
P02	31.07.25	RJ	REVISED TO NEW LAYOUT	RJ	RJ
P01	06.06.25	AC	ISSUED FOR INFORMATION	AC	AC

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PROPOSED DRAINAGE STRATEGY
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8885	06.06.25	1:250	A1

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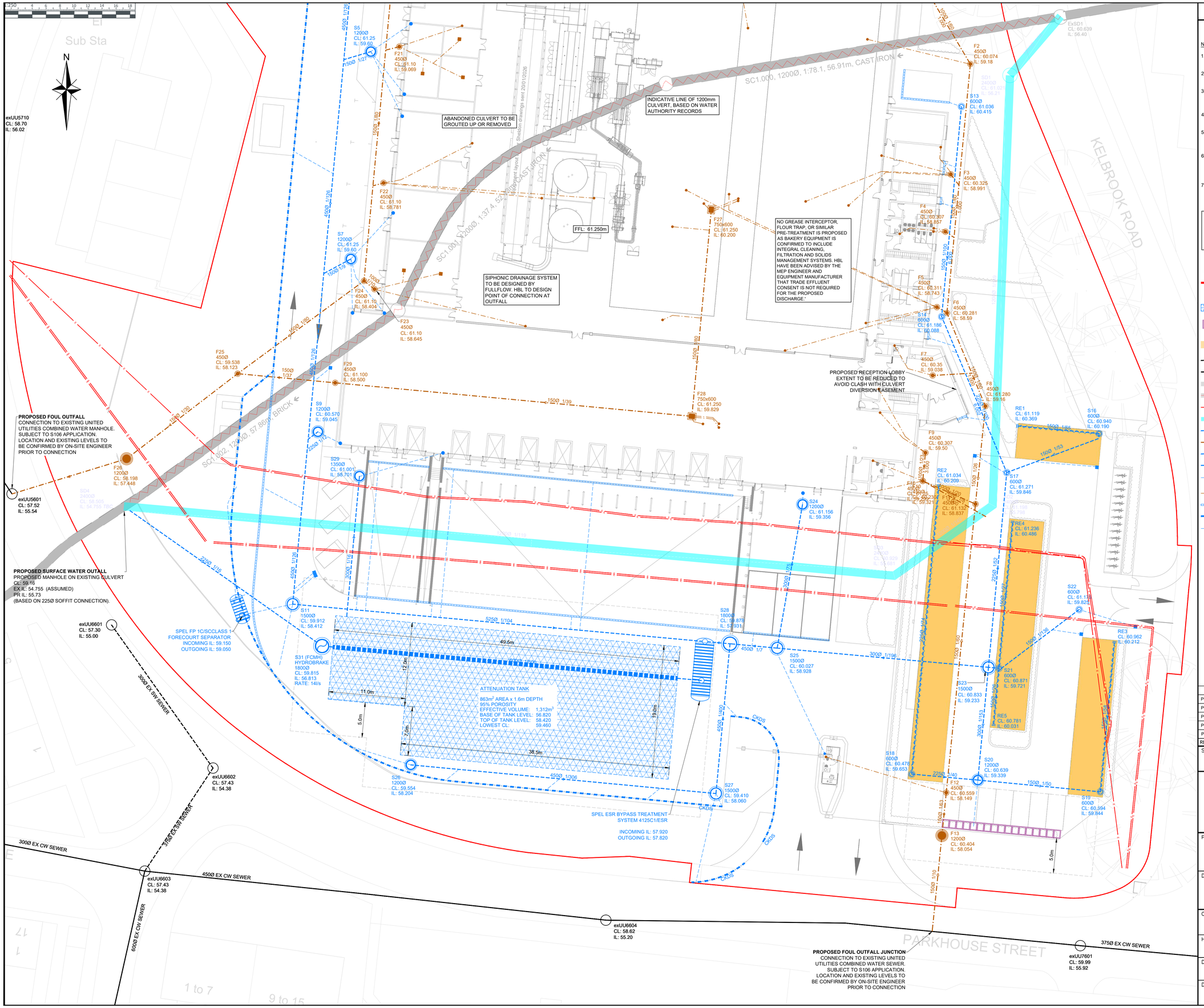
PROJECT
SHELDON BAKERY
OPENSHAW, MANCHESTER

