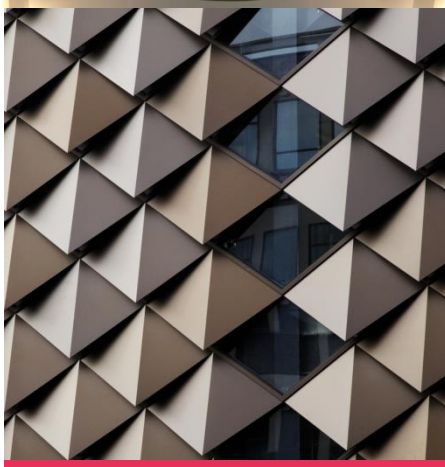




Enabling Works, Neighbourhood, Rochdale

Flood Risk Assessment and Drainage Strategy

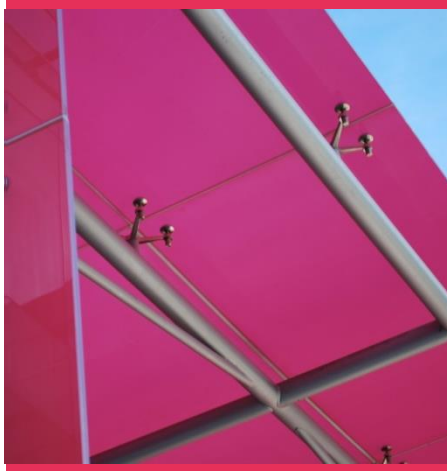
Curtins Ref: (075882) NHRH-CUR-00-XX-RP-C-92001

Revision: V01

Issue Date: 09 July 2021

Client Name: Willmott Dixon Construction Ltd

Site Address: Neighbourhood, Rochdale



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Rev	Description	Issued by	Checked	Date
V01	Issued for Planning	ATL	CG	09/07/2021

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1.0 Introduction

1.1 Project Background

1.1.1 Curtins was appointed by Willmott Dixon Construction Ltd to provide a Flood Risk Assessment (FRA) and Drainage Strategy for a proposed enabling works at the Neighbourhood development at Oldham Road/Drake Street, Rochdale.

1.1.2 The report provides information on the nature of flood risk at the site and follows Government guidance regarding development and flood risk.

1.1.3 The report is based on currently available information and preliminary discussions.

1.1.4 Proposals contained or forming part of this report represent the design intent and may be subject to alteration or adjustment in completing the detailed design for this project. Where such adjustments are undertaken as part of the detailed design and are deemed a material deviation from the intent contained in this document, prior approval shall be obtained from the relevant authority in advance of commencing such works.

1.1.5 Where the proposed works to which this report refers are undertaken more than twelve months following the issue of this report, Curtins shall reserve the right to re-validate the findings and conclusions by undertaking appropriate further investigations at no cost to Curtins.

1.2 Scope of Assessment

1.2.1 The assessment is to be undertaken in accordance with the standing advice and requirements of the Environment Agency (EA) for Flood Risk Assessments as outlined in the Communities and Local Governments Planning Policy Guidance to the National Planning Policy Framework (NPPF).

1.2.2 The assessment will:

- Investigate all potential risks of flooding to the site,
- Consider the impact the development may have elsewhere with regards to flooding,
- Consider design proposals to mitigate any potential risk of flooding determined to be present; and
- Consider foul & surface water drainage outfalls for the proposed development.

1.2.3 The total site area is approximately 2.39 hectares and following scrutiny of the Environment Agency flood maps it has been identified that site lies within Flood Zone 1. Due to the site areas, a Flood Risk Assessment is therefore required to support a planning application.

1.2.4 In April 2015, the Government made changes to the National Planning Policy Framework which made Sustainable Urban Drainage Systems (SuDS) a material consideration in the determination of planning applications for ‘major’ developments.

1.2.5 A Drainage Strategy will therefore be required as part of the Planning Application for the development, as the site is considered to be 'major' development by the Town and Country Planning Order 2015.

1.2.6 This Flood Risk Assessment and Drainage Strategy reviews the following information:

- Environment Agency flood maps for rivers and sea flooding.
- UK Government Flood Warning Information Service maps for surface water flooding and reservoir flooding.
- Strategic Flood Risk Assessment (SFRA) for Bury, Rochdale and Oldham Level 1 and Level 2 dated December 2009.
- United Utilities Public Sewer Records dated November 2020.
- CCTV Drainage Survey/Utilities Survey by SEP Ltd date May 2021.
- Soakaway Test results dated March 2021.

1.3 Proposed Development

1.3.1 The development is expected to comprise the following:

Site Clearance, site remediation, the diversion and laying of services, temporary means of access and the erection of temporary means of enclosure in order to prepare for the main development works.

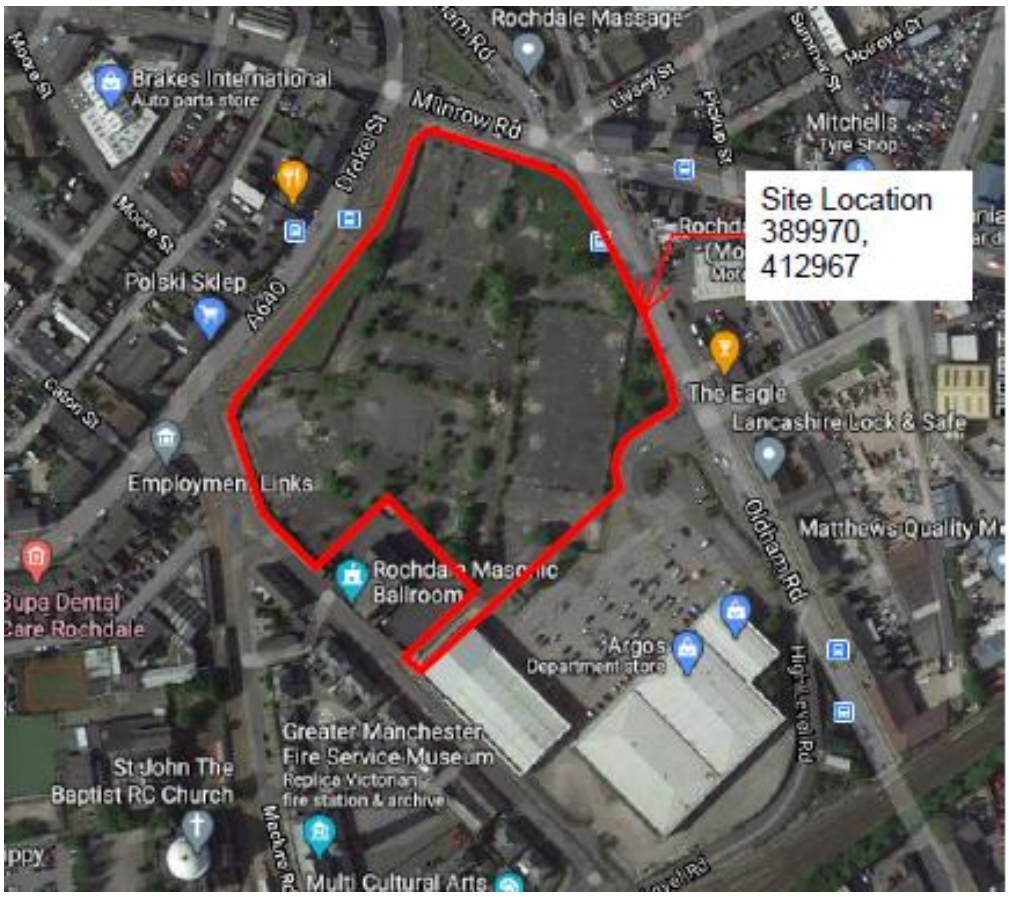
1.3.2 The Proposed Enabling Works Site Layout is enclosed in *Appendix A.*

2.0 Existing Site Details

2.1 History and Current Use

2.1.1 The site is located approximately 300m south of Rochdale Town Centre. The site is bordered by Milnrow Road to the north, Oldham Road to the east, Richard Street to the south and Drake Street to the west. The site forms part of the Central Retail Park which has been partially demolished for development with the remainder of the retail park, east of the site boundary still in operation. The wider area consists primarily of commercial and residential uses. The Metrolink tram stop, and associated tram lines border the west of the site along Drake Street. (Figure 1).

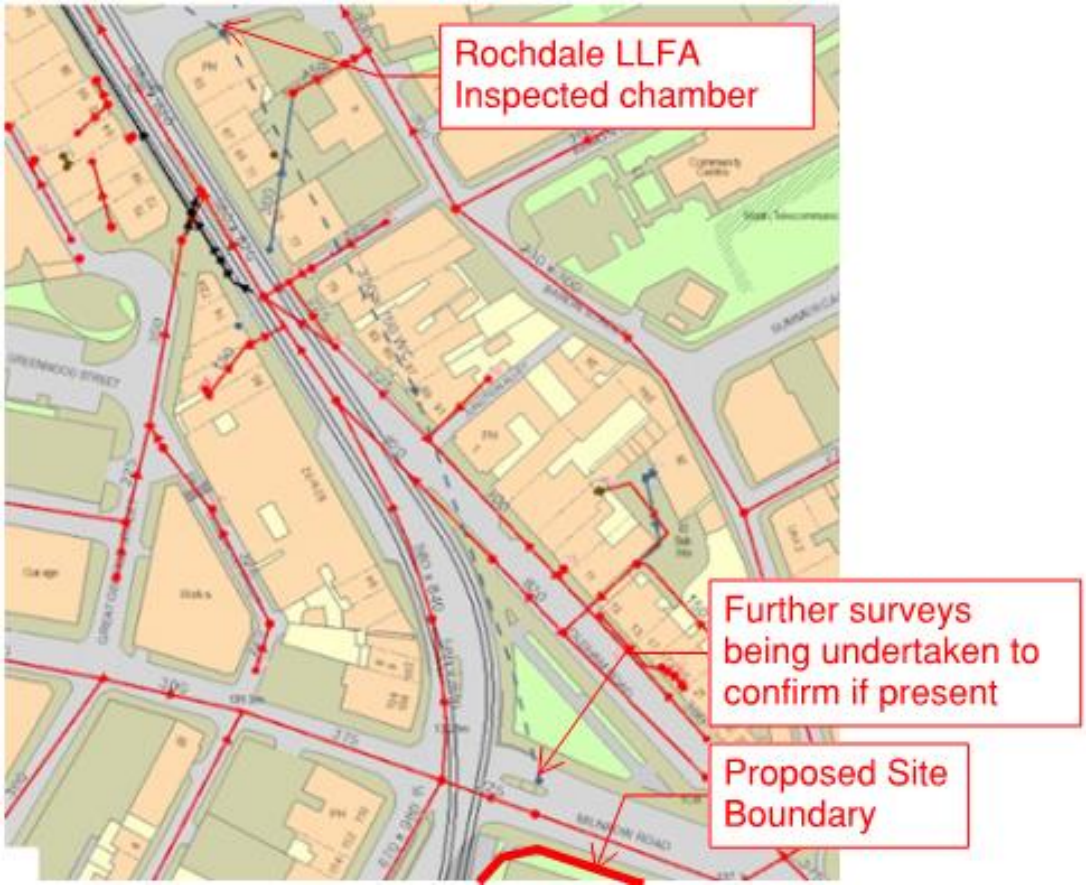
Figure 1: Aerial Photograph (© Google 2020)



2.2 Existing Watercourses and Other Waterbodies

2.2.1 There appears to be an existing 350mm x 750mm culverted watercourse identified north of the site under Milnrow Road (illustrated by the blue dashed line on the public sewer records and safedig records obtained from Rochdale Lead Local Flood Authority (LLFA), refer to Figure 2.

Figure 2: Safedig Record (extract from RMBC)



2.2.2 The information suggests that the watercourse flows in a southerly direction towards the site, although with reference to the topographical information, this appears to flow against the natural land gradient.

2.2.3 Rochdale LLFA completed a site inspection to confirm if the culverted watercourse is present as they hold no formal data. The inspection captured the upstream chamber adjacent to the Public House on Water Street and confirmed that the watercourse was not present at this location. Further chambers have been investigated within Milnrow Road (adjacent to the site), however there has been no evidence to date to indicate that the watercourse is present. We have recommended that all chambers within the footpath within Milnrow Road are also investigated.

2.2.4 The nearest known live watercourse to the site is the River Roch, which is located approximately 220m north of the site at its closest location.

2.2.5 The Rochdale Canal is located approximately 550m south-west of the site at its closest location. This is at lock 50 of the Rochdale Canal and is where the former canal basins on site previously connected to the main canal line, prior to being infilled during the 1970's.

2.3 Existing Drainage

2.3.1 An extract from the public sewer records has been obtained for the development site and is shown in Figure 3. The public sewer record is enclosed in *Appendix B*.

Figure 3: United Utilities Public Sewer Record (extract)



2.3.2 The sewer records indicate that the following public sewers are recorded within the site boundary:

- There is a 225mm combined public sewer within the eastern area of the development which appears to serve the current retail park to the south-east of the site. The sewer flows in a northerly direction before connecting into the 375mm combined public sewer in Oldham Road.

2.3.3 A CCTV Drainage Survey has been completed within the site and the surrounding public sewers. The CCTV Survey/Utilities Survey drawing is enclosed in *Appendix C*.

2.3.4 The public sewer within the site has been surveyed for the majority of its extent, with the exception of a section (approximately 19m in length, 12m is within the site boundary) between manholes UU References 0901 and 0903.

2.3.5 The defect of the sewer has been reported to United Utilities, however at the time of the survey the works had only been partially remediated (UU Case reference 00513693).

2.3.6 Based on the survey completed, it appears that the public sewer does not follow the route mapped on the UU records. The sewer appears to connect from UU Manhole Referenced 0901 to 0903 on site, however this appears to connect to an unmapped manhole within Oldham Road upstream of the recorded connection point at UU Manhole Referenced 0008.

2.3.7 The proposed site layout indicates that the proposed 'Townhaus' properties are located above the existing sewer route and therefore a public sewer diversion will be required, under a Section 185 Agreement with United Utilities.

2.3.8 The Survey also indicates that there is an existing 450mm surface water sewer along the western boundary. Further investigations confirm that this drainage is a 450mm drain owned by TfGM and is associated with the Metrolink tram lines along Drake Street.

2.3.9 The sewer records indicate that the following public sewers are recorded in the vicinity of the site boundary:

- There is a 600 x 900mm combined public sewer located to the east of the site within Oldham Road. The sewer flows in a north-westerly direction.
- There is a combined public sewer (225mm) located to the north of the site within Milnrow Road. The sewer flows in a westerly direction. There were also defects on this sewer limiting access to survey)
- There is a 900mm combined public sewer located to the west of the site within Drake Street (along the north-western side of the Metrolink tramline). The sewer flows in a north-easterly direction.
- There is a 750mm combined public sewer located to the south of the site within Richard Street. The sewer flows in a north-westerly direction, crosses below the tramline before connecting into the above mentioned 900mm sewer.

2.3.10 There are further public sewers identified on the public sewer records within the wider vicinity of the site, but these are not considered relevant to the scheme.

2.4 Topography

2.4.1 A topographical survey has been completed at the site and a general assessment has been undertaken.

2.4.2 The site appears to fall generally in a south to north direction. Levels on site vary between approximately 141.3m AoD in the far western corner and 137.4m AoD along the northern boundary.

2.4.3 The levels on site are undulating with localised flat areas, surfaced in concrete and tarmac, which are likely to be from the former building floors with intermediate localised retaining walls and banking's.

