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The Prestwich Regeneration LLP

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Strategy

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Flood Risk Assessment and Drainage Strategy

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1. Introduction

1.1 Scope and Objectives

This Flood Risk Assessment and Drainage Strategy has been prepared by Civic Engineers on behalf of The Prestwich Regeneration LLP, a Joint Venture ('JV') between Bury Council and Muse Places and is submitted in support of an application for hybrid planning permission at "Prestwich Village". The full component of the planning application includes proposals for the demolition of existing buildings, and the erection of a mixed-use development comprising community, retail and commercial floorspace alongside a travel hub (phase 1). The outline component of the application proposes the erection of a mixed-use development comprising residential and ground floor retail and commercial uses (phase 2).

The Hybrid application boundary, encompassing the full and outline components, and extends to approximately **2.48ha**, indicated in Figure 1 on page 2 and on the Ground Flood Proposed Site Plan, prepared by JMA (Drawing No. 207-JMA-MP-00-DR-A-001400) in Appendix A.

The Flood Risk Assessment applies to the entire site encompassed within the area defined by the red line boundary.

It is anticipated that the construction of the proposed development will be undertaken over two principal phases (phase 1: full element, followed by phase 2: outline element). Phase 1 will consist of the demolition of existing buildings, followed by the construction of the travel hub and other elements proposed as part of the detailed component of the application in phase 2.

The Flood Risk Assessment and drainage strategy presented herein will demonstrate that the proposed development will be safe from flooding and will not pose a flood risk to sites elsewhere. This Flood Risk Assessment and drainage strategy will:

- Investigate all potential risks of flooding to the site.
- Consider the impact the development may have elsewhere with regards to flooding.
- Consider proposals to mitigate any potential risk of flooding determined to be present; and
- Provide a drainage strategy for the site.

This report reviews the following information:

- Environment Agency Online Flood mapping
- UK Government Long Term Flood Risk Information for surface water flooding and reservoir flooding.
- United Utilities Asset Maps and information obtained from a pre-development inquiry request.
- GEA Ground Investigation Desk Study
- Asteer Planning Hybrid Planning Application – Development Specification
- Design team submission drawings and plans

1.2 Development Proposals

The proposed development is to consist of:

"Hybrid application comprising: Full planning application proposing demolition of existing buildings and structures and the erection of a phased mixed use development including a Community Hub comprising flexible uses including library, offices, medical or health services (Use Classes F1 (a-f), F2(b), E(c), E(e), E(g)) and retail uses (Use Classes E(a), E(b) F2(a)) and Sui Generis (hot food takeaway and bar), a new Market Hall (Use Classes E(a), E(b) and Sui Generis (hot food takeaway and bar)), a Commercial Building comprising flexible uses including retail, offices, gymnasium (Use Classes E(a), E(b), E(c), E(d), E(g), F2(a), a Travel Hub comprising car parking and cycle parking (Sui Generis), a public square and public realm and associated landscaping, car parking provision, cycle storage and other associated works; and part Outline planning application (with all matters reserved) proposing a phased residential led mixed use development comprising residential (Use Class C3), flexible commercial, business, service, local community and learning uses (Use Classes E, F) and Sui Generis (hot food takeaway and bar), engineering works to Rectory Lane, new public realm, associated landscaping, car parking provision, cycle storage and other associated works".

The residential component (defined as phase 2) forms part of the outline application and as such a detailed design has not been produced for these plots, but design principles have been established which will be developed further at a later date. The detailed mixed-use component (phase 1) proposals have been developed to a sufficient level of detail to support the full planning application element of the hybrid application. Therefore, this report will focus on a full site drainage assessment and the detailed proposals for phase 1. The surface water drainage proposals will consist of a gravity pipe network with attenuation tanks, rain gardens and tree pits. The drainage strategy drawings can be located within Appendix D.

2. Existing Site Details

2.1 Location

The site is located in the centre of Prestwich Village, postcode M25 1AY. The application site as existing comprises a mixture of surface level car parking bound by Rectory Lane to the south and east and existing buildings including the Longfield Centre, Prestwich Library and Prestwich Health Centre. The application site also incorporates an existing surface level car park north of Fairfax Road.

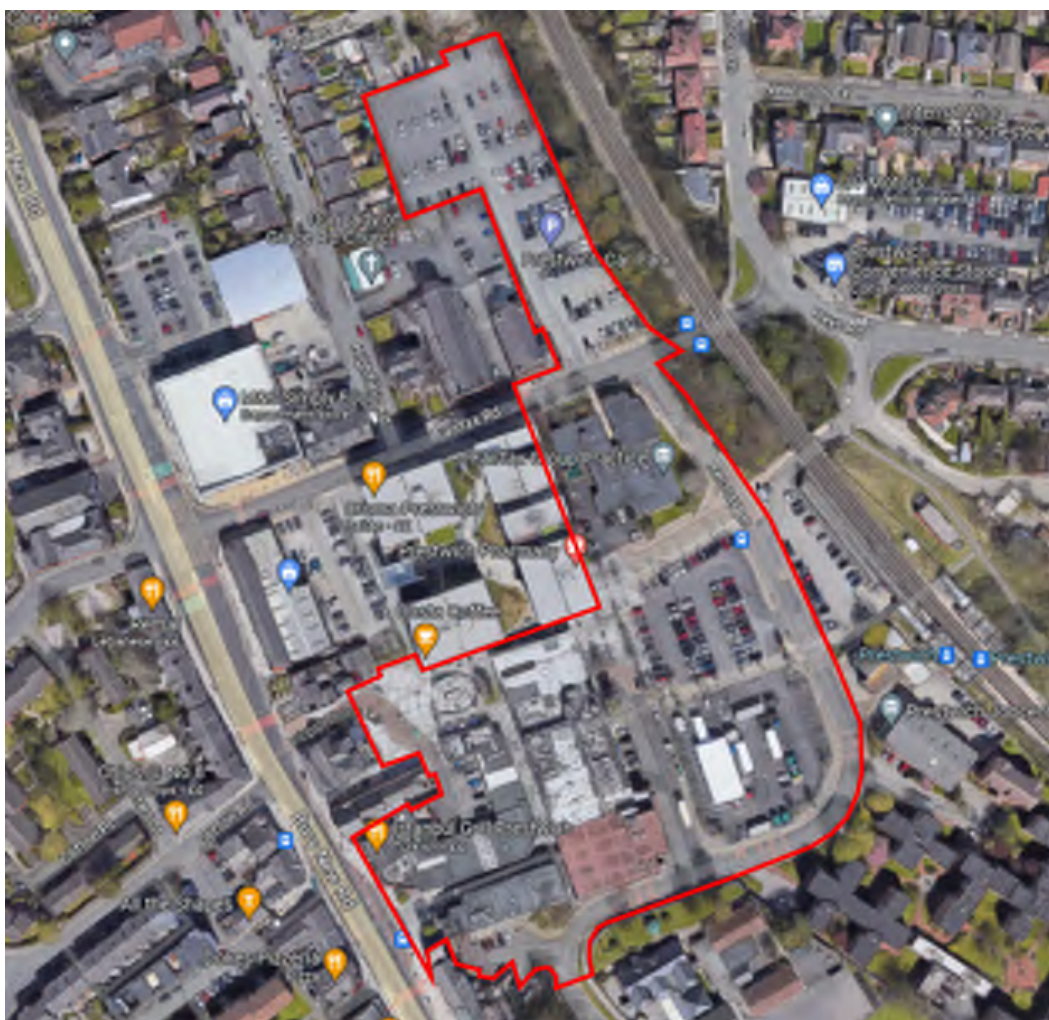


Figure 1 Site Location Plan, Google maps

The report assesses the flood risk across the entire site which is approximately 2.48ha. The OS grid coordinates at the approximate centre of the site are 381299, 404095.

2.2 Historic Land Use

GEA have produced a Ground Investigation Desk Study on behalf of the applicants. The report states that the earliest map studied, dated 1848, shows the northern half of the site to have been predominantly undeveloped, with a row of terraced residential properties located along roads named Longfield and Clayton Street.

By the early 1900s the northern section of the site was gradually developed with small buildings of unknown use increasing in number. To the south further properties had been constructed within the areas along the previously mentioned roads, as seen in Figure 2.

The site remained relatively unchanged until sometime between 1968 and 1974, when all of the residential properties and roads located within this area, apart from Fairfax Road and Poppythorn Lane had been replaced by the Longfield Shopping Centre and Health Centre as well as the car park to the southeast. To the north corporation yard had been converted into the existing surface car park by 1983.



Figure 2 Aerial photograph dated 1935 looking north with site outlined in red from the GEA Desk Study

2.3 Existing Watercourse and Waterbodies

Following initial pre application consultation with United Utilities (UU) they highlighted the presence of a culvert within Sherbourne Court to the southwest of the site. Based on the asset map, the culvert is approximately 100m from the proposed surface water outfall and located within third party land.

The closest statutory main river is the River Irwell, located approximately 1.6km southwest of the site. In 2019, the river Irwell catchment received an ecological Water Framework Directive (WFD) rating of Moderate and a chemical rating of Fail. It's overall rating was Moderate. Heaton Park Reservoir is located approximately 1.25km northeast of the site.

2.4 Existing Drainage

2.4.1 Existing Public Drainage

An excerpt of the United Utilities combined, and surface water asset map dated June 2015 was received in March 2023. Several combined sewers are visible around the perimeter of the site, shown in red, as shown in Figure 3 below. The majority of the proposed development area is clear of any adopted drainage assets.

There is a 300mm vitreous clay foul sewer running through the narrow gap at the southwest corner of the site. The layout of the development has been designed to reduce the access constraint to this sewer where feasible with the new buildings set further away from the sewer than the existing scenario and at a minimum of 3m from this sewer.

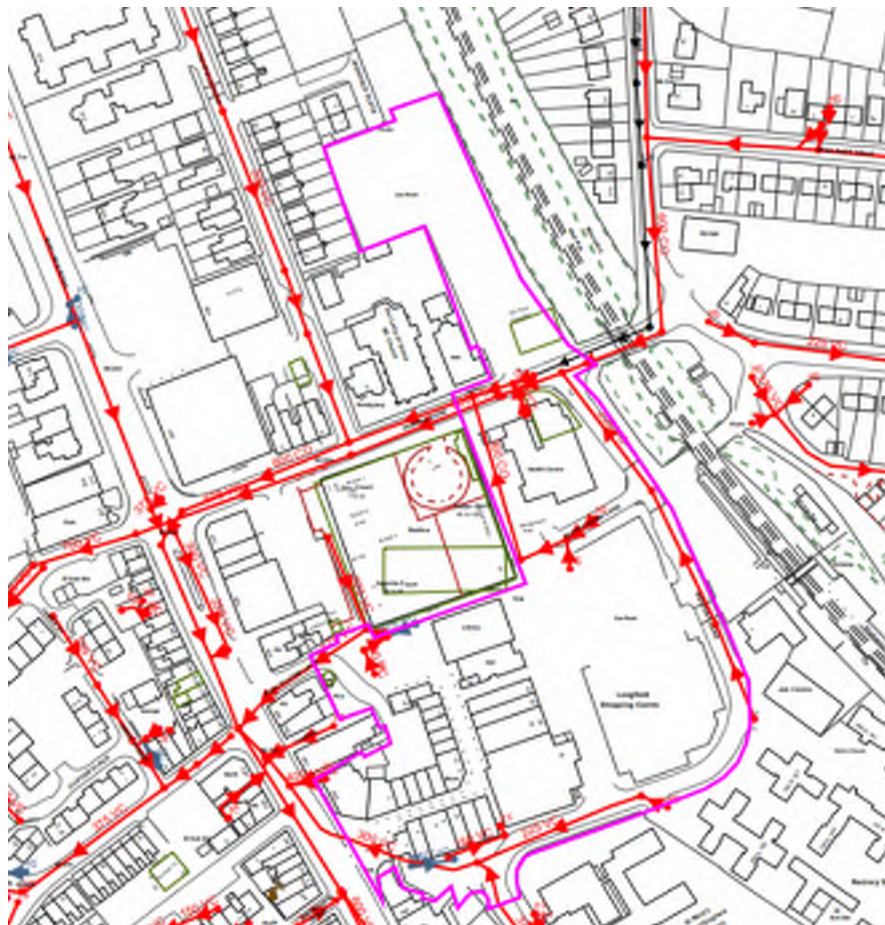


Figure 3 UU Combined and Surface Water Asset Map Extract

2.4.2 Existing Private Drainage

A CCTV and GPR Survey was carried out by Greenhatch Group and can be found within Appendix B. Various combined and surface water sewers are present across the site. The majority of the private sewers will be removed along with the demolition of existing buildings. Drainage within the site that services existing buildings to be retained is to remain and will have to be diverted where there are clashes with the proposed buildings. A drawing indicating which sewer runs will require abandoning and or diverting as part of the works can be found within Appendix C.

2.5 Topography

The Topographical Survey was carried out in February 2023 by Greenhatch Group. This survey was provided to Civic Engineers in March 2023 and has been used to create an existing site surface model to analyse the existing site levels.

The existing site levels from the most northern point to the most southern point of the site vary from 96.5mAOD down to 93.7mAOD to the south of the existing medical centre and back up to 96mAOD to the south of the existing southern car park. The low point of the site is located in the western corner of the site at approximately 92.6mAOD. The existing site contours can be seen in Figure 4.

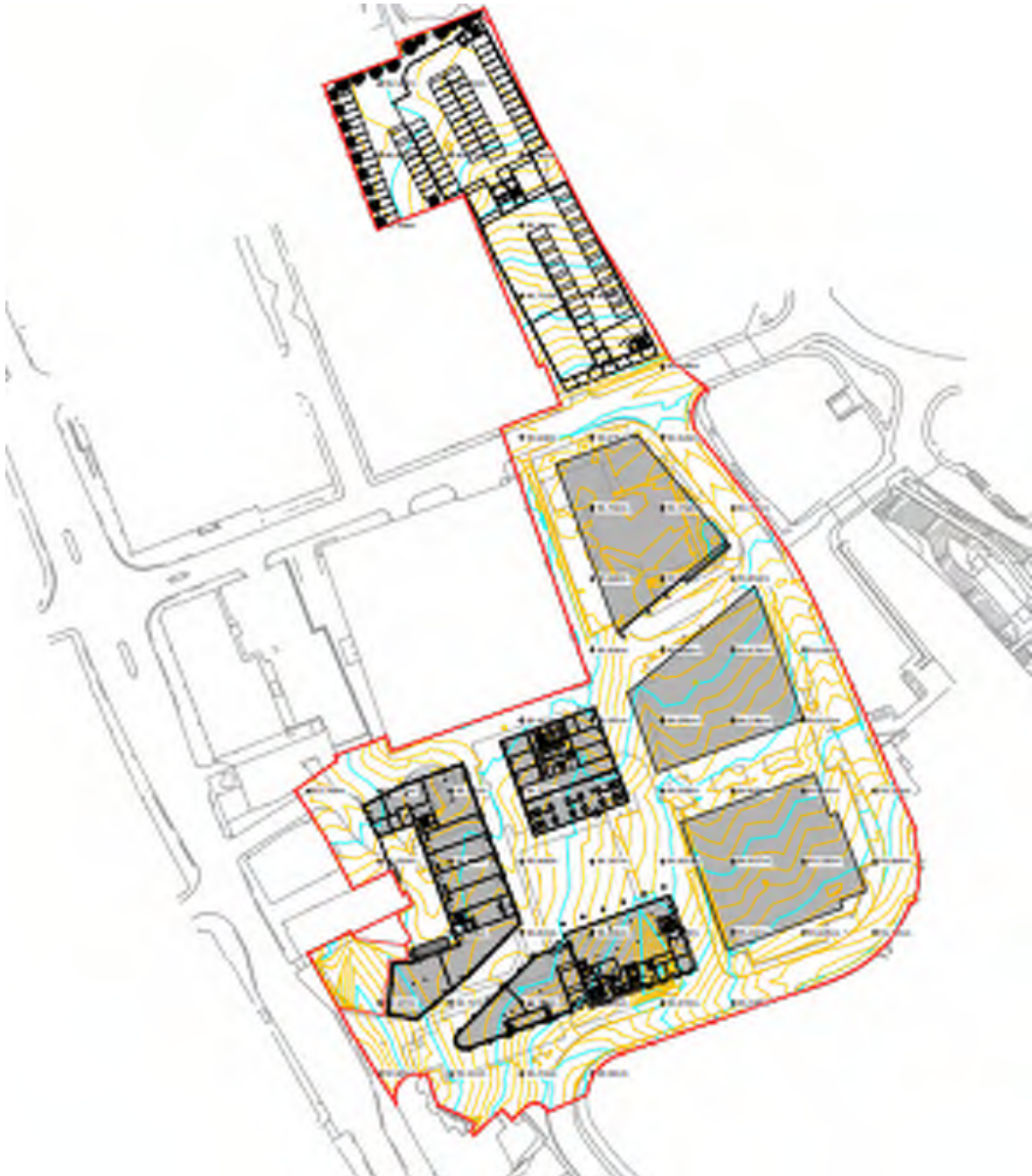


Figure 4: Existing Site Contours with Masterplan Overlain

2.6 Geology

The online BGS Geology Viewer indicates glaciofluvial deposits in the northern arm of the site, shown in Figure 5. These are typically sand and gravel with lenses of silt and clay. The southern section of superficial strata consists of hummocky glacial deposits. These are glacial marine deposits which are typically poorly sorted sand, gravel, and silty clay with a 'moundy' topography.

