BURO HAPPOLD

Pigeon Triangle, Mayfield

Drainage Strategy Report for Planning

PT-BHE-XX-XX-RP-C-3000

P046688

8 December 2025

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Glossary

Term	Definition
MCC	Manchester City Council
UU	United Utilities
ENWL	Electricity Northwest Limited
LLFA	Lead Local Flood Authority
SuDS	Sustainable Drainage Systems

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Executive Summary

Buro Happold Engineering have been instructed by Mayfield Partnership to prepare a drainage strategy in support of a Full Planning Application for public realm works including: re-grading and re-surfacing footpaths, highways, soft landscaping and planting of tress, replacement and provision of street lighting, CCTV, and street furniture, removal of car parking spaces, drainage and associated works. The proposed development named 'Pigeon Triangle' is located in Manchester, approximate postcode M1 2PZ.

The following report has been produced for the planning authority, Manchester City Council (MCC), and any other parties involved in the planning application process. This report is to be read in conjunction with all other documentation prepared and submitted in support of the planning application.

Pre-development enquiries have been undertaken with United Utilities (UU) in their role as statutory consultee. Consultation has been undertaken regarding the surface water drainage strategy and to confirm the proposed potable water connection.

The nature of the proposed development forms a significant betterment to the existing scenario through the replacement of existing impermeable hardstanding areas which have no positive drainage features and currently flow to the combined sewers within the adjacent public highway, with soft landscaping and permeable paving. The proposed SuDS features also include rain gardens that will provide attenuation of surface water flows and both water quality and biodiversity benefits, plus storage in extreme storm events.

The proposed surface water management strategy has been undertaken in accordance with local and national standards and industry best practice. A feasibility study has been undertaken to determine the viability of connecting surface water runoff following the drainage hierarchy. The proposed surface water management strategy assumes infiltration is not viable at this stage. The nearest watercourse or surface water sewer are not considered practical to provide a connection to. In recognition of the existing drainage regime of the site, it is considered most feasible to connect to the existing combined water public sewer within Baring Street.

The proposed development only includes a surface water drainage network as no foul water drainage is necessary.

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1 Introduction

1.1 Appointment and Brief

This drainage strategy report for planning has been prepared for the Mayfield Partnership for the Proposed Development comprising of a public realm works named 'Pigeon Triangle'. This report should be read in conjunction with all other document prepared and submitted in support of the Full Planning Application.

This report will review and document the following information:

- Existing site constraints
- Overview of existing drainage regime
- Proposed surface water drainage strategy
- Sustainable Drainage Systems (SuDS) strategy

The drainage strategy has been developed to demonstrate a viable solution for disposal of surface water from the proposed development meeting local and national planning policy, and without increasing flood risk to others. The approving bodies for the scheme will be Manchester City Council (MCC) as the Lead Local Flood Authority (LLFA) and United Utilities (UU) as the local water authority.

1.2 Limitations

This report is based on the interpretation and assessment of data provided by third parties. Buro Happold cannot be held responsible for the accuracy of third-party data or the conclusions that come from this information or as a result of changes arising from the developing design.

It should be noted that the detailed design of the drainage and associated Sustainable Drainage Systems (SuDS) features for the site have not been finalised and the assumptions and information presented herein are subject to design development and outcomes from consultation with relative authorities.

Operation and maintenance of all SuDS (including proprietary systems) will need to be considered once the proposed development has been finalised with all specific information being presented to those responsible for the maintenance of the facility.

The conclusions and findings of this report may change if the proposed development is amended or updated after the date of publishing.

1.3 Review of Available Information

The following information has been made available to inform the Civil Engineering design presented in this report:

- GPR Survey by Malcolm Hughes (October 2023)
- Landscape proposals by Studio Egret West (27th October 2025)
- Public sewer records from UU (June 2017)
- TFGM Utility Records (November 2007)

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2 Existing Site

2.1 Site Location and Description

The site is located within Manchester City Centre, to the South of Manchester Piccadilly train station.

The site comprises two parcels of land, separated by Baring Street. The eastern parcel has an approximate area of 315m^2 and comprises wasteland. It is bound by existing public footpaths, Baring Street to the West, Fairfield Street to the North and Travis Street to the South.

The western parcel has an approximate area of 97m^2 and comprises a car park. It is bound to the east by an existing public footpath, to the North by Fairfield Street and South Travis Street.

The planning application boundary total area is approximately 0.064 hectares (ha).

Figure 2.1 Site Location Plan

2.2 Existing Utilities

This section is to be read in conjunction with the Topographical and GPR Survey and United Utilities asset records, see **Appendix A** and **Appendix C**, respectively.

Based on GPR survey information, United Utilities asset records and Google Maps imagery, the following existing utilities have been identified:

- United Utilities' large trunk main, potentially 18 inches, adjacent to the southern boundary of the site within Travis Street.

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- United Utilities' combined water public sewer (630mm x 700mm) within Baring Street highway.
- Two United Utilities combined water public sewers within Travis Street highway.
- A potable water supply approximately parallel to the southern site boundary.
- Existing 'Colt' telecoms cable running approximately parallel to the southern site boundary.
- There are 3 existing electrical boxes, assumed to be TFGM assets to the Northeast corner of the site, within the red line boundary. These are incorporated into the proposed landscaping proposals to avoid impact of TFGM assets.
- GPR survey shows there is an existing comms cable within the site however, it has been confirmed with Virgin Media that this is based on old asset records and not representative of the cable route in this area.
- Existing road signs with electrical feed just outside the northern red line boundary, on the corner of Baring Street and Fairfield Street.
- GPR survey identified 'MK' service marker within the northern red line boundary. This is believed to be gas utility marker, as shown in Google Maps images and must be incorporated into the proposed landscape plan.
- Existing electrical box on the northern red line boundary.
- Google maps images show an existing lamp post with an electrical feed located on the northern red line boundary. This is not shown on the GPR survey.
- Google maps images show an existing above ground item, assumed to be a utility marker located outside the site boundary to the northeast (to be confirmed).
- Existing comms cable that is within the northeast redline boundary, on the corner of Travis Street and Fairfield Street. Consideration must be given to levels and whether cover is reduced.
- Traffic light with an electrical feed outside the red line boundary in the footway on the corner of Travis Street and Fairfield Street.
- Flag Staffs (FS) noted on the GPR survey within the red line boundary. These have been removed from site since the survey.
- Two existing lamp posts, with electric feeds have been identified outside the east red line boundary of the western parcel. The electrical feeds do not enter the red line boundary.

2.3 Existing Drainage

Based on GPR survey information and UU records, the following existing sewers and drainage networks are present in close proximity to the site:

- 650mm x 680mm combined water public sewer running south beneath Baring Street.
- 619mm x 762mm combined water public sewer running north beneath Travis Street.
- 650mm x 680mm combined water public sewer running south beneath Travis Street.
- 300mm combined water public sewer running south beneath Travis Street.
- Gullies are located within Baring Street and Travis Street, these are discharged into the public sewers.

2.4 Existing Catchment & Discharge Rates

The existing catchment is assumed to be 100% impermeable. Surface water is assumed to flow across the site and onto the existing footpath and highways that the site is bound by, and then to drain into the existing combined water sewer via existing highway gullies. **Figure 2.2** summarises the assumed existing catchment areas within the proposed works parcels.

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Any exceedance/overland flow is assumed to flow across the site and onto the existing footpaths and highways that the site is bound by. Impermeable areas and overland flow routes are shown in **Figure 2.3**. Smaller arrows show the assumed flow from the existing site, onto the surrounding footpaths of Baring Street and Travis Street. The larger arrows show how this water is assumed to then drain away from the site via the existing highways.

Existing discharge rates off-site have been calculated using the modified rational method as outlined below:

$$Q = 2.78\, C_v\, C_r\, I\, A$$

Where:

- C_v = 0.75
- C_r =1.3
- Rainfall Intensity, I =50 mm/hr
- Existing Impermeable Area, A = 400.00 m^2 = 0.04ha

Estimated Existing Runoff Rate:

Q = 5.42 litres per second

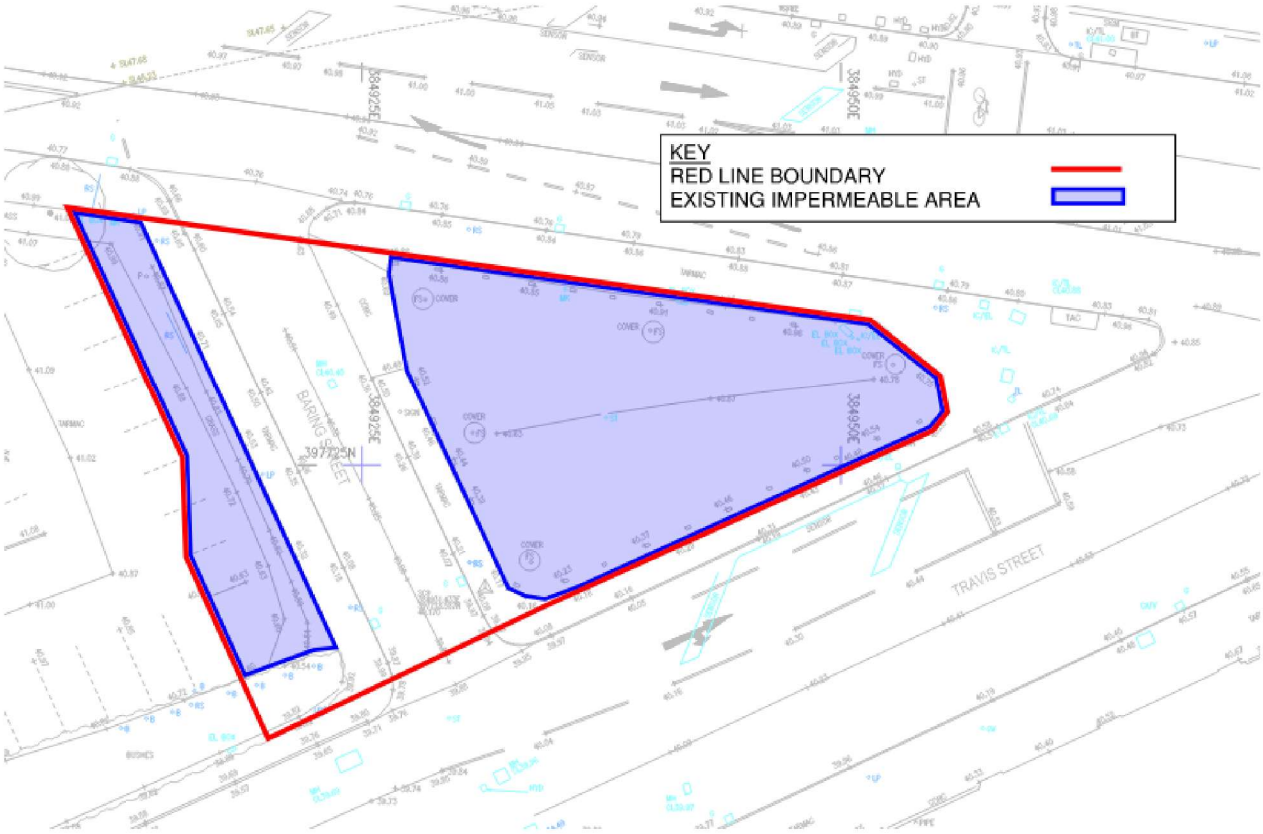

Figure 2.2 Existing Impermeable Area

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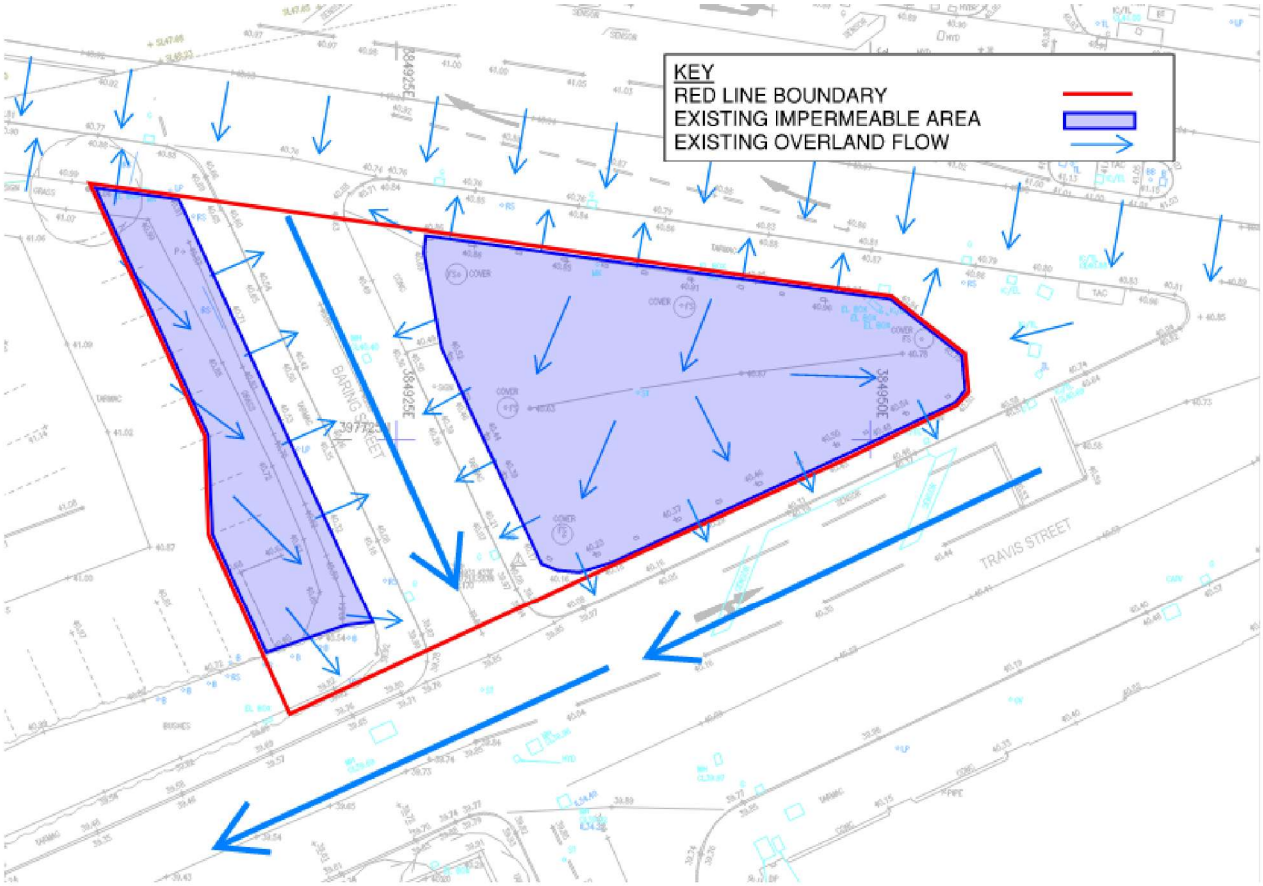

Figure 2.3 Sketch showing existing overland flow routes

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3 Proposed Development

The proposals for Pigeon Triangle include the following regeneration of a disused plot of land for public realm works including re-grading and re=surfacing footpaths, highways, soft landscaping and planting of trees, replacement and reprovision of street lighting, CCTV and street furniture, removal of carparking spaces, drainage and associated works.

The proposed landscape general arrangement is shown in **Figure 3.1**.

Figure 3.1 Proposed landscape plan (Studio Egret West, Landscape GA received 05/12/2025)

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4 Statutory & Non-Statutory Policies and Guidance

4.1 National Planning Policy Framework (NPPF) (2024)

The National Planning Policy Framework (NPPF) provides planning policy from central government for all local planning authorities. Clause 181 of the document states that "when determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere."

The Building Regulations Part H specify a hierarchy for the disposal of surface water which should be adhered to as part of any surface water drainage design. This hierarchy, which is echoed within the Non-Statutory Technical Standards for Sustainable Drainage, states that surface water should be discharged to:

- An adequate soakaway or some other adequate infiltration system; or where that is not practicable,
- A watercourse; or where that is not practicable,
- A sewer.

4.2 Local Policy

The Flood and Water Management Act 2010 (FWMA) sets out a range of duties and responsibilities for local authorities in planning for flooding and delivering effective flood risk management. Manchester City Council are designated as Lead Local Flood Authority (LLFA) and are responsible for leading on local flood risk management.

Manchester's Local Flood Risk Management Strategy (LFRMS) sets out how the LLFA will undertake their local flood risk management functions and sets out a risk-based approach to achieve the successful results using the budgets and resources available. The primary aims of the LFRMS is to:

- Reduce the likelihood, severity and consequences of flooding from ordinary watercourses, groundwater and surface water runoff.
- Seek opportunities to improve water quality and biodiversity through flood risk management activities

Manchester, Trafford and Salford Strategic Flood Risk Assessment (SFRA) has been produced by Manchester City Council, Salford City Council and Trafford Council. The SFRA presents an independent analysis of the risk posed by flooding from all sources including rivers, canals, surface water, sewers, groundwater and other water bodies within the study area. The primary purpose of the SFRA is to provide evidence to inform future sustainable development with Manchester, Salford and Trafford.

Greater Manchester's Sustainable Drainage Design Guide document has also been produced to provide guidance on the design, delivery and maintenance of SuDS features. The document has been adopted by the Greater Manchester Combined Authority (GMCA).

Greater Manchester Combined Authority (GMCA) have outlined a long-term plan, titled 'Places for Everyone,' of the nine Greater Manchester districts for jobs, new homes and sustainable growth. The published document is titled "Places for Everyone Joint Development Plan Document for Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan 2022 to 2039 Adopted 21 March 2024."

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In accordance with this document, there is a section on 'Sustainable and Resilient Places' with corresponding policy 'Policy JP-S4: Flood Risk and the Water Environment' which outlines methods of planning and managing flood risk. This includes:

- Locating and designing development so as to minimise the impacts of current and future flood risk, including retrofitting or relocating existing developments, infrastructure and places to increase resilience to flooding;
- Expecting developments to manage surface water runoff through sustainable drainage systems and as close to source as possible.
- Ensuring that sustainable drainage systems:
    - Are designed to provide multi-functional benefits wherever possible, including for water quality, nature conservation and recreation;
    - Avoid adverse impacts of water quality and any possibility of discharging hazardous substances to ground;
    - Are delivered in a holistic and integrated manner, including on larger sites split into different phases; and
    - Are managed and maintained appropriately to ensure their proper functioning over the lifetime of the development.
- Securing the remediation of contaminated land and the careful design of developments to minimise the potential for urban diffuse pollution to affect the water environment.

Manchester Core Strategy (CS) was adopted on 11 July 2012 and is the key Development Plan document in the Local Development Framework. The core strategy was updated following the adoption of Places for Everyone (PfE) Joint Development Plan in March 2024. The CS document includes Policy EN 14 'Flood Risk' outlines a sequential and risk-based approach to managing flood risk, requires new developments to meet national standards and not increase flood risk elsewhere and consideration to SuDS. CS Policy EN 14 has been superseded by Policy JP-S4 within the PfE.

4.3 Best Practice

The CIRIA SuDS Manual C753 is widely considered to set the best practice standard for the design of Sustainable Drainage Systems (SuDS). Along with design guidance for the hydraulic performance of SuDS, the Manual also provides a qualitative means of assessing the quality of runoff using indices of likely pollution levels and SuDS performance capacities.