2.5 Geology

2.5.1 Made Ground is not indicated to be present on BGS mapping, made ground associated with historic development is present on site, in addition to the infilled canal basins and infilled canal.

2.5.2 The BGS maps confirm that the site is primarily underlain by Glaciofluvial Deposits (superficial deposits) comprising sand and gravel with some clay and silt.

2.5.3 The bedrock geology is described as the Pennine Lower Coal Measures Formation (sandstone, siltstone, mudstone, some coal).

2.5.4 The site is not located within a Groundwater Source Protection Zone.

3.0 Development and Flood Risk

3.1 National Planning Policy Framework (NPPF) and Planning Practice Guidance

3.1.1 In February 2019, the Department of Communities and Local Government published the National Planning Policy Framework document (NPPF) and the Planning Practice Guidance was published in March 2014 which provides guidance on how flood risk should be assessed during the planning and development process.

Table 1: (Extract from Planning Practice Guidance) Flood Zone Classifications

These Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences. They are shown on the Environment Agency's Flood Map for Planning (Rivers and Sea), available on the Environment Agency's web site, as indicated in the table below.

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or Land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
Zone 3b The Functional Floodplain	**This zone comprises land where water has to flow or be stored in times of flood.** Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

Table 2: (Extract from Planning Practice Guidance) Flood Risk Vulnerability Classification

Essential Infrastructure • Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk. • Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood. • Wind turbines.
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.

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 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.

Table 3: (Extract from Planning Practice Guidance) Flood Risk Vulnerability and Flood Zone Compatibility

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	✗	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	✗	✗	✗	✓*

Key:

✓ Development is appropriate

✗ Development should not be permitted.

Notes to table 3:

- This table does not show the application of the Sequential Test which should be applied first to guide development to Flood Zone 1, then Zone 2, and then Zone 3; nor does it reflect the need to avoid flood risk from sources other than rivers and the sea;
- The Sequential and Exception Tests do not need to be applied to minor developments and changes of use, except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site;
- Some developments may contain different elements of vulnerability and the highest vulnerability category should be used, unless the development is considered in its component parts.

† In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

* In Flood Zone 3b (functional floodplain) essential infrastructure that has to be there and has passed the Exception Test, and water-compatible uses, should be designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

3.2 Site Specific NPPF Flood Risk Categorisation

3.2.1 To assess the NPPF flood risk classification for the site, the first step was to inspect the UK Government web based 'Flood Map for Planning' which is used to inform planning of a site's Flood Zone(s) and the probability of flooding from rivers or sea (not taking into account the presence of flood defences or climate change). However, the web based 'Long Term Flood Risk Assessment for Locations in England' should also be used to identify the long-term flood risks from rivers and seas, surface water and reservoirs.

3.2.2 The Flood Map for Planning report is enclosed in *Appendix D,* and it can be seen that whole site is classified as Flood Zone 1.

3.2.3 Further site-specific review of the flood risk to the site is provided in section 4.

3.3 Site Specific Flood Zone Compatibility

3.3.1 The proposals for the enabling works phase of the development site are likely to fall within the following category:

- Water Compatible development (i.e – no building works are proposed)

3.3.2 The site is located within Flood Zone 1 for which all development types are deemed to be appropriate. Therefore, the development passes the sequential test and an exception test is not required (refer to the Flood Zone compatibility table in the NPPF technical guidance).

3.4 Sequential Test

3.4.1 The site is categorised as a Water Compatible development (shown in table 2) and is within Flood Zone 1 therefore the sequential test is not required to be applied (see table 3).

4.0 Hydrological Assessment

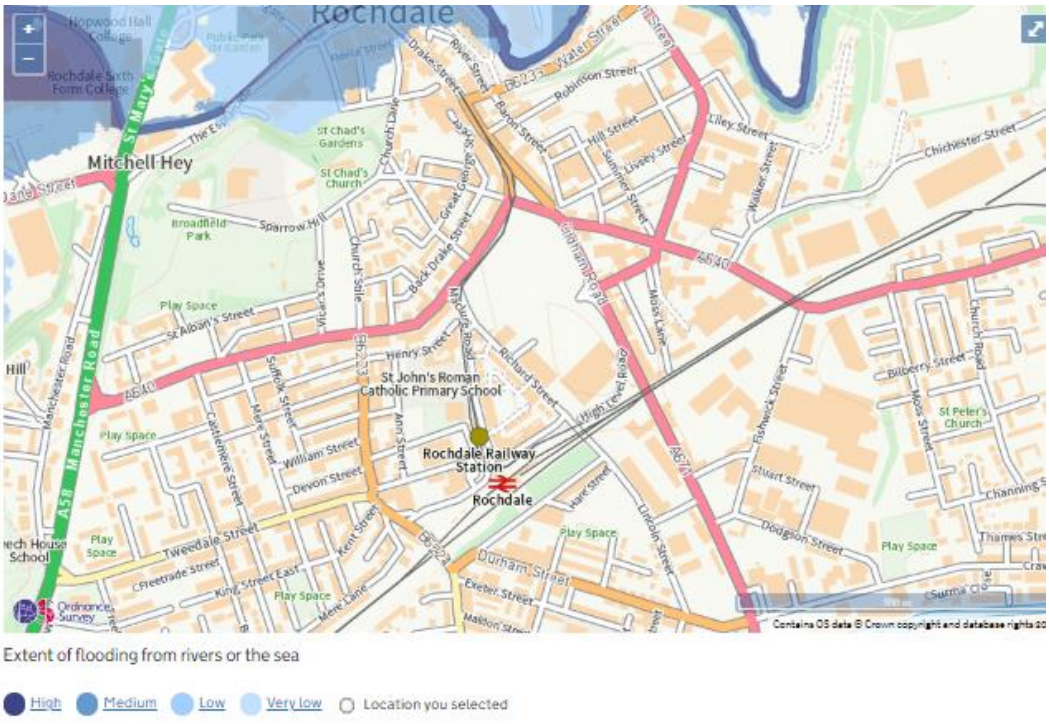
4.1 Sources of Flood Risk

4.1.1 This study assesses the risk from different types of flooding to the development and the risk of flooding from the development, taking into consideration climate change, as well as how flood risks should be managed. The approach to assessing flood risk at the development site was informed by the requirements of NPPF in conjunction with the client and Environment Agency requirements.

4.2 Fluvial Flooding (Rivers and Streams)

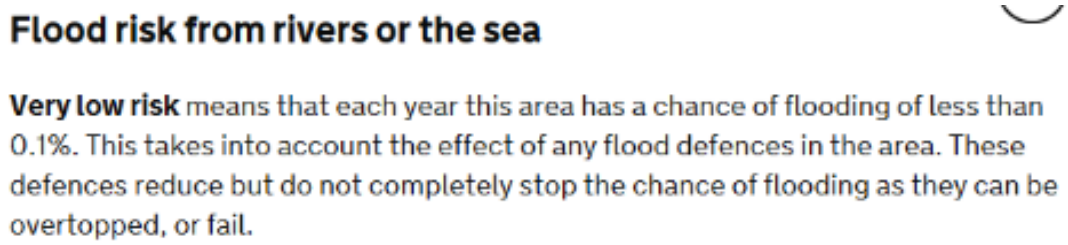
4.2.1 Flooding to the site from rivers and sea is indicated below in Figure 4, taken from the UK Government's Long-Term Flood Risk Information.

Figure 4: Long Term Flood Risk Assessment Map – Flood Risk from Rivers or Sea (© Crown Copyright)



4.2.2 It can be seen that the entire area of the site is at a 'Very Low' risk of fluvial flooding. The site is not shown to be in an area which benefits from flood defences. The site has less than a 0.1% chance of fluvial flooding each year. Therefore, the proposed site is considered to be at a very low residual risk from fluvial flooding.

Figure 5: Long Term Flood Risk Assessment (Detailed Information) – Flood Risk from Rivers or Sea (© Crown Copyright)



4.3 Tidal Flooding (Coastal or Estuarine)

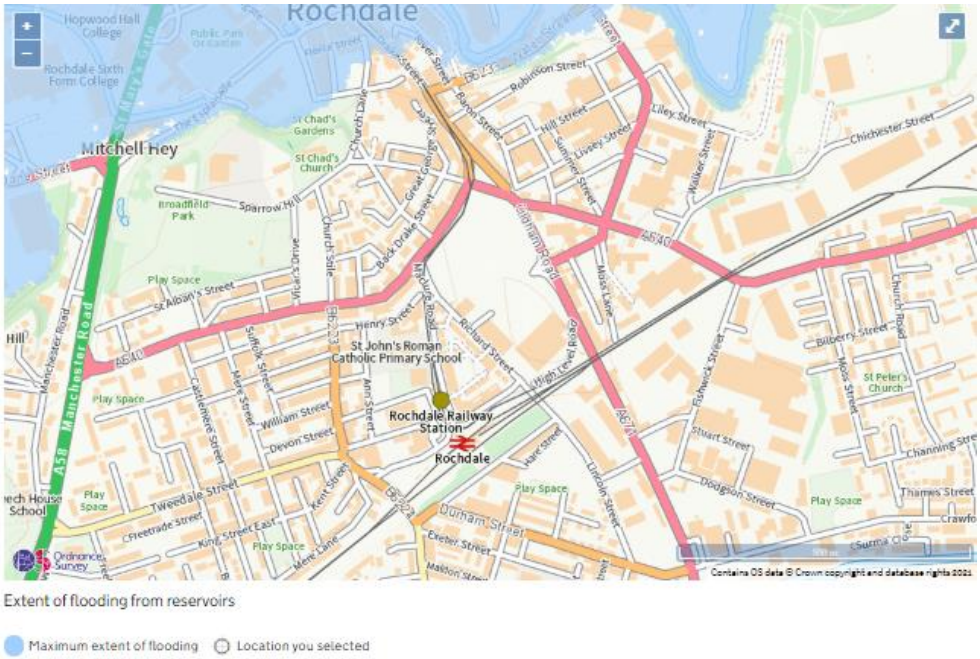
4.3.1 There is currently no flood risk identified on the Environment Agency flood maps for the site and it is therefore regarded to be at low risk from tidal flooding.

4.4 Reservoir Flooding

4.4.1 Reservoir flooding is extremely unlikely to happen and there has been no loss of life in the UK from reservoir flooding since 1925. The Environment Agency is the enforcement authority and ensures that reservoirs are inspected regularly and essential safety work is carried out.

4.4.2 The Long-Term Flood Risk Assessment (Flood Risk from Reservoirs) map shows the largest area that might be flooded if a reservoir were to fail and release the water it holds (see Figure 6).

Figure 6: Long Term Flood Risk Assessment Map – Flood Risk from Reservoirs (© Crown Copyright)



4.4.3 The site is located outside of the area that could be affected by reservoir flooding; therefore, the site is regarded to be at low risk from reservoir flooding.

4.5 Canal Flooding

4.5.1 The nearest canal to the site is the Rochdale Canal located approximately 550m south-west of the site at its closest location.

4.5.2 The canals are identified in the SFRA as not generally posing a direct flood risk as they are a controlled water body. Therefore, the residual risk of canal flooding is usually associated with lower probability events such as overtopping and/or the breaching of embankments.

4.5.3 Given the above information, it is considered that there is low risk of canal flooding to the site.

4.6 Groundwater Flooding

4.6.1 Historical Site Investigation works indicate the groundwater levels were encountered at approximately 4-5m bgl. However, further Site Investigation work has been completed in 2021, which confirms that groundwater strikes were recorded in the investigation in the made ground, Glaciofluvial Deposits, Alluvium deposits at depths varying from 1.20m to 13.5m bgl. Monitored water levels were similarly variable recorded between 1.57m and 11.46m bgl.

4.6.2 The proposed enabling works are not proposing construction of any proposed buildings; however, excavation works are proposed on site, therefore groundwater may be encountered during excavation works.

4.6.3 Based on the current information it is overall assumed that the site is at a low risk of groundwater flooding. However, as a precaution, mitigation measures are proposed in section 5.

4.7 Public Sewers or Highway Drainage Flooding (Infrastructure Failure)

4.7.1 There are no highway drains recorded within the site. There are highway drainage features surrounding the site (gullies and connections).

4.7.2 There are public sewers within the site and there are public sewers in the surrounding highways to the site.

4.7.3 United Utilities and Manchester City Council have not provided any records of flooding to the site or the vicinity.

4.7.4 It is noted that there is a defected sewer within the site on the public sewer system, which has been reported to United Utilities.

4.7.5 Providing United Utilities and Manchester City Council maintain their drainage assets within and in the vicinity of the site, the risk of flooding to the proposed development site from public sewers or highway drainage is considered as low.

4.8 Surface Water Flooding to the site

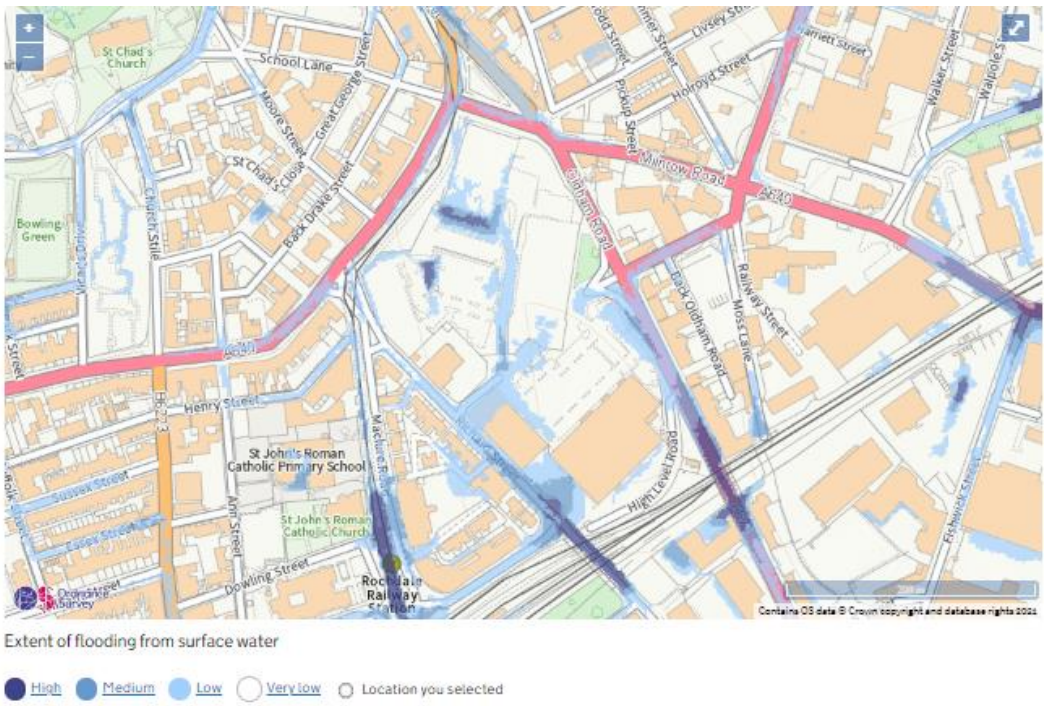
4.8.1 Surface water flooding can be caused when rainwater during extreme rainfall events does not drain away through the normal drainage system or soak into the ground with flooding occurring, principally from manholes and gullies. Surcharging sewers can result in overland flows which if originating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

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

- Where a site is located in a dark blue shaded zone, this indicates that the site is at high risk of flooding, where flooding occurs as a result of rainfall with a greater than 1 in 30 (3.3%) chance in any given year.
- Where a site is located in a mid-blue shaded zone, this indicates that the site is at medium risk of flooding, where flooding occurs as a result of rainfall of between 1 in 100 (1%) and 1 in 30 (3.3%) chance in any given year.
- Where a site is located in a light blue shaded zone, this indicates that the site is at low risk of flooding, where flooding occurs as a result of rainfall of between 1 in 1000 (0.1%) and 1 in 100 (1%) chance in any given year.
- Where a site is located in a clear (unshaded) area; this indicates that the site is at very low risk of flooding, where flooding occurs as a result of rainfall with less than 1 in 1000 (0.1%) chance in any given year.