DRAWING TITLE
PROPOSED DRAINAGE STRATEGY
SHEET 2

CLIENT
S.H. SHELDON WHOLESALE BAKERY

HBL REF.	DATE	SCALE(S)	
8885	06.06.25	1:250	A1
DRAWN: AC	CHECKED: AC	APPROVED: AC	

DRAWING No. 8885-HBL-XX-XX-DR-C-5102 — REV. P05



APPENDIX 8 – HYDRAULIC CALCULATIONS

Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	45	Minimum Backdrop Height (m)	0.200
CV	1.000	Preferred Cover Depth (m)	0.900
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	x
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
S1	0.045	5.00	61.255	1200	387697.279	397789.585	1.251	60.004
S2	0.065	5.00	60.826	600	387671.740	397796.919	1.155	59.671
S3	0.087	5.00	60.818	1200	387652.119	397783.922	1.386	59.432
S4	0.017	5.00	60.639	1200	387643.495	397768.276	1.363	59.276
S5	0.020	5.00	61.250	1200	387645.377	397748.316	1.650	59.600
SW J1	0.023	5.00	60.458		387641.513	397747.165	1.350	59.108
S7	0.029	5.00	61.250	1200	387642.521	397718.656	1.650	59.600
SW J2	0.041	5.00	60.214		387638.640	397716.566	1.350	58.864
S9	0.030	5.00	60.570	1200	387637.802	397693.928	1.525	59.045
SW J3	0.050	5.00	60.025		387636.415	397692.878	1.350	58.675
_FORECOURT SEP			58.811	1200	387626.933	397667.737		
S11	0.163	5.00	59.912	1500	387634.199	397669.325	1.500	58.412
S13	0.013	5.00	61.036	600	387729.852	397740.451	0.621	60.415
S14	0.039	5.00	61.186	600	387727.031	397710.401	1.098	60.088
RE1	0.007	5.00	61.119	100	387737.967	397694.761	0.750	60.369
S16	0.009	5.00	60.940	600	387749.545	397693.673	0.750	60.190
S17	0.020	5.00	61.271	600	387736.337	397688.102	1.425	59.846
RE2	0.042	5.00	61.034	100	387726.613	397686.163	0.825	60.209
S18	0.022	5.00	60.478	600	387722.745	397644.961	0.825	59.653
RE3	0.022	5.00	60.962	100	387751.723	397663.741	0.750	60.212
S19			60.594	600	387749.732	397642.427	0.750	59.844
S20	0.017	5.00	60.639	1200	387732.203	397644.108	1.300	59.339
RE4		5.00	61.236	100	387737.173	397680.955	0.750	60.486
RE5		5.00	60.781	100	387734.463	397652.096	0.750	60.031
S21			60.871	600	387735.215	397660.103	1.150	59.721
S22	0.018	5.00	61.175	600	387746.690	397668.501	1.350	59.825
S23			60.833	1500	387733.721	397660.239	1.600	59.233
S24	0.307	5.00	61.156	1200	387707.129	397683.544	1.800	59.356
S25	0.056	5.00	60.027	1500	387703.497	397662.985	1.099	58.928
S26	0.144	5.00	59.554	1200	387651.088	397646.283	1.350	58.204
S27	0.042	5.00	59.410	1500	387694.740	397642.185	1.350	58.060
S28			59.878	1800	387696.751	397663.610	1.947	57.931
_BYPASS SEP IN			59.498	1200	387693.167	397663.924	1.578	57.920
_BYPASS SEP OUT			59.430	1200	387692.677	397658.354	1.610	57.820
S29	0.256	5.00	61.001	1350	387643.747	397687.650	2.300	58.701
_ATTENUATION TANK			59.460	1200	387641.514	397663.002	2.640	56.820
S31			59.815	1800	387638.403	397663.318	3.002	56.813
S32			58.505	2400	387610.045	397683.261	3.750	54.755

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	S1	S3	45.513	0.600	60.004	59.432	0.572	79.6	300	5.43	50.0
2.000	S2	S3	23.536	0.600	59.671	59.507	0.164	143.5	225	5.36	50.0
1.001	S3	S4	17.865	0.600	59.432	59.343	0.089	200.0	300	5.70	50.0
1.002	S4	SW J1	21.204	0.600	59.276	59.108	0.168	126.0	450	5.89	50.0
3.000	S5	SW J1	5.149	0.600	59.600	59.408	0.192	26.8	150	5.04	50.0
1.003	SW J1	SW J2	30.734	0.600	59.108	58.864	0.244	126.0	450	6.18	50.0
4.000	S7	SW J2	4.007	0.600	59.600	59.164	0.436	9.2	150	5.02	50.0
1.004	SW J2	SW J3	23.792	0.600	58.864	58.675	0.189	126.0	450	6.40	50.0
5.000	S9	SW J3	1.740	0.600	59.045	58.900	0.145	12.0	225	5.01	50.0
1.005	SW J3	S11	23.657	0.600	58.675	58.487	0.188	126.0	450	6.61	50.0
1.006	S11	_BYPASS SEP IN	59.215	0.600	58.412	57.920	0.492	120.4	525	7.10	50.0
7.000	S13	S14	30.182	0.600	60.415	60.163	0.252	119.8	150	5.55	50.0
7.001	S14	S17	24.163	0.600	60.088	59.846	0.242	99.8	225	5.86	50.0
8.000	RE1	S16	11.629	0.600	60.369	60.190	0.179	65.0	150	5.16	50.0
8.001	S16	S17	14.236	0.600	60.190	59.921	0.269	52.9	150	5.33	50.0
7.003	S17	S23	28.198	0.600	59.846	59.308	0.538	52.4	225	6.12	50.0
9.000	RE2	S18	41.384	0.600	60.209	59.653	0.556	74.4	225	5.45	50.0
9.001	S18	S20	9.500	0.600	59.653	59.414	0.239	39.7	225	5.53	50.0
10.000	RE3	S19	21.407	0.600	60.212	59.844	0.368	58.2	150	5.27	50.0
10.001	S19	S20	17.606	0.600	59.844	59.489	0.355	49.6	150	5.48	50.0
9.002	S20	S23	16.237	0.600	59.339	59.233	0.106	153.2	300	5.74	50.0
11.000	RE4	S21	20.944	0.600	60.486	59.721	0.765	27.4	150	5.18	50.0
12.000	RE5	S21	8.042	0.600	60.031	59.721	0.310	25.9	150	5.07	50.0
11.001	S21	S23	1.500	0.600	59.721	59.383	0.338	4.4	150	5.32	50.0
13.000	S22	S21	15.378	0.600	59.825	59.721	0.104	147.9	150	5.31	50.0
7.004	S23	S25	30.348	0.600	59.233	59.078	0.155	195.8	300	6.57	50.0
14.000	S24	S25	20.877	0.600	59.356	59.078	0.278	75.1	300	5.19	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.764	124.7	11.8	0.951	1.086	0.045	0.0	62	1.121
2.000	1.089	43.3	17.0	0.930	1.086	0.065	0.0	98	1.026
1.001	1.108	78.3	51.6	1.086	0.996	0.197	0.0	178	1.180
1.002	1.810	287.8	56.1	0.913	0.900	0.214	0.0	134	1.416
3.000	1.952	34.5	5.2	1.500	0.900	0.020	0.0	40	1.416
1.003	1.810	287.8	67.3	0.900	0.900	0.257	0.0	147	1.487
4.000	3.343	59.1	7.6	1.500	0.900	0.029	0.0	36	2.303
1.004	1.810	287.8	85.7	0.900	0.900	0.327	0.0	167	1.586
5.000	3.798	151.0	7.9	1.300	0.900	0.030	0.0	35	2.027
1.005	1.810	287.8	106.6	0.900	0.975	0.407	0.0	189	1.680
1.006	2.040	441.7	149.3	0.975	1.053	0.570	0.0	210	1.851
7.000	0.917	16.2	3.4	0.471	0.873	0.013	0.0	47	0.727
7.001	1.308	52.0	13.6	0.873	1.200	0.052	0.0	79	1.108
8.000	1.249	22.1	1.8	0.600	0.600	0.007	0.0	29	0.755
8.001	1.386	24.5	4.2	0.600	1.200	0.016	0.0	42	1.038
7.003	1.810	72.0	23.1	1.200	1.300	0.088	0.0	87	1.616
9.000	1.517	60.3	11.0	0.600	0.600	0.042	0.0	65	1.158
9.001	2.081	82.7	16.8	0.600	1.000	0.064	0.0	68	1.635
10.000	1.321	23.3	5.8	0.600	0.600	0.022	0.0	51	1.096
10.001	1.432	25.3	5.8	0.600	1.000	0.022	0.0	48	1.159
9.002	1.268	89.6	27.0	1.000	1.300	0.103	0.0	113	1.114
11.000	1.931	34.1	0.0	0.600	1.000	0.000	0.0	0	0.000
12.000	1.985	35.1	0.0	0.600	1.000	0.000	0.0	0	0.000
11.001	4.817	85.1	4.7	1.000	1.300	0.018	0.0	24	2.588
13.000	0.824	14.6	4.7	1.200	1.000	0.018	0.0	59	0.738
7.004	1.120	79.2	54.8	1.300	0.649	0.209	0.0	184	1.205
14.000	1.816	128.4	80.4	1.500	0.649	0.307	0.0	173	1.914