The bedrock strata below the superficial deposits are predominantly Worsley Delf Rock, as shown in Figure 6. The sandstone is mainly medium grained but varies from fine to coarse grained and comprises sub angular to sub round quartz and feldspar grains with a variable mica content. Small areas of the Pennine coal measures are present in the north and south corners. The coal measures consist of cyclic sequences of interbedded mudstone, siltstone and sandstone with subordinate coal seams, ironstone nodules or beds and seat-earth horizons.

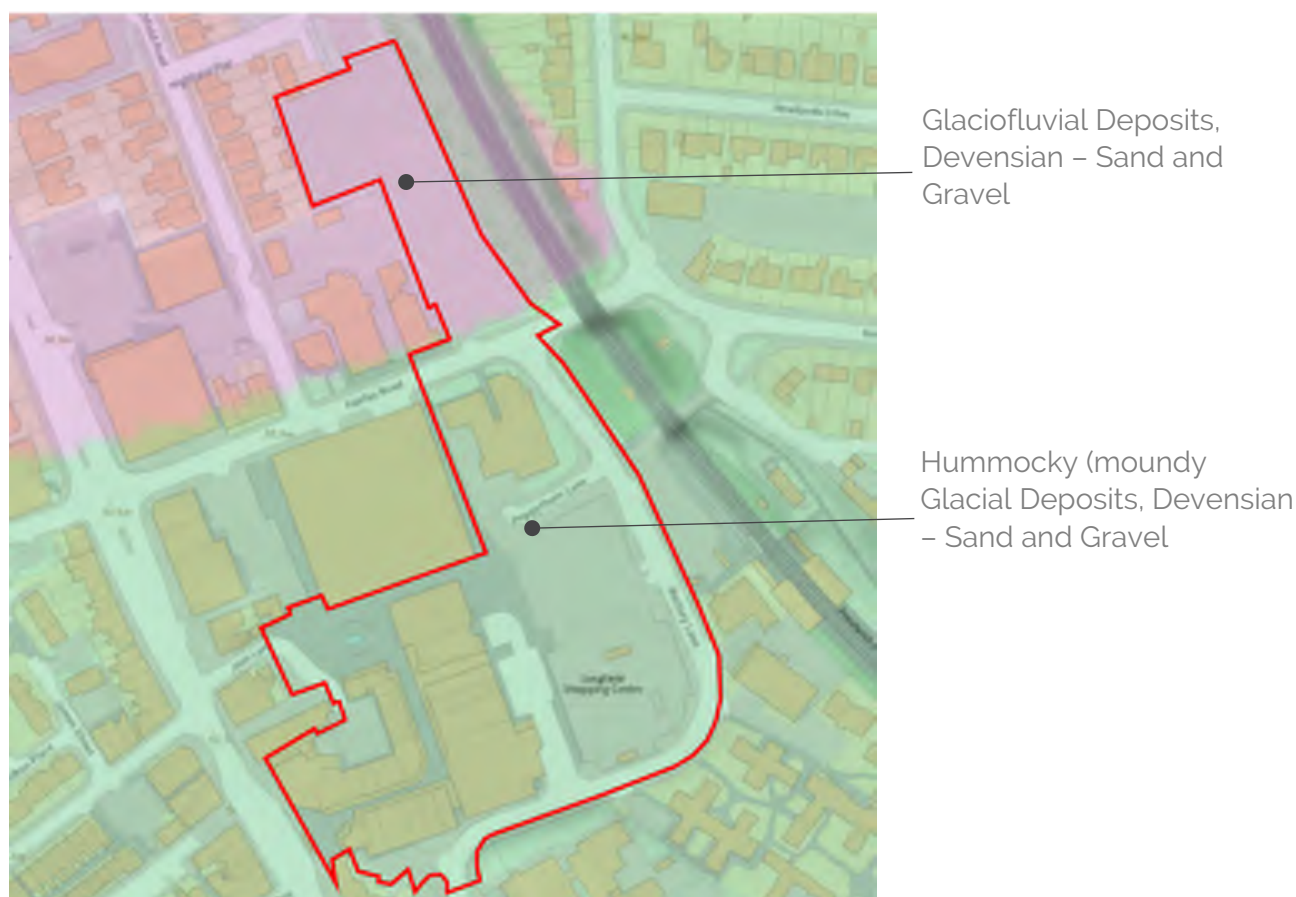


Figure 5: Superficial Geology information taken from BGS Geology Viewer

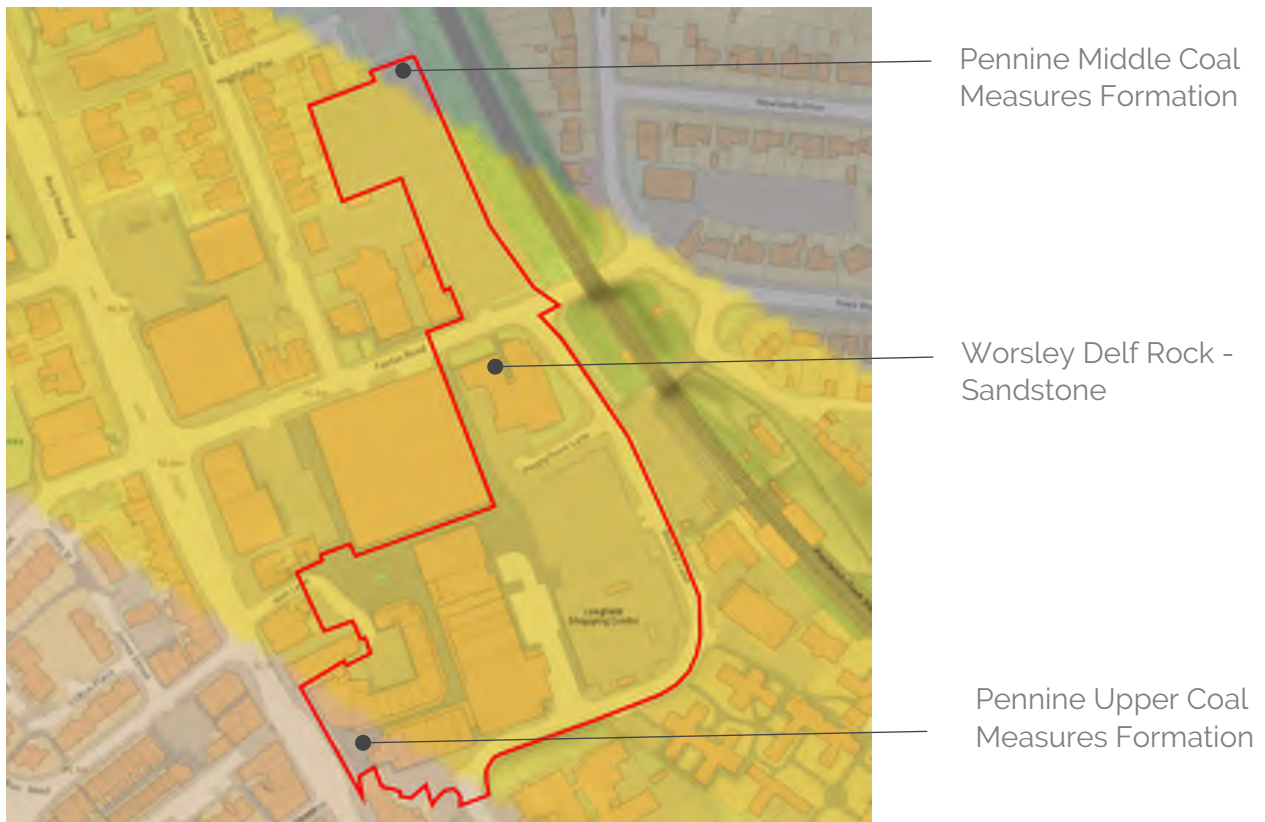


Figure 6: Bedrock Geology Information taken from BGS Geology Viewer

2.6.3 BGS Borehole Records

Borehole data is available from the BGS online borehole records. A search of the BGS borehole database has not identified any records of historic boreholes drilled on site, but four are located 120m to 150m to the south. The boreholes encountered made ground to depths of between 0.35m and 3m (91.27m OD and 96.77m OD) underlain by Hummocky Glacial Deposits comprising silty clay and sand with fragments of coal were encountered to the maximum depth investigated of 11.5m.

3. Relevant Policy and Guidance

3.1 National Planning Policy and Framework (NPPF)

In September 2023, the Ministry of Housing, Communities and Local Government revised the National Planning Policy Framework document (NPPF) and the Planning Practice Guidance which provides guidance on how flood risk should be assessed during the planning and development process.

The NPPF refers to the Flood Zones which are shown on the Environment Agency (EA) Flood Map, and establishes the range of uses which are appropriate, or compatible, land uses for each Flood Zone.

The Flood Zones can be summarised as follows:

Zone 1: Low Probability. This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any one year. (<0.1%)

Zone 2: Medium Probability. This zone comprises land assessed as having between 1 in 100 and 1 in 1000 annual probability of river flooding (1%-0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% - 0.1%) in any year.

Zone 3a: High Probability. This zone comprises land assessed as having 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.

Zone 3b: Functional Flood Plain. This zone comprises land where water must flow or be stored in times of flood. Strategic Flood Risk Assessments should identify this zone.

Annex 3 of the National Planning Policy Framework (NPPF) 2023 defines the type and nature of different development classifications in the context of their flood risk vulnerability. The following extract below outlines the NPPF Flood Risk Vulnerability Classifications.

HIGHLY VULNERABLE

- Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding.
- Emergency dispersal points.
- Basement dwellings.
- Caravans, mobile homes and park homes intended for permanent residential use.
- Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure'.)

MORE VULNERABLE

- Hospitals
- Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels.
- Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.
- Non-residential uses for health services, nurseries and educational establishments.
- Landfill* and sites used for waste management facilities for hazardous waste.
- Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.

LESS VULNERABLE

- Police, ambulance and fire stations which are not required to be operational during flooding.
- Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'more vulnerable' class; and assembly and leisure.
- Land and buildings used for agriculture and forestry.
- Waste treatment (except landfill* and hazardous waste facilities).
- Minerals working and processing (except for sand and gravel working).
- Water treatment works which do not need to remain operational during times of flood.
- Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.
- Car parks.

WATER-COMPATIBLE DEVELOPMENT

- Flood control infrastructure.
- Water transmission infrastructure and pumping stations.
- Sewage transmission infrastructure and pumping stations.
- Sand and gravel working.
- Docks, marinas and wharves.
- Navigation facilities.
- Ministry of Defence installations.
- Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location.
- Water-based recreation (excluding sleeping accommodation).
- Lifeguard and coastguard stations.
- Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.
- Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

The flood risk vulnerability and flood zone 'compatibility' has been summarised in Table 1 below. The EA presents a set of recommendations based on the level of vulnerability of a proposed structure and its Flood Zone.

The site is within 'more vulnerable' and 'less vulnerable' categories for development, so providing it sits within flood zone 1 or 2 it meets the criteria for the development without the need for an exception test.

Table 1: Flood Risk vulnerability and Flood Zone compatibility from NPPF Technical Guide

Flood Risk Vulnerability Classification		Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Flood Zone (See Table 1)	Zone 1	√	√	√	√	√
	Zone 2	√	Exception Test Required	√	√	√
	Zone 3a	Exception Test Required	×	Exception Test Required	√	√
	Zone 3b (functional floodplain)	Exception Test Required	×	×	×	√
	√ Development is appropriate × Development should not be permitted.					

3.2 Site Specific NPPF Flood Risk Categorisation

To assess the NPPF flood risk classification for the site, the Government web based 'Flood Map for Planning' is reviewed, the flood map identifies the probability of flooding from rivers or sea (not taking into account the presence of flood defences). The Government web based 'Long Term Flood Risk Assessment for Locations in England' was also used to identify the flood risks from rivers and seas, surface water and reservoirs. The Flood Map for Planning and surrounding areas is shown in Figure 7 below, which shows the proposed development is located within Flood Zone 1.

3.3 Site Specific Flood Zone Compatibility

The proposed development sits within Flood Zone 1. Meaning there is a low probability of annual flooding from rivers and sea.