4.8.3 The extent of flooding to the site from surface water is indicated in Figure 7 and it can be seen that the majority of the site is identified as being at a 'very low' risk of flooding from surface water. However, there are localised areas of flooding considered medium to high risk and it is assumed that this is as a result of localised low points and overloading of the existing drainage networks on the existing site.

Figure 7: Risk of Flooding from Surface Water - Extent of Flooding



4.8.4 Considering the above information, the risk of surface water flooding to the site is generally considered very low. As such, mitigation measures are proposed in Section 5 to ensure that the 'very low' risk can be maintained through development.

4.9 Surface Water Flooding from the site

4.9.1 Developers are responsible for ensuring that new development does not increase the flood risk elsewhere. Where new development is proposed, the proposed surface water drainage network shall be designed to not flood for the critical 1 in 30-year storm event and flood water generated up to the critical 1 in 100-year plus climate change storm event shall be constrained within areas on site so as not to cause damage to buildings, essential services or adjoining developments and services.

4.9.2 The proposals are for the enabling works to facilitate future development and under this phase of work there are no proposals to install the future drainage system with the exception of the proposed outfall connections and sewer diversion works (see section 6 of this report).

4.9.3 However, surface water run-off will need to be managed on site during the enabling works phase, either through use of the existing system as it is currently being used or through temporary measures. Therefore, flood mitigation recommendations are proposed in Section 5 to ensure the risk remains low during the enabling works phase.

4.10 Historical Flooding

4.10.1 United Utilities and Rochdale Council have not provided any records of flooding to the site or the vicinity.

4.11 Summary of Flood Risk

4.11.1 From the evidence collated and subsequent negotiations the main types of flooding that may apply to the proposed development site are as follows:

- Groundwater flooding (potential)
- Surface water flooding to the site
- Surface water flooding from the site

5.0 Mitigation

5.1 Groundwater Flood Mitigation

5.1.1 Groundwater flooding tends to be more persistent than other sources of flooding, typically lasting for weeks or months rather than hours or days. Groundwater flooding does not generally pose a significant risk to life due to the slow rate at which the water level rises; however, it can cause significant risk to property.

5.1.2 The proposed enabling works are not proposing construction of any proposed buildings; however, excavation works are proposed on site, therefore groundwater may be encountered during excavation works.

5.1.3 At the commencement of the construction phase, groundwater levels will need to be monitored during excavation works and suitable pumping/dewatering measures may be necessary.

5.1.4 Providing the above mitigation measures were imposed, the risk from groundwater flooding would therefore be considered during the enabling works phase of the development.

5.2 Surface Water Flooding to the site Mitigation

5.2.1 The UK Government Long Term Flood Risk Assessment surface water flood maps indicate that the site is at very low to low risk of surface water flooding. However, the site topography is likely to be partially reprofiled as part of the development proposals. Therefore, measures outlined in this section are recommended in order to ensure that the risk of surface water flooding to the post-development site shall not be increased and shall be reduced where possible.

5.2.2 Section 4.8 of the report confirms that the risk of surface water flooding to the site is generally considered very low, however there are localised areas of flooding considered medium to high risk and it is assumed that this is as a result of localised low points and overloading of the existing drainage networks on the existing site. Due to the nature of the works, there are unlikely to be any risk to property as the works do not include the construction of any buildings, however, to manage the risk, it is recommended that surface water run-off is managed on site during the enabling works phase, either through use of the existing system as it is currently being used or through temporary measures. The surface water management may need to be adjusted as works progress through phases of the enabling works.

5.2.3 Providing the above measures are implemented the flooding risk to the development site from surface water is therefore generally considered low during the enabling works phase.

5.3 Surface Water Flooding from the site Mitigation

5.3.1 Any new development site drainage should be designed in accordance with current best practice to provide adequate capacity not to flood for the critical 1 in 30-year storm event and flood water generated from up to the critical 1 in 100-year plus climate change storm event shall be constrained within the areas on site so not to cause damage to buildings, essential services or adjoining developments & services.

5.3.2 As noted in section 4.9, the proposals are for the enabling works to facilitate future development and under this phase of work there are no proposals to install the future drainage system with the exception of the proposed outfall connections and sewer diversion works (see section 6 of this report).

5.3.3 However, surface water run-off will need to be managed on site during the enabling works phase, either through use of the existing system as it is currently being used or through temporary measures. Therefore, it is recommended that surface water run-off is managed on site during the enabling works phase, either through use of the existing system as it is currently being used or through temporary measures. The surface water management may need to be adjusted as works progress through phases of the enabling works.

5.3.4 The final design of the drainage networks shall be in accordance with the legislation set by the Environment Agency, Rochdale Council and United Utilities.

6.0 Drainage Strategy

6.1 Existing Drainage

6.1.1 The sewer records indicate that the following public sewers are recorded within the site boundary:

- There is a 225mm combined public sewer within the eastern area of the development which appears to serve the current retail park to the south-east of the site. The sewer flows in a northerly direction before connecting into the combined public sewer in Oldham Road at manhole 0008. (This has not been proven to be the case – see 6.1.5)

6.1.2 The public sewer within the site has been surveyed for the majority of its extent, with the exception of a section (approximately 19m in length, 12m is within the site boundary) between manholes UU References 0901 and 0903.

6.1.3 The defect of the sewer has been reported to United Utilities, however at the time of the survey the works had only been partially remediated (UU Case reference 00513693).

6.1.4 Based on the survey completed, it appears that the public sewer does not follow the route mapped on the UU records. The sewer appears to connect from UU Manhole Referenced 0901 to 0903 on site, however this appears to connect to an unmapped manhole within Oldham Road upstream of the recorded connection point at UU Manhole Referenced 0008 – survey refenced buried manhole 0904A.

6.1.5 The proposed site layout indicates that the proposed 'Townhaus' properties are located above the existing sewer route and therefore a public sewer diversion will be required, under a Section 185 Agreement with United Utilities.

6.1.6 Initial discussions with United Utilities confirm that at this stage they have assumed the sewer is a critical asset until the Section 185 application and survey information has been submitted and reviewed. Section 185 Proposals are to be submitted as soon as possible.

6.1.7 The existing public sewer and any diverted sections will require a 6m easement, 3m either side from the sewer centreline. Any proposals within the easement should be in accordance with the 'Design and Construction Guidance for foul and surface water sewers' Sewerage Sector Guidance.

6.1.8 The CCTV Drainage Survey also indicates that there is an existing 450mm surface water sewer along the western boundary. Further investigations confirm that this drainage is a 450mm drain owned by TfGM and is associated with the Metrolink tram lines along Drake Street.

6.1.9 TfGM drawing records show that there is an existing 450mm drain within this land which was installed with the tramline works. The land is currently owned by TfGM (between the current development ownership and the back of footpath) however, discussions are ongoing in relation to the purchase of the land between the current ownership and the back of footpath.

6.1.10 The proposed site layout indicates that the proposed future buildings are located above the existing TfGM drain route and therefore a diversion will be required, which will be subject to agreement with TfGM. It is assumed that an easement will be required, which will also need to be confirmed by TfGM.

6.1.11 The proposals are layout assumes a 6m easement, located 3m either side from the centreline.

6.1.12 Any works within the agreed easement will be subject to approval from TfGM.

6.2 Proposed Foul Water Drainage

6.2.1 As part of the enabling works, a separate foul and surface water drainage outfalls are proposed to be installed. However, the main drainage system for the development is not proposed to be installed as part of this phase and therefore no flows are proposed to be discharged via the installed connections at this stage.

6.2.2 The proposed foul water drainage is to be collected by gravity and outfall into the existing combined water public sewer at the junction of Oldham Road/Milnrow Road at Manhole referenced 0008 via the proposed sewer diversion works. However, this will require full co-ordination with the sewer diversion works and will be subject to an agreed diversion proposal with United Utilities.

6.2.3 The proposed outfall connection for the foul drainage has been sized based on the assumed peak flows likely to be generated from the proposed future development.

6.2.4 Connection to the public sewer network will be subject to a Section 106 Agreement with United Utilities.

6.2.5 The proposed drainage outfalls for the site have been detailed on the Proposed Enabling Works Drainage Layout included within *Appendix F*.

6.3 Proposed Surface Water Drainage

6.3.1 Although the drainage system is not proposed to be installed as part of this phase of works, it has been necessary to investigate the future development discharge potential to determine any necessary outfalls likely to be required and installed as part of this phase of works.

6.3.2 In following the standard hierarchy of drainage solutions, consideration should firstly be given to the discharge of surface water runoff by sustainable methods such as infiltration.

Infiltration

6.3.3 Due to historical evidence of development and redevelopment in and around the site area, it is expected that there will be variable depths of deposits of made ground across the site. The existing canal basins on site that have been infilled are also likely to have had permeable liners around the canal walls and base.

6.3.4 Soakaway testing has been completed within Site Investigation works and based on the results, infiltration was considered to be poor. Two locations were investigated: SA1 achieved some infiltration, however the excavation collapsed, which prevented the necessary 3 No. tests to be completed to base a design. SA2 achieved no infiltration and therefore 3 No. tests could not be completed.

6.3.5 The soakaway test results are enclosed in *Appendix E.*

6.3.6 Site investigation works confirm that groundwater levels have been identified between 1.20m to 13.5m bgl, which would unlikely provide adequate unsaturated ground below any infiltration system.

6.3.7 Considering the above information, it is assumed that infiltration SuDS will not be suitable for the site.

6.3.8 Any future consideration of infiltration should assess groundwater depths, potential of remobilising contaminants in addition to the ground conditions identified during site investigation works.

Watercourse

6.3.9 There is a 350mm x 750mm Culverted Watercourse indicated on the public sewer records to the north of the site.

6.3.10 As part of discussions held with Rochdale Council LLFA, they completed a site inspection to confirm if the culvert is present as they hold no formal data on the watercourse. The investigation works included visual inspection of the manholes within Water Street and this confirmed that there were no pipework/channels present within the chamber. Further chambers have been investigated within Milnrow Road (adjacent to the site), however there has been no evidence to date to indicate that the watercourse is present.

6.3.11 Based on the information available, it suggests that the watercourse has been removed therefore at this stage this is not considered a viable outfall for the development surface water drainage.

6.3.12 The closest known watercourse/waterbody is the River Roch, approximately 220m north of the site. Draining to this would not be feasible as it is a considerable distance from the site and would involve crossing various third-party land.

Surface Water Sewer

6.3.13 There are no existing public surface water sewers on or surrounding the site. Therefore, connection to a surface water sewer is not a viable option.

Combined Water sewer

6.3.14 There are various existing combined public sewers within, and in the vicinity of the site. It is therefore assumed that discharge to the public combined sewer network will likely be the only viable option for discharge from the site.

6.3.15 It is therefore considered at this stage that connection to the combined public sewer system.

6.3.16 As part of the enabling works, a separate foul and surface water drainage outfalls are proposed to be installed. However, the main drainage system for the development is not proposed to be installed as part of this phase and therefore no flows are proposed to be discharged via the installed connections at this stage.

6.3.17 The proposed surface water system outfall has been sized based on the catchment areas likely to drain to the system, on the basis there will be future provision for attenuation volumes under the main development works which will manage the run-off volumes and restricted follows will be discharged via the connections being installed under this phase.

6.3.18 The proposed surface water drainage is to be collected by gravity and outfall into the existing combined water public sewer at the junction of Oldham Road/Milnrow Road at Manhole referenced 0008 via the proposed sewer diversion works. However, this will require full co-ordination with the sewer diversion works and will be subject to an agreed diversion proposal with United Utilities.

6.3.19 Initial discussions with Rochdale LLFA confirm that the proposed surface water flows from the developed site should aim to achieve a minimum 50% reduction on proven existing discharge rates.

6.3.20 As proposals are to outfall into the public sewer system, discharge rates should also be agreed with United Utilities. United Utilities preference is to limit proposed discharge rates to greenfield run-off rates; however, they have agreed that we can restrict discharge to 50% of the existing 1 in 2-year brownfield run-off rates and greenfield rates.

6.3.21 The Greenfield and Brownfield flow rates have been calculated as follows:

Table 4: Greenfield/Brownfield Runoff rates

EXISTING & PROPOSED FLOWS		
AREA TYPE	CATCHMENT AREA (Ha)	FLOW RATE FOR THE 1 IN 2 YEAR EVENT (l/s)
ALLOWABLE FLOWS BASED ON PARTIAL BROWNFIELD RUNOFF - REFER TO DRAWING 075882-NHRH-CUR-XX-XX-DR-C-92010		
TOTAL GREENFIELD	1.96	14.3
TOTAL BROWNFIELD	0.46	65.3
BROWNFIELD DISCHARGE BASED ON 50% REDUCTION		32.7
TOTAL DISCHARGE (GREENFIELD + 50% BROWNFIELD)		**47**

6.3.22 The allowable flows are based on the partial brownfield/greenfield areas demonstrated on drawing 075882-NHRH-CUR-XX-XX-DR-C-92010, enclosed in *Appendix E*.

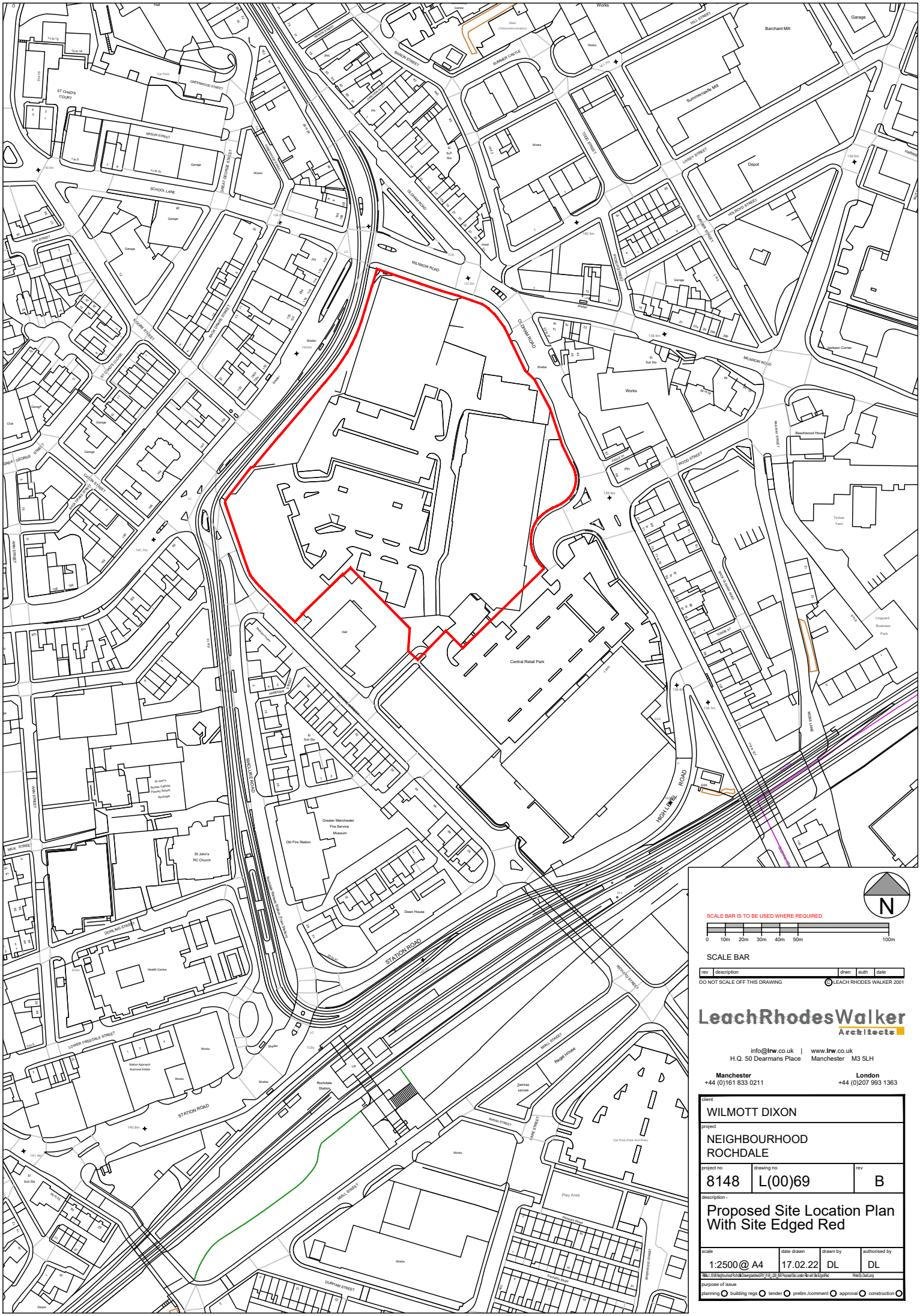
6.3.23 The proposed drainage outfalls for the site have been detailed on the Proposed Enabling Works Drainage Layout included within *Appendix F*.