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Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
7.005	S25	S28	6.775	0.600	58.928	58.006	0.922	7.3	450	6.58	50.0
15.000	S26	S27	44.096	0.600	58.204	58.060	0.144	306.2	450	5.64	50.0
15.001	S27	S28	21.521	0.600	58.060	58.006	0.054	398.5	450	5.99	50.0
7.006	S28	_BYPASS SEP IN	3.598	0.600	57.931	57.920	0.011	327.1	525	6.63	50.0
1.008	_BYPASS SEP IN	_BYPASS SEP OUT	5.592	0.600	57.920	57.820	0.100	55.9	525	7.13	50.0
1.009	_BYPASS SEP OUT	_ATTENUATION TANK	51.373	0.600	57.820	56.820	1.000	51.4	600	7.38	50.0
16.000	S29	_ATTENUATION TANK	24.749	0.600	58.701	57.154	1.547	16.0	300	5.10	50.0
1.010	_ATTENUATION TANK	S31	3.124	0.600	56.820	56.813	0.007	446.3	600	7.43	50.0
1.011	S31	S32	31.847	0.600	56.813	54.755	2.058	15.5	225	7.58	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
7.005	7.534	1198.2	149.9	0.649	1.422	0.572	0.0	107	5.226
15.000	1.156	183.9	37.7	0.900	0.900	0.144	0.0	138	0.917
15.001	1.012	160.9	48.7	0.900	1.422	0.186	0.0	169	0.891
7.006	1.233	266.9	198.6	1.422	1.053	0.758	0.0	339	1.345
1.008	2.999	649.3	348.0	1.053	1.085	1.328	0.0	274	3.048
1.009	3.402	962.0	348.0	1.010	2.040	1.328	0.0	249	3.140
16.000	3.949	279.2	67.1	2.000	2.006	0.256	0.0	100	3.271
1.010	1.146	324.0	415.0	2.040	2.402	1.584	0.0	600	1.156
1.011	3.343	132.9	415.0	2.777	3.525	1.584	0.0	225	3.404

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	45.513	79.6	300	Circular	61.255	60.004	0.951	60.818	59.432	1.086
2.000	23.536	143.5	225	Circular	60.826	59.671	0.930	60.818	59.507	1.086
1.001	17.865	200.0	300	Circular	60.818	59.432	1.086	60.639	59.343	0.996
1.002	21.204	126.0	450	Circular	60.639	59.276	0.913	60.458	59.108	0.900
3.000	5.149	26.8	150	Circular	61.250	59.600	1.500	60.458	59.408	0.900
1.003	30.734	126.0	450	Circular	60.458	59.108	0.900	60.214	58.864	0.900
4.000	4.007	9.2	150	Circular	61.250	59.600	1.500	60.214	59.164	0.900
1.004	23.792	126.0	450	Circular	60.214	58.864	0.900	60.025	58.675	0.900
5.000	1.740	12.0	225	Circular	60.570	59.045	1.300	60.025	58.900	0.900
1.005	23.657	126.0	450	Circular	60.025	58.675	0.900	59.912	58.487	0.975
1.006	59.215	120.4	525	Circular	59.912	58.412	0.975	59.498	57.920	1.053
7.000	30.182	119.8	150	Circular	61.036	60.415	0.471	61.186	60.163	0.873
7.001	24.163	99.8	225	Circular	61.186	60.088	0.873	61.271	59.846	1.200
8.000	11.629	65.0	150	Circular	61.119	60.369	0.600	60.940	60.190	0.600

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	S1	1200	Manhole	Adoptable	S3	1200	Manhole	Adoptable
2.000	S2	600	Manhole	Adoptable	S3	1200	Manhole	Adoptable
1.001	S3	1200	Manhole	Adoptable	S4	1200	Manhole	Adoptable
1.002	S4	1200	Manhole	Adoptable	SW J1		Junction	
3.000	S5	1200	Manhole	Adoptable	SW J1		Junction	
1.003	SW J1		Junction		SW J2		Junction	
4.000	S7	1200	Manhole	Adoptable	SW J2		Junction	
1.004	SW J2		Junction		SW J3		Junction	
5.000	S9	1200	Manhole	Adoptable	SW J3		Junction	
1.005	SW J3		Junction		S11	1500	Manhole	Adoptable
1.006	S11	1500	Manhole	Adoptable	_BYPASS SEP IN	1200	Manhole	Adoptable
7.000	S13	600	Manhole	Adoptable	S14	600	Manhole	Adoptable
7.001	S14	600	Manhole	Adoptable	S17	600	Manhole	Adoptable
8.000	RE1	100	Manhole	Adoptable	S16	600	Manhole	Adoptable

