

3315 – Postal Street, FRA and SuDS Strategy

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Matthew Quant

Ronan Hennessy

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1. Introduction

This Flood Risk Assessment and SuDS Strategy Report has been prepared by Heyne Tillet Steel to support the Stage 3 submission to Manchester City Council in relation to the proposed development at Postal Street, Manchester, M1 1EE, hereafter referred to as 'the site'.

This report aims to incorporate and demonstrate compliance with the following national, regional and local planning policy guidance and statutory requirement as far as reasonably possible:

- + National Planning Policy Framework (NPPF), 2024
- + Planning Practice Guidance (PPG), 2024
- + Manchester City, Salford City and Trafford Councils (MST) Level 1 Hybrid SFRA, 2010.
- + Manchester City, Salford City and Trafford Councils (MST) Level 2 Hybrid SFRA, 2011.
- + Level 1 Strategic Flood Risk Assessment for Greater Manchester, 2019
- + Greater Manchester Surface Water Management Plan (SWMP), 2012
- + Manchester City Council Local Flood Risk Management Strategy (LFRMS), 2014

2. Site Description

2.1 Existing Development

The development is located within Manchester city centre, bound by Dean Street to the south-east, Faraday Street to the south-west, Newton Street to the north-west and Postal Street to the north-east. The National Grid reference is 384726E, 98446N.

The site is approximately 0.2 ha and is vacant since 2024, previously occupied by an existing commercial unit with the surrounding area predominantly surfaced with hardstanding. Out of the 0.2 ha, 0.16 ha are private land, the rest sits within the public highway extents.

The surrounding mixed-use developments consist of 'The Sorting House' [residential] to the north, with three Grade II listed buildings; 'Former Newton Street Police Station', '72-76 Newton Street' [Offices] and 'Marlsbro House'.

There are more car parks to the south of the site with potential scope for future development as part of Picadilly Basin Regeneration Framework.



Image 1 - Existing Site

2.2 Proposed Development

The development comprises the construction of a residential building with ground floor commercial facilities and amenities. The proposals are for the construction of an eight-storey residential block.

2.3 Site Topography and Geology

A topographical survey has been conducted at the site by Survey Solutions. Refer to Appendix D. The site is flat. Site levels range from 48.9mAOD to 48.5mAOD.

A Ground Investigation Report produced for the site by Soiltechnics in March 2025. The survey found that the ground for the site consists of hardstanding (asphalt and concrete) at ground level (approx. thickness of 0.3m) over made ground (approx. thickness of 2.0 – 3.1m). The made ground was underlain by fine grained Devensian Till (approx. thickness of 16.9 – 18.5m) consisting of gravelly clay which then became coarse grained Devensian Till (approx. thickness of 1.9 – 6.3m) consisting of clayey sand and gravel on top of Chester formation bedrock. Table 1 is an extract from the Ground Investigation Report and shows Soiltechnics’ generalised interpretation of geological and hydrogeological conditions at the site. The report also states that groundwater encountered during their investigation of three of the trial pits, the groundwater was encountered at bgl depths of 2.6m, 2.7m, and 3.1m. As there is no basement proposed for the site the groundwater levels present a very low risk.

Stratum	Brief description	Top depth range (m bgl)	Adopted model top depth (m bgl)	Thickness (m)
Hardstanding	Asphalt and concrete (TP04, TP05 and TP06 only) and Curtins 2022.	G.L	G.L	0.10 – 0.30
Made Ground	Variable. Generally brown, sandy, fine to coarse gravel/gravelly sand with high cobble content. Gravels comprised brick, concrete, sandstone, slate and clinker with metal and plastic. Localised soft brown sandy gravelly clay.	G.L to 0.30	0.30	2.00 – >3.10
Devensian Till (fine-grained)	Firm orangish brown mottled grey and brown/greyish brown gravelly clay	2.00 – 3.50	3.00	16.90 – 18.55
Devensian Till (coarse-grained)	Clayey sand and gravel	17.50 – 21.00	19.75	1.90 – 6.30
Chester Formation	Very weak to weak reddish brown sandstone	22.90 – 23.80	23.40	ND

Table 1 - Ground model (Extracted from Ground Investigation Report by Soiltechnics)

3. Flood Risk

In order to determine the risk of flooding for the development site, the Environment Agency (EA)’s website was referenced as well as flood maps published by Manchester City, Salford City and Trafford Councils (MST), including information contained in the Strategic Flood Risk Assessment (SFRA) and Surface Water Management Plan (SWMP). Flood risk was also assessed in accordance with the technical guidance document to the NPPF.