6.3.24 Connection to the public sewer network will be subject to a Section 106 Agreement with United Utilities.

6.3.25 The final design of the drainage networks shall be in accordance with the legislation set by the Environment Agency, Manchester City Council and United Utilities.

Appendix A

Proposed Enabling Works Site Layout



N

SCALE BAR IS TO BE USED WHERE REQUIRED.

0 10m 20m 30m 40m 50m 100m

SCALE BAR

rev	description	drwn	auth	date

DO NOT SCALE OFF THIS DRAWING

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client
WILMOTT DIXON

project
NEIGHBOURHOOD ROCHDALE

project no	drawing no	rev
8148	L(00)69	B

description -
Proposed Site Location Plan With Site Edged Red

scale	date drawn	drawn by	authorised by
1:2500@ A4	17.02.22	DL	DL

Filename: L:\8148 Neighbourhood Rochdale\Drawings\Architect\DRW_8148_LBW_B69 Proposed Site Location Plan with Site Edged Red Printed By: David Long

purpose of issue
planning ○ building regs ○ tender ○ prelim./comment ○ approval ○ construction ○

Appendix B

United Utilities Public Sewer Records

United Utilities
Water for the North West

How to contact us:

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

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

Curtins Consulting Ltd

51-55
Tithebarn Street,
Liverpool,
L2 2SB

FAO:

Your Ref: 075882 Neighbourhood Rochdale
Our Ref: UUPS-ORD-211023
Date: 31/10/2020

Dear Sirs

Location: Neighbourhood Rochdale

I acknowledge with thanks your request dated 26/10/2020 for information on the location of our services.

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

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

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

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

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

Yours Faithfully,

Karen McCormack
Property Searches Manager

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

Water for the North West

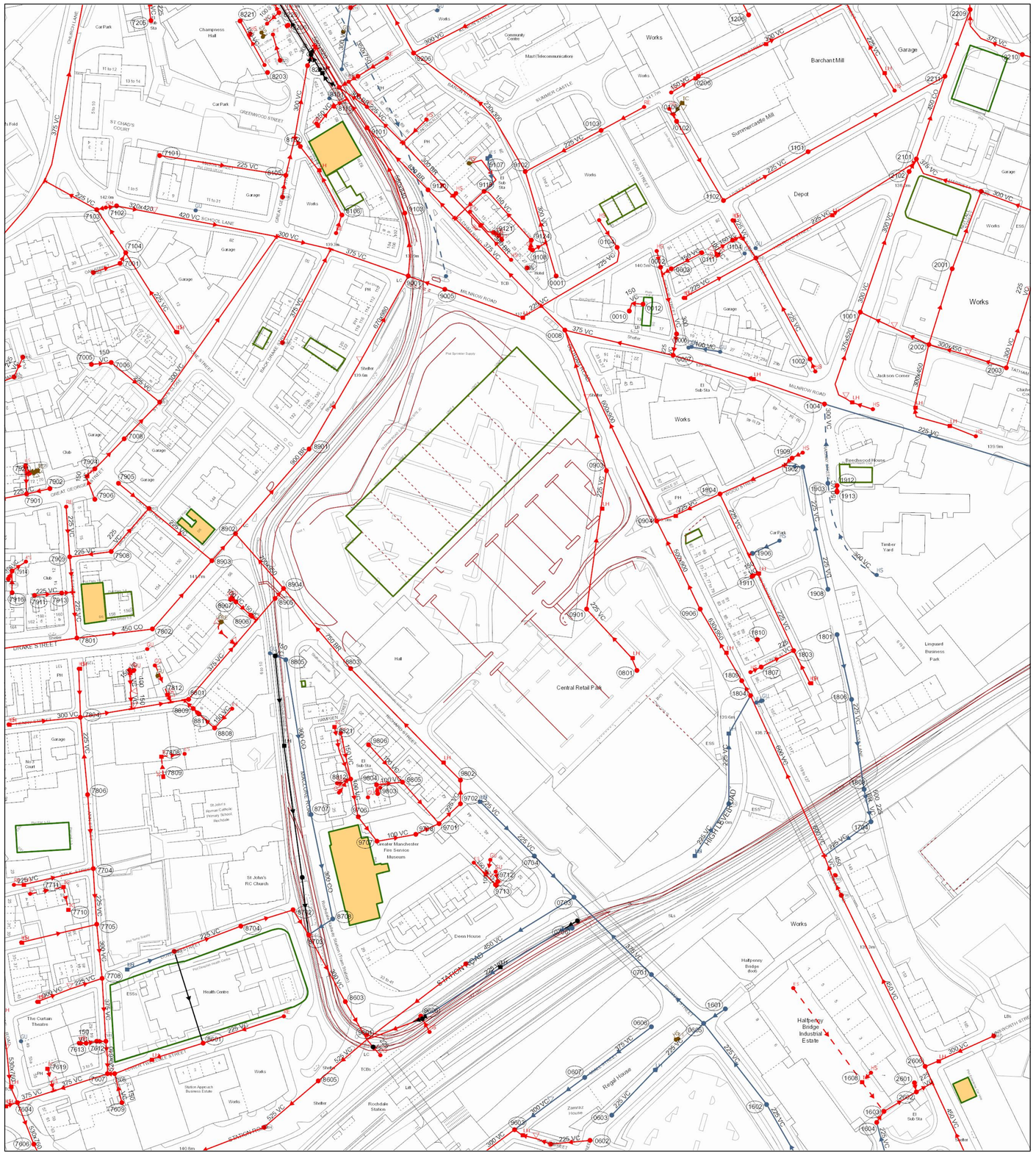
TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

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



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
1808	139.85	SW	137.88	500			BR	9.215544	
7911		CO	0	225			VC	14.95751	
9606	140.78	CO	138.82	300			VC	32.84396	1 in 71
9712		CO		100			VC	2.119205	
0901	140.08	CO	137.46	225			VC	77.78175	1 in 136
7801	143.23	CO	139.27	450			CO	42.29657	1 in 146
1102	140.76	CO	137.71	225			VC	54.20332	1 in 42
7904	143.57	CO	0	300			VC	28.3399	
8603	141.03	CO	136.89	300			VC	24.17908	1 in 110
9804		CO		100			VC	14.48812	
8225		CO		100			VC	14.86392	
8902	141.41	CO	134.28	900			BR	62.36987	1 in 120
0606	140.35	SW	138.65	375			VC	46.40043	1 in 125
0605	141.12	SW	137.95	375			VC	39.62323	1 in 209
8702	140.3	CO	137.33	300			VC	16.31468	1 in 181
8805	140.33	SW	137.9	300			CO	87.14848	1 in 236
7906	143.95	CO	142.57	150			VC	20.33151	
2003	139.68	CO	136.83	300			VC	43.9659	
8801	142.02	CO	138.52	375			VC	73.75224	1 in 29
9603	140.67	CO	137.94	300			VC	50	1 in 125
0103	141.79	CO	139.13	225			VC	47.88528	
0906	139.48	CO	134.98	630			BR	27.73085	1 in 163
9713		CO		150			VC	17.06038	
8704	140.82	CO	137.95	225			VC	30.36445	1 in 63
8115		CO		150			VC	8.472046	
7705	143.98	CO	140.01	300			VC	30.14963	1 in 27
0903	139.61	CO	136.85	225			VC	40.5216	
7908	144.04	CO	141.23	225			VC	31.89044	1 in 30
1806	141.15	SW	139.55	225			VC	50.48762	1 in 35
7612	142.28	CO	0	150			VC	5	
0008	139.72	CO	137.13	300			VC	6.082763	1 in 18
8102	135.37	CO	133.66	225			VC	5.830952	
7609	141.72	CO	140.24	150			VC	16.49242	
9702	139.51	CO	135.51	225			VC	13	1 in 76
0701	139.02	SW	137.74	375			VC	60.81118	1 in 138
8605	140.8	CO	136.31	525			VC	39.61892	
0008	138.82	CO	135.64	225			VC	67.58018	
0104	140.24	CO	137.17	225			VC	115.3102	1 in 34
1807	140.66	CO	138.97	225			VC	20.12461	1 in 101
8811		CO		150			VC	4.431383	
2606	140.63	CO	136.75	450			VC	106.0473	1 in 126
8101		CO	126.36	580			BR	26.94917	
0703	139.18	SW	137.28	450			VC	70.51476	1 in 235
1604	140.59	CO	138.42	225			VC	7.211102	1 in 15
7607	141.91	CO	137.45	375			VC	52.49762	
1908	140.76	SW	139.12	225			VC	69.42622	1 in 65
1603	140.5	CO	137.86	225			VC	21.09502	1 in 88
1903	140.58	SW	137.77	300			VC	44.04543	1 in 86
2002	139.79	CO	136.68	300			VC	43.9659	
8220		CO		100			VC	5.738782	
9103		CO	0	580			BR	51.99791	
9708		CO		100			VC	14.2161	
2002	139.79	CO	136.68	375			VC	21.0238	1 in 131
7913		CO	0	225			VC	6.293779	
9108		CO		150			VC	8.65347	
9102	139.41	CO	0	230			BR	92.0575	
0904	139.73	CO	134.63	600			BR	117.6308	
0607	140.52	SW	138.28	375			VC	23.60085	1 in 91
8220		CO		100			VC	8.924911	
0008	138.07	CO	0	375			VC	86.97701	
2211	136.87	CO	133.01	450			CO	39.56008	1 in 24
7914		CO		100			VC	9.330054	
0001	138.56	CO	135.26	300			VC	60.44005	
1906	142.01	CO	136.76	530			BR	39.35734	1 in 86
8703	140.52	CO	137.21	300			VC	42.37137	1 in 141
8106	138.55	CO	135.47	225			VC	44.57922	1 in 25
8808		CO		150			VC	11.71249	
7806	143.93	CO	141.51	225			VC	41.10961	1 in 64
7921		CO		100			VC	0.8220854	
8903		CO	0	450			CO	19.84943	
9805		CO		100			VC	30.71518	
9005	137.37	CO	133.8	225			VC	21.41906	1 in 535
1909	140.42	CO	137.94	225			VC	5.656854	
8708	140.9	SW	137.27	300			CO	16.05808	1 in 321
0602	141.39	CO	138.67	225			VC	22.09072	1 in 85
9803		CO		100			VC	4.814135	
0601	141.03	CO	138.32	225			VC	8.544003	1 in 53
8901	140.43	CO	133.74	900			BR	55.56977	1 in 150
8705	141.86	CO	138.59	225			VC	39.56008	1 in 62
2601	140.52	CO	138.04	225			VC	5.09902	1 in 24
1704	139.79	SW	0	225			VC	32.20248	
1902	140.45	SW	138.03	225			VC	10.04988	
1002	140.06	CO	138.15	225			VC	63.52952	1 in 65
9802	139.58	CO	135.03	750			BR	86.97757	1 in 300
2003	139.68	CO	137.12	300			VC	22.13594	1 in 92
8601	141.38	CO	137.82	225			VC	51.90511	
1804	139.05	CO		630			BR	46.04156	
9208	131.08	CO	129.22	150			VC	5.830952	
7608		CO	0	225			VC	2	
1004	140.27	CO	137.13	300			VC	88.25952	1 in 101
8105	137.2	CO	135.52	225			VC	21.58703	
7604		CO	0	530			BR	24.69818	
8707	140.37	SW	137.52	300			CO	59.20551	1 in 247
9101	132.68	CO	129.82	580			BR	27.17025	
8223	130.55	CO	126.55	300			CO	10.77159	1 in 269
7806	143.93	CO	141.51	225			VC	43.18565	1 in 40
1904	140.16	CO	137.34	225			VC	38.17115	1 in 18
7611		CO		530			BR	9.055386	
2209	135.42	CO	131.31	525			CO	10.04988	1 in 18
7001	142.11	CO	139.43	225			VC	0.708204	1 in 61
7915		CO		150			VC	5.017515	
7102	142.14	CO	139.19	320			VC	21.37756	
0111		CO	0	150			VC	19.23538	
9706		CO		100			VC	17.1949	
2001		CO	0	300			VC	45.88028	
1911		CO		150			VC	3.507146	
7902	144.12	CO	141.87	225			VC	13.34166	1 in 30
9806		CO		100			VC	27.93184	
0801	140.17	CO	137.98	225			VC	44.41251	1 in 87
1602	141.52	SW	139.51	225			VC	57.00877	1 in 47
9120	134.42	CO	129.78	820			BR	48.26717	1 in 51
9122		CO		100			VC	18.12347	
7007	143.03	CO	140.37	300			VC	112.6455	1 in 0.82139026
8907		CO		150			VC	11.01327	
7104	142.14	CO	139.29	225			VC	28.84441	1 in 70
9707		CO		100			VC	21.81102	
7908	144.04	CO	141.21	225			VC	23.19483	1 in 59
0706	144.07	SW	141.83	225			VC	6.230026	
7905	143.62	CO	140.91	225			VC	22.02271	1 in 27
1101	138.84	CO	136.41	225			VC	86.83318	1 in 39
2103	138.42	CO	135.19	375			VC	42.47038	1 in 109
8219		CO	0	150			VC	12.75588	
7708	143	CO	138.76	375			VC	35.05709	
7003	143.4	CO	141.72	225			VC	12.08305	1 in 93
1804	139.05	CO	135.28	630			BR	9.528218	
0603	141.23	SW	138.7	225			VC	72.13878	1 in 106
7704	144.04	CO	140.85	225			VC	31.06445	1 in 38
9001	137.63	CO	132.66	580			BR	35.24442	
7613	142.36	CO	0	150			VC	6.082763	
1801	140.82	SW	139.3	225			VC	36.87818	
9704	140.12	CO	136.97	450			VC	69.17454	1 in 150
7802	142.85	CO	138.96	450			CO	50.32892	
8812		CO		100			VC	21.32049	
8803	140.14	CO	134.72	750			BR	58.03271	
2210	136	CO	132.08	375			VC	33.91772	
9115		CO	0	820			BR	21.93171	
7904	143.57	CO	0	300			VC	23.28374	
7005	143.68	CO	141.99	150			VC	11.04536	1 in 33
1913		CO		150			VC	3.618628	
2607	142.32	CO	138.91	300			VC	41.63047	1 in 22
9206	133.07	CO	130.37	300			VC	38.94868	
7002	142.68	CO	141.03	225			VC	15.81139	1 in 10
7205	131.21	CO	127.81	225			VC	27.30387	1 in 38
7901	143.95	CO	141.4	225			VC	26.4764	1 in 17
8604	140.85	CO	0	525			VC	70.55257	
7916		CO		150			VC	12.06794	
8905	141.05	CO	135.96	375			VC	7.277584	
1702	141.91	SW	0	225			VC	63.18677	
7101	140.88	CO	138.82	225			VC	70.85902	1 in 23
0102	141.92	CO	139.27	225			VC	51.10773	1 in 33
8108	138.26	CO	137.11	400			BR	12.16553	1 in 8
1001	139.43	CO	136.36	300			VC	82.5409	1 in 62
7907	143.41	CO	140.04	225			VC	45.45327	
1703	138.63	CO	136.94	450			VC	13.92839	
7909	143.77	CO	140.81	225			VC	19.6121	
0007	139.52	CO	136.24	375			VC	61.61169	
2101	137.85	CO	134.78	450			CO	48.70318	1 in 28
8904		CO	0	700			BR	40.5689	
9701	139.63	CO	135.67	225			VC	16.27882	1 in 102
0704	139.32	SW	137.56	225			VC	31.82766	1 in 138
0206	141.27	CO	138.48	300			VC	91.6832	1 in 19
1601	141.09	SW	0	225			VC	14.4222	
7006	143.52	CO	141.56	225			VC	34.82815	1 in 0.25054420
1700	135.91	CO	135.91	600			VC	9.784431	
9601	140.78	CO	136.43	525			VC	35.48129	1 in 394
2602	140.45	CO	137.59	225			VC	10.29563	
7804	143.46	CO	139.94	300			VC	30.41381	1 in 42
1803	141	CO	138.75	225			VC	96.18055	1 in 75
7004	143.28	CO	141.57	225			VC	16.13907	1 in 85
8809		CO		150			VC	6.828858	
2102	138	CO	134.99	450			CO	8.087019	1 in 42
7103	142.01	CO	138.86	225			VC	33.12099	
0003	140.73	CO	138.93	150			VC	5.830952	
1104	140.68	CO	138.94	150			VC	5.385165	
8002		CO	0	375			VC	104.133	
0002	140.72	CO	138.49	300			VC	38.07896	1 in 28
1906	140.44	SW	139.38	100			VC	2.236068	
1106	140.34	CO	137.05	225			VC	102.7519	