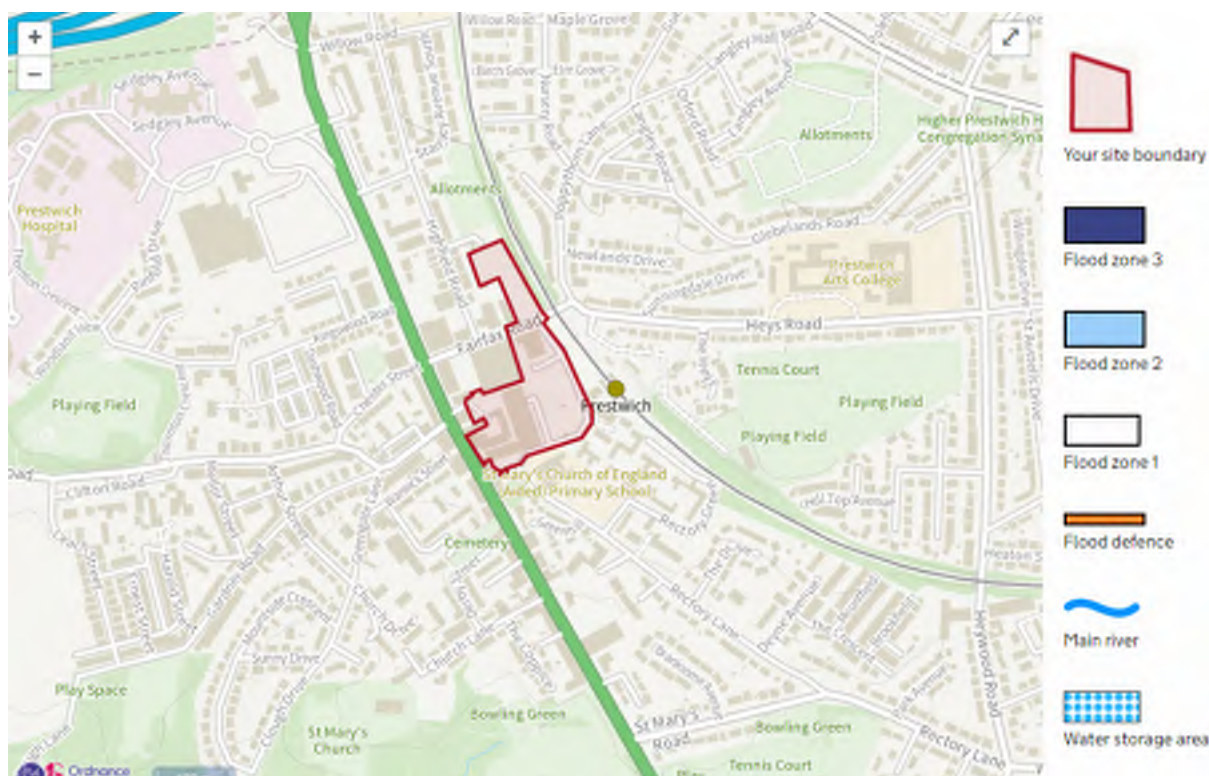


Figure 7 Extract from Flood Maps for Planning.Gov

3.4 Greater Manchester Strategic Flood Risk Assessment (SFRA) 2019

The Greater Manchester SFRA for Bury states:

"Development should be designed so that there is no flooding to the development in a 1 in 30 AEP event and no property flooding in a 1 in 100 year plus climate change event, "

4. Flood Risk Assessment

The potential sources of flooding to the development have been assessed and are discussed below.

4.1 Tidal/Fluvial Flooding (Rivers and Sea)

From the Government flood map for planning:

- Where a site is located in a dark blue shaded zone, this indicates that the site is within Flood Zone 3 where there is a chance of flooding of 1 in 100 (1%) or greater.
- Where a site is located in a light blue shaded zone; this indicates that the site is within Flood Zone 2 where there is a chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%).
- Where a site is located in a white (unshaded) area, it is generally deemed to be classified as Flood Zone 1 where there is a chance of flooding of less than 1 in 1000 (0.1%).

The 'Flood Map for Planning' shown in Figure 8 indicates a very low probability of annual flooding from rivers and sea.

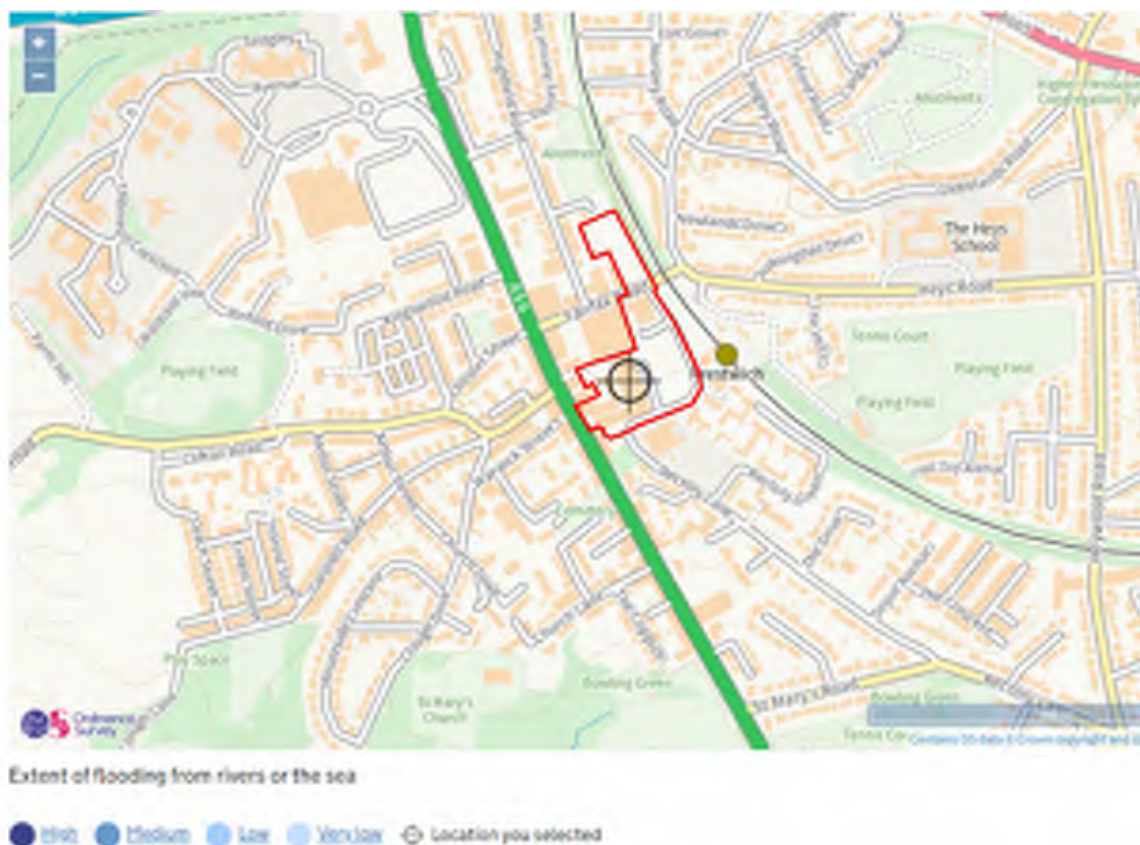


Figure 8 Flood Risk Map from Rivers and Sea

4.2 Reservoir Flooding

Reservoir flooding is extremely unlikely to happen and there has been no recorded loss of life in the UK from reservoir flooding since 1925. The closest reservoir to the site is Heaton Park Reservoir which is located circa 1.24km northeast of the site, therefore the risk of flooding is considered to be low. The Environment Agency is the enforcement authority and ensures that reservoirs are inspected regularly, and essential safety work is carried out.

4.3 Groundwater Flooding

According to the desk study produced by GEA, "groundwater is likely within the glaciofluvial deposits and Hummocky Glacial Deposits, flowing in a southerly direction towards Prestwich Bank." The site is not located within a Groundwater Source Protection Zone and is located within an area with limited potential for groundwater flooding to occur. Groundwater will be further assessed through ground investigations and if deemed to be a potential issue to either the construction works or the completed development then mitigation measures will be put in place, which will form part of a remediation strategy and which can be secured by a suitably worked planning condition.

4.4 Surface water Flooding to the site

Surface water flooding can be caused when rainwater, during extreme rainfall events, does not drain away through the normal drainage system or soak into the ground. Surcharging sewers can result in overland flows which if originating at a higher elevation than a development site can potentially pose a flood risk.

Surface water flooding is dependant primarily on topography which dictates either the flow path of overland flow which is not contained within public sewers, or areas in which ponding may occur. Surface water flooding is more difficult to predict than the risk of flooding from Rivers or Sea as it is dependent on the amount of rain which will fall in a very localised area, the specific topography of that region and the capacity and functionality of the drainage network within that section.

From the UK Government's Flood Risk from Surface Water (extent of flooding) map.

- Where a site is in a dark blue shaded zone, this indicates that the site is at high risk of flooding where there is a chance of flooding of greater than 1 in 30 (3.3%).
- Where a site is in a mid-blue shaded zone, this indicates that the site is at medium risk of flooding where there is a chance of flooding of between 1 in 100 (1%) and 1 in 30 (3.3%).
- Where a site is in a light blue shaded zone; this indicates that the site is at low risk of flooding where there is a chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%).
- Where a site is in a white (unshaded) area; this indicates that the site is at very low risk of flooding where there is a chance of flooding of less than 1 in 1000 (0.1%).

The Extent of flooding to the site from surface water is indicated in Figure 9 below. It shows the majority of the site to be at very low to low risk with a section of Fairfax Road within the medium risk zone.



Figure 9 Surface Water Flood Risk Map

4.5 Surface Water Flooding from the Site

Developers are responsible for ensuring that a new development does not increase flood risk elsewhere. The proposed surface water drainage network has been designed to not flood for the critical 1 in 30-year storm event, which is discussed further in Section 5.3 of this report. Flood water generated up to the critical 1 in 100-year plus climate change storm event shall be managed on site on site so as not to cause damage to buildings, essential services or adjoining developments and services.

With the addition of soft planted areas, the proposed site has a reduced impermeable area of circa 5% compared to the existing site.

4.6 Summary of Flood Risk

From the evidence collated, the flood risk proposed to the development can be summarised as follows:

- Rivers and Sea – Very low risk
- Reservoir – Low Risk
- Groundwater – Low risk
- Surface Water – Low Risk

5. Surface Water Management Strategy

5.1 Existing site/Pre-development Runoff

The existing drainage around the development consists of a UU combined sewer along Fairfax Road, Rectory Lane and to the west of the site, this is as described in Section 2.4 of this report and as shown in Figure 3, within that Section. Within the site there are surface and combined water drainage runs servicing the existing buildings and car parks, and surveys indicate that these drainage runs discharge to the public sewer.

The existing brownfield runoff rate for the site has been calculated using a two-pipe network simulation using software packaged Causeway Flow to be 289l/s. A reduced discharge rate of 23l/s has been agreed with UU based on the existing greenfield rate for the site. A summary of consultation to date with UU and the LLFA can be located within Section 7 of this report.

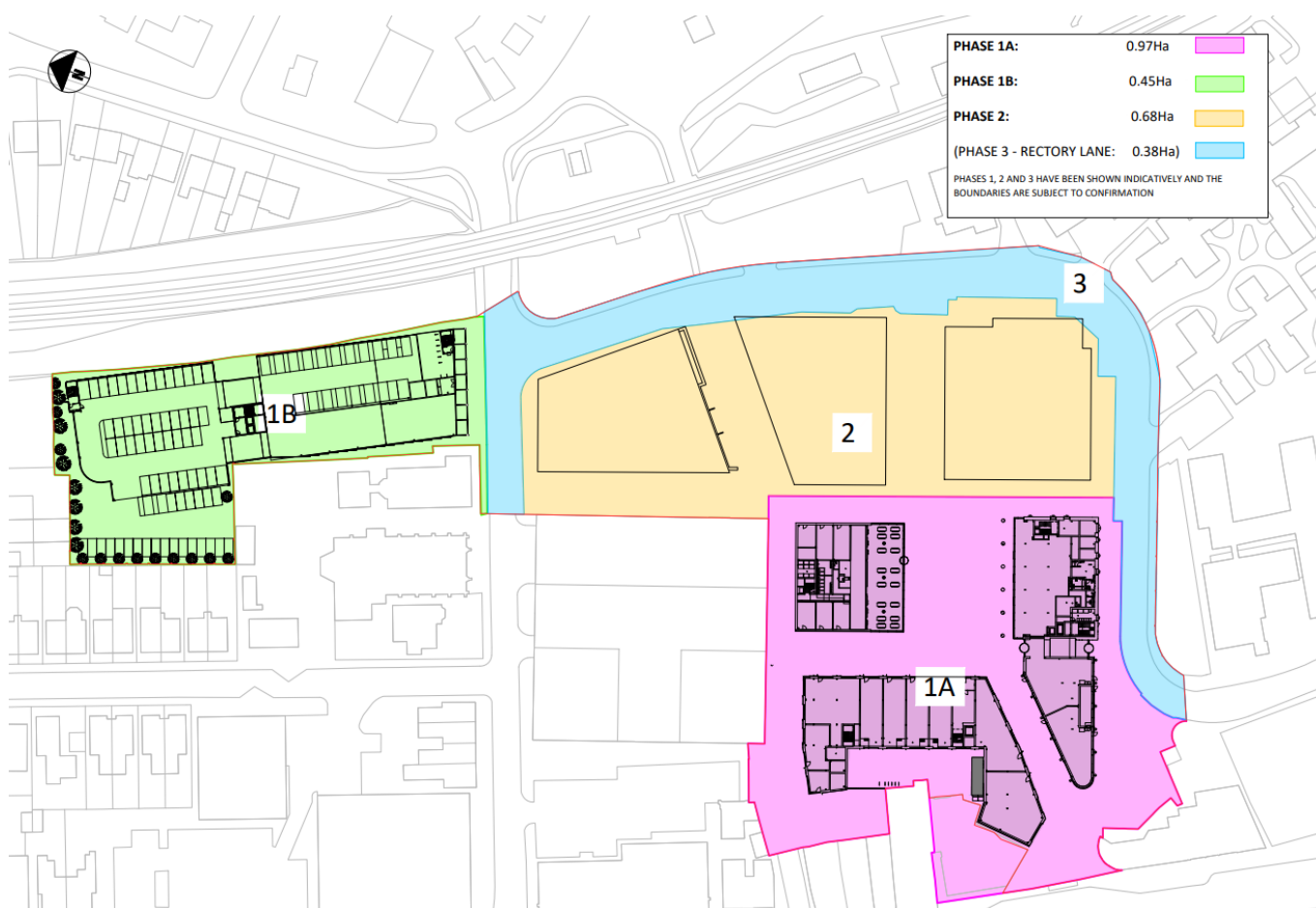


Figure 10: Proposed Indicative Construction sequence

Phase 1 drainage will be installed first with phase 1A restricted to 20l/s and phase 1B restricted to 3l/s, prior to discharging to the public network. Phase 1 A will be constructed with a stub connection at the head of the system located at the interface between phases 1A and 2, to allow for the future connection of the phase 2 drainage. When phase 2 surface water is constructed, it will also be restricted to 20l/s to ensure all storage components are utilised efficiently.

5.2 Drainage Hierarchy Points of Discharge

The Planning Practice Guidance Paragraph 080 states that:

"Generally, the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable:

1. into the ground (infiltration).
2. to a surface water body.
3. to a surface water sewer, highway drain, or another drainage system.
4. to a combined sewer."

Infiltration Potential Sustainable Drainage Systems (SuDS) Features to be Considered.

Initial investigation of BGS records indicate that there could be the potential for infiltration into the sandstone bedrock (although the depth of bedrock below ground level is currently unknown) or sand and gravel lenses beneath the site. Infiltration tests are being carried out on site at the time of writing this report to confirm if infiltration is feasible and if it is then there may be an opportunity to reduce the volume of surface water entering the public sewer through infiltration associated with some of the proposed drainage features such as raingardens or attenuation tanks. The infiltration testing is expected to be completed by December 2023.

Water Body

The closest statutory main river is the River Irwell, located approximately 1.6km southwest of the site. Heaton Park Reservoir is located approximately 1.25km northeast of the site. Due to the distance to these waterbodies, discharge by means of watercourse is unfeasible.

Surface Water Sewer

UU highlighted the presence of a culvert approximately 100m southwest of the site within private land. Due to the distance and third-party land ownership constraints, connection to the culvert has been determined to be unfeasible. Also, following review of historical mapping within the area, the culvert isn't indicated on the map.

The existing private surface water sewers within the site connect directly to the combined sewer system and are to be grubbed out and removed.

There are two short public surface water runs located in the southwestern and western corners of the site which discharge to the UU combined sewer. Due to existing site levels, it is not proposed to discharge to these surface water sewers.