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Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
8.001	14.236	52.9	150	Circular	60.940	60.190	0.600	61.271	59.921	1.200
7.003	28.198	52.4	225	Circular	61.271	59.846	1.200	60.833	59.308	1.300
9.000	41.384	74.4	225	Circular	61.034	60.209	0.600	60.478	59.653	0.600
9.001	9.500	39.7	225	Circular	60.478	59.653	0.600	60.639	59.414	1.000
10.000	21.407	58.2	150	Circular	60.962	60.212	0.600	60.594	59.844	0.600
10.001	17.606	49.6	150	Circular	60.594	59.844	0.600	60.639	59.489	1.000
9.002	16.237	153.2	300	Circular	60.639	59.339	1.000	60.833	59.233	1.300
11.000	20.944	27.4	150	Circular	61.236	60.486	0.600	60.871	59.721	1.000
12.000	8.042	25.9	150	Circular	60.781	60.031	0.600	60.871	59.721	1.000
11.001	1.500	4.4	150	Circular	60.871	59.721	1.000	60.833	59.383	1.300
13.000	15.378	147.9	150	Circular	61.175	59.825	1.200	60.871	59.721	1.000
7.004	30.348	195.8	300	Circular	60.833	59.233	1.300	60.027	59.078	0.649
14.000	20.877	75.1	300	Circular	61.156	59.356	1.500	60.027	59.078	0.649
7.005	6.775	7.3	450	Circular	60.027	58.928	0.649	59.878	58.006	1.422
15.000	44.096	306.2	450	Circular	59.554	58.204	0.900	59.410	58.060	0.900
15.001	21.521	398.5	450	Circular	59.410	58.060	0.900	59.878	58.006	1.422
7.006	3.598	327.1	525	Circular	59.878	57.931	1.422	59.498	57.920	1.053
1.008	5.592	55.9	525	Circular	59.498	57.920	1.053	59.430	57.820	1.085
1.009	51.373	51.4	600	Circular	59.430	57.820	1.010	59.460	56.820	2.040
16.000	24.749	16.0	300	Circular	61.001	58.701	2.000	59.460	57.154	2.006
1.010	3.124	446.3	600	Circular	59.460	56.820	2.040	59.815	56.813	2.402
1.011	31.847	15.5	225	Circular	59.815	56.813	2.777	58.505	54.755	3.525

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
8.001	S16	600	Manhole	Adoptable	S17	600	Manhole	Adoptable
7.003	S17	600	Manhole	Adoptable	S23	1500	Manhole	Adoptable
9.000	RE2	100	Manhole	Adoptable	S18	600	Manhole	Adoptable
9.001	S18	600	Manhole	Adoptable	S20	1200	Manhole	Adoptable
10.000	RE3	100	Manhole	Adoptable	S19	600	Manhole	Adoptable
10.001	S19	600	Manhole	Adoptable	S20	1200	Manhole	Adoptable
9.002	S20	1200	Manhole	Adoptable	S23	1500	Manhole	Adoptable
11.000	RE4	100	Manhole	Adoptable	S21	600	Manhole	Adoptable
12.000	RE5	100	Manhole	Adoptable	S21	600	Manhole	Adoptable
11.001	S21	600	Manhole	Adoptable	S23	1500	Manhole	Adoptable
13.000	S22	600	Manhole	Adoptable	S21	600	Manhole	Adoptable
7.004	S23	1500	Manhole	Adoptable	S25	1500	Manhole	Adoptable
14.000	S24	1200	Manhole	Adoptable	S25	1500	Manhole	Adoptable
7.005	S25	1500	Manhole	Adoptable	S28	1800	Manhole	Adoptable
15.000	S26	1200	Manhole	Adoptable	S27	1500	Manhole	Adoptable
15.001	S27	1500	Manhole	Adoptable	S28	1800	Manhole	Adoptable
7.006	S28	1800	Manhole	Adoptable	_BYPASS SEP IN	1200	Manhole	Adoptable
1.008	_BYPASS SEP IN	1200	Manhole	Adoptable	_BYPASS SEP OUT	1200	Manhole	Adoptable
1.009	_BYPASS SEP OUT	1200	Manhole	Adoptable	_ATTENUATION TANK	1200	Manhole	Adoptable
16.000	S29	1350	Manhole	Adoptable	_ATTENUATION TANK	1200	Manhole	Adoptable
1.010	_ATTENUATION TANK	1200	Manhole	Adoptable	S31	1800	Manhole	Adoptable
1.011	S31	1800	Manhole	Adoptable	S32	2400	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S1	387697.279	397789.585	61.255	1.251	1200				
						0	1.000	60.004	300

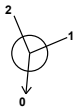
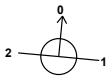
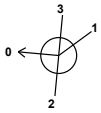
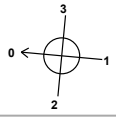
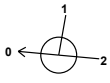
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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S2	387671.740	397796.919	60.826	1.155	600		0	2.000	59.671	225
S3	387652.119	397783.922	60.818	1.386	1200		1	2.000	59.507	225
							2	1.000	59.432	300
							0	1.001	59.432	300
S4	387643.495	397768.276	60.639	1.363	1200		1	1.001	59.343	300
							0	1.002	59.276	450
S5	387645.377	397748.316	61.250	1.650	1200		0	3.000	59.600	150
SW J1	387641.513	397747.165	60.458	1.350			1	3.000	59.408	150
							2	1.002	59.108	450
							0	1.003	59.108	450
S7	387642.521	397718.656	61.250	1.650	1200		0	4.000	59.600	150
SW J2	387638.640	397716.566	60.214	1.350			1	4.000	59.164	150
							2	1.003	58.864	450
							0	1.004	58.864	450
S9	387637.802	397693.928	60.570	1.525	1200		0	5.000	59.045	225
SW J3	387636.415	397692.878	60.025	1.350			1	5.000	58.900	225
							2	1.004	58.675	450
							0	1.005	58.675	450
_FORECOURT SEP	387626.933	397667.737	58.811		1200					
S11	387634.199	397669.325	59.912	1.500	1500		1	1.005	58.487	450
							0	1.006	58.412	525
S13	387729.852	397740.451	61.036	0.621	600		0	7.000	60.415	150
S14	387727.031	397710.401	61.186	1.098	600		1	7.000	60.163	150
							0	7.001	60.088	225
RE1	387737.967	397694.761	61.119	0.750	100		0	8.000	60.369	150

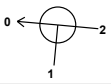
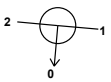
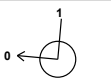
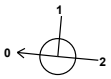
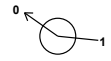
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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S16	387749.545	397693.673	60.940	0.750	600	1	8.000	60.190	150
									