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

LEGEND

Abandoned · Foul · Surface Water · Combined

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

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

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

MANHOLE FUNCTION

FO	Foul
SW	Surface Water
CO	Combined
OV	Overflow

SEWER SHAPE

CI	Circular	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:

Neighbourhood Rochdale,

Scale: 1:1250 **Date:** 31/10/2020

Sheet: 1 of 1

Printed by: Property Searches

SEWER RECORDS

United Utilities
Water for the North West

Appendix C

CCTV Drainage Survey/Utilities Survey drawing

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N

PLAN GRID NORTH

File Name: S21671-U-Rochdale Rev A.dwg

LEGEND

AS	AIR VALVE	BT	BT
BT	BT INSPECTION COVER	BT STAT RECORD	BT-A
CB	CONTROL BOX	CABLE DUCT	DU-A
COL	COLUMN / BOLLARD POST	CABLE DUCT STAT RECORD	DU-A
COM	COMMUNICATIONS COVER	CABLE TV	CA-A
CTV	CABLE TV COVER	CABLE TV STAT RECORD	CA-A
DC	DRAIN CHANNEL	DRAIN	DD-A
DP	DOWN PIPE	DRAIN STAT RECORD	DD-A
DT	DRAIN TRAP	CCTV	CC-S
EIC	ELEC. INSPECTION COVER	CCTV STAT RECORD	CC-S
ELB	ELECTRIC BOX	TELECOMS	TC-U
EP	EARTH PEG	TELECOMS STAT RECORD	TC-U
EP	ELECTRICITY POLE	EARTH ROD STRIP	EA-A
FCL	FINISHED CARRIAGE LEVEL	EARTH ROD STRIP STAT RECORD	EA-A
FH	FIRE HYDRANT	ELECTRIC	EL-A
G	GULLY	ELECTRIC STAT RECORD	EL-A
GLT	GROUND LIGHT	OPTICS	FO-A
GST	GAS TAP	OPTICS STAT RECORD	FO-A
GSV	GAS VALVE	FUEL LINE	FL-A
IC	INSPECTION COVER	FUEL LINE STAT RECORD	FL-A
IL	INVERT LEVEL	GAS	GM-S
KP	KERB OUTLET	GAS STAT RECORD	GM-S
LP	LAMP POST	MAINS WATER	MW-A
MH	MANHOLE	MAINS WATER STAT RECORD	MW-A
OF	OFFSET	SEWER CW	CW-S
OP	OUTFALL PIPE	SEWER CW STAT RECORD	CW-S
PC	PEDESTAL	SEWER FW	FW-A
PP	PETROL PUMP	SEWER FW STAT RECORD	FW-A
RE	RODDING EYE	SEWER UK	SW-A
SBP	SOIL & VENT PIPE	SEWER UK STAT RECORD	SW-A
SOF	SOFFIT LEVEL	TRAFFIC SIGNAL CABLE	TS-U
SV	STOP VALVE	TRAFFIC SIGNAL CABLE STAT RECORD	TS-U
TCB	TRAFFIC CONTROL BOX	UNIDENTIFIED TRACE	UT-A
TL	TRAFFIC LIGHT	UNIDENTIFIED TRACE STAT RECORD	UT-A
TLB	TRAFFIC LIGHT BOX	UNIDENTIFIED PIPE	UP-A
TP	TELEGRAPH POLE	UNIDENTIFIED PIPE STAT RECORD	UP-A
WM	WATER METER	VEHICLE DETECTOR CABLE	VC-U
WO	WATER OUTLET	VEHICLE DETECTOR CABLE STAT RECORD	VC-U
WST	WATER STOP TAP	SURVEY BOUNDARY	
WSV	WATER STOP VALVE	SURFACE FEATURES SURVEY	

Indicates no or poor record

QUALITY LEVEL

EOT	END OF TRACE
GPR	GROUND PENETRATING RADAR
UTL	UNABLE TO LIFT
UTS	UNABLE TO SONDE
UTT	UNABLE TO TRACE
SL1	SIGNAL LOSS
BLK	BLOCKED
BOC	BACKDROP GPR CONTACTS
BSL	BACKDROP SHAFT
TOP	TOP OF PIPE
TOT	TOP OF TANK
FFR	FITTING FROM RECORDS

A – Verification

B1 – Horizontal/Vertical location using multiple techniques

B2 – Horizontal/Vertical location using a single technique

B3 – Horizontal location using a single technique

B4 – Assumed route

C – Site Reconnaissance

D – Desktop utility records search

NOTES:

All levels relate to O.S (Newlyn) Datum, Established using network RTK. Survey plotted on a plane local grid, orientated to National Grid.

This Underground Utilities survey was conducted in compliance with the BSI PAS128:2014 standards.
Services linetypes display text indicating first an abbreviation of the services' function (eg. EL = Electric Cables) followed by the Quality Level to which that service was located (eg. B4 = Assumed route).

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Lines annotated as GPR indicate a series of consistent subsurface anomalies located using the Ground Penetrating Radar and should be considered as Quality Level C. The nature of these anomalies could not be determine by non-invasive means. GPR lines that were identifiable as a service are shown as their respective service.

DISCLAIMER:

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Where similar services run in close proximity it may be impossible to separately trace individual services as the trace signal can experience interference. In such cases, services will be shown as a single, annotated line. The displayed depth will refer to the shallowest detected utility.

Successful tracing of non-conductive materials may be limited. Drainage gulleys are also tested where possible to prove connectivity but if it is not always possible to introduce the sonde due to narrow pipe sizes and/or accumulated silt.

Depth information of underground services/features are generally accurate to within +/- 10% (i.e. a pipe at 2m deep may be accurate to +/-200mm) but this cannot be guaranteed. Depths shown usually refer to the top of the service. Gravity sewer and drain depths are usually to invert (base of drainage channel) unless otherwise stated.

Some above ground features may have been obscured at time of survey, it is not always possible to operate the Ground Penetrating Radar in areas including, but not limited to, dense vegetation, rubble, debris and/or roughtunerven ground.

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Excavation in the vicinity of services shown should be carried out with due diligence (Ref. HSG47).

SHEET LAYOUT

0 2m 4m 8m 12m 16m

SCALE BAR

REV	DATE	DESCRIPTION
A	June 21	225D pipe information from manhole MH904A updated (Sheet 3).

SURVEY & ENGINEERING PROJECTS

Client
Willmott Dixon Construction Limited
Hollinwood Business Centre
Albert Square, Albert Mill
Hollinwood
Oldham
OL8 3QL

Project Title
Utility Survey of Land at:
Richard Street, Drake Street & Oldham Road
Rochdale
O11 1DU

Surveyed	Drawn	Checked
L.Morris	R Webb	J.Gardner

Scale	Date	Drawing Ref.	No.	Size	Rev
1:200	May 21	S21671-U	01	A0	A

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N

PLAN GRID NORTH

File Name: S21671-U-Rochdale Rev A.dwg

LEGEND

AS	AIR VALVE	BT	BT-A / BT-A
BT	BT INSPECTION COVER	BT STAT RECORD	BT-A / BT-A
CB	CONTROL BOX	CABLE DUCT	DU-A / DU-A
CBP	CATHODIC PROT. POST		
COM	COMMUNICATIONS COVER	CABLE TV	CA-A / CA-A
CTV	CABLE TV COVER	CABLE TV STAT RECORD	CA-A / CA-A
D	DRAIN / CHANNEL	COAL	CO-A / CO-A
DP	DOWN PIPE	COAL STAT RECORD	CO-A / CO-A
EH	ELEC. HEATER	TELECOMS	TC-D / TC-D
EIC	ELEC. INSPECTION COVER	TELECOMS STAT RECORD	TC-D / TC-D
EJB	ELEC. JUNCTION BOX	EARTH ROD STRIP	EA-A / EA-A
ELB	EARTH BOLT	EARTH ROD STRIP STAT RECORD	EA-A / EA-A
EP	ELECTRICITY POLE	ELECTRIC	EL-A / EL-A
FCL	FENCE CONSTRUCTION LEVEL	ELECTRIC STAT RECORD	EL-A / EL-A
FH	FIRE HYDRANT	LAMP CAPTION	FU-A / FU-A
G	GULLY	FUEL LINE	FL-A / FL-A
GLT	GANTRY LIGHT	FUEL LINE STAT RECORD	FL-A / FL-A
GST	GAS TAP	FLUID CONDITION LINE	FL-D / FL-D
GV	GAS VALVE	GAS	GM-A / GM-A
HC	HANDHOLE COVER	GAS STAT RECORD	GM-A / GM-A
IL	INVERT LEVEL	HANDHOLE	HH-A / HH-A
KP	KERB OUTLET	MAINS WATER	WM-A / WM-A
LP	LAMP POST	MAINS WATER STAT RECORD	WM-A / WM-A
MH	MANHOLE	SEWER CW	CW-A / CW-A
OF	OIL FILLER	SEWER CW STAT RECORD	CW-A / CW-A
OP	OUTFALL PIPE	SEWER FW	FW-A / FW-A
PC	PEDESTAL	SEWER FW STAT RECORD	FW-A / FW-A
PP	PETROL PUMP	SEWER UK	SW-A / SW-A
RE	RODDING EYE	SEWER UK STAT RECORD	SW-A / SW-A
SGP	SOFFIT GAS PIPE	TRAFFIC CONTROL CABLE	TC-A / TC-A
SOF	SOFFIT LEVEL	TRAFFIC CONTROL CABLE STAT RECORD	TC-A / TC-A
SV	STOP VALVE	UNIDENTIFIED TRACE	UT-A / UT-A
TB	TELEPHONE CALL BOX	UNIDENTIFIED TRACE STAT RECORD	UT-A / UT-A
TL	TRAFFIC LIGHT	UNIDENTIFIED PIPE	UP-A / UP-A
TLB	TRAFFIC LIGHT BOX	VEHICLE DETECTOR CABLE	VD-A / VD-A
TP	TELEPHONE POLE	SURVEY BOUNDARY	
WV	WATER VALVE	SURVEY BOUNDARY	
WT	WATER TANK	OUTSIDE SURVEY AREA	
WST	WATER STOP TAP	Indicates no or scarce fit of dataset	
WSV	WATER STOP VALVE		
EOT	END OF TRACE		
OSA	OUTSIDE SURVEY AREA		
UTL	UNABLE TO LIFT		
UTS	UNABLE TO SONDE		
UTT	UNABLE TO TRACE		
SL/L	SIGNAL LOSS		
BLK	BLOCKED		
NC	NO CONNECTOR GPR CONTACT		
RD	RACKROOF PIPE		
SP	SOIL VENT PIPE		
TOP	TOP OF PIPE		
WM	WATER METER		
FM	FITTING FROM RECORDS		

QUALITY LEVEL

A – Verification

B1 – Horizontal/Vertical location using multiple techniques

B2 – Horizontal/Vertical location using a single technique

B3 – Horizontal location using a single technique

B4 – Assumed route

C – Site Reconnaissance

D – Desktop utility records search

NOTES:

All levels relate to O.S (Newlyn) Datum, Established using network RTK. Survey plotted on a plane local grid, orientated to National Grid.

This Underground Utilities survey was conducted in compliance with the BSI PAS128:2014 standards.
Services linetypes display text indicating first an abbreviation of the services' function (eg. EL = Electric Cables) followed by the Quality Level to which that service was located (eg. B4 = Assumed route).

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SHEET LAYOUT

0 2m 4m 8m 12m 16m

SCALE BAR

REV	DATE	DESCRIPTION
A	June 21	2250 pipe information from manhole MH904A updated (Sheet 3).