Combined Sewer

It is proposed to discharge the foul and surface water networks to the existing UU combined sewer. Phase 1A will discharge to the combined sewer located in the southwestern corner of the site at a restricted rate of 20l/s and the network has been designed such that phase 2 could discharge into phase 1A. Phase 1B will discharge to the combined network within Fairfax Road at a restricted rate of 3l/s.

5.3 Proposed Surface Water Drainage Design

As the site was previously developed, surface water drainage from the site will be restricted such that it does not exceed the pre-development run off rates. Following consultation with UU a discharge rate of 23L/s has been agreed for the site, reducing the pre-development rate by approximately 90%.

In February 2016, the Environment Agency released updated climate change allowances for peak rainfall intensities which should be applied to new developments. Figure 11 below demonstrates the climate change allowances with central and upper end allowances being considered.

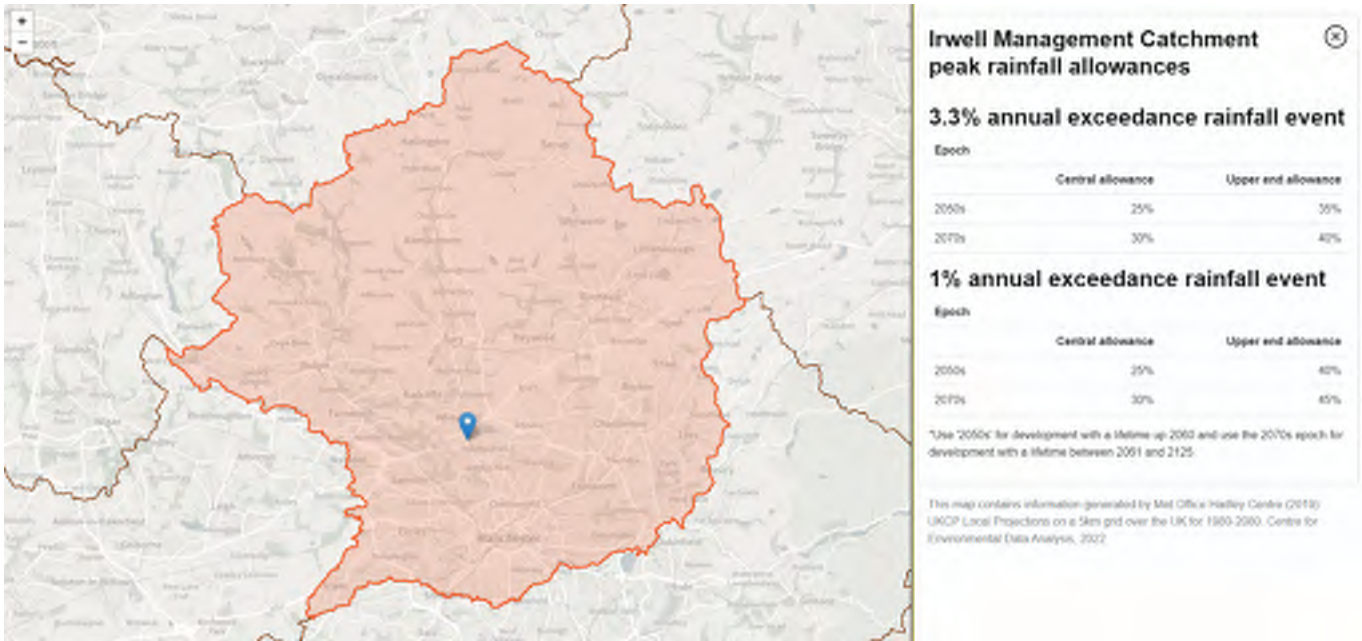


Figure 11: Climate change allowances for peak rainfall intensities for the site

Based on the nature of the development, a lifespan in excess of 60 years is anticipated. The potential climate change allowance for 2070 and onwards ranges between 30% for the central allowance and 45% for the upper end allowance. As such the design will consider an allowance of 45% climate change on peak rainfall intensity calculations.

It is proposed to restrict the surface water runoff to 23 L/s. Based on this requirement, surface water storage features will be required to accommodate the attenuated water. The storage features will be in the form of attenuation tanks, rain gardens and tree pits. The necessary on-site attenuation volume in order to achieve the restricted rate of 23L/s is circa 1100 m³.

A drainage strategy has been produced showing proposed drainage connection points and layouts incorporating attenuation. This can be found within Appendix D, along with the proposed catchment plan. The drainage design has been developed in detail for Phase 1A and 1B (refer to Figure 10). Phases 2 and 3, outlined in Figure 10, form part of the outline application area, so the drainage design has not been developed in detail for these phases although the drainage to Phase 1A has been designed such that it can manage flows from Phase 2 and 3.

5.4 Sustainable Urban Drainage Systems (SuDS)

Where possible the site drainage will look to utilise SuDS features. Section 1.1 of the SuDS Manual (Ciria C753) states the following:

"Sustainable drainage systems (SuDS) can deliver multiple benefits.

Surface water is a valuable resource, and this should be reflected in the way it is managed and used in the built environment. It can add to and enhance biodiversity, beauty, tranquillity and the natural aesthetic of buildings, places and landscapes and it can help make them more resilient to the changing climate.

The philosophy of sustainable drainage systems is about maximising the benefits and minimising the negative impacts of surface water run-off from developed areas.

The SuDS approach involves slowing down and reducing the quantity of surface water runoff from a developed area to manage downstream flood risk and reducing the risk of that runoff causing pollution. This is achieved by harvesting, infiltrating, slowing, storing, conveying, and treating runoff on site and, where possible, on the surface rather than underground. Water then becomes a much more visible and tangible part of the built environment, which can be enjoyed by everyone."

The SuDS Manual describes the four pillars of SuDS design as Water Quality, Water Quantity, Amenity and Biodiversity as illustrated in Figure 12 below.

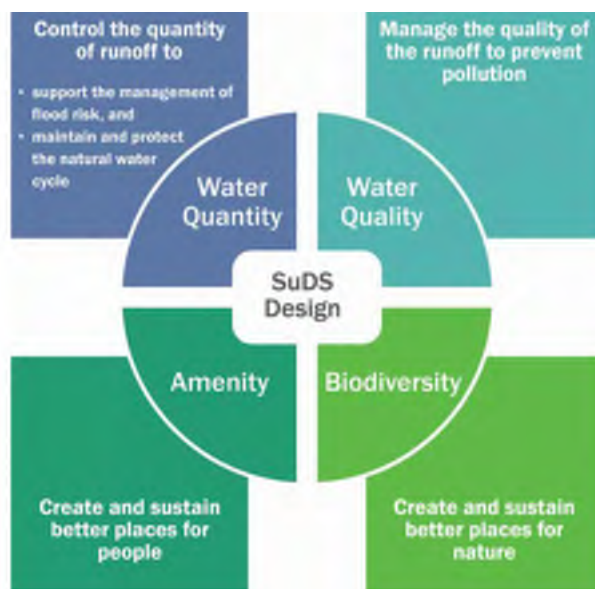


Figure 12: Sustainability Development Objectives (Representation of figure 2.1 of the SuDS Manual)

Where possible, SuDS are to be incorporated into the post development design to reduce the surface water run-off rates. Various SuDS methods have been summarised in Table 2 below to assess and establish which are most feasible for the proposed post development site.

Table 2: SuDS Sustainability Assessment

Feature	Type	Advantages with this site
Currently Proposed		
Rain Gardens	At Surface	Rain gardens will provide amenity and biodiversity benefits as well as providing treatment and surface water attenuation.
Tree pits	At surface	Tree pits provide amenity, biodiversity, treatment, and small amounts of attenuation benefits.
Green roofs	Above Ground	Green roofs will form part of the building structure and store runoff from the large roofs. Generally, they will also provide benefits such as energy saving in terms of temperature control within buildings, noise reduction, biodiversity, and improved air quality. They also have the ability to remove up to 80% of rainwater through evapotranspiration.
Tanked/Geocellular Attenuation systems and oversized pipes.	Below Ground	Tanked attenuation systems provide high storage capacity and can be incorporated beneath road pavements and under landscaping, they do not provide any direct biodiversity or amenity benefits.
Other features that have been considered		
Basins and Ponds – Above Ground storage	At Surface	Basins and ponds increase biodiversity and amenity of the area; provide attenuation; and improve water quality. This method does occupy large areas of developable land and needs to be constructed at the lower levels of the site. Given the town centre location there is minimal external space around the proposed buildings and proposed public realm, basins and ponds are not feasible.
Swales	At Surface	Swales can be used adjacent to any impervious surfaces to collect surface water run off at source. They also provide additional benefits such as amenity and biodiversity opportunities. Again, due to the minimal external space around the proposed buildings and proposed public realm, swales are not feasible within Phase 1 of the development.
Blue Roofs	Above Ground	Blue roofs have the availability to potentially store higher volumes than green roofs but do not provide any direct biodiversity or amenity benefits and as such have not been pursued over other methods that have been proposed.
Permeable Paving	At Surface	Permeable Paving removes the requirement to provide entry points (gullies etc.), provides pollution treatment and allows water to be stored within aggregate sub-base. Consideration has been given to the use of permeable paving. The primary

		constraint at this stage is that UU have advised that permeable paving should not be constructed above or in the vicinity of adoptable sewerage.
--	--	--

The surface water run-off from the site will be from roofs and residential streets and as such the risk of contamination and suspended silts/debris being present within surface water will be low. Maintenance of SuDS will be the responsibility of the developer/operator of the development.

6. Proposed Foul Water Drainage

The hierarchy for foul water drainage disposal is set out in Part H of the Building Regulations; in order of priority the preferred methods are:

1. Public sewer
2. Septic tank
3. Cesspool.

The new foul drainage network is proposed to connect to the public sewer.

The foul water system shall be designed in accordance with;

- BS EN 752:2008 (Drain and sewer systems outside buildings)
- Sewers for Adoption (6th Edition)
- Technical Guidance to the National Planning Policy Framework document (Department for Communities and Local Government, March 2012).
- BS EN 12056-2:2000 (Drainage systems inside buildings)
- Building Regulations Approved Document H, Drainage, and waste disposal. (Office of the Deputy Prime Minister, December 2010).

Any connection to the public sewer is subject to formal agreement with United Utilities under Section 106 of the Water Industry Act 1991.

A Pre-Development Enquiry (PDE) was issued to UU on the 8th June 2023. UU responded to confirm acceptance of the point of connection to the existing combined manhole in the western corner of the site. On the condition that all proposed manhole chambers are higher than the receiving public sewer. The foul water drainage design can be found in Appendix D.

7. Consultation to date

A pre-planning consultation response was issued by UU to Bury Council on the 21st of June 2023. The primary points raised are scheduled below along with Civic Engineers' response.

Points Raised by UU	Civic Engineers' Response
Flood Risk: We request that the applicant has regard to all forms of flood risk in the preparation of the masterplan and detailed design of the site	This report explores all possible forms of flooding posing risks to the site and any mitigations required.
Drainage: UU advised that a culverted watercourse at 1-6 Sherbourne Court which could be a potential point of discharge.	Review of historic maps indicate no culvert present at 1-6 Sherbourne Court. Further review of UU asset maps indicates the culvert to be circa 100m from the site and located within private land. Therefore, due to distance and third part land constraints discharge to the culvert has been ruled as unfeasible.
Sustainable Drainage: The drainage design should explore opportunities for surface water management improvements through the use of SuDS	The design incorporates the use of rain gardens, landscaping, and green roofs. A SuDS sustainability assessment can be found in Table 3 within section 5.4 of this report.
Management and Maintenance of Drainage Systems If the applicant intends to offer wastewater assets forward for adoption by United Utilities, their proposed detailed design will be subject to a technical appraisal by our Developer Services team and must meet the requirements outlined in 'Sewerage Sector Guidance Appendix C	The drainage has been designed to meet the requirements outlined in the Sewerage Sector Guidance Appendix C and the S104 pre application has been issued to UU for comment.
UU Property, Assets, and Infrastructure Where United Utilities' assets cross the proposed red line boundary, developers must contact our Developer Services team prior to commencing any works on site, including trial holes, groundworks, or demolition	The proposals have been developed to take cognisance of all existing UU assets identified within and adjacent to the site and access maintained similarly to the existing scenario or improved where feasible. Appropriate procedures will be followed to inform UU of any assets that have been identified that are required to be abandoned or diverted
Water Pipelines United Utilities will not allow building over or in close proximity to a water main	A preliminary Infrastructure Assessment has been carried out by Hilson Moran identifying existing water mains servicing the site to ensure the proposals will not impact on any UU assets. A C3 Enquiry has been submitted and response provided by UU relating to the proposed diversion of a UU water main within the site boundary,

Further correspondence with UU and the LLFA

A Pre-Development Enquiry was issued to UU and the LLFA by Civic Engineers on the 8th of June 2023.

UU provided a response that was received on the 19th of June which can be located in Appendix E of this report. The response from UU proposed a discharge rate of 23l/s for the entire site. In response to this Civic issued a package of drawings to UU on the 10th of October demonstrating that the existing site currently drains to the public network.

An S104 Pre-Application enquiry was issued to UU on the 6th of October highlighting the drainage proposed for adoption and the drainage features that are proposed to remain private. A response was received on the 18th October 2023, which can be located within Appendix E. In summary, UU confirmed that in principle they would accept sustainable drainage (besides tree pits which will have to remain private) discharging to the public network at a restricted rate, providing infiltration has been discounted for. A full S104 application will be issued to UU in due course.

Correspondence was received from Bury Council LLFA on the 21st of June 2023 stating:

"Our standard requirements for development sites are no flooding to 1:100 + 40% CC with no increase in discharge rates to the sewer if a connection is required and preferably a reduction achieved overall."

As such, the surface water network has been designed to not flood for the 1 in 100-year event plus 45% climate change and the proposed discharge rate is lower than the existing scenario.

8. Conclusions

The development is located within in Flood Zone 1 and is within the low-risk area for reservoir, rivers and sea, groundwater, and surface water flooding.

- Rivers and Sea – Very low risk
- Reservoir – Low Risk
- Groundwater – Low risk
- Surface Water – Low risk

There are no historic borehole records located within the site boundary, however the GEA Desk Study found the existing geology of the site is likely to consist of sandstone bedrock overlain by clays, sands, and gravels which in turn are overlain by made ground. Based on the presence of sandstone bedrock and sand and gravels, infiltration could be feasible and further investigations are underway which include infiltration testing to confirm.

There are no watercourses within the immediate vicinity of the site. The site is currently served by a combined sewer and as such the intention is to replicate the existing regime discharging to the combined sewer but at a reduced rate.