3.1 Flood Risk from Rivers and/or the Sea

According to the Environment Agency (EA)’s Flood Map for Planning, shown in Image 2, the site is predominantly in Flood Zone 1. This zone is defined as land having a less than 1 in 1000 annual probability of river or sea flooding (<0.1%). Therefore, the risk from rivers or sea is considered very low.

As the site lies in Flood Zone 1, all development is deemed appropriate, and the sequential and exception tests are not required. This is supported by Table 2 found in the NPPF guidance as shown below:

Flood Zones	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Zone 1	Appropriate	Appropriate	Appropriate	Appropriate	Appropriate
Zone 2	Appropriate	Exception Test Required	Appropriate	Appropriate	Appropriate
Zone 3a	Exception Test Required	Not Appropriate	Exception Test Required	Appropriate	Appropriate
Zone 3b	Exception Test Required	Not Appropriate	Not Appropriate	Not Appropriate	Appropriate

Table 2 - Flood Zone Vulnerability Matrix

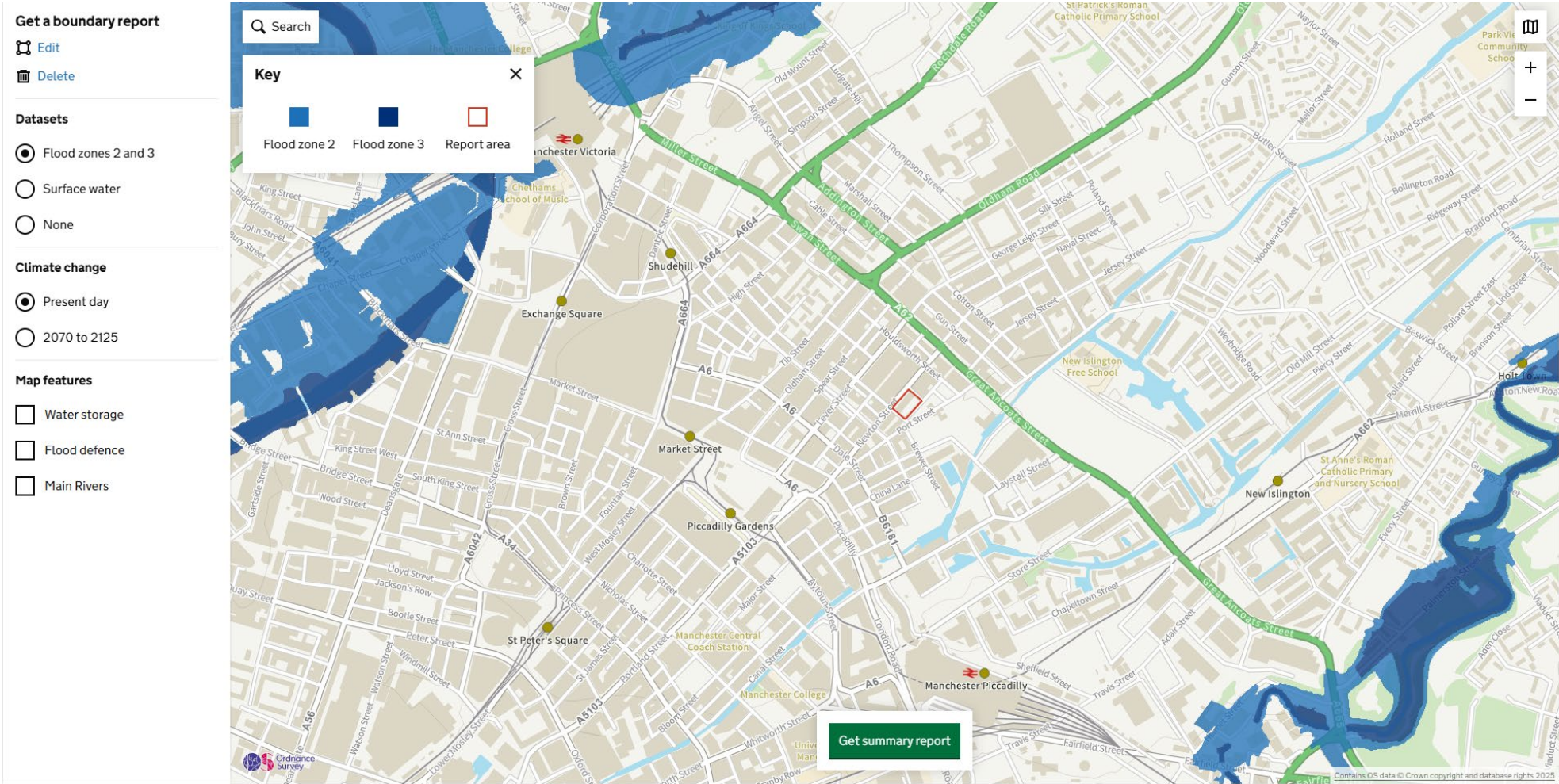


Image 2 - EA Flood Zone Map

3.2 Flood Risk from Surface Water and Overland flows

Surface water flooding occurs when rainwater neither drains away through the on-site drainage system nor soaks into the ground. It instead ponds locally or flows over the ground. Surface water flooding is typically associated with topographical low points.

The EA projected long term flooding map shows that whilst most of the site is at very low risk, some areas of the site are at low risk of surface water flooding. Refer to Image 3 for the EA surface water flooding map.

Low-risk surface water flooding refers to the annual probability of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%). This flooding occurs on site on the existing car parking areas through a flow path which extends from Dean Street.

The proposed scheme includes the re-development of the vacant plot into an eight-storey building, with preliminary proposed FFLs equal or above the surrounding external levels.

The EA flood map indicates surface water flooding only in the low-risk scenario. However, the proposed development will not be at risk, as existing topographical levels show that any flooding within the site would originate from within the development rather than the public highway, which sits at a lower level than the car park. The proposed scheme will maintain existing pavement cross falls away from building thresholds, ensuring protection in both low-risk and exceedance events.