Sewer Sector Guidance (SSG) refers to a set of documents developed to standardise and regulate the adoption of sewerage assets by water and sewerage companies in England. The SSG provides a framework for the design, construction and adoption of new sewerage infrastructure to ensure consistency across the industry. These documents allows developers and consultants to meet legal and technical requirements. These documents are maintained by Water UK and approved by Ofwat.

BS EN 752:2008 Drains and Sewer Systems outside buildings is a British and European Standard that provides guidance on the planning, design, construction, maintenance and rehabilitation of drain and sewer systems located outside buildings.

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5 Proposed Surface Water Drainage Strategy

5.1 Proposed Catchments & Discharge Rates

Based on the proposed landscaping strategy, the proposed catchment areas are shown in **Figure 5.1**.

Figure 5.1 Proposed Catchment and Impermeable Areas

The estimated permeable and impermeable areas of the proposed catchment areas are summarised in **Table 5-1**.

Impermeable areas refer to areas of hardstanding where surface water runoff will be positively drained into the proposed drainage network. Permeable areas refer to proposed soft landscaping. The implementation of soft landscaping results in an approximate 60% reduction of impermeable areas compared to the existing impermeable area.

Table 5-1 Summary of proposed catchment areas

Proposed Catchment Areas	Estimated Area (m^2)
Impermeable	124.00
Permeable	288.00
Total	412.00

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The proposed discharge rates have been calculated using the modified rational method as outlined below:

$$Q = 2.78\ C_v C_r I A$$

Where:

- C_v = 0.75
- C_r =1.3
- Rainfall Intensity, I =50 mm/hr
- Proposed Impermeable Area, A = 124.00 m^2 = 0.0124ha

Estimated Proposed Runoff Rate:

Q = 1.68 litres per second

As a result of the proposed development, it is estimated that there will be an approximate 69% betterment on existing discharge rates as a result of the proposed development and reduction in impermeable areas.

5.2 Drainage Hierarchy

The drainage hierarchy has been considered to determine a feasible method of surface water discharge. This is summarised below:

- **Infiltration** is considered non-feasible for the site due to desk information available on existing ground conditions and so has been discounted. This is to be proven through ground investigation works.
- Discharge via **watercourse** is also considered unfeasible due to the lack of suitable watercourse in close proximity to the site. Therefore, this has been discounted.
- Discharge via **surface water sewer** is also considered unfeasible.
  United Utilities' asset record information suggests that the nearest surface water sewer is a public sewer located within Fairfield Street to the north of the proposed development. The sewer is 225mm diameter, approximately 4m deep, although this is to be confirmed by survey works.
  In order to connect to the surface water sewer, there are various constraints to be considered. Firstly, the existing surface water is located within a major highway within Manchester City Centre and provides access to Manchester Piccadilly train station. Consultation with Manchester City Council (MCC) Highways team would be required to agree any works within this highway and it is likely that they will request other options are pursued as an alternative.
  Secondly, there is a vast array of existing utilities present within the adjacent footpath of Fairfield Street. These would need to be passed in order to provide a connection to the existing surface water sewer.
  Thirdly, there is the existing elevated live railway in close proximity to the existing surface water sewer which may restrict construction works in this area.
  Finally, the existing drainage regime of the site is considered to be runoff flows from the existing hardstanding to the adjacent footpaths and highways where existing gullies within Baring Street and Travis Street will collect the runoff. According to the GPR survey, the existing gullies ultimately to connect to the existing combined water public sewers within Baring Street and Travis Street. Based on this information, the existing drainage regime could be maintained and betterment provided.

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- Based on the above information, it is considered most practical to discharge surface water into the existing **combined water public sewer** within Baring Street (as per the existing drainage regime) via a new connection.

5.3 Sustainable Drainage Systems

The Sustainable Drainage Systems (SuDS) approach involves the slowing down of surface water runoff from a development to manage on-site and downstream flood risk, as well as providing water quality improvements. This can generally be achieved by harvesting, infiltrating, slowing, storing and conveying runoff via a variety of techniques, as opposed to the historical and more traditional method of sole reliance on below ground pipework. The variety of SuDS techniques available are generally not all appropriate for every development, and the selection depends on the characteristics of the site including permeability of underlying ground, space constraints, land use and topography.

The proposed drainage strategy incorporates soft landscaping and Sustainable Drainage Systems (SuDS) in the form of rain gardens and permeable paving with a permeable sub-base, as shown on drawing PT-BHE-XX-XX-DR-C-3100 which can be found in **Appendix B**.

The use of soft landscaping will reduce the impermeable area of the site by 60%. Any remaining surface water runoff will ultimately be conveyed into the proposed drainage network. However, the proposed permeable paving and rain gardens will offer attenuation of surface water flows and above ground storage during extreme storm events.

Using information available at present, the existing subgrade is not considered suitable for infiltration. Within permeable paving areas, surface water runoff will infiltrate through the permeable surface course and laying course into the permeable sub-base which is contained by an impermeable membrane to restrict any runoff discharging to the existing subgrade. Perforated pipework is proposed within the permeable sub-base to collect surface water runoff and convey towards the rain gardens prior to discharging to the existing public sewer**.** This connection is subject to the agreement of United Utilities following planning approval.

The proposed rain garden located west of Baring Street adjacent to the existing Travis Street car park area will also provide significant water quality benefits, through the treatment of exceedance flows from the adjacent car park. These proposals seek to maximise the usage of the available space within the development for SuDS features, delivering blue green infrastructure in an urban environment. This approach is in line with the retrofit considerations outlined in the Greater Manchester Sustainable Drainage Design Guide document. Again this rain garden will ultimately discharge to the existing public sewer through a connection to be agreed with United Utilities following planning approval.

In summary, the SuDS features proposed within the development are rain gardens (bioretention systems) and permeable paving. These will provide various flood mitigation, water quality and biodiversity benefits. A flow control device to restrict flows is not proposed within the proposed drainage network due to the nature of the development and implementation of SuDS features. The SuDS implemented as part of the proposed strategy are considered to drastically slow down and reduce the rate of which surface water runoff enters the existing public sewer network.

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5.4 United Utilities Consultation

Pre-development enquiries have been undertaken with United Utilities (UU) in their role as statutory consultee. Consultation has been undertaken regarding the surface water drainage strategy and to confirm the proposed potable water connection.

The proposed development includes a bib tap to supply water to the site for irrigation purposes. The bib tap requires a new connection to a potable water source. UU have been consulted to ascertain the feasibility of connecting to the existing potable water main within Travis Street. Consultation with UU regarding the connection is ongoing, with further information expected.

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6 Flood Risk

The National Planning Policy Framework (NPPF) aims to avoid inappropriate development in areas that are at the highest risk of flooding. The following section outlines the flood risk of the proposed development site.

6.1 Flood Zone

The NPPF defines the Flood Zones as follows:

Flood Zone 1	Low probability Land having less than 0.1% (< 1 in 1000) annual probability of river and sea flooding
Flood Zone 2	Medium probability Land having between a 1% and 0.1% (< 1 in 100 and 1 in 1000) annual probability of river flooding; or land having between a 0.5% and 0.1% (< 1 in 200 and 1 in 1000) annual probability of sea flooding.
Flood Zone 3a	High probability Land having a 1% or greater (> 1 in 100) annual probability of river flooding; or land having a 0.5% or greater (>1 in 200) annual probability of sea flooding.
Flood Zone 3b	The Functional Floodplain This zone comprises land where water from rivers or the sea has to flow or be stored in times of flood.

The Flood Map for Planning produced by the Environment Agency (EA) shows the site to be located entirely within Flood Zone 1. This is defined as an area with an annual probability of flooding from rivers or the sea of less than 0.1%.

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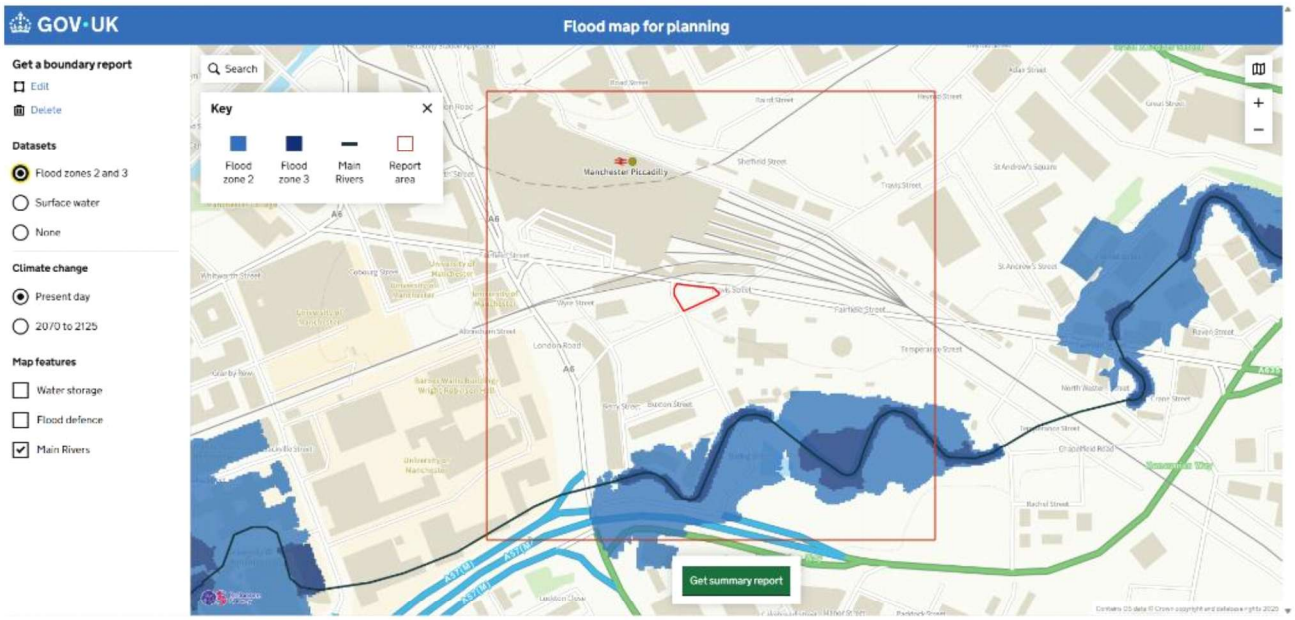

Figure 6.1 EA Flood Map for Planning (Flood Zones)

Figure 6.1 shows the proposed development site lies outside of the extent of Flood Zone 2 and 3. The nearest areas within Flood Zone 2 and 3, a medium and high risk of flooding respectively, are located approximately 130m to the south of the Proposed Development site.