SURVEY & ENGINEERING PROJECTS

Client
Wilmott Dixon Construction Limited
Hollinwood Business Centre
Albert Square, Albert Mill
Hollinwood
Oldham
OL8 3QL

Project Title
Utility Survey of Land at:
Richard Street, Drake Street & Oldham Road
Rochdale
OL11 1DU

Surveyed	Drawn	Checked
L.Morris	R Webb	J.Gardner

Scale	Date	Drawing Ref.	No.	Size	Rev
1:200	May 21	S21671-U	02	A0	A

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N

PLAN GRID NORTH

File Name: S21671-U-Rochdale Rev A.dwg

LEGEND

AS	AIR VALVE	BT	BT-A / BT-A
BT	BT INSPECTION COVER	BT STAT RECORD	BT-A / BT-A
CB	CONTROL BOX	CABLE DUCT	DUCT-A / DUCT-A
CBP	CATHODIC PROTECTION POST	CABLE DUCT STAT RECORD	DUCT-A / DUCT-A
COM	COMMUNICATIONS COVER	CABLE TV	CA-A / CA-A
CTV	CABLE TV COVER	CABLE TV STAT RECORD	CA-A / CA-A
DC	DRAIN CHANNEL	COAL	CO-A / CO-A
DP	DOWN PIPE	COAL STAT RECORD	CO-A / CO-A
EH	ELEC. HEAD	TELECOMS	TC-O / TC-O
EIC	ELEC. INSPECTION COVER	TELECOMS STAT RECORD	TC-O / TC-O
ELB	ELECTRIC BOX	EARTH ROD STRIP	EA-A / EA-A
EP	EARTH PEG	EARTH ROD STRIP CLOSED	EA-A / EA-A
EP	ELECTRICITY POLE	ELECTRIC	EL-A / EL-A
FL	FLOOD LIGHTING LEVEL	ELECTRIC STAT RECORD	EL-A / EL-A
FH	FIRE HYDRANT	FIBRE OPTICS	FO-A / FO-A
G	GULLY	FIBRE OPTICS STAT RECORD	FO-A / FO-A
GLT	GROUND LIGHT	FUEL LINE	FL-A / FL-A
GST	GAS TAP	FUEL LINE STAT RECORD	FL-A / FL-A
GSV	GAS VALVE	GAS PRESSURE LINE	GM-S / GM-S
IC	INSPECTION COVER	GAS STAT RECORD	GM-S / GM-S
IL	INVERT LEVEL	MAINS WATER STAT RECORD	WM-S / WM-S
LP	KERB OUTLET	MAINS WATER	WM-S / WM-S
MH	MANHOLE	SEWER CM	CM-S / CM-S
MW	MARKER POST	SEWER CM STAT RECORD	CM-S / CM-S
OP	OUTFALL PIPE	SEWER FM	FM-S / FM-S
PC	PEDESTAL	SEWER FM STAT RECORD	FM-S / FM-S
PP	PETROL PUMP	SEWER SW	SW-S / SW-S
RE	RODDING EYE	SEWER SW STAT RECORD	SW-S / SW-S
SGP	SOIL VENT PIPE	TRAFFIC SIGNAL CABLE	TM-O / TM-O
SOF	SOFFIT LEVEL	TRAFFIC SIGNAL CABLE STAT RECORD	TM-O / TM-O
SV	STOP VALVE	UNIDENTIFIED TRACE	UT-A / UT-A
TB	TELEPHONE CALL BOX	UNIDENTIFIED TRACE STAT RECORD	UT-A / UT-A
TL	TRAFFIC LIGHT	UNIDENTIFIED PIPE	UP-A / UP-A
TLB	TRAFFIC LIGHT BOX	VEHICLE DETECTOR CABLE	VD-A / VD-A
TP	TELEPHONE POLE	SURVEY BOUNDARY	
WV	WATER VALVE	SURVEY BOUNDARY	
WT	WATER TANK	OUTSIDE SURVEY AREA	
WST	WATER STOP TAP		
WSV	WATER STOP VALVE		

EOT	END OF TRACE
OSA	OUTSIDE SURVEY AREA
UTL	UNABLE TO LIFT
UTS	UNABLE TO SONDE
UTT	UNABLE TO TRACE
SLA	SIGNAL LOSS
BLK	BLOCKED
NCC	NO CONCRETE GPR CONTACTS
RSL	RACKSPACE WIRE
TSP	TOP OF STEP
TOP	TOP OF PIPE
FR	FITTING FROM RECORDS

Indicates tie on plans to 1st manhole

QUALITY LEVEL

A – Verification

B1 – Horizontal/Vertical location using multiple techniques

B2 – Horizontal/Vertical location using a single technique

B3 – Horizontal location using a single technique

B4 – Assumed route

C – Site Reconnaissance

D – Desktop utility records search

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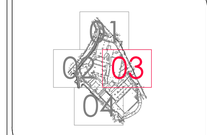

SHEET LAYOUT

0 2m 4m 8m 12m 16m

SCALE BAR

REV	DATE	DESCRIPTION
A	June 21	225ø pipe information from manhole MH904A updated (Sheet 3)

SURVEY & ENGINEERING PROJECTS

Client
Wilmott Dixon Construction Limited
Hollinwood Business Centre
Albert Square, Albert Mill
Hollinwood
Oldham
OL8 3QL

Project Title
Utility Survey of Land at:
Richard Street, Drake Street & Oldham Road
Rochdale
O11 1DU

Surveyed	Drawn	Checked
L.Morris	R Webb	J.Gardner

Scale	Date	Drawing Ref.	No.	Size	Rev
1:200	May 21	S21671-U	03	A0	A

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N

PLAN GRID NORTH

File Name: 521671-U-Rochdale Rev A.dwg

LEGEND

AB	AIR VALVE	BT	BT-A / BT-A
BT	BT INSPECTION COVER	BT STAT RECORD	BT-A / BT-A
CB	CONTROL BOX	CABLE DUCT	DU-A / DU-A
CBP	CABLE DUCT POST	CABLE DUCT STAT RECORD	DU-A / DU-A
COM	COMMUNICATIONS COVER	CABLE TV	CA-A / CA-A
CTV	CABLE TV COVER	CABLE TV STAT RECORD	CA-A / CA-A
DC	DRAIN CHANNEL	COAL	CO-A / CO-A
DP	DOWN PIPE	COAL STAT RECORD	CO-A / CO-A
EM	ELECTRIC METER	TELECOMS	TC-U / TC-U
EX	ELEC. INSPECTION COVER	TELECOMS STAT RECORD	TC-U / TC-U
EP	ELECTRIC POST	EARTH ROD STRIP	EA-A / EA-A
ER	EARTH ROD	ELECTRIC BOOSTER BUILDING	EL-A / EL-A
EP	ELECTRICITY POLE	ELECTRIC	EL-A / EL-A
FA	FIRE ALARM CONTROL LEVEL	ELECTRIC STAT RECORD	EL-A / EL-A
FH	FIRE HYDRANT	GRID CAPTEX	FU-A / FU-A
G	GULLY	GRID CAPTEX STAT RECORD	
GLT	GROUND LIGHT	FUEL LINE	FL-A / FL-A
GST	GAS TAP	FUEL LINE STAT RECORD	FL-A / FL-A
GSV	GAS VALVE	GRID FIBRE OPTIC LINE	OP-U / OP-U
IC	INSPECTION COVER	GAS	GM-U / GM-U
IL	INVERT LEVEL	GAS STAT RECORD	GM-U / GM-U
HY	KERB OUTLET	MAINS WATER	WM-A / WM-A
LP	LAMP POST	MAINS WATER STAT RECORD	WM-A / WM-A
MH	MANHOLE	SEWER CW	CW-A / CW-A
OC	OPEN CHANNEL	SEWER CW STAT RECORD	CW-A / CW-A
OP	OUTFALL PIPE	SEWER FW	FW-A / FW-A
PC	PEDESTAL	SEWER FW STAT RECORD	FW-A / FW-A
PP	PITWELL PUMP	SEWER UK	SW-A / SW-A
RE	RODDING EYE	SEWER UK STAT RECORD	SW-A / SW-A
SHP	SHOWER HOSE PIPE	TRAFFIC SIGNAL CABLE	TS-U / TS-U
SOF	SOFFIT LEVEL	TRAFFIC STAT RECORD	TS-U / TS-U
SV	STOP VALVE	UNIDENTIFIED TRACE	UT-A / UT-A
TCB	TRAFFIC CONTROL CALL BOX	UNIDENTIFIED CABLE	UT-A / UT-A
TL	TRAFFIC LIGHT	UNIDENTIFIED PIPE	UP-A / UP-A
TLB	TRAFFIC LIGHT BOX	VEHICLE DETECTION CABLE	VD-U / VD-U
TP	TRIAL PIT TRACE	WATER COURSE	WC-A / WC-A
WM	WATER METER	SURVEY BOUNDARY	
WP	WATER POST	ABANDONED SERVICE SURVEY	
WST	WATER STOP TAP		
WSV	WATER STOP VALVE		
EOT	END OF TRACE		
NAD	NO ACCESS TO ANY AREA		
UTL	UNABLE TO LIFT		
UTS	UNABLE TO SONDE		
EOT	END OF TRACE		
SVL	SIGNAL LOSS		
BLK	BLOCKED		
NCP	NO CONCRETE GPR CONTACTS		
RSL	RACKSHOP WIRE		
TWP	TOP OF WIRE		
TOP	TOP OF PIPE		
MH	MANHOLE		
FI	FITTING FROM RECORDS		

Services in or close to the carriageway

QUALITY LEVEL

A – Verification

B1 – Horizontal/Vertical location using multiple techniques

B2 – Horizontal/Vertical location using a single technique

B3 – Horizontal location using a single technique

B4 – Assumed route

C – Site Reconnaissance

D – Desktop utility records search

NOTES:

All levels relate to O.S (Newlyn) Datum, Established using network RTK. Survey plotted on a plane local grid, orientated to National Grid.

This Underground Utilities survey was conducted in compliance with the BSI PAS128:2014 standards.
Services linetypes display text indicating first an abbreviation of the services' function (eg. EL = Electric Cables) followed by the Quality Level to which that service was located (eg. B4 = Assumed route).

Quality Level descriptions shown in the above legend are for reference purposes only and are not intended as detailed descriptions.
For more information on Quality Levels, please consult the BSI PAS 128:2014 standard document.

Lines annotated as GPR indicate a series of consistent subsurface anomalies located using the Ground Penetrating Radar and should be considered as Quality Level C. The nature of these anomalies could not be determine by non-invasive means. GPR lines that were identifiable as a service are shown as their respective service.

DISCLAIMER:

At SEP we use skilled and experienced staff, modern up to date techniques and top of the range electromagnetic and radar technology to locate and trace sub-surface utilities. However the performance of the equipment employed in non-invasive surveys can be adversely affected by factors outside the control of SEP. Therefore SEP cannot guarantee that all utilities present on site have been located. It is the responsibility of the Client to consult regional authority records and undertake trial digs where appropriate.

Where similar services run in close proximity it may be impossible to separately trace individual services as the trace signal can experience interference. In such cases, services will be shown as a single, annotated line. The displayed depth will refer to the shallowest detected utility.

Successful tracing of non-conductive materials may be limited. Drainage gullies are also tested where possible to prove connectivity but if it is not always possible to introduce the sonde due to narrow pipe sizes and/or accumulated silt.

Depth information of underground services/features are generally accurate to within +/- 10% (i.e. a pipe at 2m deep may be accurate to +/-200mm) but this cannot be guaranteed. Depths shown usually refer to the top of the service. Gravity sewer and drain depths are usually to invert (base of drainage channel) unless otherwise stated.

Some above ground features may have been obscured at time of survey. It is not always possible to operate the Ground Penetrating Radar in areas including, but not limited to, dense vegetation, rubble, debris and/or rough/uneven ground.

Existing record information that was made available to SEP by the Client or by the statutory utility provider should be regarded only as an indication and not as the guarantees.

Excavation in the vicinity of services shown should be carried out with due diligence (Ref. HSG47).

SHEET LAYOUT

0 2m 4m 8m 12m 16m

SCALE BAR

REV	DATE	DESCRIPTION
A	June 21	2250 pipe information from manhole MH904A updated (Sheet 3).

SURVEY & ENGINEERING PROJECTS

Client
Willmott Dixon Construction Limited
Hollinwood Business Centre
Albert Square, Albert Mill
Hollinwood
Oldham
OL8 3QL

Project Title
Utility Survey of Land at:
Richard Street, Drake Street & Oldham Road
Rochdale
O11 1DU

Surveyed	Drawn	Checked
L.Morris	R Webb	J.Gardner

Scale	Date	Drawing Ref.	No.	Size	Rev
1:200	May 21	521671-U	04	A0	A

Appendix D

Environment Agency Flood Map for Planning

Flood map for planning

Your reference	Location (easting/northing)	Created
Neighbourhood	**389968/412935**	**22 Oct 2020 11:21**

Your selected location is in flood zone 1, an area with a low probability of flooding.

This means:

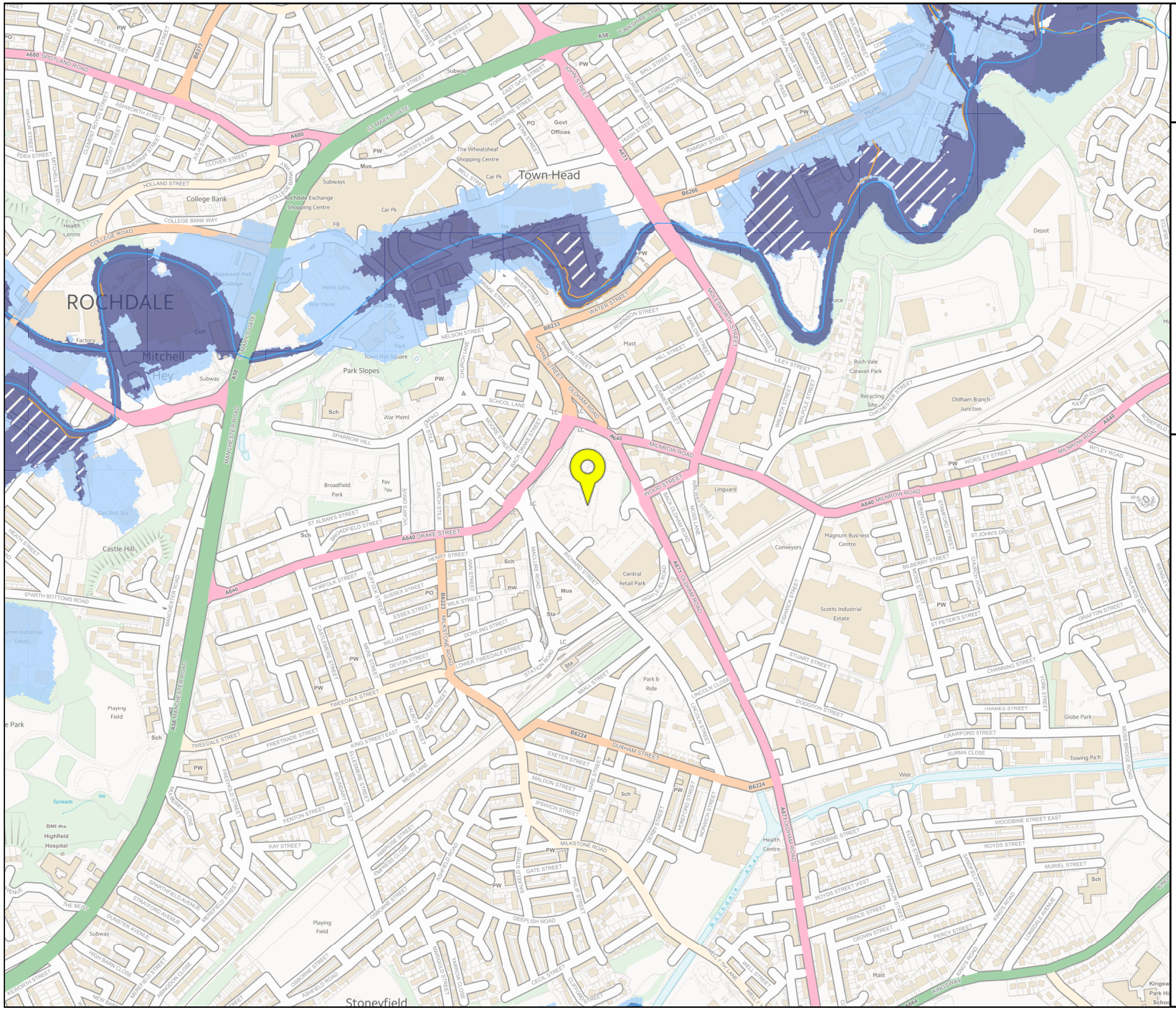
- you don't need to do a flood risk assessment if your development is smaller than 1 hectare and not affected by other sources of flooding
- you may need to do a flood risk assessment if your development is larger than 1 hectare or affected by other sources of flooding or in an area with critical drainage problems

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

The Open Government Licence sets out the terms and conditions for using government data.
https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/



Environment Agency

Flood map for planning

Your reference
Neighbourhood

Location (easting/northing)
389968/412935

Scale
1:10000

Created
22 Oct 2020 11:21

- Selected point
- Flood zone 3
- Flood zone 3: areas benefitting from flood defences
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Flood storage area

0 100 200 300m

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Appendix E

Soakaway Testing Report

STRUCTURAL SOILS LTD

INSITU TESTING REPORT

1774

Report No. 784871.R01(00)

Date	01-April-2021	Contract	Neighbourhood, Rochdale

Client Curtins Consulting Ltd
Address 51-55 TITHEBARN STREET
LIVERPOOL
L2 2SB

For the Attention of Siobhán Hyde

Order received	29-March-2021	Client Reference	
Testing Started	31-March-2021	Client Order No.	EBMA2665
Testing Completed	31-March-2021	Instruction Type	Written

Tests marked 'Not UKAS Accredited' in this report are not included in the UKAS Accreditation Schedule for our Laboratory.