						0	8.001	60.190	150
S17	387736.337	397688.102	61.271	1.425	600	1	8.001	59.921	150
									
						2	7.001	59.846	225
						0	7.003	59.846	225
RE2	387726.613	397686.163	61.034	0.825	100				
									
						0	9.000	60.209	225
S18	387722.745	397644.961	60.478	0.825	600	1	9.000	59.653	225
									
						0	9.001	59.653	225
RE3	387751.723	397663.741	60.962	0.750	100				
									
						0	10.000	60.212	150
S19	387749.732	397642.427	60.594	0.750	600	1	10.000	59.844	150
									
						0	10.001	59.844	150
S20	387732.203	397644.108	60.639	1.300	1200	1	10.001	59.489	150
									
						2	9.001	59.414	225
						0	9.002	59.339	300
RE4	387737.173	397680.955	61.236	0.750	100				
									
						0	11.000	60.486	150
RE5	387734.463	397652.096	60.781	0.750	100				
									
						0	12.000	60.031	150
S21	387735.215	397660.103	60.871	1.150	600	1	13.000	59.721	150
									
						2	12.000	59.721	150
						3	11.000	59.721	150
						0	11.001	59.721	150
S22	387746.690	397668.501	61.175	1.350	600				
									
						0	13.000	59.825	150
S23	387733.721	397660.239	60.833	1.600	1500	1	11.001	59.383	150
									
						2	9.002	59.233	300
						3	7.003	59.308	225
						0	7.004	59.233	300
S24	387707.129	397683.544	61.156	1.800	1200				
									
						0	14.000	59.356	300
S25	387703.497	397662.985	60.027	1.099	1500	1	14.000	59.078	300
									
						2	7.004	59.078	300
						0	7.005	58.928	450

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Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S26	387651.088	397646.283	59.554	1.350	1200		0	15.000	58.204	450
S27	387694.740	397642.185	59.410	1.350	1500		1	15.000	58.060	450
							0	15.001	58.060	450
S28	387696.751	397663.610	59.878	1.947	1800		1	15.001	58.006	450
							2	7.005	58.006	450
							0	7.006	57.931	525
_BYPASS SEP IN	387693.167	397663.924	59.498	1.578	1200		1	7.006	57.920	525
							2	1.006	57.920	525
							0	1.008	57.920	525
_BYPASS SEP OUT	387692.677	397658.354	59.430	1.610	1200		1	1.008	57.820	525
							0	1.009	57.820	600
S29	387643.747	397687.650	61.001	2.300	1350		0	16.000	58.701	300
_ATTENUATION TANK	387641.514	397663.002	59.460	2.640	1200		1	16.000	57.154	300
							2	1.009	56.820	600
							0	1.010	56.820	600
S31	387638.403	397663.318	59.815	3.002	1800		1	1.010	56.813	600
							0	1.011	56.813	225
S32	387610.045	397683.261	58.505	3.750	2400		1	1.011	54.755	225

Simulation Settings

Rainfall Methodology	FEH-22	Skip Steady State	x	2 year (l/s)	18.3
Rainfall Events	Singular	Drain Down Time (mins)	240	30 year (l/s)	39.6
Summer CV	1.000	Additional Storage (m³/ha)	0.0	100 year (l/s)	50.3
Winter CV	1.000	Starting Level (m)		Check Discharge Volume	✓
Analysis Speed	Detailed	Check Discharge Rate(s)	✓	100 year 360 minute (m³)	215

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)	Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
2	0	0	0	100	45	0	0
30	0	0	0				

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Pre-development Discharge Rate

Site Makeup	Greenfield	Region	1	QMed	18.3
Greenfield Method	FEH	QBar/QMed conversion factor	1.111	QBar	20.3
Positively Drained Area (ha)	2.166	Growth Factor 2 year	0.90	Q 2 year (l/s)	18.3
SAAR (mm)	896	Growth Factor 30 year	1.95	Q 30 year (l/s)	39.6
Host	1	Growth Factor 100 year	2.48	Q 100 year (l/s)	50.3
BFIHost	0.312	Betterment (%)	0		

Pre-development Discharge Volume

Site Makeup	Greenfield	SPR	0.47	Storm Duration (mins)	360
Greenfield Method	FSR/FEH	CWI		Betterment (%)	0
Positively Drained Area (ha)	2.166	Return Period (years)	100	PR	
Soil Index	4	Climate Change (%)	0	Runoff Volume (m³)	

Node S31 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	56.813	Product Number	CTL-SHE-0161-1400-1600-1400
Design Depth (m)	1.600	Min Outlet Diameter (m)	0.225
Design Flow (l/s)	14.0	Min Node Diameter (mm)	1500

Node ATTENUATION TANK Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	56.820
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	480

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	863.0	863.0	1.600	863.0	1029.6	1.601	0.0	1029.6