6.2 Surface Water Flooding

Surface water flooding occurs when heavy rainfall is unable to infiltrate into the ground due to impermeable surfaces or low permeability ground conditions. As a result, excess surface water runoff can flow through built-up areas and accumulate in lower-lying locations causing localised flooding.

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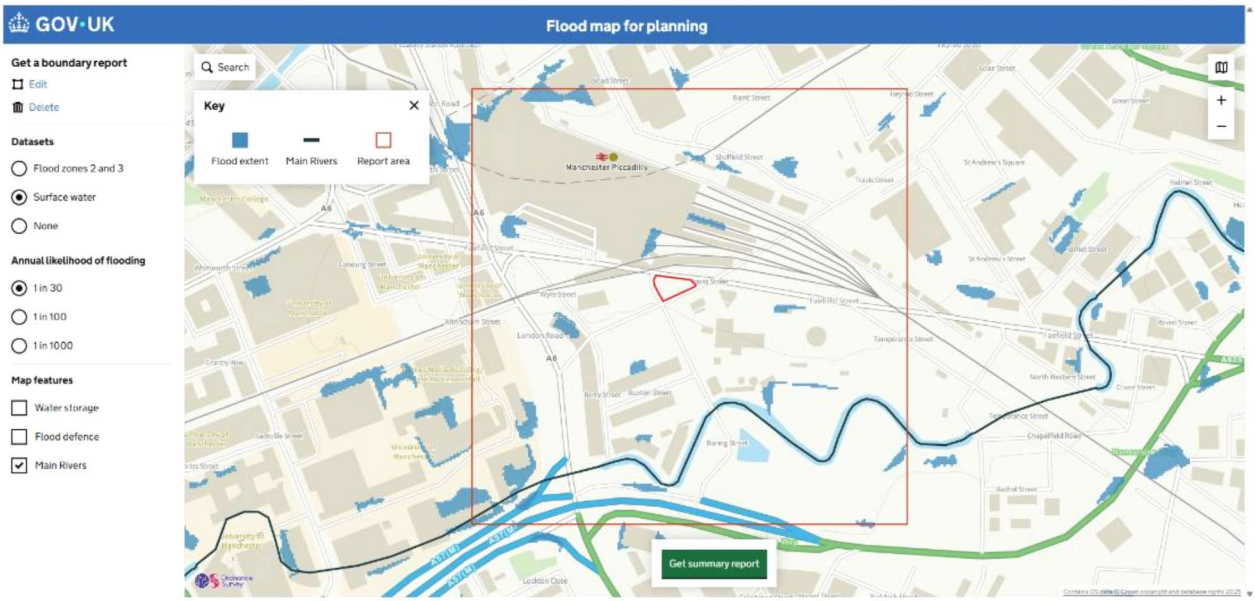

Figure 6.2 EA Flood Map for Planning (Surface Water Flooding)

Based on the existing site levels, the surface water flood map produced by the EA indicates that the proposed development site is at a low risk of surface water flooding.

Figure 6.2 shows the proposed development site is not considered to be at risk of flooding from surface water.

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Appendix A GPR and Topographical Survey Information

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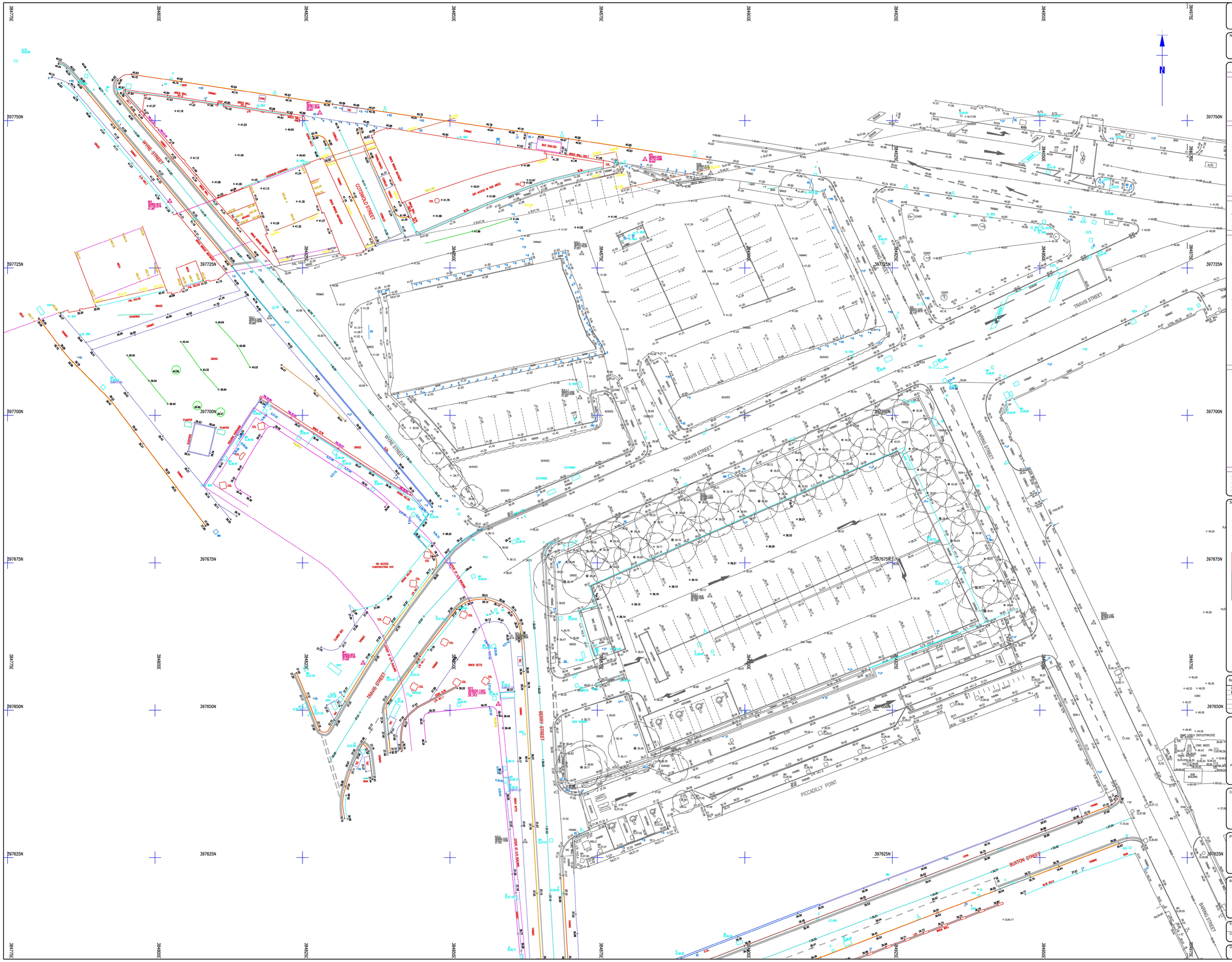


Grid: Local Plane Metric related to National Grid at survey control SC10
Levels: OS Datum from GNSS positioning converted using the National Geoid Model OSGM02

Notes
related to Project No.19479, originally surveyed September 2017

Topographical Survey Legend

BUILDINGS AND WALLS

Building
Building Open Sided
Ruin (RUIN)
Passage
Wall with Height (Wall HG.3m)
Retaining Wall (RW)

FENCE STYLES AND DESCRIPTIONS

Close Boarded C/B
Corrugated Iron C/I
Chestnut Paling C/P
Chainlink C/L
Handrail H/R
Interwoven IWE
Iron Railings I/R
Lattice L/F
Miscellaneous Misc
Palisade PAL
Post & Chain P/C
Post & Rail P/R
Post & Wire P/W
Post & Barbed Wire B/W
Wire mesh W/M
Stile
Gate
Fence Strategic

ROADS

Kerbs
Edge of Surfacing
Pedestrian Crossing (PC)
Track (TRACK)
Footpath (FOOTPATH)

STREET FURNITURE

Bellards Beacon ⊕ BB
Bus Stop ⊕ BS
Bollard ⊕ B
Gate Eye ⊕ CE
Coal Chute ⊕ CC
Closed Circuit TV ⊕ CCTV
Drain ⊕ DR
Electricity Pole ⊕ EP
Flood Light ⊕ FL
Flag Staff ⊕ FS
Lamp Post ⊕ LP
Letter Box ⊕ LB
Noise Poles (Armed) ⊕ NP
Mooring Ring ⊕ MR
Mile Post or Marching Post ⊕ MP
Service Marker ⊕ MK
Mile Stone ⊕ MS
Post ⊕ P
Parking Meter ⊕ PM
Reflector Post ⊕ RP
Rodding Eye ⊕ RE
Road Sign ⊕ RS
Speed Camera ⊕ S/CAM
Information Sign ⊕ SIGN
Stop ⊕ SV
Traffic Light ⊕ TL
Telegraph Pole ⊕ TP
Traffic Light Push Button Post ⊕ TLP
Traffic Light Control ⊕ TLC/P
Control Box (C/BOX)
British Telecom Box (BT BOX)
Electricity Box (EL BOX)
Gas Box (GAS BOX)