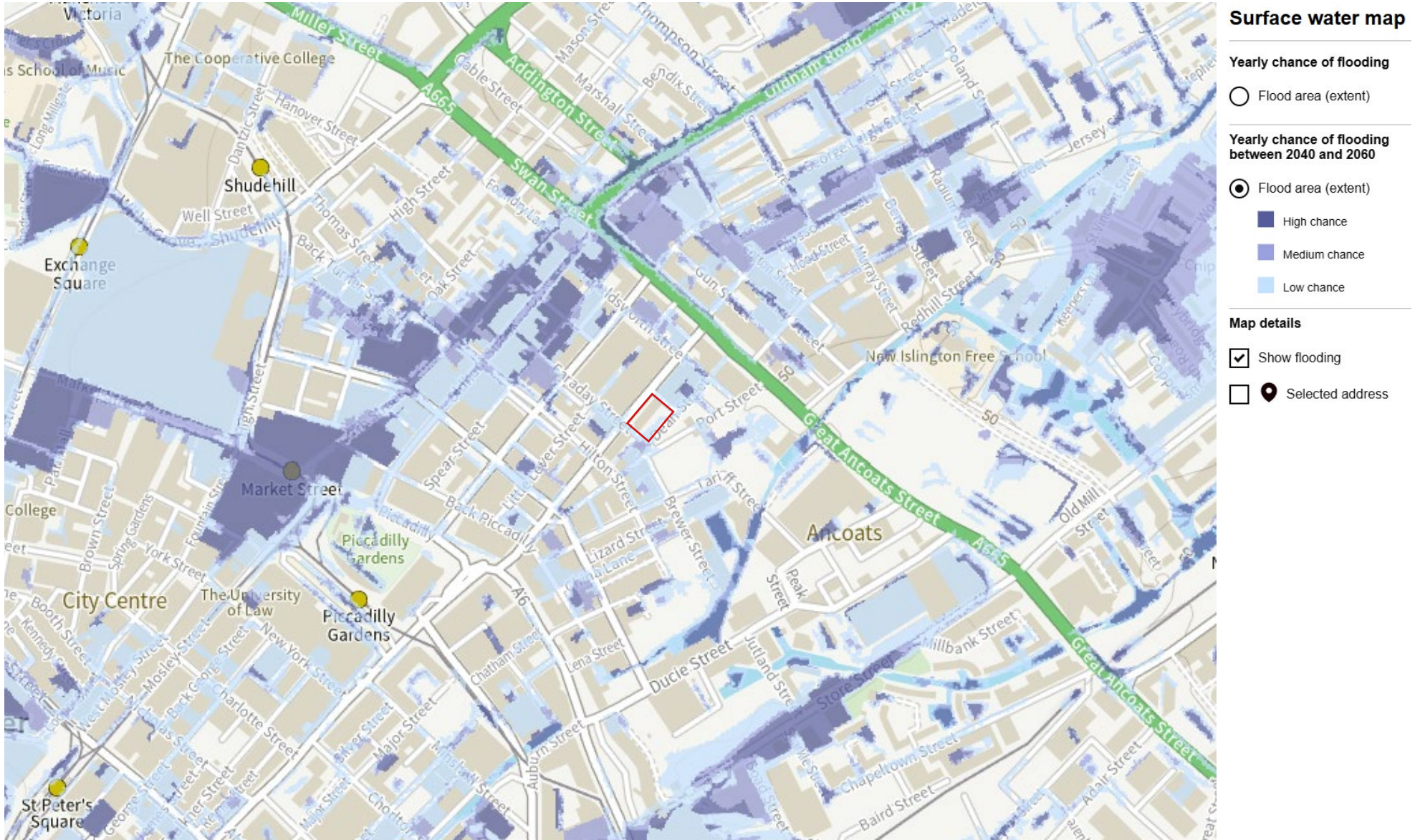


Image 3 - EA Surface Water Flooding Map

3.3 Flood Risk from Sewers

Sewer flooding typically occurs when the drainage network lacks sufficient capacity during extreme rainfall events.

Historical data on sewer flooding incidents in Manchester City is limited. The Greater Manchester Combined Authority Strategic Flood Risk Assessment (GMCA SFRA, 2019) noted that United Utilities could not provide exact incident locations due to data sensitivity. However, the site is located within a Critical Drainage Area (CDA), as identified in Image 4 below extracted from the Level 2 SFRA.

These CDAs are designated based on factors such as:

- + Localized flooding from ordinary watercourses, including culvert surcharges and overland surface water flows.
- + Potential sewer network flooding due to blockages, system failures, or storm events exceeding design capacity.
- + Areas undergoing significant redevelopment that may impact surface water runoff and drainage infrastructure.

The proposed FFLs are located above the road level, thus in the event of sewer surcharge, the public highway will accommodate the overland flows via existing flow paths in the public highway, this will protect the building against flooding as evidenced in the surface water flood risk section.