UKAS Accredited Tests

Not - UKAS Tests:

* 2 no.Soakaway Testing to BRE Digest 365
Please note that 3 fills in each pit was not achievable due to time constraints/ground conditions

The results represent the ground conditions at the specified locations and depths at the time of testing.

Please Note: Remaining samples will be retained for a period of one month from today and will then be disposed of.
Test were undertaken on samples 'as received' unless otherwise stated.
Opinions and interpretations expressed in this report are outside the scope of accreditation for this laboratory.

Structural Soils Ltd, The Potteries, Pottery Street, Castleford, WF10 1NJ Tel.01977552255. e-mail matthew.doran@soils.co.uk

TESTING VERIFICATION CERTIFICATE

The test results included in this report are certified as:-

ISSUE STATUS: **FINAL**

In accordance with the Structural Soils Ltd Laboratory Quality Management System, results sheets and summaries of results issued by the laboratory are checked by an approved signatory. The integrity of the test data and results are ensured by control of the computer system employed by the laboratory as part of the Software Verification Program as detailed in the Laboratory Quality Manual.

This testing verification certificate covers all testing compiled on or before the following datetime: **01/04/2021 12:17:34**.

Testing reported after this date is not covered by this Verification Certificate.



Approved Signatory
Matthew Doran (Deputy Site Testing Manager)

(Head Office)
Bristol Laboratory
Unit 1A, Princess Street
Bedminster
Bristol
BS3 4AG

Castleford Laboratory
The Potteries, Pottery Street
Castleford
West Yorkshire
WF10 1NJ

Hemel Laboratory
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Tonbridge Laboratory
Anerley Court, Half Moon Lane
Hildenborough
Tonbridge
TN11 9HU

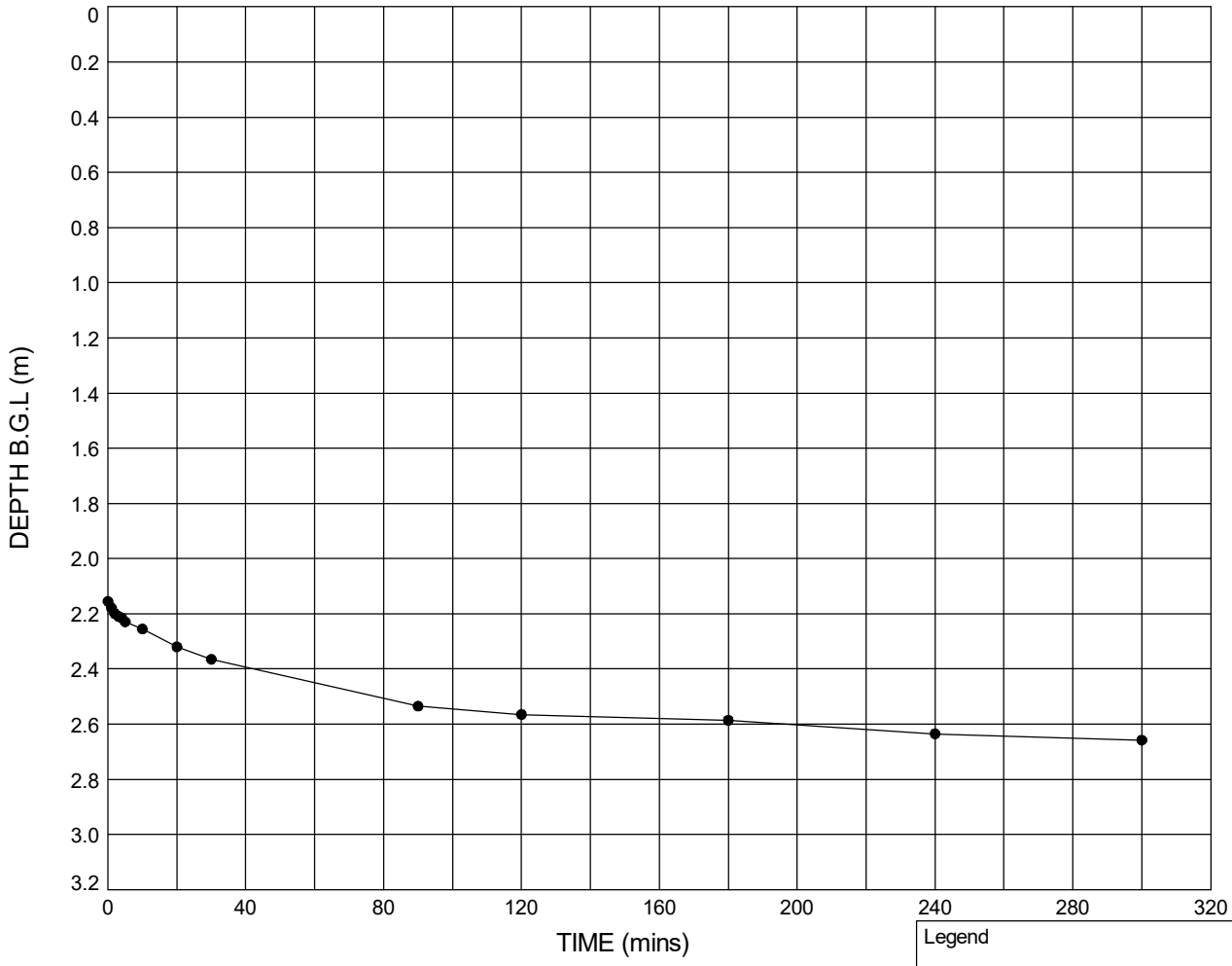
GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | GrfcText L - LAB VERIFICATION REPORT - V02 - A4P | 784871.GPJ - v10_01.
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 01/04/21 - 12:18 | MD3 |

FULL SCALE SOAKAWAY TEST

Non-standard test

Soakaway Test - Position ID : **TT02/SA1**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME



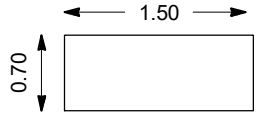
Legend

● Test 1 (31.03.21)

Pit start depth:	=	**3.20**	m
Pit final depth:	=	**3.00**	m
Effective depth, De	=	**0.84**	m
Effective storage volume, V_{p75-25}	=	**0.4426**	m^3
Surface area, a_{p50}	=	**2.9046**	m^2
Time, t_{p75-25}	=	**36414**	secs
Infiltration rate, f	=	**4.18x10^{-6}**	m/s

Please note test data was extrapolated to obtain tp75-tp25.
Terminated due to collapsing of Side walls after 300mins

Plan (Not to scale)



No Bearing Taken

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date
C Cole	**01/04/21**	M Dow	**01/04/21**

Contract	Contract Ref:
Neighbourhood, Rochdale	**784871**

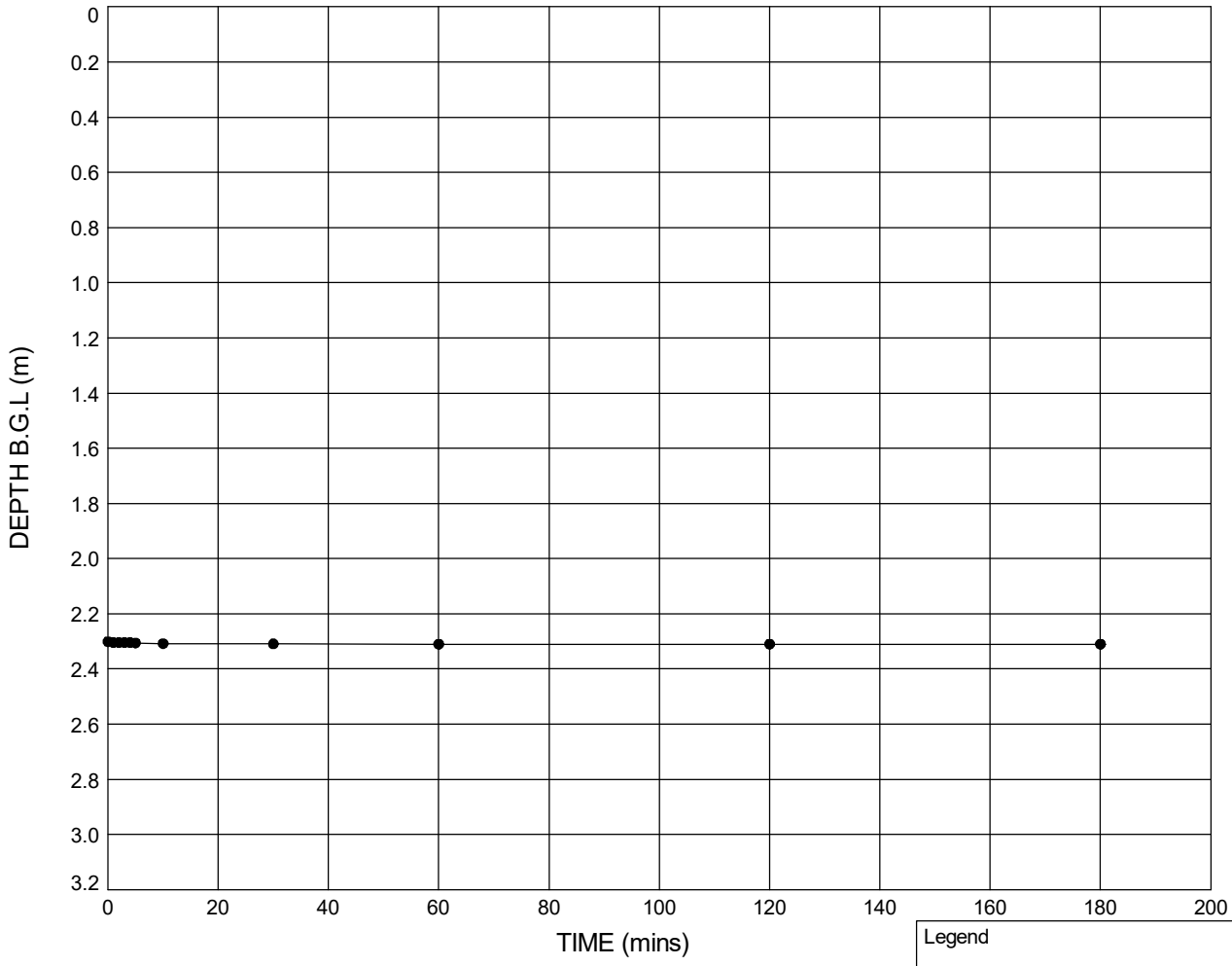
GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph I - TP SOAKAWAY - 2 - FINAL REPORT - A4P | 784871.GPJ - v10_01. | 01/04/21 - 12:05 | MD3 |

FULL SCALE SOAKAWAY TEST

Non-standard test

Soakaway Test - Position ID : **TTA/SA2**

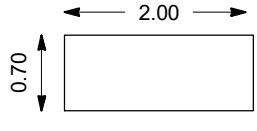
PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME



Legend

● Test 1 (31.03.21)

Plan (Not to scale)



No Bearing Taken

Pit start depth:	=	**3.10**	m
Pit final depth:	=	**3.10**	m
Effective depth, De	=	**0.80**	m
Effective storage volume, V_{p75-25}	=	**0.5593**	m^3
Surface area, a_{p50}	=	**3.5573**	m^2
Time, t_{p75-25}	=	**N/A**	secs
Infiltration rate, f	=	**N/A**	m/s

Notes: Test 1 - Unable to calculate infiltration rate due to insufficient drop in water level

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

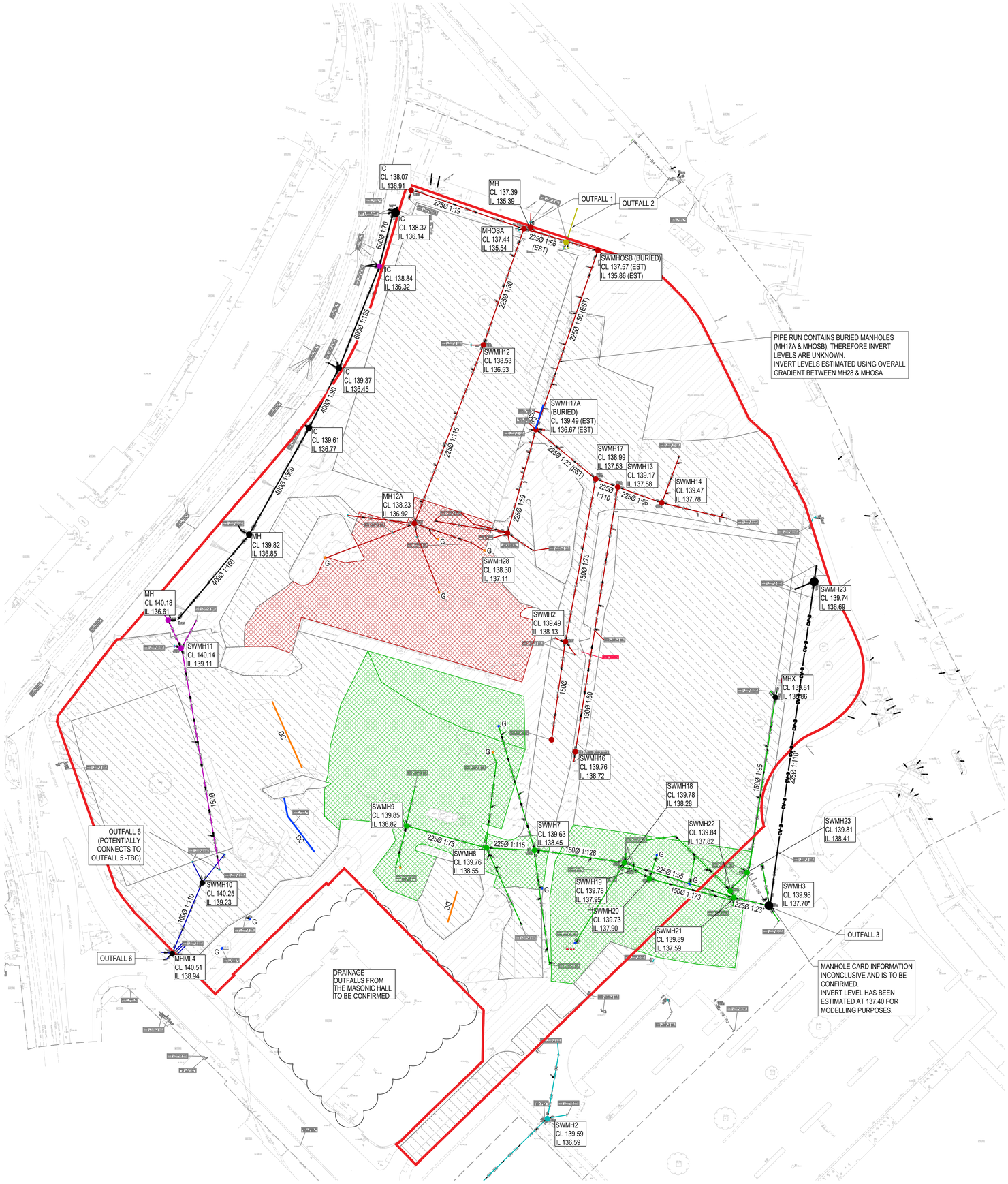
Compiled By	Date	Checked By	Date
C Cole	**01/04/21**	M Dan	**01/04/21**