INSPECTION CHAMBERS AND PIPES

Inspection Cover (IC)
Inspection Cover (Disc) (IC/EL)
Manhole (MH)
British Telecom Cover (BT)
Inspection Cover (Gomma) (IC/CONC)
Cable TV (CATV)
Inspection Cover Traffic Signals (IC/TL)
Gully (G)
Kerb Outlet (KO)
Vent Pipe ⊕ VP
Down Pipe ⊕ DP
Rain Water Pipe ⊕ RWP
Soil Pipe ⊕ SWP
Gas Pipe ⊕ G-PIPE
Unable to lift cover (UTL)
Stop Tap ⊕ ST
Stop Valve ⊕ SV
Lamphole ⊕ LH
Hydrant ⊕ HYD
Earth Rod ⊕ ER
Gas Valve ⊕ GV
Water meter ⊕ WM
Washout ⊕ WO
Rodding Eye ⊕ RE

GEOTECHNICAL INFORMATION

Borehole (BH)
Trial Pit (TP)
Monitor Pin ⊕ MON
Probe Hole ⊕ PH
Window Sample ⊕ WS

GENERAL INFORMATION

Petrol Pump (PP)
Basement Light (BL)
Footbridge (FB)
Dish Type Channel (DISH)
Slot Type Channel (SLOT)
Grate Type Channel (GRATE)
Tactile Paving (TAC)
Kerb Starter (K/S)
Column (COL)
Excavation (XAV)
Gas Vacuum (GV)
Offset Fill ⊕ OF
Air Valve ⊕ AV
Trough (TR)
Chimney (CHY)
Telephone Call Box (TCB)

OVERHEAD FEATURES

Electricity Pylon (E.PYLON)
Electricity (EL)
Telephone (TEL)

WATER FEATURES

Canal
Stream
Ditch
Weir
Culvert
Grip (Land Drain)
Spring (SPR)

RELIEF AND VEGETATION

Hedge
Edge of wood/Bushes
Stump (STUMP)
Individual Trees
Slopes with Height Greater than 1m
Cliff Face
Marsh
Reeds

LEVEL AND HEIGHT INFORMATION

Standard Spot Height × 123.45
Precision Spot Height + 123.456
Bed Level + BL23.00
Water Level + WL24.00
Soffit Level + SL25.00
Threshold Level + THR.88
Cover Level + CL26.45
Invert Level + IL25.10
Pipe Soffit Level + PSL20.00
Floor Level + FL20.00
Finished Floor Level + FFL8.00
Top of Tank Level + T17.00
Eave Level + EL8.00
Ridge Level + RL9.00
Top of Top Level + TOL8.00
Flat Roof Level + FRL7.00
Top of Coronys Level + TOP/C17.00
Underside of Coronys Level + SOF/C16.50
Window Sill Level + WSL8.00
Window Head Level + WHL9.00
Springing Level + SPL8.00
Arch Level + AL7.00
Cobble Level + CHTS.00
Top of Wall Level + TWL10.00
Underside of Beam Level + UBL8.00
General Height + HTS.00

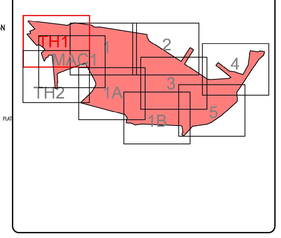
SURVEY INFORMATION SIGNS

Permanent Ground Marker
O.S. Trig Station
O.S. Bench Mark

GEOTECHNICAL INFORMATION

Borehole (BH)
Trial Pit (TP)
Monitor Pin (MON)
Probe Hole (PH)
Window Sample (WS)

Sheet Index



Rev.	Date	Description
A	24/01/24	Additional Utility survey data added to Area 1A
B	07/02/24	Additional Utility survey data added to Area 1A

MALCOLM HUGHES
CHARTERED LAND SURVEYORS
Ambree House, Trident Business Park, Daten Avenue
Warrington, WA3 6BX, Tel: 0161 905 1265
www.malcolmhughes.co.uk
survey@mhls.co.uk

Accreditations: RICS, The Survey Association, ICES, Confederation of Land Surveyors, NSL

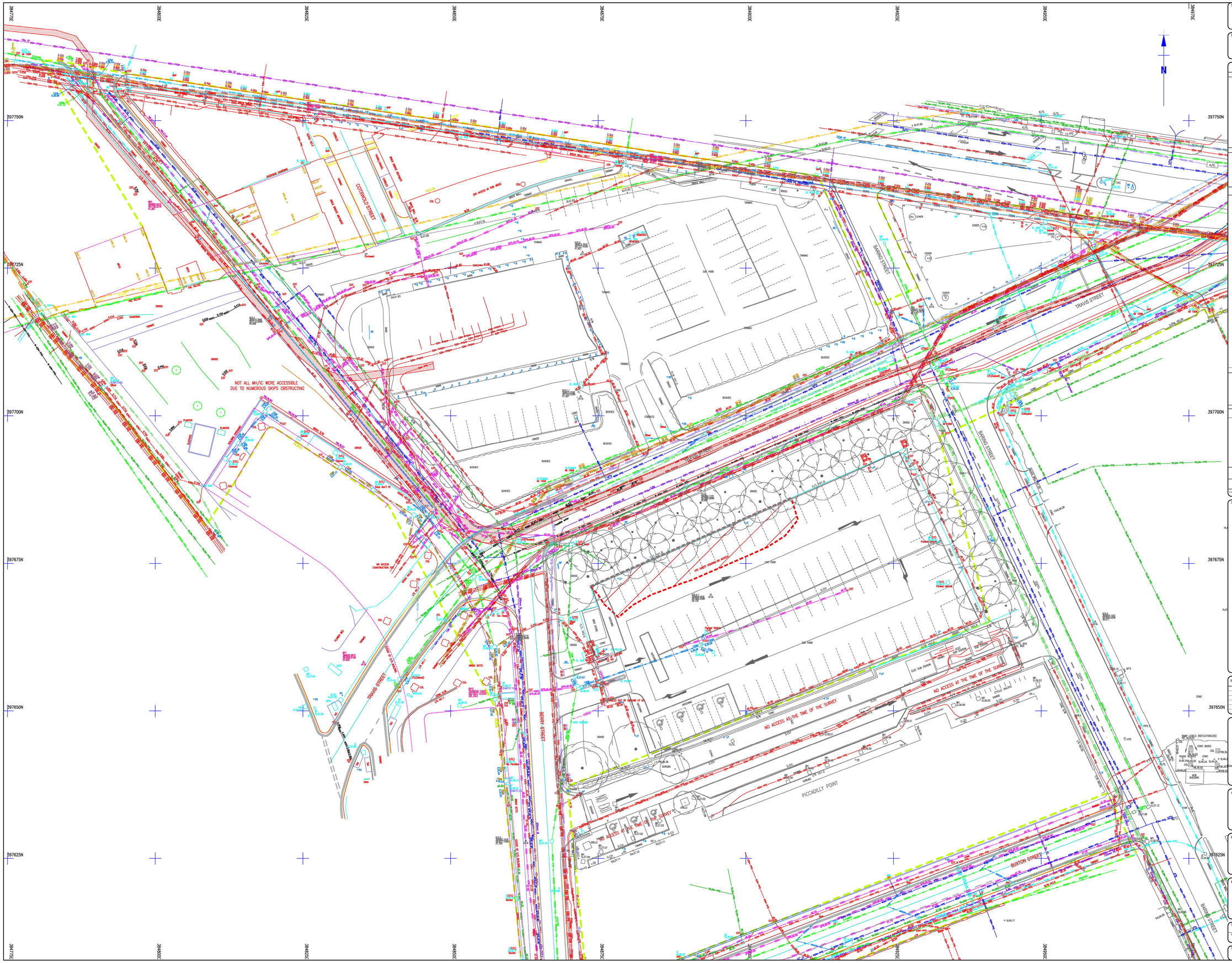
Client
BURO HAPPOLD LTD
CAMEN MILL, LOWER BRISTOL ROAD
BATH, BA2 3DQ

Project
MANCHESTER MAYFIELD STATION
FAIRFIELD STREET, MANCHESTER
M1 2QF

Drawing Title
TOPOGRAPHICAL SURVEY (3D)

Surveyed by	Drawn by	Survey Date
RP	AW 02/10/23	September 2023
Checked by	Approved by	Scale
EAD 02/10/23		1 : 200

Drawing No: 19479-TH-Topo1
Revision: B



Survey Notes

Grid: Local Plane Metric related to National Grid at survey control SC10

Levels: OS Datum from GNSS positioning converted using the National Geoid Model OSGM02.