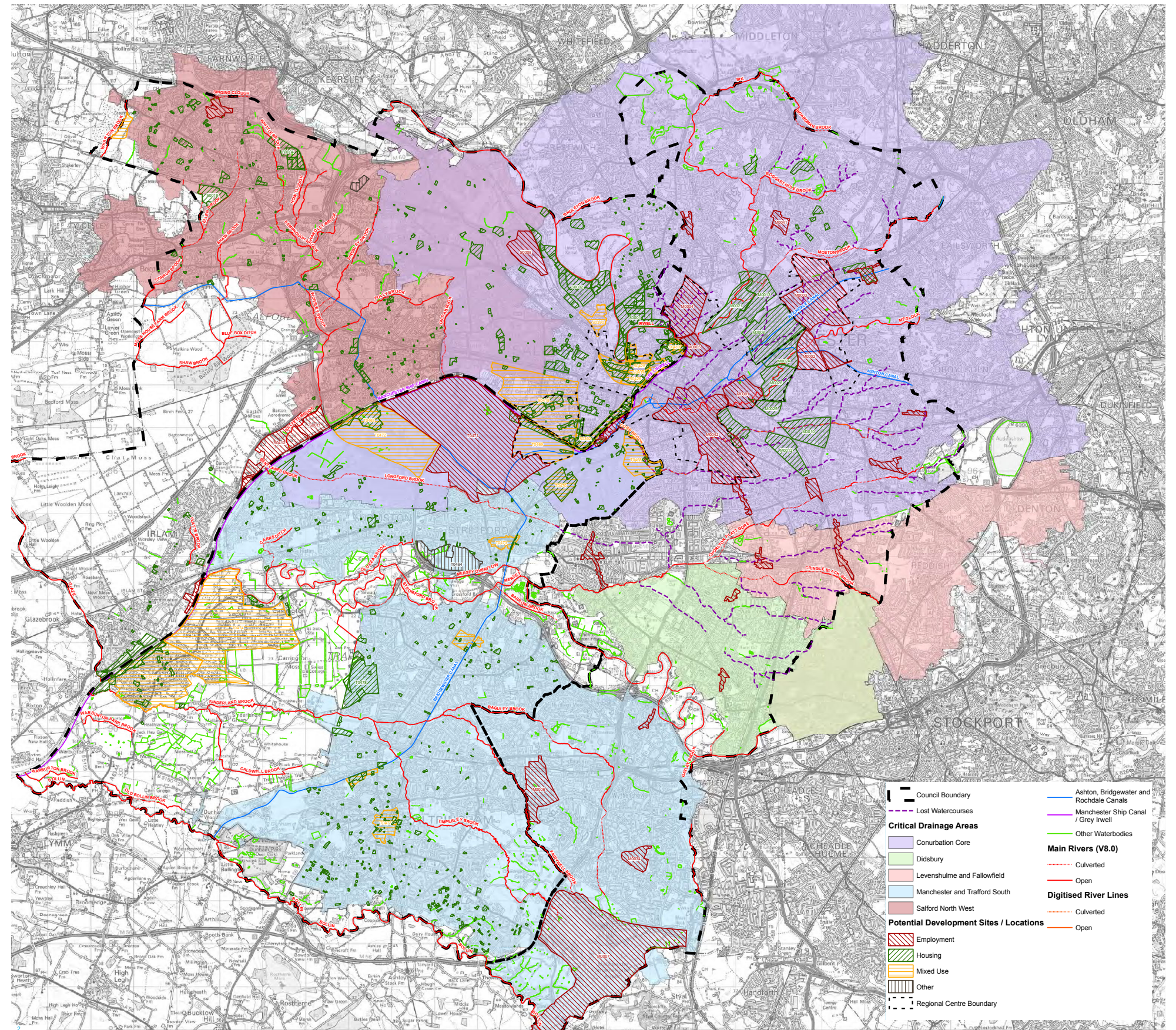


Image 4 - Critical Drainage Areas

3.4 Flood Risk from Groundwater

Groundwater flooding is caused when the level of water within rock or soil rises significantly due to long periods of abnormally high rainfall. Although this type of flooding does not pose a significant risk to life, it can cause significant damage to property and infrastructure. The two most vulnerable settings for groundwater flooding are chalk and river valleys which are underlain by permeable superficial deposits. Lead Local Flood Authorities are responsible for managing groundwater flood risk.

According to the MST Level 2 SFRA (2011), certain areas are susceptible to groundwater flooding. However, as shown in Image 5, the site is not located within one of these areas. Also, due to the site not having a proposed basement, the risk of groundwater flooding is considered low.

3.5 Summary

This Flood Risk Assessment has been prepared in accordance with the local, regional, and national planning policy and guidance documents.

The site is predominantly in Flood Zone 1, with a very low risk of river or sea flooding. While some areas face a low risk of surface water flooding, proposed drainage measures will mitigate this. Sewer flood risk is minimal, with SuDS and non-return valves enhancing protection. Groundwater flooding is unlikely due to underlying clay and borehole test results. Overall, the flood risk to the site is low.