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Results for 2 year Critical Storm Duration. Lowest mass balance: 99.86%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	10	60.053	0.049	7.5	0.0555	0.0000	OK
15 minute summer	S2	10	59.749	0.078	10.8	0.0221	0.0000	OK
15 minute summer	S3	11	59.573	0.141	32.5	0.1599	0.0000	OK
15 minute summer	S4	11	59.383	0.107	34.8	0.1213	0.0000	OK
15 minute summer	S5	10	59.632	0.032	3.3	0.0364	0.0000	OK
15 minute summer	SW J1	11	59.222	0.114	41.8	0.0000	0.0000	OK
15 minute summer	S7	10	59.630	0.030	4.8	0.0339	0.0000	OK
15 minute summer	SW J2	11	58.993	0.129	52.9	0.0000	0.0000	OK
15 minute summer	S9	10	59.075	0.030	5.0	0.0339	0.0000	OK
15 minute summer	SW J3	11	58.824	0.149	65.6	0.0000	0.0000	OK
	_FORECOURT SEP							
15 minute summer	S11	11	58.571	0.159	91.4	0.2801	0.0000	OK
15 minute summer	S13	11	60.452	0.037	2.2	0.0105	0.0000	OK
15 minute summer	S14	10	60.150	0.062	8.6	0.0176	0.0000	OK
15 minute summer	RE1	10	60.393	0.024	1.2	0.0002	0.0000	OK
15 minute summer	S16	10	60.224	0.034	2.7	0.0096	0.0000	OK
15 minute summer	S17	11	59.916	0.070	14.4	0.0197	0.0000	OK
15 minute summer	RE2	10	60.260	0.051	7.0	0.0004	0.0000	OK
15 minute summer	S18	10	59.710	0.057	10.6	0.0162	0.0000	OK
15 minute summer	RE3	10	60.253	0.041	3.7	0.0003	0.0000	OK
15 minute summer	S19	10	59.883	0.039	3.7	0.0111	0.0000	OK
15 minute summer	S20	11	59.426	0.087	16.8	0.0985	0.0000	OK
15 minute summer	RE4	1	60.486	0.000	0.0	0.0000	0.0000	OK
15 minute summer	RE5	1	60.031	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S21	10	59.742	0.021	3.0	0.0060	0.0000	OK
15 minute summer	S22	10	59.876	0.051	3.0	0.0143	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1	1.000	S3	7.4	0.390	0.059	0.9123	
15 minute summer	S2	2.000	S3	10.6	0.890	0.245	0.2812	
15 minute summer	S3	1.001	S4	32.1	1.026	0.409	0.5583	
15 minute summer	S4	1.002	SW J1	34.9	1.155	0.121	0.6402	
15 minute summer	S5	3.000	SW J1	3.3	1.210	0.095	0.0140	
15 minute summer	SW J1	1.003	SW J2	41.7	1.212	0.145	1.0589	
15 minute summer	S7	4.000	SW J2	4.8	1.966	0.081	0.0097	
15 minute summer	SW J2	1.004	SW J3	52.9	1.270	0.184	0.9918	
15 minute summer	S9	5.000	SW J3	5.0	1.674	0.033	0.0052	
15 minute summer	SW J3	1.005	S11	65.5	1.466	0.228	1.0578	
15 minute summer	S11	1.006	_BYPASS SEP IN	91.0	1.086	0.206	4.9988	
15 minute summer	S13	7.000	S14	2.1	0.636	0.132	0.1015	
15 minute summer	S14	7.001	S17	8.5	0.885	0.164	0.2325	
15 minute summer	RE1	8.000	S16	1.2	0.502	0.054	0.0276	
15 minute summer	S16	8.001	S17	2.6	0.893	0.107	0.0417	
15 minute summer	S17	7.003	S23	14.3	1.397	0.199	0.2895	
15 minute summer	RE2	9.000	S18	6.9	0.942	0.115	0.3044	
15 minute summer	S18	9.001	S20	10.4	1.377	0.126	0.0722	
15 minute summer	RE3	10.000	S19	3.7	0.970	0.157	0.0811	
15 minute summer	S19	10.001	S20	3.6	1.004	0.142	0.0631	
15 minute summer	S20	9.002	S23	16.8	0.696	0.187	0.4066	
15 minute summer	RE4	11.000	S21	0.0	0.000	0.000	0.0161	
15 minute summer	RE5	12.000	S21	0.0	0.000	0.000	0.0062	
15 minute summer	S21	11.001	S23	3.0	2.093	0.035	0.0021	
15 minute summer	S22	13.000	S21	3.0	0.919	0.205	0.0520	

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Results for 2 year Critical Storm Duration. Lowest mass balance: 99.86%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S23	11	59.376	0.143	34.1	0.2528	0.0000	OK
15 minute summer	S24	10	59.496	0.140	51.1	0.1587	0.0000	OK
15 minute summer	S25	11	59.011	0.083	92.3	0.1472	0.0000	OK
15 minute summer	S26	10	58.311	0.107	24.0	0.1209	0.0000	OK
15 minute summer	S27	11	58.242	0.182	30.5	0.3222	0.0000	OK
15 minute summer	S28	11	58.233	0.302	121.1	0.7680	0.0000	OK
15 minute summer	_BYPASS SEP IN	11	58.194	0.274	211.3	0.3099	0.0000	OK
15 minute summer	_BYPASS SEP OUT	11	58.063	0.243	210.1	0.2751	0.0000	OK
15 minute summer	S29	10	58.783	0.082	42.7	0.1172	0.0000	OK
480 minute summer	_ATTENUATION TANK	320	57.129	0.309	55.1	253.3746	0.0000	OK
480 minute summer	S31	320	57.128	0.315	13.2	0.8027	0.0000	SURCHARGED
480 minute summer	S32	320	54.803	0.048	13.2	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S23	7.004	S25	34.1	1.064	0.431	0.9727	
15 minute summer	S24	14.000	S25	50.6	1.648	0.394	0.6413	
15 minute summer	S25	7.005	S28	92.3	2.826	0.077	0.3394	
15 minute summer	S26	15.000	S27	23.5	0.686	0.128	1.9556	
15 minute summer	S27	15.001	S28	30.0	0.560	0.186	1.5089	
15 minute summer	S28	7.006	_BYPASS SEP IN	120.3	0.993	0.451	0.4360	
15 minute summer	_BYPASS SEP IN	1.008	_BYPASS SEP OUT	210.1	2.061	0.324	0.5921	
15 minute summer	_BYPASS SEP OUT	1.009	_ATTENUATION TANK	212.9	3.851	0.221	3.0968	
15 minute summer	S29	16.000	_ATTENUATION TANK	42.4	2.808	0.152	0.3739	
480 minute summer	_ATTENUATION TANK	1.010	S31	13.2	0.137	0.041	0.4625	
480 minute summer	S31	1.011	S32	13.2	2.127	0.099	0.1979	331.9