Notes

related to Project No.19479, originally surveyed September 2017

Survey Legend

STREET FURNITURE

Air Valve	AV	Bus Pole	BP
Bus Stop	BS	Bus Top	BT
Bollard	B	Stop Valve	SV
Bushes Stop	Bus	Traffic Light	TL
Cable Post	CP	Traffic Light Pole	TLP
Closed Circuit TV	CCTV	Traffic Light Push Button Post	TLP
Down Pipe	DP	Traffic Light Control	TLC/P
Drain	D	Yard Hydrant	YH
Earth Rod	ER	Water Meter	WM
Electric Light Pole	EL	Weather	WD
Flood Light	FL	Control Box	C/BOX
Gas Meter	GM	Car Vacuum	VAC
Gas Valve	GV	Car air	AIR
Hydrant	H	Junction Box	JB
Lamp Post	LP	Stop Cock Water	SCW GOV
Lamp Post Mother	LPM	Telephone Cell Box	TCP
Offset Pit	OP	Petrol Pump	PP
Post	P	Pole	P
Parking Meter	PM	Gas Drainage Channel	GDC
Pipe Riser	PR	Rain Water Pipe	RWP
Rain Water Pipe	RWP	Slot Drainage Channel	SDC
Building Eye	BE	Grate Drainage Channel	GDC
Road Sign	RS		
Speed Camera	SPCAM		

INSPECTION CHAMBERS

Inspection Cover	IC
Inspection Cover (Elec)	E/CL
Inspection	IC
British Telecom Cover	BT
Inspection Cover (Comms)	E/CTV/M
Valve	E/VV
Inspection Cover Traffic Signals	E/TL
Gully	G
Kerb Outlet	KO

OVERHEAD FEATURES

Electricity Pylon	
Electricity	E
Telephone	T

LEVEL AND HEIGHT INFORMATION

Cover Level	= CL(8.45)
Invert Level	= IL(6.15)
Reducing Slab Level	= RSL(4.15)
Survey Level	= SL(98.32) ft

UNDERGROUND SERVICES KEY

TV(B2)	Cable TV Cable
CCTV(B2)	CCTV Cable
COM(B2)	Communications Cable
DU(B2)	Empty Ducting
EA(B2)	Earth Cable
HV(B2)	HV Electricity Cable
E(B2)	Electricity Cable
G(B2)	Fuel Gauge Line
F(B2)	Fuel Line
V(B2)	Fuel Vent Line
G(B2)	Gas Pipe
H(B2)	Heating Pipe
R(B2)	GPR Detected Anomaly Area/Trace
J(B2)	Sewer Raising Main
CWS(B2)	Sewer Combined
FWS(B2)	Sewer Foul
SWS(B2)	Sewer Surface Water
TEL(B2)	British Telecom
TL(B2)	Traffic Light Cable
U(B2)	Water Utility Cable
U(B2)	Unidentified GPR or electro-location trace
VR(B2)	Vapour Recovery Pipe
W(B2)	Instalie Detection Fuel
W(B2)	Water pipe
EXIT	End of trace
	Vapour Recovery Pipe/Vapour Recovery Pipe/Vapour Recovery Pipe
	Area of No Access
	GPR Detected Anomaly Area/Trace
	GPR Detected Rebar
	GPR Detected Structural Anomaly
	GPR Detected Structure
	GPR Live Data
	GPR Detected Anomaly Fixed Directional
	GPR Transect

NOTES

Electromagnetic and Ground Penetrating Radar techniques have been used in the detection of underground services, features and buried structures. Results are based on the application of standard procedures and are recommended that that excavation should be undertaken to confirm identification, location and depth of features where these are critical to design or site works.

Please note that not all buried pipes, cables and ducts can be detected and mapped in consideration of their depth, location, material type, geology and proximity to other utilities.

All reasonable effort and care has been made in searching available record drawings. The completeness of the underground service information supplied to and by us cannot be guaranteed.

Where services are non-metallic or not proven on site, positions are taken from records. Stretch scans and surface detail.

Pipe sizes which cannot be obtained by visual survey are taken from utilities record drawings or market photos where available.

Services shown as Taken From Records (TFR) or PAS128 QL-D have not been proven on site.

The diagram below describes the depth information obtained in detail.

The CAD layering may contain further information.

Collected data from GPS has not been post processed unless specified otherwise or described on the survey drawing.

All utilities inspected and measured at Inspection Covers or Manholes are considered to be a 2d, 4 for a radius up to 5m from the chamber wall.

DRAWING INFORMATION

AD	Assumed Route
BLK	Blockage
D	Depth
D	Depth
GPR	Ground Penetrating Radar
MP	No Mapping Plane
NL	No Level
NL	Signal Lost
TFR	Taken From Records
U	Unable
UTS	Unable To Survey
US	Unable To Boot
US	Unable To Lift
US	Unable To Lift
UVR	Unable To Vapour Recovery Fixed

PIPE MATERIAL

AC	Asbestos Cement
BRK	Brick
CI	Cast Iron
CO	Concrete
DI	Ductile Iron
HDPE	High Density Polythene Pipe
PVC	Polyvinyl Chloride
SI	Spun Iron
ST	Steel
VC	Vitrified Clay

TYPICAL FEATURE DEPTH ANNOTATION

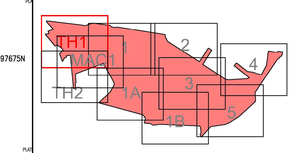
ELECTRO-MAGNETIC DETECTION	GRAVITY DRAIN (VISUAL OBSERVATION)	GROUND PENETRATING RADAR
APPROX DEPTH TO CENTRE	APPROX DEPTH TO INVERT	APPROX DEPTH TO EXTERNAL CROWN
CABLE/FIBRE OPTIC		

BSI PAS128:2022 QUALITY LEVEL INFORMATION

SURVEY TYPE		QUALITY LEVEL	DESCRIPTION
D	Detection	QL-D4 TFR	Location not detected on site, taken from records
		QL-D4 NS	A utility segment that has not been detected but is suspected to exist. Denotes assumed route only
		QL-D3	Horizontal detection by one geophysical technique only. Denotes utility segments with weak signals / no depth information
		QL-D2	Horizontal and vertical detection by one geophysical technique only (Electromagnetic Detection/Ground Penetrating Radar). Medium confidence level for position and depth.
		QL-D1	Horizontal and vertical detection by multiple geophysical techniques. Denotes utility segments with strong signals (Ground Penetrating Radar). High confidence level for position and depth.
A	Verification	QL-A	Horizontal and vertical location of the utility established by visual inspection and verified and corrected as necessary by use of targeted excavations (vacuum excavation and trial pits).
OTHER ANNOTATIONS		(P)	Denotes utility segments that have been detected through the use of GPS Post Processing

Further information on PAS128 can be found on our resource website: www.pas128.co.uk

Sheet Index



Rev.	Date	Description
A	24/01/24	Additional Utility survey data added to Area 1A
B	07/02/24	Additional Utility survey data added to Area 1A

MALCOLM HUGHES
CHARTERED LAND SURVEYORS
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Tel: 0141 885 0800
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Accreditations

Client

Buro Happold Ltd.
Canal Suite, Churchgate House
56 Oxford Street, Manchester M1 6EU

Project

Mayfield, Manchester

Drawing Title

Utility Mapping Survey (2D)

Surveyed by: JB/IPG	Drawn by: PS 11/10/23	Survey Date: October 2023
Checked by: DJ 04/01/24	Approved by	Scale: A0@1:200

Drawing No	Revision
19479-TH-UG1	B

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Appendix B Proposed Drainage Strategy Drawing

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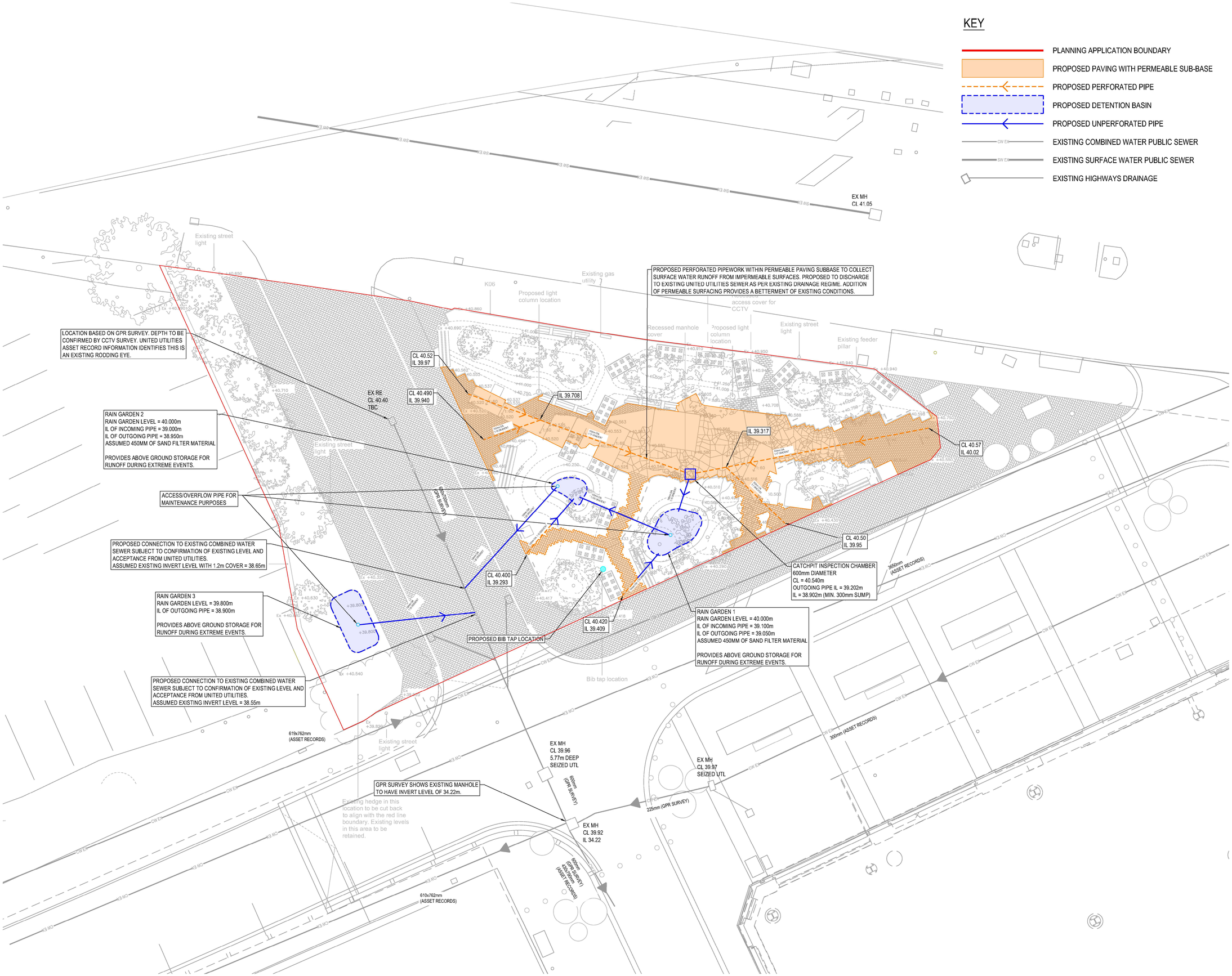

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DO NOT SCALE THIS DRAWING.