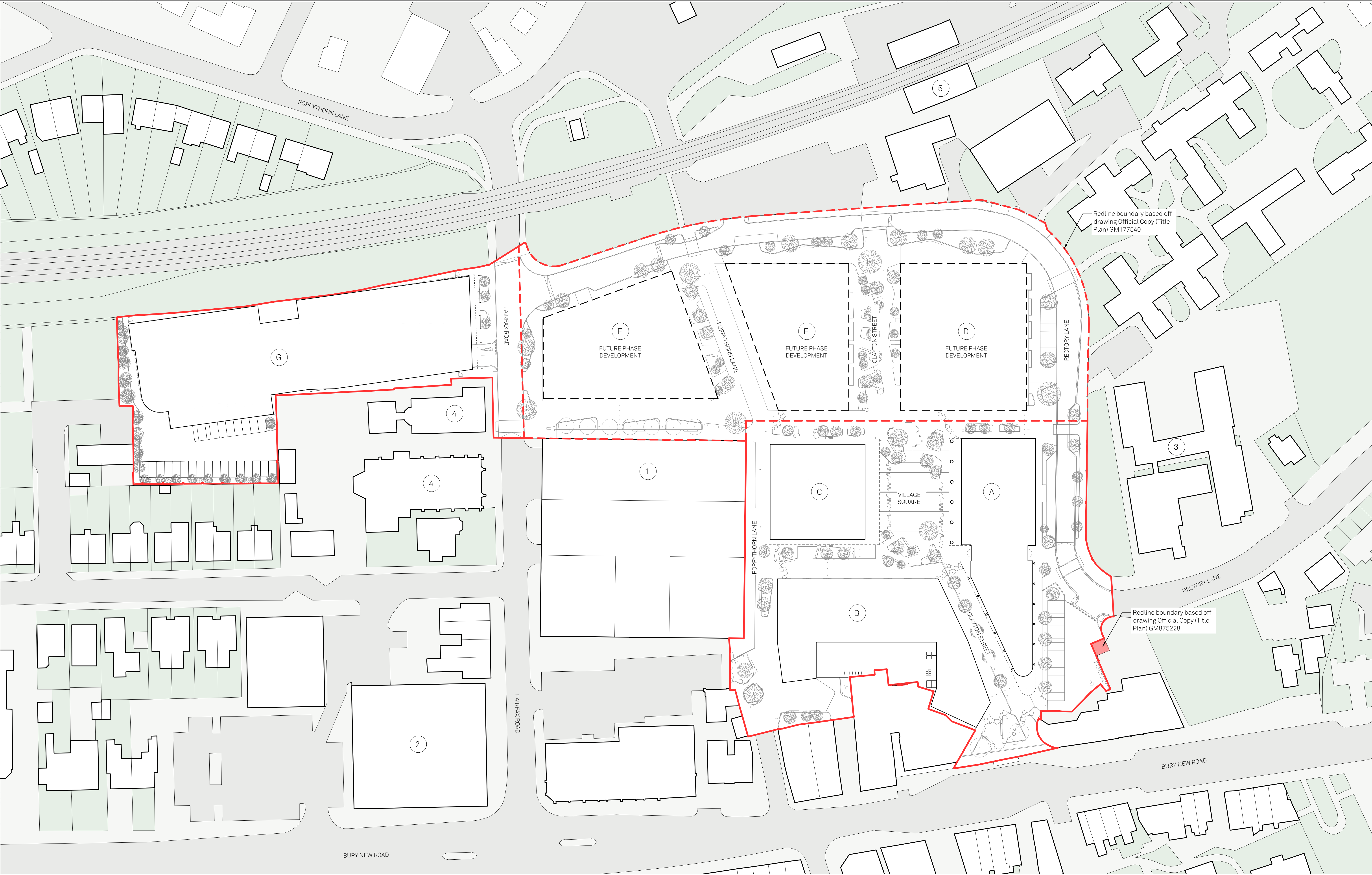
The site impermeable area will be reduced with the addition of soft landscape areas.

A discharge rate of 23l/s has been proposed and approved by UU to discharge the surface water to the UU combined sewer, which also meets the LLFA requirement of a reduced discharged rate.

The proposed drainage network has been designed to accommodate run off from the 1 in 100yr + 45% climate change event.

Appendix A

Ground Floor Proposed Site Plan by John Mathews Architects (207-JMA-MP-00-DR-A-001400)



MASTERPLAN KEY

- EXTENT OF FULL APPLICATION
- EXTENT OF OUTLINE APPLICATION SITE BOUNDARY

PROPOSED PLOTS

- A PLOT A - COMMUNITY HUB
- B PLOT B - RETAIL HUB
- C PLOT C - MARKET HALL
- G PLOT G - MSCP
- D PLOT D - RESIDENTIAL BLOCK
- E PLOT E - RESIDENTIAL BLOCK
- F PLOT F - RESIDENTIAL BLOCK

EXISTING KEY BUILDINGS

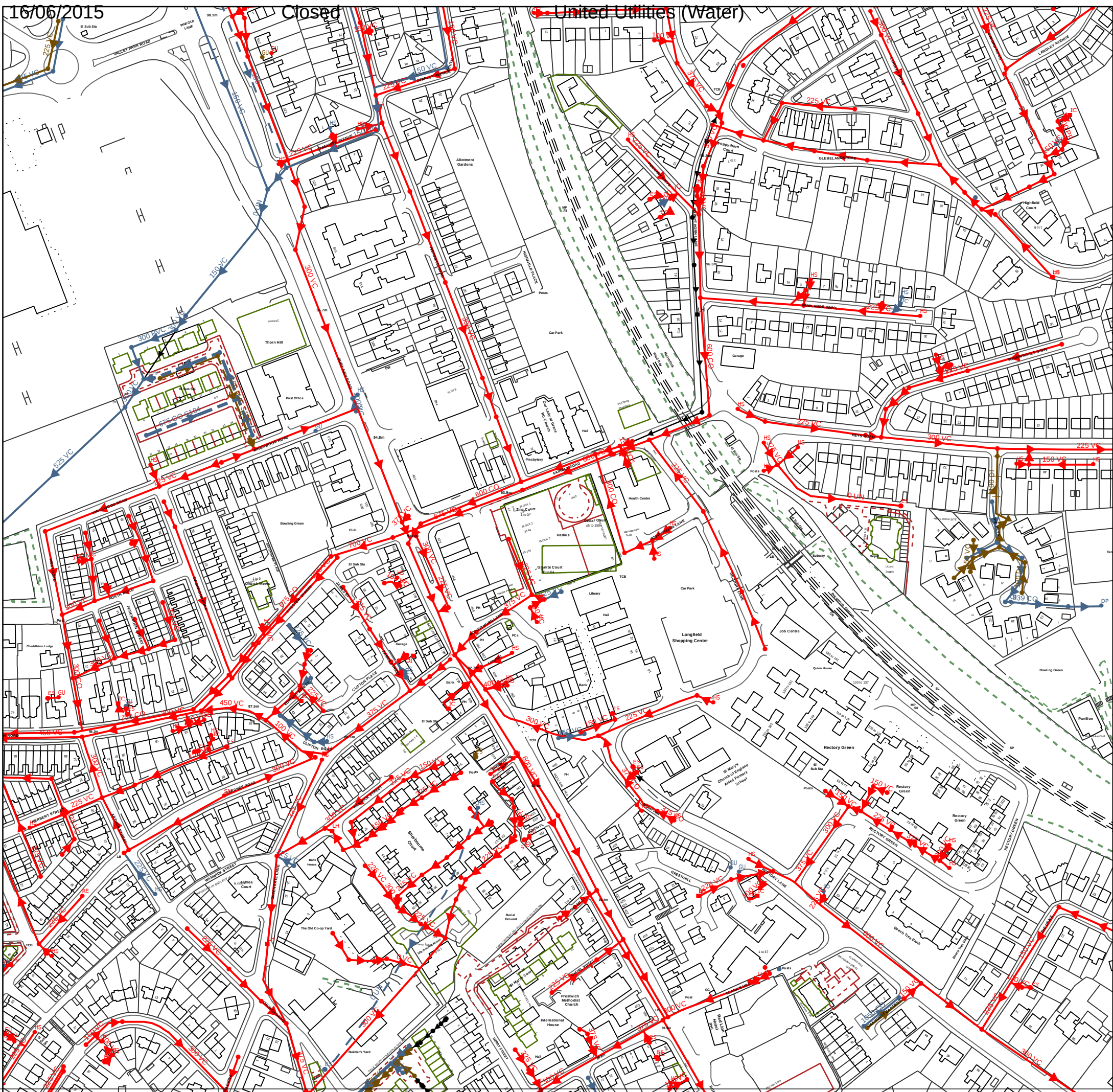
- 1 THE RADIUS
- 2 MARKS & SPENCER
- 3 SCHOOL
- 4 CHURCH
- 5 PRESTWITCH TRAM STOP

Appendix B

UU Asset Map

CCTV Survey

GPR Survey



Extract from Map of Public Sewers

The position of underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available.

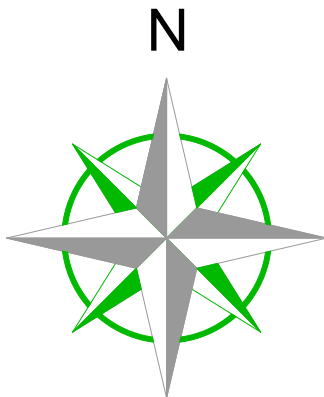
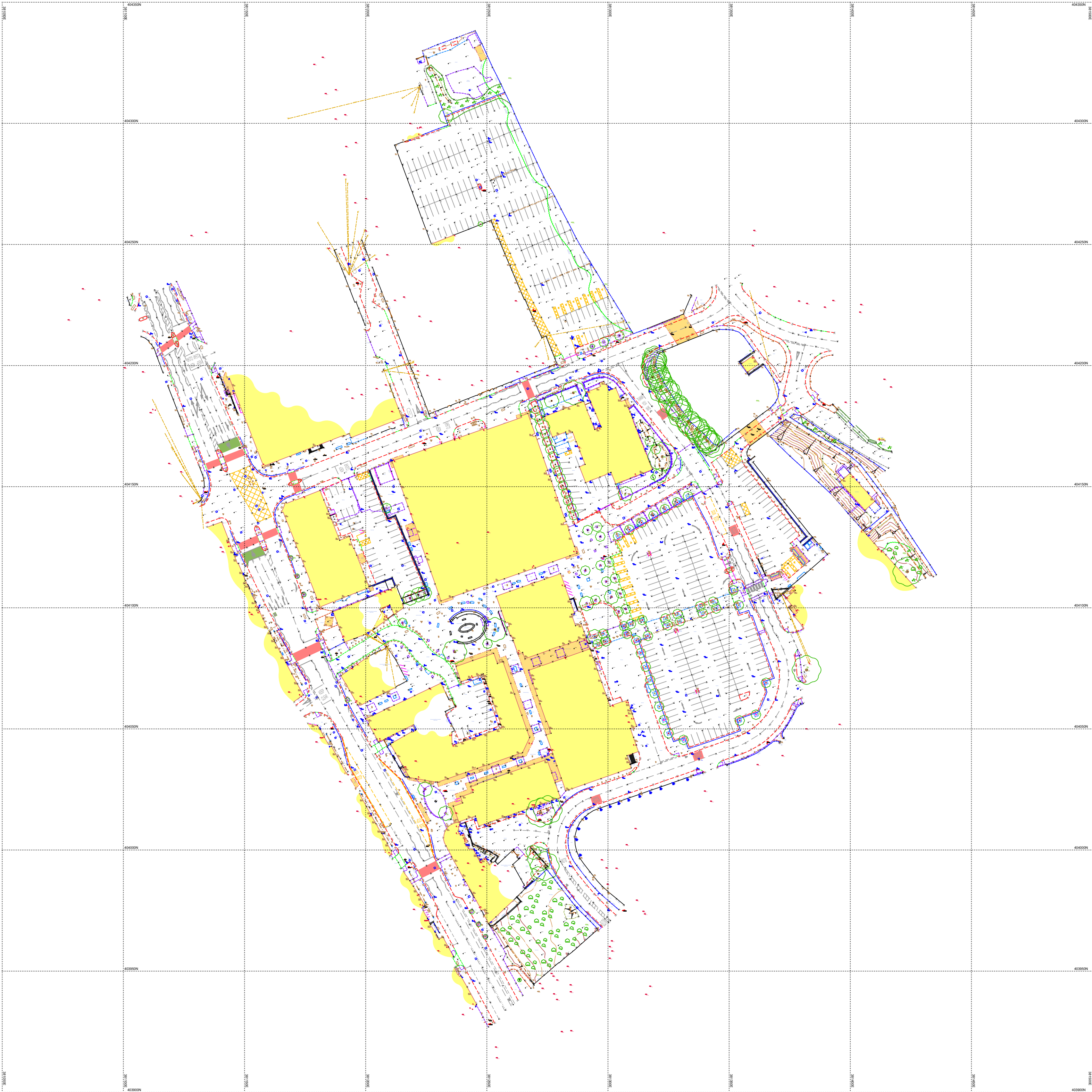
The actual positions may be different from those shown on the plan and private pipes, sewers or drains may not be recorded.

United Utilities will not accept any liability for any damage caused by the actual positions being different from those shown.

United Utilities Water Limited 2014.
The plan is based upon the Ordnance Survey Map with the sanction of the Controller of H.M. Stationery Office.Crown and United Utilities copyrights are reserved. Unauthorised reproduction will infringe these copyrights.

LEGEND

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



Station Information:

Station	Easting (m)	Northing (m)	Level (m)
GH1	381306.129	403974.985	95.300
GH2	381250.810	403928.069	91.736
GH3	381219.135	403992.899	92.484
GH4	381186.496	404050.750	92.585
GH5	381134.708	404148.089	93.902
GH6	381223.527	404167.919	94.001
GH7	381302.698	404210.054	93.754
GH8	381347.733	404126.615	94.660
GH9	381365.742	404043.859	96.126
GH10	381271.242	404011.805	94.563

OS Note:
Some services may have been omitted due to parked vehicles.
The Ordnance Survey file is to be used as a guide only.

OS Buildings  Surveyed Buildings 

This survey has been orientated to the Ordnance Survey (O.S.) National Grid OSGB36(15) via Global Navigation Satellite Systems (GNSS) and the O.S. Active Network (OS AN).

A true OSGB36 coordinate has been established near to the site centre via a transformation using the OSTN15GB & OSGM15GB transformation models.
The survey has been correlated to this point and a further one or more OSGB36 (15) points established to create a true O.S. bearing for angle orientation.

No scale factor has been applied to the survey therefore the coordinates shown are arbitrary & not true O.S. Coordinates which have a scale factor applied.
Please refer to Survey Station Table to enable establishment of the on-site grid and datum.