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.95%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	10	60.082	0.078	19.0	0.0882	0.0000	OK
15 minute summer	S2	10	59.802	0.131	27.4	0.0371	0.0000	OK
15 minute summer	S3	11	59.707	0.275	82.7	0.3107	0.0000	OK
15 minute summer	S4	11	59.454	0.178	87.7	0.2012	0.0000	OK
15 minute summer	S5	10	59.653	0.053	8.4	0.0597	0.0000	OK
15 minute summer	SW J1	11	59.295	0.187	105.3	0.0000	0.0000	OK
15 minute summer	S7	10	59.649	0.049	12.2	0.0555	0.0000	OK
15 minute summer	SW J2	11	59.083	0.219	134.0	0.0000	0.0000	OK
15 minute summer	S9	10	59.094	0.049	12.7	0.0556	0.0000	OK
15 minute summer	SW J3	11	58.932	0.257	166.8	0.0000	0.0000	OK
	_FORECOURT SEP							
15 minute summer	S11	11	58.676	0.264	232.8	0.4673	0.0000	OK
15 minute summer	S13	10	60.475	0.060	5.5	0.0171	0.0000	OK
15 minute summer	S14	10	60.193	0.105	21.7	0.0296	0.0000	OK
15 minute summer	RE1	10	60.406	0.037	3.0	0.0003	0.0000	OK
15 minute summer	S16	10	60.246	0.056	6.8	0.0158	0.0000	OK
15 minute summer	S17	10	59.958	0.112	36.6	0.0318	0.0000	OK
15 minute summer	RE2	10	60.292	0.083	17.7	0.0007	0.0000	OK
15 minute summer	S18	10	59.749	0.096	26.8	0.0271	0.0000	OK
15 minute summer	RE3	10	60.280	0.068	9.3	0.0005	0.0000	OK
15 minute summer	S19	10	59.909	0.065	9.3	0.0183	0.0000	OK
15 minute summer	S20	11	59.538	0.199	43.1	0.2245	0.0000	OK
15 minute summer	RE4	1	60.486	0.000	0.0	0.0000	0.0000	OK
15 minute summer	RE5	1	60.031	0.000	0.0	0.0000	0.0000	OK
15 minute summer	S21	10	59.751	0.030	7.5	0.0085	0.0000	OK
15 minute summer	S22	10	59.910	0.085	7.6	0.0239	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1	1.000	S3	18.7	0.466	0.150	1.8632	
15 minute summer	S2	2.000	S3	27.3	0.987	0.631	0.7105	
15 minute summer	S3	1.001	S4	80.9	1.297	1.033	1.1033	
15 minute summer	S4	1.002	SW J1	87.9	1.461	0.305	1.2763	
15 minute summer	S5	3.000	SW J1	8.4	1.560	0.242	0.0276	
15 minute summer	SW J1	1.003	SW J2	105.7	1.524	0.367	2.1326	
15 minute summer	S7	4.000	SW J2	12.2	2.532	0.206	0.0193	
15 minute summer	SW J2	1.004	SW J3	134.5	1.582	0.467	2.0227	
15 minute summer	S9	5.000	SW J3	12.7	2.143	0.084	0.0103	
15 minute summer	SW J3	1.005	S11	167.2	1.859	0.581	2.1275	
15 minute summer	S11	1.006	_BYPASS SEP IN	232.9	1.359	0.527	9.6197	
15 minute summer	S13	7.000	S14	5.3	0.818	0.329	0.1971	
15 minute summer	S14	7.001	S17	21.6	1.139	0.414	0.4575	
15 minute summer	RE1	8.000	S16	3.0	0.642	0.135	0.0544	
15 minute summer	S16	8.001	S17	6.7	1.153	0.273	0.0825	
15 minute summer	S17	7.003	S23	36.3	1.518	0.504	0.8219	
15 minute summer	RE2	9.000	S18	17.5	1.198	0.290	0.6059	
15 minute summer	S18	9.001	S20	26.7	1.694	0.323	0.1800	
15 minute summer	RE3	10.000	S19	9.3	1.229	0.396	0.1611	
15 minute summer	S19	10.001	S20	9.1	1.287	0.361	0.1249	
15 minute summer	S20	9.002	S23	41.8	0.794	0.466	0.9633	
15 minute summer	RE4	11.000	S21	0.0	0.000	0.000	0.0262	
15 minute summer	RE5	12.000	S21	0.0	0.000	0.000	0.0101	
15 minute summer	S21	11.001	S23	7.5	2.396	0.088	0.0144	
15 minute summer	S22	13.000	S21	7.5	1.220	0.518	0.0979	

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Results for 30 year Critical Storm Duration. Lowest mass balance: 99.95%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S23	11	59.518	0.285	85.3	0.5043	0.0000	OK
15 minute summer	S24	11	59.675	0.319	129.5	0.3610	0.0000	SURCHARGED
15 minute summer	S25	11	59.084	0.156	231.3	0.2752	0.0000	OK
15 minute summer	S26	11	58.539	0.335	60.7	0.3791	0.0000	OK
15 minute summer	S27	11	58.528	0.468	72.2	0.8269	0.0000	SURCHARGED
15 minute summer	S28	11	58.513	0.582	301.4	1.4803	0.0000	SURCHARGED
15 minute summer	_BYPASS SEP IN	11	58.449	0.529	534.3	0.5987	0.0000	SURCHARGED
15 minute summer	_BYPASS SEP OUT	11	58.207	0.387	531.8	0.4380	0.0000	OK
15 minute summer	S29	10	58.839	0.138	108.0	0.1976	0.0000	OK
600 minute summer	_ATTENUATION TANK	450	57.510	0.690	89.5	566.5534	0.0000	SURCHARGED
600 minute summer	S31	450	57.510	0.697	14.2	1.7739	0.0000	SURCHARGED
60 minute winter	S32	93	54.804	0.049	14.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S23	7.004	S25	83.8	1.315	1.058	1.9136	
15 minute summer	S24	14.000	S25	126.0	1.954	0.981	1.4280	
15 minute summer	S25	7.005	S28	231.4	2.956	0.193	0.7016	
15 minute summer	S26	15.000	S27	57.0	0.690	0.310	6.2854	
15 minute summer	S27	15.001	S28	79.2	0.594	0.492	3.4099	
15 minute summer	S28	7.006	_BYPASS SEP IN	301.4	1.395	1.129	0.7772	
15 minute summer	_BYPASS SEP IN	1.008	_BYPASS SEP OUT	531.8	2.741	0.819	1.0814	
15 minute summer	_BYPASS SEP OUT	1.009	_ATTENUATION TANK	535.7	4.381	0.557	6.7025	
15 minute summer	S29	16.000	_ATTENUATION TANK	107.4	3.562	0.385	0.7462	
600 minute summer	_ATTENUATION TANK	1.010	S31	14.2	0.136	0.044	0.8800	
600 minute summer	S31	1.011	S32	14.0	2.161	0.105	0.2057	856.9