HEALTH AND SAFETY INFORMATION

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING

CONSTRUCTION:
- WORKS IN PROXIMITY TO MANCHESTER PICCADILLY STATION ELEVATED PLATFORMS
- WORKS ADJACENT TO KEY HIGHWAY (FAIRFIELD STREET)
- WORKS IN CLOSE PROXIMITY TO LIVE SERVICES
- WORKS IN CLOSE PROXIMITY TO SURROUNDING FOOTWAYS WITH GENERAL PUBLIC TO BE CONSIDERED

MAINTENANCE/CLEANING/OPERATION:
- WORKS IN PROXIMITY TO MANCHESTER PICCADILLY STATION ELEVATED PLATFORMS
- WORKS ADJACENT TO KEY HIGHWAY (FAIRFIELD STREET)
- WORKS IN CLOSE PROXIMITY TO LIVE SERVICES
- WORKS IN CLOSE PROXIMITY TO SURROUNDING FOOTWAYS WITH GENERAL PUBLIC TO BE CONSIDERED

DECOMMISSIONING/DEMOLITION:
- WORKS IN PROXIMITY TO MANCHESTER PICCADILLY STATION ELEVATED PLATFORMS
- WORKS ADJACENT TO KEY HIGHWAY (FAIRFIELD STREET)
- WORKS IN CLOSE PROXIMITY TO LIVE SERVICES
- WORKS IN CLOSE PROXIMITY TO SURROUNDING FOOTWAYS WITH GENERAL PUBLIC TO BE CONSIDERED

GENERAL NOTES:

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
2. THE DESIGN OF THIS SCHEME HAS BEEN BASED ON THE FOLLOWING DRAWINGS AND INFORMATION:
   - GPR SURVEY DRAWING No. 19479-TH-Topo1 DATED OCTOBER 2023, BY MALCOLM HUGHES
   - UNITED UTILITIES PUBLIC SEWER RECORDS DATED JUNE 2017
   - TFGM UTILITY RECORDS No. A3/3/4/1 DATED NOVEMBER 2007
   - LANDSCAPE ARCHITECT PROPOSED GENERAL ARRANGEMENT PLAN DRAWING No. 0434-SEW-L-003005 DATED 27.10.25, BY STUDIO EGRET WEST
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS, DETAILS AND SPECIFICATIONS.
4. REFER TO LANDSCAPE SPECIFICATIONS FOR ASSOCIATED DETAILS.
5. PROPOSED CONNECTION TO EXISTING PUBLIC SEWER SUBJECT TO CONFIRMATION BY UNITED UTILITIES.
6. PRIOR TO THE COMMENCEMENT OF WORK THE LOCATION, SIZE AND DEPTH OF ALL EXISTING DRAINS/SEWERS AND SERVICES SHALL BE ESTABLISHED BY THE CONTRACTOR. ANY DISCREPANCIES FROM THE INFORMATION INDICATED ON THESE DRAWINGS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ARCHITECT OR ENGINEER.
7. THE CONTRACTOR SHALL ALLOW FOR THE PROTECTION, TEMPORARY AND PERMANENT SUPPORT AND DIVERSION WORKS AS NECESSARY, TO ALL EXISTING SERVICES TO THE SATISFACTION OF THE PUBLIC UTILITIES.
8. ALLOWANCE TO BE MADE FOR JETTING OF EXISTING DRAINAGE FOR PROPOSED CONNECTION

Rev	Description	Date	Iss'd	Rev'd	App'd
P02	FOR PLANNING	05/12/25	NC	NC	PA
P01	DRAFT	28/11/25	TB	NC	PA

PLANNING

Project Stage

FOR INFORMATION

Status of Drawing

BURO HAPPOLD

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London
W1T 1PD
UK

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Fax: +44 (0)870 787 4145
Email: 0042912@buruhappold.com
Web: www.burohappold.com

Client: *MAYFIELD PARTNERSHIP*
Architect: *STUDIO EGRET WEST*
Project: **MAYFIELD PIGEON TRIANGLE**
Drg Title: PROPOSED SURFACE WATER DRAINAGE STRATEGY

Job No.	Scale@A1
P0046688	1:100

Drawn/Designed By.	Checked By.	Approved By.
TB	NC	PA

Drawing No.	Revision
PT-BHE-XX-XX-DR-C-3100	P02

Warm Outlier C:\Users\outlier\Buro Happold\00046688 Mayfield Apportionments 2026 - CAD\PT - Proposed Drainage Strategy P02.dwg

Appendix C United Utilities Asset Records

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United Utilites Water Limited

Property Searches
Ground Floor Grasmere House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP

Telephone 0370 751 0101

Property.searches@uuplc.co.uk

Malcolm Hughes Land Surveyors Ltd

65 CROSS STREET
MANCHESTER
SALE
M33 7HF

FAO: **Chris Wildman**

Your Ref: 1879/UU
Our Ref: 1304968
Date: 29/6/2017

Dear Sirs

Location: **Mayfield Train Station Fairfield Street Manchester M1 2WR**

I acknowledge with thanks your request dated 28/06/17 for information on the location of our services.

Please find enclosed plans showing the approximate position of our 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 our 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 you requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please telephone us on 0370 7510101.

Yours Faithfully

[redacted]

Karen McCormack
Property Searches Manager

TERMS AND CONDITIONS - WASTERWATER & 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:

1. 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.
2. 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.
3. In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only and given in accordance with the best information available. The nature of the relevant system and/or its actual position may be different from that shown on the plan and UUWL is not liable for any damage caused by incorrect information provided save as stated in section 199 of the Water Industry Act 1991. 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.
4. 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.
5. 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.
6. 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.
7. 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.
8. 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.
9. 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.

WASTE WATER SYMBOLOGY

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

Overflow

- Sludge Main, Public
- Sludge Main, Private
- Sludge Main, S104

Abandoned Pipe

- MainSewer
- Rising Main
- Highway Drain
- Sludge Main

Foul	Surface	Combined	
ST		ST	Septic Tank
			Vent Column
			Network Storage Tank
			Orifice Plate
			Vortex Chamber
			Penstock Chamber
			Blind Manhole

Foul	Surface	Combined	
			WW Site Termination
AV	AV	AV	Air Valve
CA	CA	CA	Cascade
NRV	NRV	NRV	Non Return Valve
ES	ES	ES	Extent of Survey
FM	FM	FM	Flow Meter
GU	GU	GU	Gulley
HA	HA	HA	Hatch Box
HS	HS	HS	Head of System
HY	HY	HY	Hydrobrake / Vortex
IN	IN	IN	Inlet
IC	IC	IC	Inspection Chamber
			Bifurcation
CA	CA	CA	Catchpit
			WW Pumping Station

Foul	Surface	Combined	
			Sludge Pumping Station
		V	Sewer Overflow
			T Junction/Saddle
LH	LH	LH	LampHole
OI	OI	OI	OilInterceptor
PE	PE	PE	PenStock
			Pump
RE	RE	RE	RoddingEye
	SO	SO	Soakaway
SM	SM	SM	Summit
VA	VA	VA	Valve
VC	VC	VC	Valve Chamber
WO	WO	WO	Washout Chamber
DS	DS	DS	DropShaft
			WW Treatment Works

Foul	Surface	Combined	Overflow	
				Screen Chamber
DP	DP	DP	DP	Discharge Point
				Outfall

- CK Control Kiosk
- Unspecified

Legend

MANHOLE FUNCTION		SEWER SHAPE			
FO	Foul	CI	Circular	TR	Trapezoidal
SW	Surface Water	EG	Egg	AR	Arch
CO	Combined	OV	Oval	BA	Barrel
OV	Overflow	FT	Flat Top	HO	HorseShoe
		RE	Rectangular	UN	Unspecified
		SQ	Square		

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

CLEAN WATER SYMBOLOGY

PIPE WORK

Live	Proposed	
		Trunk Main - PressurisedMain
		Raw Water Aqueduct - PressurisedMain
		Raw Water Aqueduct - GravityMain
		LDTM Raw Water Distribution - PressurisedMain
		LDTM Raw Water Distribution - GravityMain
		LDTM Treated Water Distribution - PressurisedMain
		LDTM Treated Water Distribution - GravityMain
		Private Pipe - LateralLine
		Distribution Main - PressurisedMain
		Comms Pipe - LateralLine
		Concessionary Service - LateralLine

ABANDONED PIPE

- Trunk Main
- Raw Water Aqueduct
- LDTM Raw Water Distribution
- LDTM Treated Water Distribution
- Private Pipe
- Distribution Main
- Comms Pipe
- Concessionary Service

NODES/FURNITURES

Live	Proposed	
		End Cap
		CC Valve
		AC Valve
		Air Valve
		Sluice Valve
		Non Return Valve
		Pressure Management Valve
		Change of Characterstic
		Anode
		Chlorination Point
		De Chlorination Point
		Bore Hole
INLET	INLET	Inlet Point
		Bulk Supply Point
FH	FH	Fire Hydrant
H	H	Hydrant