Legend:			
 Buildings	 Overhead Cables	 Drainage channel	 Road
 Road	 Trench edge	 Pipe trench	 Boundary
 Level	 Trench edge	 Gully	 Boundary
 Level	 Trench edge	 Gully	 Boundary
 Level	 Trench edge	 Gully	 Boundary
 Level	 Trench edge	 Gully	 Boundary
 Level	 Trench edge	 Gully	 Boundary
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 Level	 Trench edge	 Gully	 Boundary
 Level	 Trench edge	 Gully	 Boundary
 Level	 Trench edge	 Gully	 Boundary

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Rev	Date	Description	Drawn	O. Ref.
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- ☐ Topographical Surveys
- ☐ Site Engineering
- ☐ Utility / CCTV Surveys
- ☐ Measured Building Surveys
- ☐ 3D Laser Scanning
- ☐ Revit & BIM Models

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CLIENT
The Prestwich Regeneration LLP

PROJECT
Prestwich Village
Prestwich
Manchester

TITLE
Topographical
Survey

SCALE		DATE	
A1@ 1: 1000		Feb 23	
DRAWN		QUALITY REF	
JC		GH16190	

Level datum	See notes
Grid orientation	See notes

Job number	46382
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Drawing No.	46382_T	Rev.	0
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Comments
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All dimensions should be checked on site prior to design and construction.
Drainage information (where applicable) has been visually inspected from the surface and therefore should be treated as approximate only.
Notes:



Station	Easting (m)	Northing (m)	Level (m)
GH1	381306.129	403974.985	95.300
GH2	381250.810	403928.069	91.736
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GH4	381186.496	404050.750	92.585
GH5	381134.708	404148.069	93.902
GH6	381223.527	404167.919	94.001
GH7	381302.698	404210.054	93.754
GH8	381347.733	404126.615	94.660
GH9	381385.742	404043.859	96.126
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[illegible]

Rev	Date	Description	Drawn	Q. Re
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- Topographical Surveys
- Site Engineering
- Utility / CCTV Surveys
- Measured Building Surveys
- 3D Laser Scanning
- Revit & BIM Models

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CLIENT
The Prestwich Regeneration LLP

PROJECT

**Prestwich Village
Prestwich
Manchester**

Topographical Survey

SCALE A1@ 1: 500	DATE Feb 23
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<i>DRAWN</i> JC	<i>QUALITY REF</i> GH16190
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Level datum	See notes
Grid orientation	See notes

Job number	46382
Drawing No	Rev

46382_T	0
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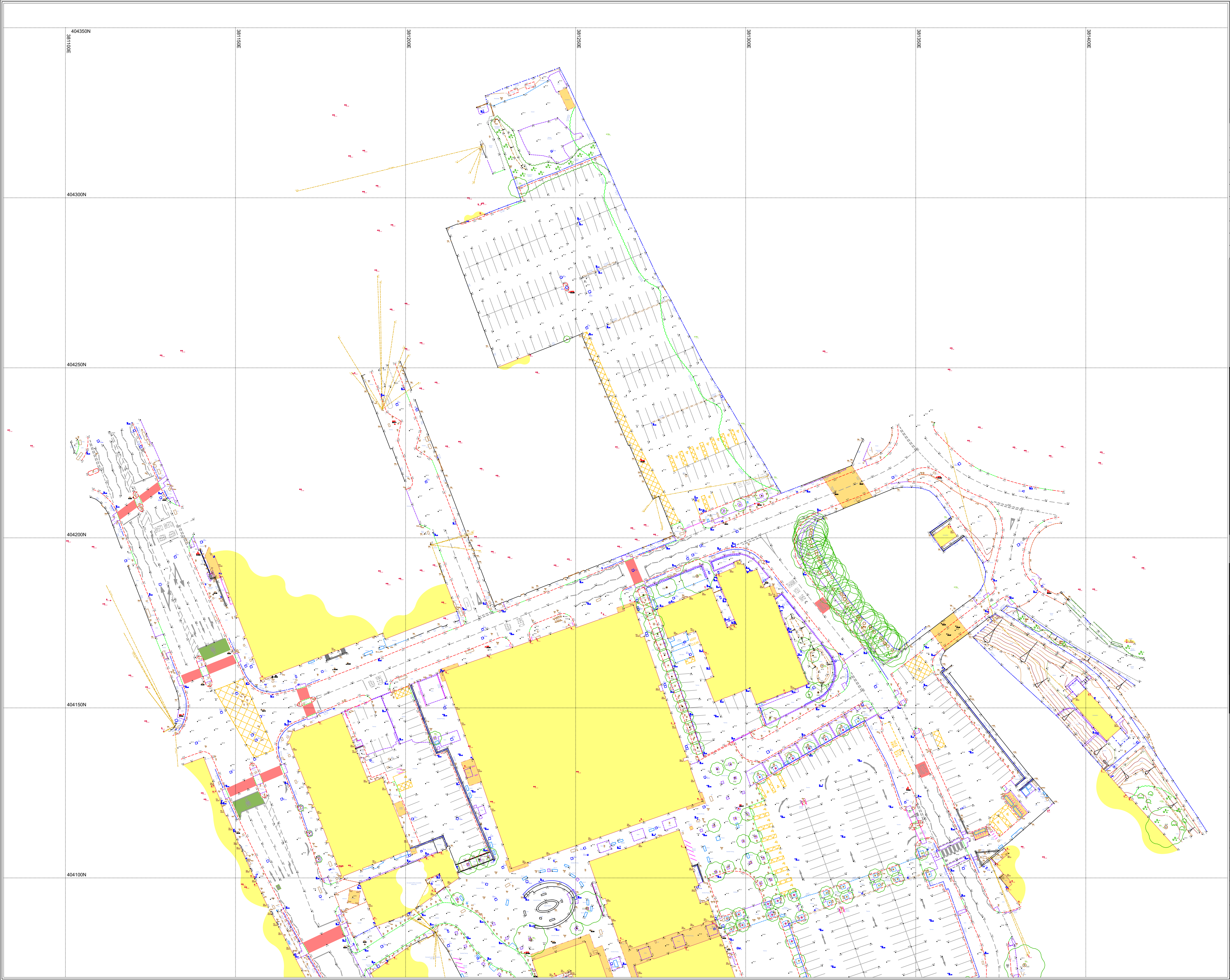
Comments

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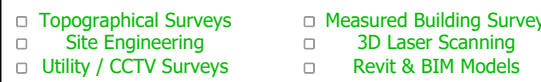
OS Buildings Surveyed Buildings

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[illegible]

Rev	Date	Description	Drawn	Q. Rev



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PROJECT

**Prestwich Village
Prestwich
Manchester**

Topographical Survey

SCALE A1@ 1: 500	DATE Feb 23
DRAWN JC	QUALITY REF GH16190

Level datum	See notes
Grid orientation	See notes

Job number	46382
Drawing No.	46382_T
Rev.	0

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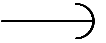
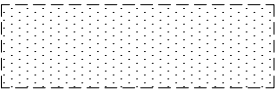
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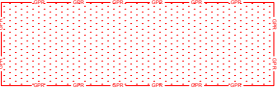
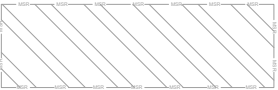
UTILITY LINETYPES

Air Line	
British Telecom	
British Telecom Overhead	
CCTV / Cable Television	
Communication Cable	
Drainage - Combined Water	
Drainage - Foul Water	
Drainage - Storm Water	
Drainage - Unknown Water	
Drainage - Trade Effluent Water	
Drainage - Combined Water - Assumed/TFR	
Drainage - Foul Water - Assumed/TFR	
Drainage - Storm Water - Assumed/TFR	
Drainage - Unknown Water - Assumed/TFR	
Drainage - Trade Effluent Water - Assumed/TFR	
Drainage - Approximate Pipe Size/Extents	
Earth Cable	
Empty Duct	
Electric & Comms	

Electric Low Voltage	
Electric High Voltage	
Electric - Unknown Voltage	
Electric Overhead	
Fibre Optic	
Fuel Line	
Gas Line	
Gauge Line	
GPR Line	
Heating Pipes	
Offset Fills	
Oil Pipe	
Rising Main	
Telecom	
Traffic Light Signals	
Trench Scar	
Unknown	
Vapour Recovery	
Vent Line	
Water	

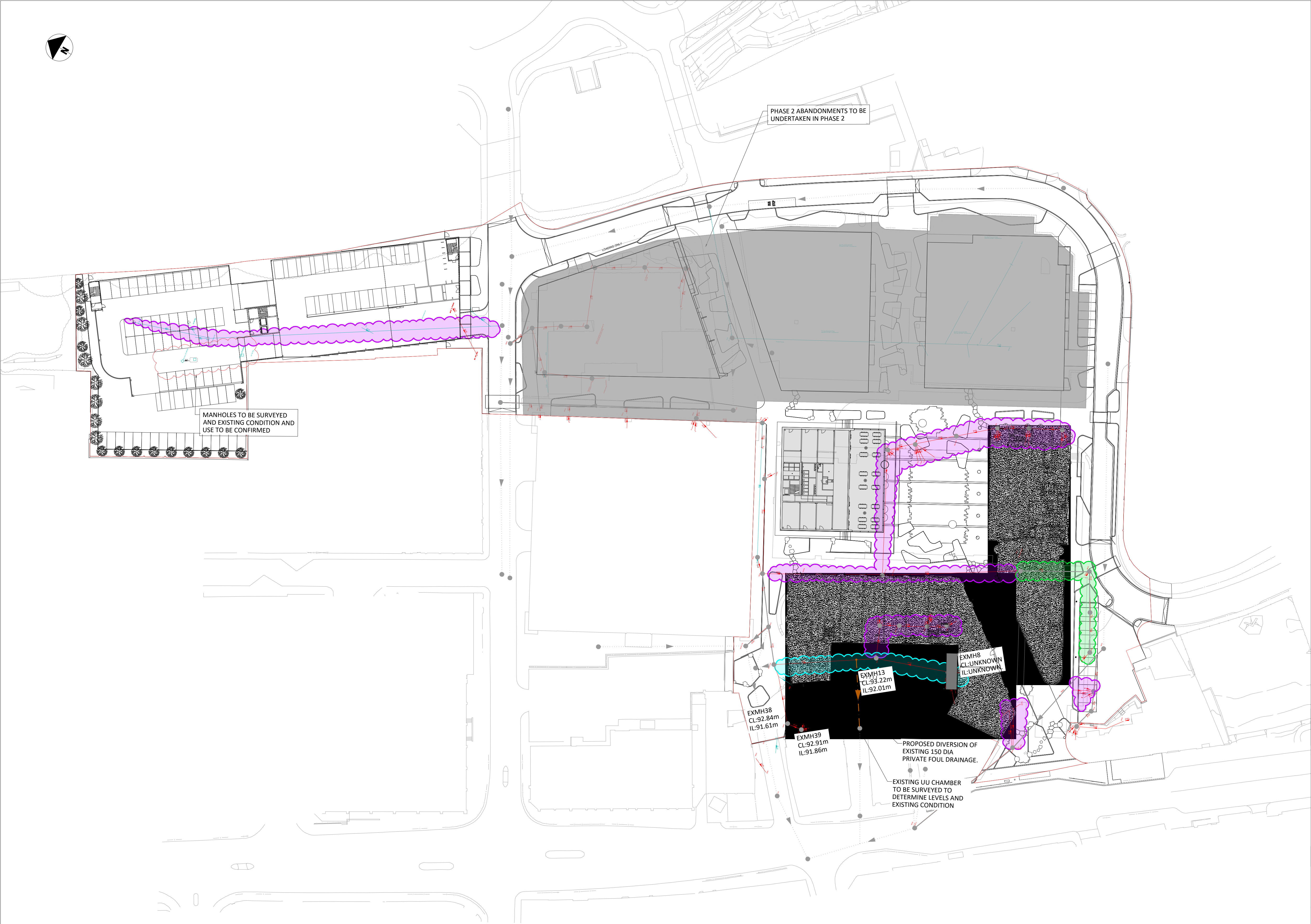
UTILITY SURVEY INFORMATION

Contracted Survey Area	
Depth to Top of Service (m)	0.40d
End of Trace	 EOT
Head of Run	HoR
Weak Signal	WS
Taken From Records	TFR
Off Survey Area	OSA
Back Drop	BD
Silt Level	SL
Above Ground	A/G
Unable to Locate	UTL
Unable to Survey	UTS
Unable to Raise (cover)	UTR
Unable to Trace	UTT
Unable to Survey	
Chamber Extents	

Assumed Route	AR
Assumed Connection	ACP
Sound Connection	S/C
Sonde Stopped	S/S
No Visible Access	NVA
No Visible Exit	NVE
No Visible Pipes	NVP
No Visible Services	NVS
No Depth Indicated	NDI
Base Level	BL
High Level	HL
Top of Pipe / Top of Valve	T.o.P / T.o.V
Landing Level	LL
Rubble Level	RL
Approximate Location	
GPR Anomaly	
Multiple Services Route	

Appendix C

2772-CIV-XX-XX-D-C-10030 – Existing Drainage Abandonment and Diversion Plan



- STANDARD NOTES
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT'S AND ENGINEER'S DRAWINGS AND THE SPECIFICATIONS.
 2. THIS DRAWING SHOULD NOT BE SCALED.
 3. ALL DIMENSIONS ARE TO BE VERIFIED BY THE CONTRACTOR ON SITE.
 4. ALL DISCREPANCIES SHOULD BE REPORTED TO C.A./E.A. PRIOR TO THE COMMENCEMENT OF WORKS.

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- NOTES:
- THE TOPOGRAPHICAL SURVEY WAS CARRIED OUT IN FEBRUARY 2023 BY GREENHATCH AND PROVIDED TO CIVIC ENGINEERS BY ASTEER IN DECEMBER 2023.
 - THE UU EXISTING DRAINAGE INFORMATION HAS BEEN SOURCED FROM A UNITED UTILITIES MAP OF PUBLIC SEWER EXTRACT, WHICH WAS PROVIDED TO CIVIC ENGINEERS IN MARCH 2023
 - THE SITE MASTERPLAN WAS PROVIDED BY PLANIT NOVEMBER 2023
 - THE CCTV SURVEY WAS PROVIDED TO CIVIC ENGINEERS BY CHROMA CONSULTING ON 06.09.23. INVERT LEVELS BASED ON DEPTH FROM COVER PROVIDED WITH CCTV

- KEY:
- SITE BOUNDARY
 - ASSUMED UU COMBINED SEWER LOCATION (TAKEN FROM UU ASSET MAP)
 - UU COMBINED SEWER (FROM CCTV/GPR SURVEY)
 - EXISTING SURFACE WATER SEWER (FROM CCTV SURVEY)
 - EXISTING COMBINED WATER SEWER (FROM CCTV SURVEY)
 - PROPOSED DIVERTED PRIVATE FOUL SEWER
 - PRIVATE DRAINAGE TO BE ABANDONED
 - PRIVATE DRAINAGE TO BE DIVERTED
 - PUBLIC SEWER TO BE ABANDONED
S116 AGREEMENT TO BE ISSUED

17.01.24	P04	UPDATED RLB	CER	PM
05.12.23	P03	REVISED NOTES FOR FRA	CER	CER
17.11.23	P02	FOR INFORMATION	CER	PM
06.11.23	P01	STAGE 3 ISSUE	CER	PM
DATE	REV	DESCRIPTION	DRAWN	CHKD



Civic Engineers

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www.civicingineers.com

PROJECT
MUSE, PRESTWICH

TITLE
EXISTING DRAINAGE
ABANDONMENT AND DIVERSION PLAN

DRAWING STATUS					STATUS CODE
INFORMATION					-
CE PROJECT No.	SCALE @ A1	DATE CREATED	DRAWN	CHECKED	
2772	1:500	13.10.23	CER	PM	
DRAWING No.				REV	
2772-CIV-XX-XX-D-C-10030				P04	