Contract	Contract Ref:
Neighbourhood, Rochdale	**784871**

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph I - TP SOAKAWAY - 2 - FINAL REPORT - A4P | 784871.GPJ - v10_01. | 01/04/21 - 12:06 | MD3 |

Appendix F

Existing Catchment Plan



KEY:

- REDLINE BOUNDARY TAKEN FROM SHED KM DRAWING NHRH-SKM-Z0-00-DR-A-(00)051 PROPOSED PLAN - PHASE 01
- EXISTING PUBLIC COMBINED SEWER
- EXISTING SURFACE WATER SEWER
- EXISTING GULLY (CONFIRMED ON TOPO/ CCTV SURVEY
- EXISTING GULLY (NOTED ON SITE WALKOVER)
- EXISTING DRAINAGE CHANNEL (CONFIRMED ON TOPO/ CCTV SURVEY
- EXISTING DRAINAGE (NOTED ON SITE WALKOVER)
- EXISTING PRIVATE DRAINAGE - OUTFALL 1 (CONFIRMED)
- EXISTING PRIVATE DRAINAGE - OUTFALL 1 (INTERPOLATED)
- EXISTING PRIVATE DRAINAGE - OUTFALL 2 (CONFIRMED)
- EXISTING PRIVATE DRAINAGE - OUTFALL 2 (INTERPOLATED)
- EXISTING PRIVATE DRAINAGE - OUTFALL 3 (CONFIRMED)
- EXISTING PRIVATE DRAINAGE - OUTFALL 3 (INTERPOLATED)
- EXISTING PRIVATE DRAINAGE - OUTFALL 4 (CONFIRMED)
- EXISTING PRIVATE DRAINAGE - OUTFALL 4 (INTERPOLATED)
- EXISTING PRIVATE DRAINAGE - OUTFALL 5 (CONFIRMED)
- EXISTING PRIVATE DRAINAGE - OUTFALL 5 (INTERPOLATED)
- EXISTING PRIVATE DRAINAGE - OUTFALL 6 (CONFIRMED)
- EXISTING PRIVATE DRAINAGE - OUTFALL 6 (INTERPOLATED)

AREA SUMMARY

- EXISTING PERMEABLE AREA: 0.58 Ha
- EXISTING IMPERMEABLE AREA: NO CONNECTION TO OUTFALL. 1.38 Ha
- EXISTING IMPERMEABLE AREA: CONNECTION TO OUTFALL 1 0.16 Ha
- EXISTING IMPERMEABLE AREA: CONNECTION TO OUTFALL 2 NO AREA
- EXISTING IMPERMEABLE AREA: CONNECTION TO OUTFALL 3 0.34 Ha
- EXISTING IMPERMEABLE AREA: CONNECTION TO OUTFALL 4 NO AREA
- EXISTING IMPERMEABLE AREA: CONNECTION TO OUTFALL 5 NO AREA
- EXISTING IMPERMEABLE AREA: CONNECTION TO OUTFALL 6 NO AREA

EXISTING FLOW: BASED ON MICRODRAINAGE MODEL OF EXISTING DRAINAGE

OUTFALL	CATCHMENT AREA (Ha)	FLOW RATE FOR THE 1 IN 1 YEAR EVENT (l/s)	FLOW RATE FOR THE 1 IN 30 YEAR EVENT (l/s)	FLOW RATE FOR THE 1 IN 100 YEAR EVENT (l/s)
PERMEABLE AREA (GREENFIELD)	0.58	4.1	8.0	9.8
IMPERMEABLE AREA: NO OUTFALL (GREENFIELD)	1.38	9.7	18.9	23.2
IMPERMEABLE AREA: OUTFALL 1 (BROWNFIELD)	0.16	17.9	43.1	54.0
IMPERMEABLE AREA: OUTFALL2 (BROWNFIELD)	0.00	0.0	0.0	0.0
IMPERMEABLE AREA: OUTFALL 3 (BROWNFIELD)	0.30	32.6	65.9	74.6
IMPERMEABLE AREA: OUTFALL 4 (BROWNFIELD)	0.00	0.0	0.0	0.0
IMPERMEABLE AREA: OUTFALL 5 (BROWNFIELD)	0.00	0.0	0.0	0.0
IMPERMEABLE AREA: OUTFALL 6 (BROWNFIELD)	0.00	0.0	0.0	0.0
TOTAL GREENFIELD	1.96	13.8	26.9	33.0
TOTAL BROWNFIELD	0.46	50.5	109.0	128.6
BROWNFIELD DISCHARGE BASED ON 50% REDUCTION		25.3	54.5	64.3
TOTAL DISCHARGE (GREENFIELD + 50% BROWNFIELD)		39.1	81.4	97.3
ALLOWABLE DISCHARGE RATE TO BE AGREED WITH LLFA & UNITED UTILITIES				

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. REDLINE BOUNDARY TAKEN FROM SHED KM DRAWING NHRH-SKM-Z0-00-DR-A-(00)051 PROPOSED PLAN - PHASE 01

DRAWING IS BASED ON:

- PROPOSED SITE PLAN NHRH-SKM-Z0-00-DR-A-(00)051
- TOPOGRAPHICAL SURVEY S19388-T BY SEP SURVEYS OCTOBER 2019
- UNDERGROUND SERVICES SURVEY 19104_03 BY LOY SURVEYS SEP 2020
- CCTV SURVEY BY SEP SURVEY SEP 2020

Rev:	Description:	Date:	By:	Chkd:
P01	ISSUED FOR INFORMATION	03.12.20	ATL	CG

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Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Status: S2 - FOR INFORMATION

Project: NEIGHBOURHOOD, ROCHDALE

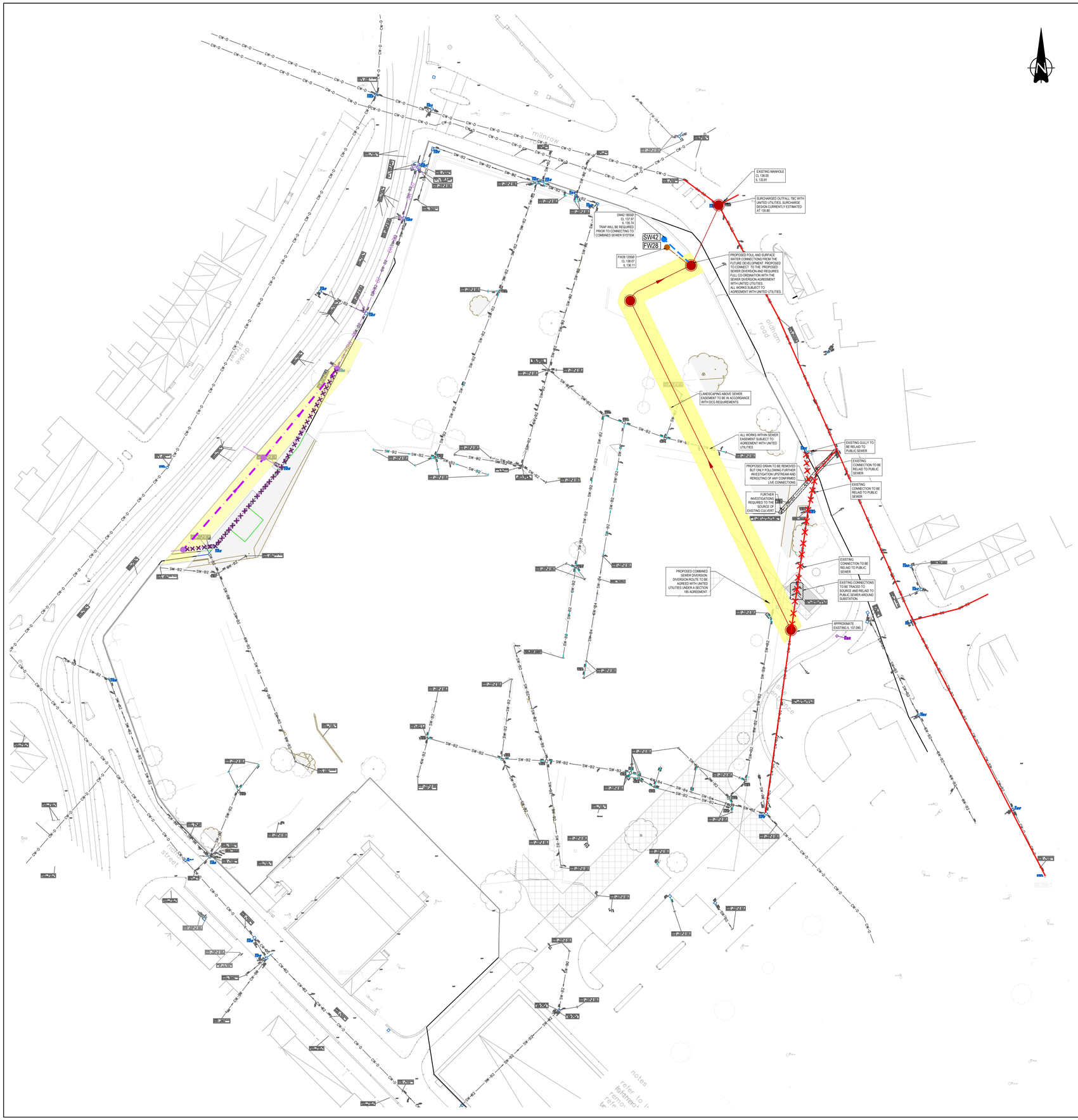
Drg Title: EXISTING DRAINAGE CATCHMENTS

Project No:	Size:	Date:	Drawn By:	Designed By:	Checked By:
075882	A1	25/11/20	ATL	ATL	CG
	Scale: 1:500				

Project Code:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
NHRH	CUR	XX	XX	DR	C	92010	P01

Appendix G

Proposed Drainage Strategy



KEY

- EXISTING PUBLIC COMBINED SEWER
- EXISTING PRIVATE SURFACE WATER DRAINAGE (SW = S2)
- EXISTING PRIVATE COMBINED DRAINAGE (CW = D)
- PROPOSED COMBINED SEWER DIVERSION (TBC)
- PROPOSED TfGM DRAINAGE DIVERSION
- EXISTING TfGM DRAINAGE
- EASEMENT FOR COMBINED SEWER DIVERSION (TBC) & TfGM DIVERSION
- EXISTING PUBLIC SEWER TO BE REMOVED
- EXISTING TfGM DRAINAGE TO BE REMOVED

TABLE 1: EXISTING & PROPOSED FLOWS

AREA TYPE	CATCHMENT AREA (Ha)	FLOW RATE FOR THE 1 IN 2 YEAR EVENT (l/s)
ALLOWABLE FLOWS BASED ON PARTIAL BROWNFIELD RUNOFF - REFER TO DRAWING 075882-NHRH-CUR-XX-XX-DR-C-92010		
TOTAL GREENFIELD	1.96	14.3
TOTAL BROWNFIELD	0.46	65.3
BROWNFIELD DISCHARGE BASED ON 50% REDUCTION		32.7
TOTAL DISCHARGE (GREENFIELD + 50% BROWNFIELD)		47.0
NO FLOWS ARE PROPOSED TO BE DISCHARGED AS PART OF THE ENABLING WORKS PHASE AND ONLY TO DEMONSTRATE THE FUTURE DEVELOPMENT FLOWS		

GENERAL NOTES:

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DESIGN BASED ON TOPOGRAPHICAL SURVEY AND CCTV SURVEY INFORMATION AVAILABLE AT THE TIME OF DESIGN.
3. ALL EXISTING SEWERS, CONNECTIONS, PIPE SIZES AND INVERT LEVELS TO BE CONFIRMED BY CONTRACTOR PRIOR TO COMMENCEMENT OF WORKS TO ENSURE CONNECTIVITY. ANY VARIANCE FROM THE INFORMATION SHOWN SHOULD BE REPORTED TO THE ENGINEER FOR REVIEW.
4. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
5. ALL DIMENSIONS ARE IN METRES AND LEVELS IN METRES ABOVE ORDNANCE DATUM UNLESS OTHERWISE NOTED.
6. WHERE EXISTING DRAINAGE IS BEING USED, ALLOWANCES SHOULD BE MADE TO REMEDIATE THIS DRAINAGE IN LINE WITH AVAILABLE CCTV SURVEY INFORMATION. IF NO SURVEY IS AVAILABLE, IT IS ADVISED TO OBTAIN ONE PRIOR TO COMMENCEMENT OF WORKS.
7. ALL EXISTING SERVICES TO BE LOCATED PRIOR TO COMMENCEMENT OF ANY DRAINAGE WORKS, AND WHERE NECESSARY PROTECTION OR DIVERSIONS TO BE UNDERTAKEN TO AVOID CONFLICT WITH THE PROPOSED WORK.
8. OUTFALL CONNECTION(S) SUBJECT TO AGREEMENT WITH THE APPROVING AUTHORITY.

DRAWING IS BASED ON:

ARCHITECTS PLANS
- ~~NHRH-CUR-HH-ZZ-DR-A-08061_P04_site_boundary_plan_08_phase_01~~

HIGHWAY BOUNDARY
- HIGHWAY BOUNDARY PLANS RECEIVED 12.03.21

TOPOGRAPHICAL SURVEY
- TOPOGRAPHICAL SURVEY S19388-T BY SEP SURVEYS OCTOBER 2019

UTILITY/ CCTV SURVEY
- CCTV SURVEY BY SEP SURVEY LAST RECEIVED JULY 2021

Willmott Dixon Construction Ltd note:
Proposed development hidden to avoid future conflicting information.

Rev:	Description:	Date:	By:	Chkd:
P01	ISSUED FOR PLANNING	09.07.21	ATL	CG

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Birmingham • Bristol • Cambridge • Cardiff • Douglas • Dublin • Edinburgh • Glasgow • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Status: S2 FOR INFORMATION

Project: NEIGHBOURHOOD, ROCHDALE

Drg Title: ENABLING WORKS DRAINAGE

Size:	Date:	Drawn By:	Designed By:	Checked By:
A1	09/07/21	ATL	ATL	CG

Scale: 1:500

Project No:	Originator:	Volume:	Level:	Type:	Role:	Category / Number:	Rev:
NHRH	CUR	XX	XX	DR	C	92050	P01

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Registered in England and Wales number: 2054159
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