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Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.60%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1	12	60.365	0.361	34.8	0.4087	0.0000	SURCHARGED
15 minute summer	S2	12	60.545	0.874	50.3	0.2474	0.0000	FLOOD RISK
15 minute summer	S3	12	60.333	0.901	150.5	1.0186	0.0000	SURCHARGED
15 minute summer	S4	12	59.996	0.720	159.3	0.8145	0.0000	SURCHARGED
15 minute summer	S5	12	59.997	0.397	15.5	0.4494	0.0000	SURCHARGED
15 minute summer	SW J1	12	59.947	0.839	183.1	0.0000	0.0000	SURCHARGED
15 minute summer	S7	11	59.936	0.336	22.5	0.3796	0.0000	SURCHARGED
15 minute summer	SW J2	11	59.863	0.999	219.4	0.0000	0.0000	SURCHARGED
15 minute summer	S9	11	59.776	0.731	23.2	0.8266	0.0000	SURCHARGED
15 minute summer	SW J3	11	59.768	1.093	272.2	0.0000	0.0000	FLOOD RISK
15 minute summer	_FORECOURT SEP S11	11	59.586	1.174	378.5	2.0745	0.0000	SURCHARGED
15 minute summer	S13	12	60.643	0.228	10.1	0.0646	0.0000	SURCHARGED
15 minute summer	S14	12	60.564	0.476	40.4	0.1347	0.0000	SURCHARGED
15 minute summer	RE1	12	60.510	0.141	5.4	0.0011	0.0000	OK
15 minute summer	S16	12	60.503	0.313	12.4	0.0885	0.0000	SURCHARGED
15 minute summer	S17	12	60.448	0.602	63.0	0.1703	0.0000	SURCHARGED
15 minute summer	RE2	12	60.338	0.129	32.5	0.0010	0.0000	OK
15 minute summer	S18	12	60.242	0.589	49.3	0.1666	0.0000	FLOOD RISK
15 minute summer	RE3	12	60.426	0.214	17.0	0.0017	0.0000	SURCHARGED
15 minute summer	S19	12	60.279	0.435	17.2	0.1232	0.0000	SURCHARGED
15 minute summer	S20	12	60.152	0.813	69.7	0.9191	0.0000	SURCHARGED
15 minute summer	RE4	1	60.486	0.000	0.0	0.0000	0.0000	OK
15 minute summer	RE5	12	60.090	0.059	0.4	0.0005	0.0000	OK
15 minute summer	S21	12	60.091	0.370	13.6	0.1048	0.0000	SURCHARGED
15 minute summer	S22	12	60.170	0.345	13.9	0.0978	0.0000	SURCHARGED

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1	1.000	S3	47.3	0.776	0.380	3.2050	
15 minute summer	S2	2.000	S3	48.6	1.223	1.123	0.9361	
15 minute summer	S3	1.001	S4	146.1	2.074	1.865	1.2580	
15 minute summer	S4	1.002	SW J1	160.1	1.531	0.556	3.3596	
15 minute summer	S5	3.000	SW J1	14.9	1.789	0.433	0.0906	
15 minute summer	SW J1	1.003	SW J2	191.0	1.562	0.664	4.8696	
15 minute summer	S7	4.000	SW J2	21.2	2.905	0.358	0.0705	
15 minute summer	SW J2	1.004	SW J3	226.9	1.610	0.789	3.7697	
15 minute summer	S9	5.000	SW J3	21.7	2.327	0.144	0.0692	
15 minute summer	SW J3	1.005	S11	279.0	1.883	0.969	3.7483	
15 minute summer	S11	1.006	_BYPASS SEP IN	378.4	1.752	0.857	12.7924	
15 minute summer	S13	7.000	S14	10.7	0.918	0.658	0.5313	
15 minute summer	S14	7.001	S17	36.6	1.182	0.704	0.9610	
15 minute summer	RE1	8.000	S16	5.4	0.747	0.244	0.2024	
15 minute summer	S16	8.001	S17	13.2	1.220	0.537	0.2506	
15 minute summer	S17	7.003	S23	55.3	1.489	0.768	1.1215	
15 minute summer	RE2	9.000	S18	32.3	1.276	0.535	1.3110	
15 minute summer	S18	9.001	S20	44.8	1.613	0.541	0.3778	
15 minute summer	RE3	10.000	S19	17.2	1.407	0.735	0.3769	
15 minute summer	S19	10.001	S20	16.2	1.338	0.641	0.3100	
15 minute summer	S20	9.002	S23	66.9	0.950	0.746	1.1434	
15 minute summer	RE4	11.000	S21	0.0	0.000	0.000	0.1844	
15 minute summer	RE5	12.000	S21	0.7	0.050	0.020	0.0967	
15 minute summer	S21	11.001	S23	15.3	2.229	0.179	0.0264	
15 minute summer	S22	13.000	S21	13.6	1.298	0.935	0.2707	

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Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.60%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S23	12	60.068	0.835	134.4	1.4751	0.0000	SURCHARGED
15 minute summer	S24	11	60.749	1.393	237.6	1.5758	0.0000	SURCHARGED
15 minute summer	S25	11	59.581	0.653	389.7	1.1538	0.0000	SURCHARGED
15 minute summer	S26	11	59.445	1.241	111.4	1.4034	0.0000	FLOOD RISK
15 minute summer	S27	11	59.385	1.325	142.8	2.3417	0.0000	FLOOD RISK
15 minute summer	S28	11	59.331	1.400	520.9	3.5623	0.0000	SURCHARGED
15 minute summer	_BYPASS SEP IN	11	59.143	1.223	892.2	1.3837	0.0000	SURCHARGED
15 minute summer	_BYPASS SEP OUT	11	58.520	0.700	890.7	0.7914	0.0000	SURCHARGED
15 minute summer	S29	10	58.909	0.208	198.1	0.2974	0.0000	OK
1440 minute summer	_ATTENUATION TANK	1080	58.361	1.541	92.9	1264.9570	0.0000	SURCHARGED
1440 minute summer	S31	1080	58.361	1.548	14.1	3.9389	0.0000	SURCHARGED
15 minute summer	S32	127	54.804	0.049	14.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S23	7.004	S25	140.0	1.988	1.768	2.1371	
15 minute summer	S24	14.000	S25	229.0	3.252	1.784	1.4701	
15 minute summer	S25	7.005	S28	386.5	3.083	0.323	1.0735	
15 minute summer	S26	15.000	S27	110.3	0.696	0.600	6.9867	
15 minute summer	S27	15.001	S28	134.4	0.848	0.835	3.4099	
15 minute summer	S28	7.006	_BYPASS SEP IN	517.2	2.394	1.938	0.7773	
15 minute summer	_BYPASS SEP IN	1.008	_BYPASS SEP OUT	890.7	4.123	1.372	1.2081	
15 minute summer	_BYPASS SEP OUT	1.009	_ATTENUATION TANK	898.5	4.351	0.934	11.7533	
15 minute summer	S29	16.000	_ATTENUATION TANK	197.0	4.044	0.706	1.2048	
1440 minute summer	_ATTENUATION TANK	1.010	S31	14.1	0.135	0.044	0.8800	
1440 minute summer	S31	1.011	S32	14.0	2.161	0.105	0.2057	1076.6

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