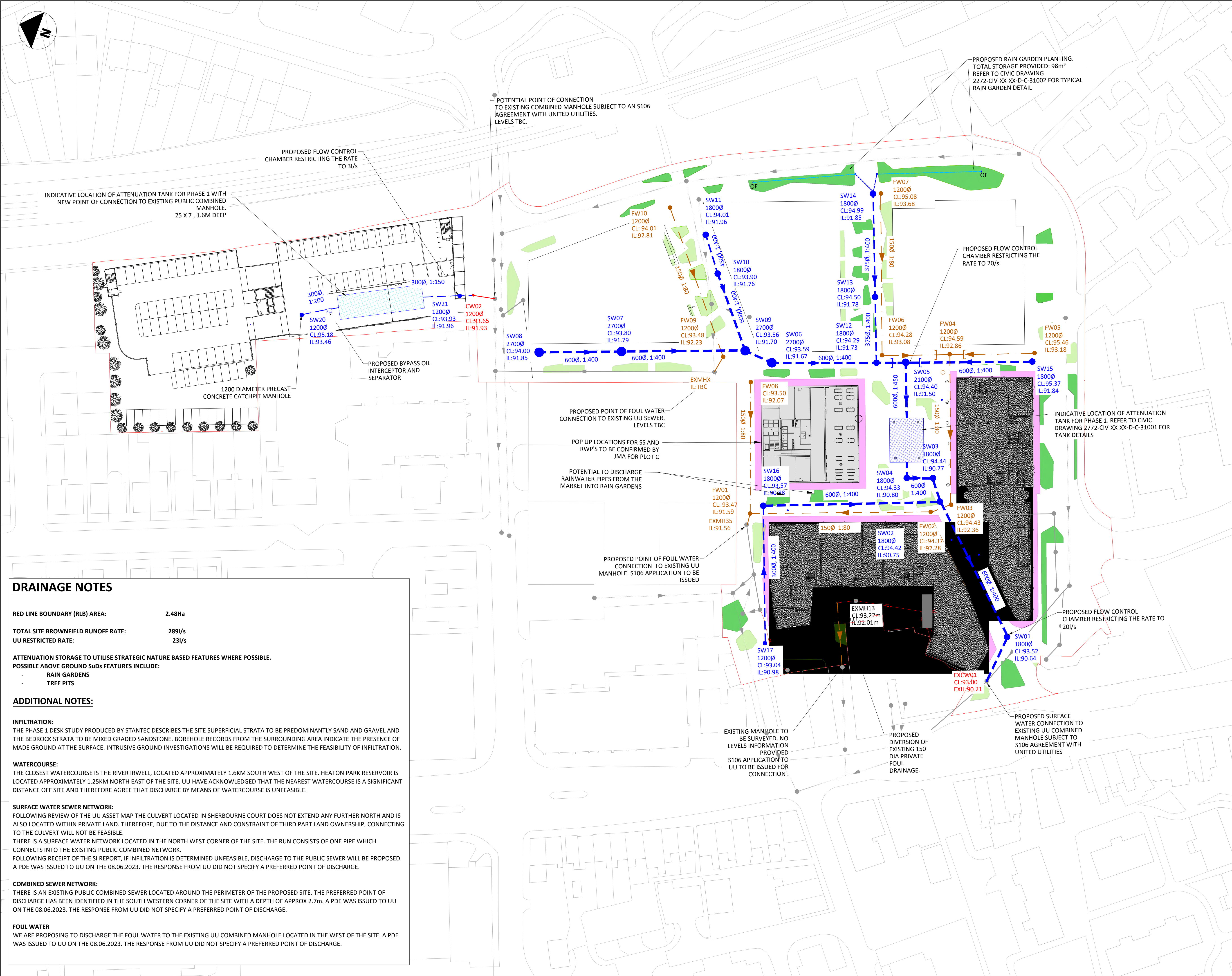
Appendix D

2772-CIV-XX-XX-D-C-30001 – Surface and Foul Water Drainage Strategy

2772-CIV-XX-XX-D-C-30002 – Surface and Foul Water Drainage Strategy Phasing

2772-CIV-XX-XX-D-C-30003 – Surface Water Drainage Strategy

2772-CIV-XX-XX-D-C-30004 – Foul Water Drainage Strategy



DRAINAGE NOTES

RED LINE BOUNDARY (RLB) AREA: 2.48Ha

TOTAL SITE BROWNFIELD RUNOFF RATE: 289l/s

UU RESTRICTED RATE: 23l/s

ATTENUATION STORAGE TO UTILISE STRATEGIC NATURE BASED FEATURES WHERE POSSIBLE.

POSSIBLE ABOVE GROUND SuDs FEATURES INCLUDE:

- RAIN GARDENS
- TREE PITS

ADDITIONAL NOTES:

INFILTRATION:

THE PHASE 1 DESK STUDY PRODUCED BY STANTEC DESCRIBES THE SITE SUPERFICIAL STRATA TO BE PREDOMINANTLY SAND AND GRAVEL AND THE BEDROCK STRATA TO BE MIXED GRADED SANDSTONE. BOREHOLE RECORDS FROM THE SURROUNDING AREA INDICATE THE PRESENCE OF MADE GROUND AT THE SURFACE. INTRUSIVE GROUND INVESTIGATIONS WILL BE REQUIRED TO DETERMINE THE FEASIBILITY OF INFILTRATION.

WATERCOURSE:

THE CLOSEST WATERCOURSE IS THE RIVER IRWELL, LOCATED APPROXIMATELY 1.6KM SOUTH WEST OF THE SITE. HEATON PARK RESERVOIR IS LOCATED APPROXIMATELY 1.25KM NORTH EAST OF THE SITE. UU HAVE ACKNOWLEDGED THAT THE NEAREST WATERCOURSE IS A SIGNIFICANT DISTANCE OFF SITE AND THEREFORE AGREE THAT DISCHARGE BY MEANS OF WATERCOURSE IS UNFEASIBLE.

SURFACE WATER SEWER NETWORK:

FOLLOWING REVIEW OF THE UU ASSET MAP THE CULVERT LOCATED IN SHERBOURNE COURT DOES NOT EXTEND ANY FURTHER NORTH AND IS ALSO LOCATED WITHIN PRIVATE LAND. THEREFORE, DUE TO THE DISTANCE AND CONSTRAINT OF THIRD PART LAND OWNERSHIP, CONNECTING TO THE CULVERT WILL NOT BE FEASIBLE.

THERE IS A SURFACE WATER NETWORK LOCATED IN THE NORTH WEST CORNER OF THE SITE. THE RUN CONSISTS OF ONE PIPE WHICH CONNECTS INTO THE EXISTING PUBLIC COMBINED NETWORK.

FOLLOWING RECEIPT OF THE SI REPORT, IF INFILTRATION IS DETERMINED UNFEASIBLE, DISCHARGE TO THE PUBLIC SEWER WILL BE PROPOSED. A PDE WAS ISSUED TO UU ON THE 08.06.2023. THE RESPONSE FROM UU DID NOT SPECIFY A PREFERRED POINT OF DISCHARGE.

COMBINED SEWER NETWORK:

THERE IS AN EXISTING PUBLIC COMBINED SEWER LOCATED AROUND THE PERIMETER OF THE PROPOSED SITE. THE PREFERRED POINT OF DISCHARGE HAS BEEN IDENTIFIED IN THE SOUTH WESTERN CORNER OF THE SITE WITH A DEPTH OF APPROX 2.7m. A PDE WAS ISSUED TO UU ON THE 08.06.2023. THE RESPONSE FROM UU DID NOT SPECIFY A PREFERRED POINT OF DISCHARGE.

FOUL WATER

WE ARE PROPOSING TO DISCHARGE THE FOUL WATER TO THE EXISTING UU COMBINED MANHOLE LOCATED IN THE WEST OF THE SITE. A PDE WAS ISSUED TO UU ON THE 08.06.2023. THE RESPONSE FROM UU DID NOT SPECIFY A PREFERRED POINT OF DISCHARGE.

STANDARD NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT'S AND ENGINEER'S DRAWINGS AND THE SPECIFICATIONS.
2. THIS DRAWING SHOULD NOT BE SCALED.
3. ALL DIMENSIONS ARE TO BE VERIFIED BY THE CONTRACTOR ON SITE.
4. ALL DISCREPANCIES SHOULD BE REPORTED TO C.A./E.A. PRIOR TO THE COMMENCEMENT OF WORKS.

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NOTES AND KEY:

1. THE LANDSCAPE MASTERPLAN WAS PROVIDED BY PLANTIE ON 05.10.23.
2. UNITED UTILITIES SEWER LOCATIONS HAVE BEEN SHOWN INDICATIVELY BASED ON INFORMATION FROM AN EXTRACT OF A MAP OF PUBLIC SEWERS DATED JUNE 2015. THIS WAS PROVIDED TO CIVIC IN MARCH 2023.
3. EXISTING MANHOLE COVER LEVELS HAVE BEEN TAKEN FROM THE TOPOGRAPHICAL SURVEY WHICH WAS CARRIED OUT IN FEBRUARY 2023 BY GREENHATCH AND PROVIDED TO CIVIC ENGINEERS BY ASTEER IN DECEMBER 2023.
4. DRAINAGE STRATEGY IS DEPENDENT ON CONFIRMATION OF THE FOLLOWING:
 - INVERT LEVELS
 - EXISTING CONDITION
 - LEVELS DESIGN
5. FIGURES ARE APPROXIMATE AND SUBJECT TO CHANGE AS LAYOUT AND MASTERPLAN DEVELOPS

KEY:

- SITE BOUNDARY
- EXISTING PUBLIC COMBINED SEWER
- EXISTING PUBLIC COMBINED SEWER ASSUMED
- EXISTING PRIVATE COMBINED NETWORK
- PROPOSED SURFACE WATER SEWER
- PROPOSED PERFORATED PIPE
- OF — PROPOSED OVERFLOW PIPE
- PROPOSED PPIC
- PROPOSED FOUL WATER SEWER
- PROPOSED COMBINED SEWER
- PROPOSED CONCRETE SURFACE WATER ATTENUATION TANK FOR ADOPTION
- PROPOSED PRIVATE SURFACE WATER ATTENUATION TANK
- PROPOSED SOFT PLANTED AREAS
- PROPOSED RAIN GARDENS
- 2M PROPOSED SERVICE TRENCH

17.01.24	P06	UPDATED RLB	CER	PM
05.12.23	P05	UPDATED NOTES FOR FRA	CER	CER
15.11.23	P04	REMOVAL OF FW11	CER	PM
06.11.23	P03	STAGE 3 ISSUE	CER	PM
19.06.23	P02	UPDATED GREENFIELD RATE	CER	PM
02.06.23	P01	FOR INFORMATION	CER	PM
DATE	REV	DESCRIPTION	DRAWN	CHKD



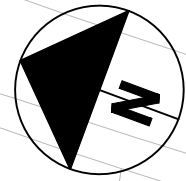
Civic Engineers

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PROJECT				
MUSE, PRESTWICH				
TITLE				
SURFACE AND FOUL WATER DRAINAGE STRATEGY				
DRAWING STATUS				STATUS CODE
INFORMATION				S1
CE PROJECT No.	SCALE @ A1	DATE CREATED	DRAWN	CHECKED
2772	1:500	09.05.23	CER	PM
DRAWING No.				REV
2772-CIV-XX-XX-D-C-30001				P06



- PHASE 1A:

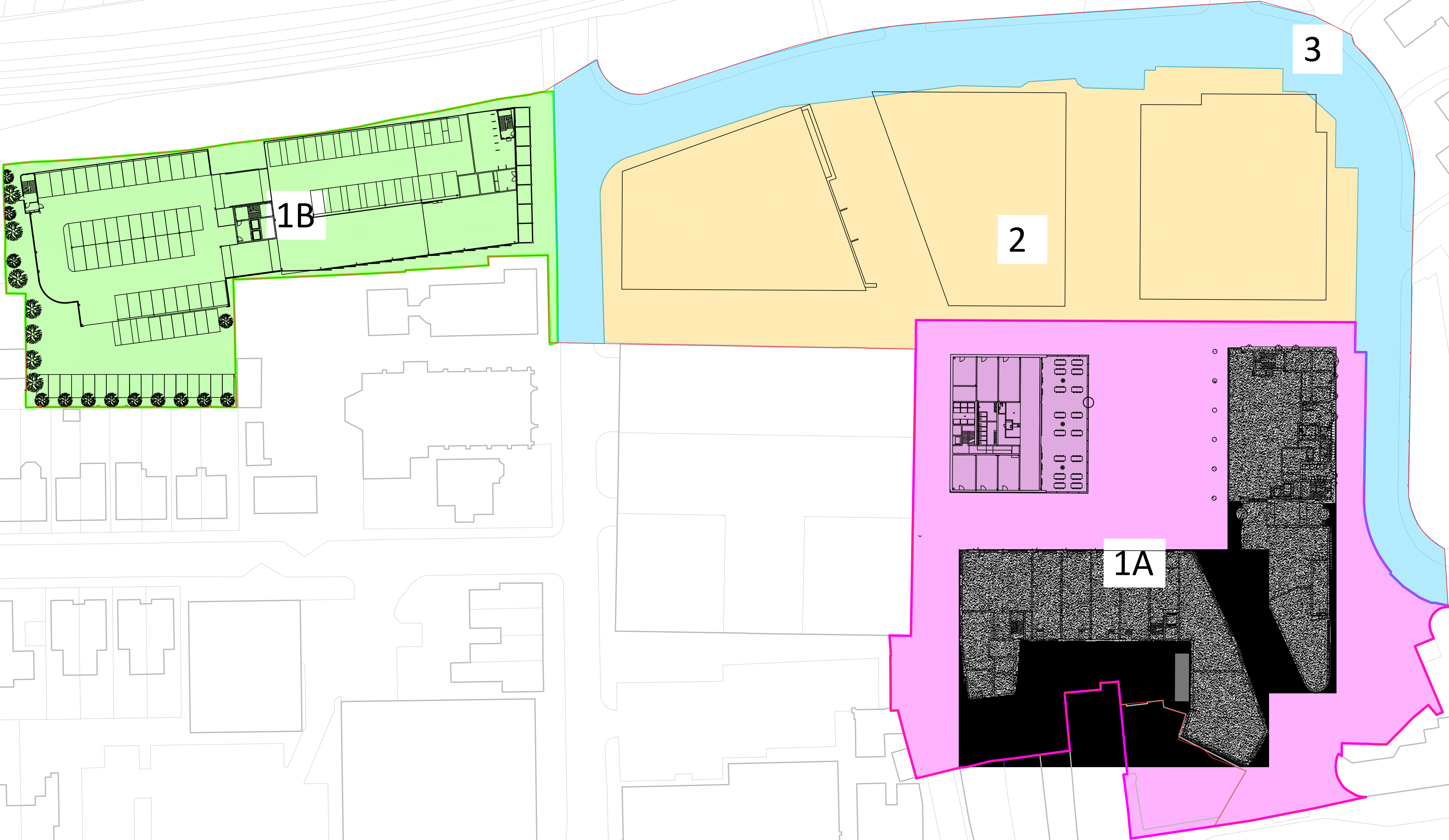
0.97Ha
- PHASE 1B:

0.45Ha
- PHASE 2:

0.68Ha
- (PHASE 3 - RECTORY LANE:

0.38Ha)

PHASES 1, 2 AND 3 HAVE BEEN SHOWN INDICATIVELY AND THE BOUNDARIES ARE SUBJECT TO CONFIRMATION



- STANDARD NOTES
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT'S AND ENGINEER'S DRAWINGS AND THE SPECIFICATIONS.
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- NOTES AND KEY:
1. THE LANDSCAPE MASTERPLAN WAS PROVIDED BY PLANT I/E IN NOVEMBER 2023.
 2. THE EXTENTS OF CATCHMENT 2 ARE BASED ON THE EXISTING EXTENTS OF ADOPTION. INFORMATION ON THE EXTENTS OF ADOPTED HIGHWAY HAS BEEN TAKEN FROM THE BURY.GOV.UK WEBSITE.