Live	Proposed	
PFH	PFH	Private Fire Hydrant
		Pump
		Site Termination
		Service Start
		Service End
PM	PM	Process Meter
		Stop Tap
		Monitor Location
SP	SP	Strainer Point
AP	AP	Access Point
HB	HB	Hatch Box
IP	IP	IP Point
RM		Route Marker
SPT	SPT	Sampling Station
LB	LB	Logger Box

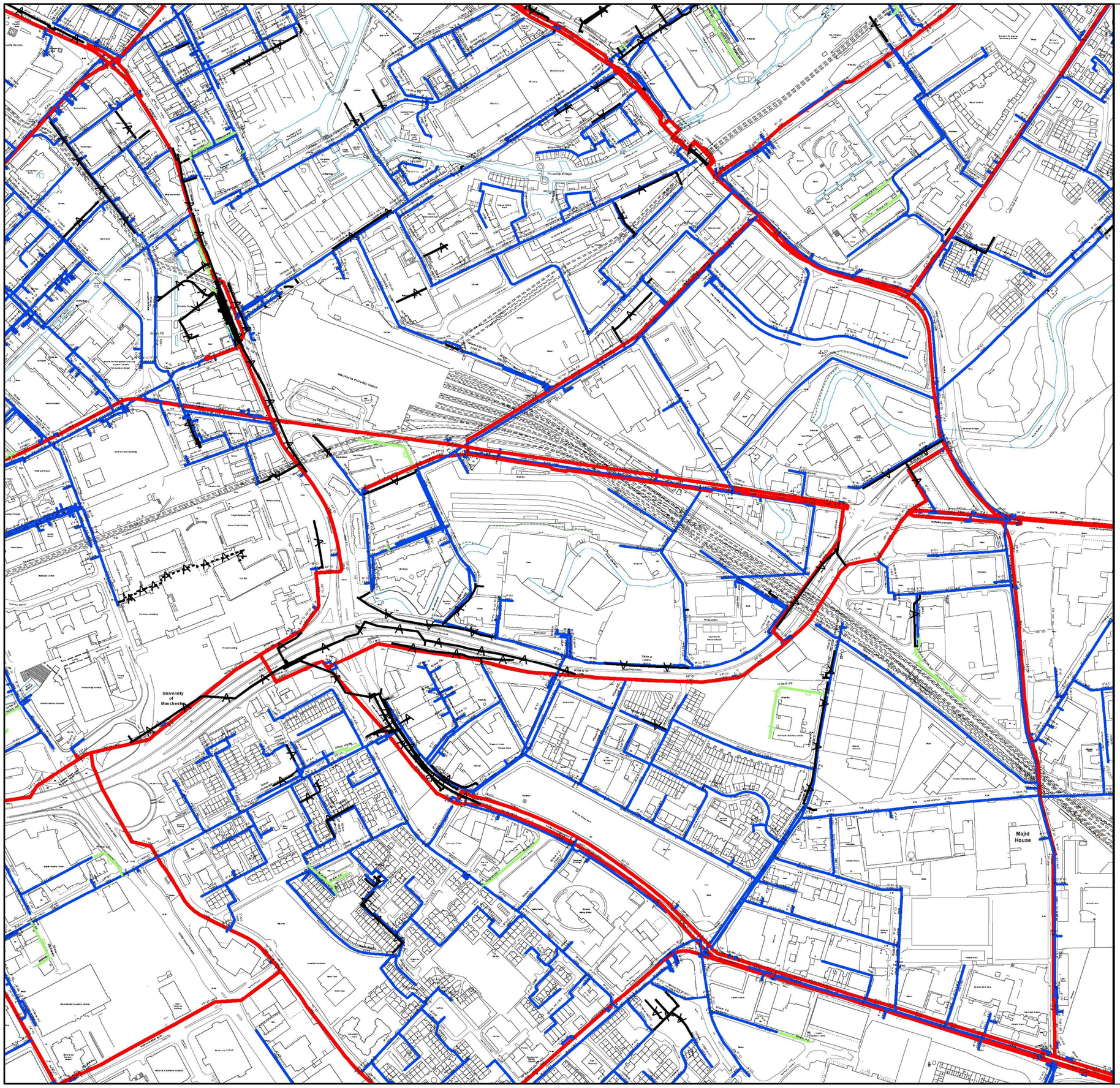
PROPERTY TYPES

Live	Proposed	
		Condition Report
PB	PB	Pipe Bridges
PT	PT	Tunnels (non carrier)
		Pumping Station
		Water Treatment Works
		Private Treatment Works

Live	Proposed	
VH	VH	Valve House
		Water Tower
SR	SR	Service Reservoir
SR	SR	Supply Reservoir
Inlet AP	Inlet AP	Abstraction Point
M	M	Domestic meter
CM	CM	Commercial meter
T	T	Telemetry Outstation

Legend

MATERIAL TYPES		LINING TYPES	
AC	ASBESTOS CEMENT	CL	CEMENT LINING
CI	CAST IRON	TB	TAR OR BITUMEN
CU	COPPER	ERL	EPOXY RESIN
CO	CONCRETE		
DI	DUCTILE IRON	INSERTION TYPES	
GI	GALVANISED IRON		
GR	GREY IRON	DD	DIE DRAWN
OT	OTHERS	DR	DIRECTIONAL DRILLING
PB	LEAD	MO	MOLING
PV	uPVC	PI	PIPELINE
SI	SPUN IRON	SL	SLIP LINED
ST	STEEL		
UN	UNKONWN		
PE	POLYETHYLENE		



Extract from Map of Water Mains

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

The actual positions may be different from those shown on the plan, private service pipes may be shown where a known record is available.

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Mayfield Train Station
Fairfield Street
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Approximate Scale: 1:5000

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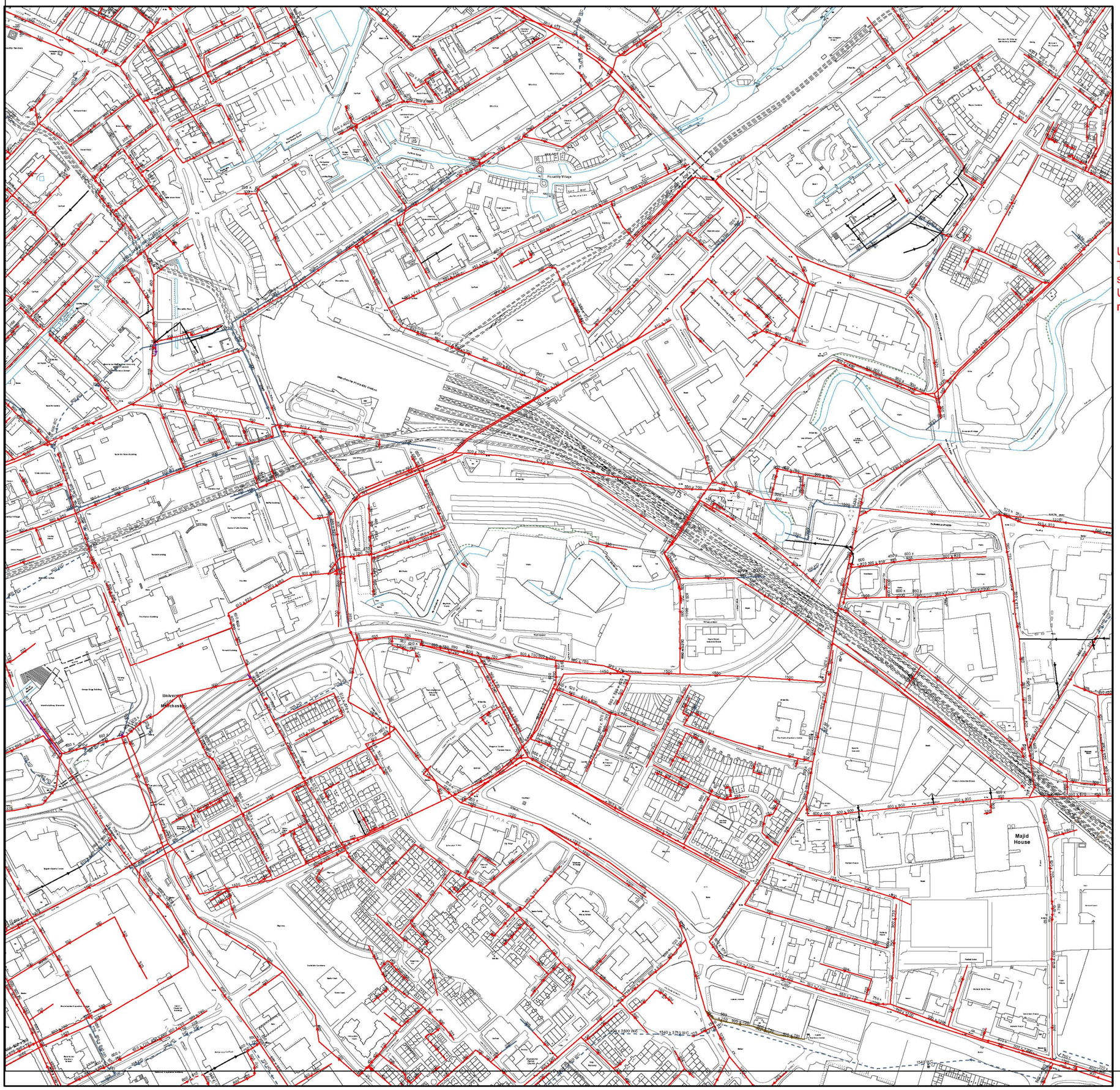

Extract from Map of Public Sewers

The position of the 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.

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