17.01.24	P06	UPDATED RLB	CER	PM
22.11.23	P05	UPDATED SITE PLAN	CER	PM
06.11.23	P04	STAGE 3	CER	PM
10.10.23	P03	BROWNFIELD RATES ADDED FOR PDE RESPONSE	CER	TC
06.10.23	P02	S104 PRE APPLICATION	CER	PM
02.06.23	P01	FOR INFORMATION	CER	PM
DATE	REV	DESCRIPTION	DRAWN	CHKD



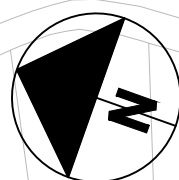
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PROJECT
MUSE, PRESTWICH

TITLE
SURFACE AND FOUL WATER
DRAINAGE STRATEGY
PHASING

DRAWING STATUS					STATUS CODE	
INFORMATION					S1	
CE PROJECT No.	SCALE @ A1	DATE CREATED	DRAWN	CHECKED	CER	PM
2772	1:500	09.05.23				
DRAWING No.					REV	P06
2772-CIV-XX-XX-D-C-30002						



INDICATIVE LOCATION OF ATTENUATION TANK FOR PHASE 1 WITH NEW POINT OF CONNECTION TO EXISTING PUBLIC COMBINED MANHOLE.
25 X 7, 1.6M DEEP

PROPOSED FLOW CONTROL CHAMBER RESTRICTING THE RATE TO 3l/s

1200 DIAMETER PRECAST CONCRETE CATCHPIT MANHOLE

PROPOSED BYPASS OIL INTERCEPTOR AND SEPARATOR

POTENTIAL POINT OF CONNECTION TO EXISTING COMBINED MANHOLE SUBJECT TO AN S106 AGREEMENT WITH UNITED UTILITIES. LEVELS TBC.

POP UP LOCATIONS FOR SS AND RWP'S TO BE CONFIRMED BY JMA FOR PLOT C
POTENTIAL TO DISCHARGE RAINWATER PIPES FROM THE MARKET INTO RAIN GARDENS

PROPOSED RAIN GARDEN PLANTING.
TOTAL STORAGE PROVIDED: 98m³
REFER TO CIVIC DRAWING 2272-CIV-XX-XX-D-C-31002 FOR TYPICAL RAIN GARDEN DETAIL

PROPOSED FLOW CONTROL CHAMBER RESTRICTING THE RATE TO 20l/s

INDICATIVE LOCATION OF ATTENUATION TANK FOR PHASE 1. REFER TO CIVIC DRAWING 2272-CIV-XX-XX-D-C-31001 FOR TANK DETAILS

PROPOSED FLOW CONTROL CHAMBER RESTRICTING THE RATE TO 20l/s

PROPOSED SURFACE WATER CONNECTION TO EXISTING UU COMBINED MANHOLE SUBJECT TO S106 AGREEMENT WITH UNITED UTILITIES

DRAINAGE NOTES

RED LINE BOUNDARY (RLB) AREA: 2.48HA

TOTAL SITE BROWNFIELD RUNOFF RATE: 289l/s
PROPOSED RATE: 23l/s

EXISTING IMPERMEABLE AREA: 2.48HA
PROPOSED IMPERMEABLE AREA: 2.35HA

THE PROPOSED SUSTAINABLE DRAINAGE SYSTEMS WILL TREAT AND ATTENUATE THE SURFACE RUN OFF PRIOR TO DISCHARGING THE PROPOSED SURFACE WATER NETWORK.
THE ROPOSED SURFACE WATER NETWORK WILL BE RESTRICTED TO THE FOLLOWING RATES BASED ON CONTRIBUTING AREAS:

PROPOSED RESTRICTED RATES

PHASE 1A RESTRICTED RATE: 20 l/s
PHASE 1B RESTRICTED RATE: 3 l/s

A SITE INVESTIGATION IS UNDERWAY TO EXPLORE THE POTENTIAL FOR INFILTRATION INTO THE BELOW STRATA. HOWEVER THIS WILL NOT BE CONFIRMED UNTIL THE END OF NOVEMBER 2023, THEREFORE WE ARE NOT CURRENTLY PROPOSING INFILTRATION

STANDARD NOTES

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- EXISTING PUBLIC COMBINED SEWER
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- PROPOSED PERFORATED PIPE
- OF • PROPOSED OVERFLOW PIPE
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- PROPOSED CONCRETE SURFACE WATER ATTENUATION TANK FOR ADOPTION
- PROPOSED PRIVATE SURFACE WATER ATTENUATION TANK
- PROPOSED SOFT PLANTED AREAS
- PROPOSED RAIN GARDENS

17.01.24	P03	UPDATED RLB	CER	PM
05.12.23	P02	UPDATED NOTES FOR THE FRA	CER	CER
06.11.23	P01	STAGE 3 ISSUE	CER	PM
DATE	REV	DESCRIPTION	DRAWN	CHKD



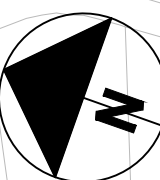
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PROJECT
MUSE, PRESTWICH

TITLE
SURFACE WATER DRAINAGE STRATEGY

DRAWING STATUS					STATUS CODE
STAGE 3					S1
CE PROJECT No.	SCALE @ A1	DATE CREATED	DRAWN	CHECKED	
2772	1:500	19.09.23	CER	PM	
DRAWING No.					REV
2772-CIV-XX-XX-D-C-30003					P03



1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECT'S AND ENGINEER'S DRAWINGS AND THE SPECIFICATIONS.
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	SITE BOUNDARY
	EXISTING PUBLIC COMBINED SEWER
	EXISTING PRIVATE COMBINED SEWER
	ASSUMED EXISTING PUBLIC COMBINED SEWER
	PROPOSED FOUL WATER SEWER
	PROPOSED COMBINED SEWER

17.01.24	P04	UPDATED RLB	CER	PM
05.12.23	P03	UPDATED NOTES FOR FRA	CER	CER
15.11.23	P02	FOR INFORMATION	CER	PM
06.11.23	P01	STAGE 3 ISSUE	CER	PM
DATE	REV	DESCRIPTION	DRAWN	CHKD



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PROJECT _____

MUSE, PRESTWICH

TITLE

FOUL WATER

DRAINAGE STRATEGY

DRAWING STATUS	STATUS CODE
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STAGE 3	S1
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CE PROJECT No.	SCALE @ A1	DATE CREATED	DRAWN	CHECKED
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2772	1:500	19.09.23	CEB	PM
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DRAWING No.				REV
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2772-CIV-XX-XX-D-C-30004 P04

[illegible]

Appendix E

S104 Pre-Application Response from United Utilities

PDE Response from United Utilities

S104 Pre-Design Response Form

Version 1 (Nov 22)

United Utilities Reference Number:		04755472	
Applicant details			
Company name	Civic Engineers		
Contact name			
Site details			
Site name/address (including nearest postcode)	Prestwich Village		
Developer Engineer assessment			
Area for discussion/assessment	Multiple phases/landowners ☐ Multiple points of connection ☐ Pumped discharge ☐ Adoptable Infiltration Viability ☒ Adoptable SuDS Components ☐ Storage components ☐ Other ☐		
SuDS Component(s) >	Pond / Wetland ☐	Basin ☐	Infiltration System ☐
	Swale ☐	Bio retention system ☒	Filter Drains ☐
Developer Engineer comments	I cannot complete a full assessment in a Pre-Design Application this service is part of the technical assessment for S104 applications. Pre-Design Application are used for specific questions about anything unusual on site, E.G. SuDS, Pumping stations (discharge rates etc.), site phasing, land ownership issues etc. Therefore, please find my response to the questions proposed in red below: - The outflow of the rain gardens will be controlled with a flow control to maximise the storage. Can UU confirm if this would be acceptable under a S104 application? Yes this would be acceptable in principle however please note we prefer the rain garden and flow control to be adopted by the Highway Authority. If a private contractor will be responsible then we will need a maintenance schedule for our assessment along with the S104 application. - Will UU adopt this network with sustainable drainage discharging into the public network at a restricted rate– Yes in principle but this would need to be agreed at planning with evidence that the surface water hierarchy has been explored to discount infiltration and discharging to a watercourse. You have a Pre-Development Enquiry (PDE) where this will be discussed under UU reference 04175408. - Can rain gardens be constructed within easements to sewers offered for adoption? They will be lined and not infiltration systems. United Utilities would request the rain garden is moved outside of the easement in the first instance. If it is not possible to move the rain garden out of the easement a full engineering review is required following submission of a S104 application. - Tree pits, a crated tree pit system is proposed – Tree pits are not adoptable under a S104 agreement. - Can we model the flows routing through the raingardens and flow controls before discharging into the adoptable network? – This is not required as the flow control for the rain garden is a private asset which is not adoptable. - *Please note that this guidance/advice is <u>not</u> an acceptance for suitability of section 104 agreement, which will only be given once a full design review and acceptance has been given (please see sewerage sector guidance for more information, this can be found on Water UK website)*		

Meeting required to discuss further	Yes ☐	No ☒
Reason for meeting		
Developer Engineer Name:		Date (XX/XX/XX): 18/10/23
Applicant comments		

From:

Sent:

To:

Subject:

Attachments: [Greenfield runoff rate estimation - members _ UK SuDS.pdf](#)

Good afternoon Claudia,

Pre Development Enquiry for: Prestwich, Bury UU Reference Number : 04175408

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 foul water/combined sewer system.

After reviewing the foul water drainage drawing 2772-CIV-XX-XX-D-C-30001 , rev: P01, Dated: 02/06/2023, we found the foul water proposal acceptable in principle to United utilities, the site can discharge foul water at an unrestricted rate.

Please ensure all proposed manhole chambers cover levels and finished floor levels are higher than the receiving public sewer.

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.

Infiltration

Surface water runoff generated from this development should discharge to the ground via infiltration system where feasible.

A detailed evidence based feasibility assessment must be carried out in line with Chapter 25 of the CIRIA SuDS Manual 2015 to determine whether infiltration is a suitable method of surface water disposal.

Particular attention must be paid to Ground Water Source Protection Zones to ensure that the risk of pollution to these valuable resources is not compromised. Details can be obtained from the government website:

<https://www.gov.uk/guidance/groundwater-source-protection-zones-spzs#find-groundwater-spzs>

If your site is in a Groundwater Source Protection Zone, you should have regard to the Environment Agency's approach to Groundwater Protection. Information on this is available via the link below:

<https://www.gov.uk/government/publications/groundwater-protection-position-statements>

Please note that such a location could have implications for the principle of your development and the need for additional mitigating measures to protect the groundwater environment and public water supply in the detailed design of your site.

Waterbody

United Utilities acknowledge that the nearest watercourse is a significant distance off-site.

Highway Drainage

If an evidence based assessment has been carried out and confirms that infiltration is not feasible, we recommend that you investigate the possibility of draining surface water to the highway drain where this ultimately discharges to a watercourse, by contacting the relevant Highway Authority.

Public Sewer

In accordance with the hierarchy of drainage options within the National Planning Practice Guidance, both discharge to ground via infiltration and discharge to a waterbody should be discounted prior to consideration of discharging surface water to the public sewer system. Evidence should be provided to demonstrate how these have been discounted, as outlined in the North West SuDS pro-forma.

Once evidence is provided as outlined above, United Utilities will consider a connection to the 5 point of connection according to drawing 2772-CIV-XX-XX-D-C-30001 , rev: P01, Dated: 02/06/2023.

In accordance with the North West Suds Proforma, all sites should strive to meet Greenfield rates. As this is a brownfield site, this rate has been calculated utilising soil type 5 (most impermeable) to give the peak Greenfield flow rate (file attached).

In accordance with the Ciria SuDS manual which states the rational method can only be used for very simple sites, or for an indicative design, United Utilities request that any agreed rate does not exceed 23l/s.

Please note the given discharge rate is based on the full site area as the specifics of the area being developed are not yet clear. If there are significant areas of the site that will not be developed, the discharge rate should be reduced accordingly.

As a Water Company, we have no obligation to accept highway drainage into our public sewer network. However, should your proposals include runoff from highways, we would request that consideration is given to SuDS components that deliver source control are incorporated within the design of the scheme to reduce the volume and frequency of discharges of these flows to the public sewer.

Levels

For low-lying sites, (where the ground level of the site or the level of a basement is below the ground level at the point where the drainage connects to the public sewer), care should be taken to ensure that the property is not at increased risk of flooding. If these circumstances exist, we recommend that you contact us to discuss further. It could affect the detailed design of your site and result in the need to incorporate appropriate mitigating measures in your drainage scheme.

Land drainage / Overland flows / track drainage

United Utilities have no obligation, and furthermore we do not accept land drainage, overland flows or track drainage into the public sewerage network under any circumstances

Existing Wastewater Assets Crossing the Site

According to our public sewer records there are public sewers located within your site boundary. We will require unrestricted access to the sewer for maintenance purposes, we would ask that you maintain a minimum clearance of 6m which is measured 3m from the centre line of the pipe unless there happens to be a formal easement agreement in place, in which case the specified easement width would apply. If you cannot achieve this then you may wish to consider diverting and or abandoning the public sewer.

Please be aware that any proposed diversion may require modelling. This process may take up to 6 months in order to reach an acceptable design.

Please refer to the link below to obtain full details of the processes involved with sewer diversions:

<https://www.unitedutilities.com/builders-developers/larger-developments/wastewater/sewer-diversions/>

Please refer to the link below to obtain full details of the processes involved with sewer closure:

<https://www.unitedutilities.com/builders-developers/wastewater-services/close-a-sewer/sewer-closures/>

Existing Water Assets Crossing the Site

It is the developer responsibility to identify utilities on-site. Where clean water assets are shown on our records, we recommend that you contact our Water Pre-Development Team, via the following email address: DeveloperServicesWater@uuplc.co.uk. Further information for this service can be found on our website via the link below:

<https://www.unitedutilities.com/builders-developers/larger-developments/pre-development/water-pre-dev/>

Connection Application

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

<https://www.unitedutilities.com/builders-developers/wastewater-services/sewer-connections/sewer-connection/>

We recommend that the detailed design should confirm the locations of all utilities in the area and ensure that any proposed drainage solution considers routing and clash checks where required.

If we can be of any further assistance please don't hesitate to contact us further.

Sewer Adoptions

You have indicated on your application form that you intend to put the sewers forward for adoption (including any SuDS components that can come within the meaning of a sewer).

United Utilities assess adoption applications based on the current Design & Construction Guidance and local practices which have now replaced 'Sewers For Adoption 6th Edition'.

We recommend that you submit a pre design assessment to the sewer adoption mailbox (SewerAdoptions@uuplc.co.uk) stating pre design assessment in the title

Please refer to links below to obtain further guidance:

<https://www.unitedutilities.com/builders-developers/larger-developments/wastewater/sewer-adoptions/>

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

If you intend to put forward your wastewater assets for adoption by United Utilities, the proposed detail design will be subject to a technical appraisal by an Adoption Engineer as we need to be sure that the proposals meets the requirements set out in the Design & Construction Guidance. The proposed design should give consideration to long term operability and give United Utilities a safe and cost effective proposal for the lifetime of the assets. In these cases, we strongly recommend that no construction commences until the detailed drainage design, submitted as part of the Section 104 application, has been assessed and accepted in writing by United Utilities. Any work carried out prior to the technical assessment being approved is done entirely at the developer's own risk and could be subject to change.

SuDS

If your development proposal incorporates any SuDS component(s) which interact with a sewer network you plan on offering for adoption to United Utilities; contact should be made with our technical team at your earliest convenience, please complete the 'Section 104 pre-application form : ' and include as much relevant detail as you can. These discussions can help prevent delays later in the development process.

Section 104 Pre application form (1b)

As per the sewerage sector guidance, all SuDS should be designed in accordance with the standards within the Design & construction guidance & the CIRIA SuDS manual (C753)

Codes For Adoption

The new Codes for Adoption are outlined on the Water UK Website. The link below takes you to their webpage:

<https://www.water.org.uk/technical-guidance/developers-services/codes-for-adoption/>

A free copy of the new Design & Construction Guidance can be downloaded via the link below:

<https://www.water.org.uk/sewerage-sector-guidance-approved-documents/>

Kind regards,



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