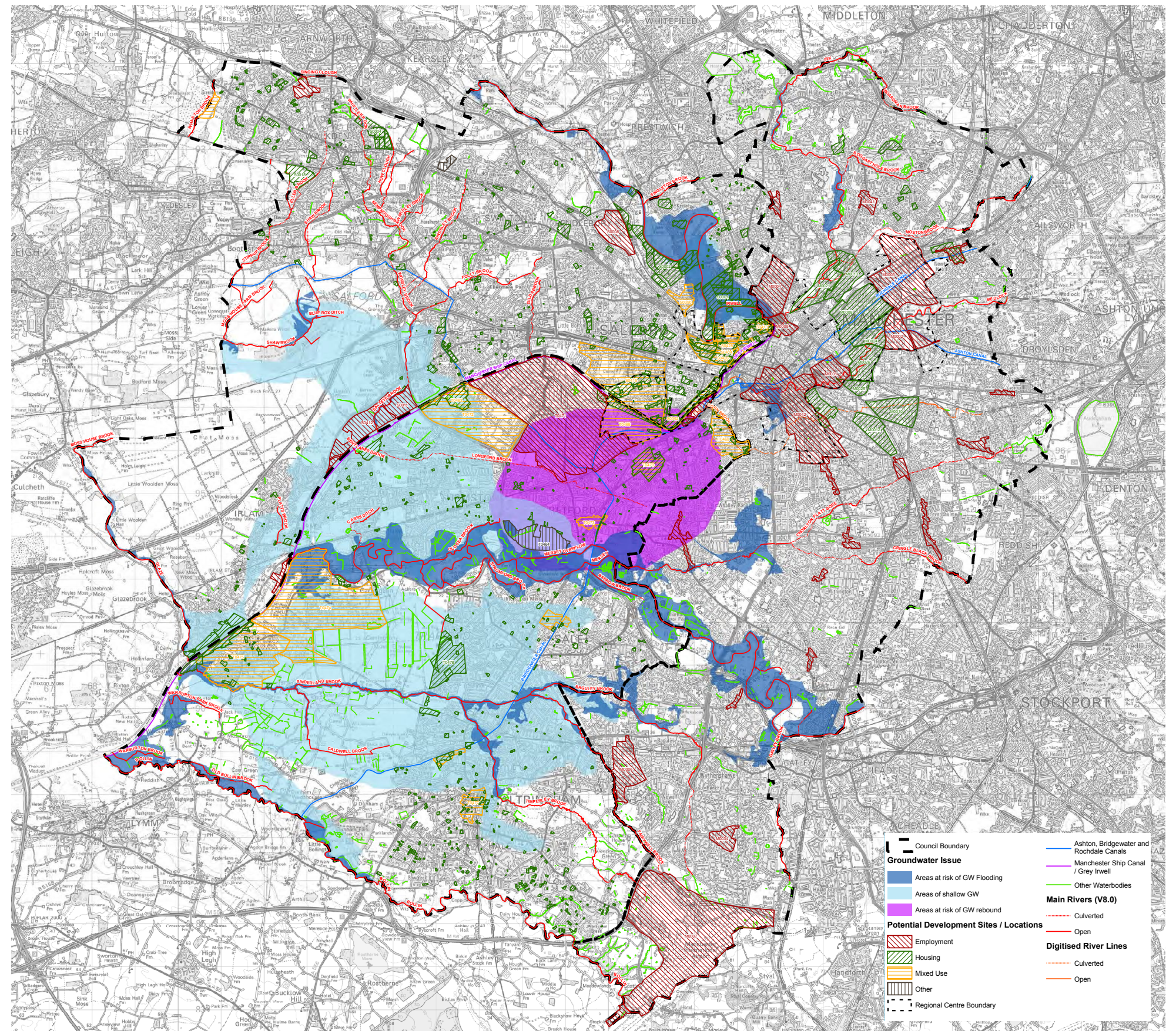


Image 5 - Groundwater flooding susceptibility

4. Existing Drainage Arrangements

4.1 Public Drainage Network

The site is served by a combined water sewer system operated by United Utilities. Sewers are located under the four roads which bound the site. A GPR survey named 22C084 was conducted in March 2022 by Survey Operations which provides more information on the sewers and can be seen in Image 6. After receiving conflicting information from the GPR survey that did not align with the sewer records a CCTV survey was undertaken in April 2022 to confirm the discrepancies for the sewer runs on Postal Street and Newton Street. The key features obtained from the asset map, GPR survey, and CCTV survey are summarised below:

- + While the asset map shows a 600mm-diameter combined sewer, the GPR survey recorded a 450mm diameter combined sewer, which runs north-east on Postal Street; however, the CCTV survey showed the sewer was in fact a U-shaped sewer with a flat top 450mm high by 400mm wide. The head of the run was unable to be traced and is shown at the south of the street on the asset map. A manhole halfway through Newton Street recorded the sewer invert level to be 45.83mAOD with a cover level of 48.88mAOD. This sewer then joins onto Newton Street's combined sewer.
- + While the asset map shows a 600mm diameter sewer, the GPR recorded a 650mm diameter combined sewer which runs the length of Newton Street; however, the CCTV survey confirmed the diameter of this pipe to be a 600mm diameter sewer. On the north-east of the site, where the Postal Street sewer meets the Newton Street sewer, a cover level of 49.01 mAOD and invert level of 45.06mAOD were recorded. The signal for this sewer was lost, however the UU asset map shows this sewer running south-east.
- + A 400mm diameter combined sewer on Faraday Street which joins a 300x400mm combined sewer on Dean Street and turns into a 470x630mm combined sewer running south-west on Port Street according to United Utilities asset map. The GPR survey shows the connection of these sewers on plan, however no levels are given other than the connection on Port Street junction with Brewer Street which shows a cover level of 48.47 mAOD and an invert level of 43.17mAOD.

The asset map can be seen in Appendix C and the GPR Survey in Appendix D.

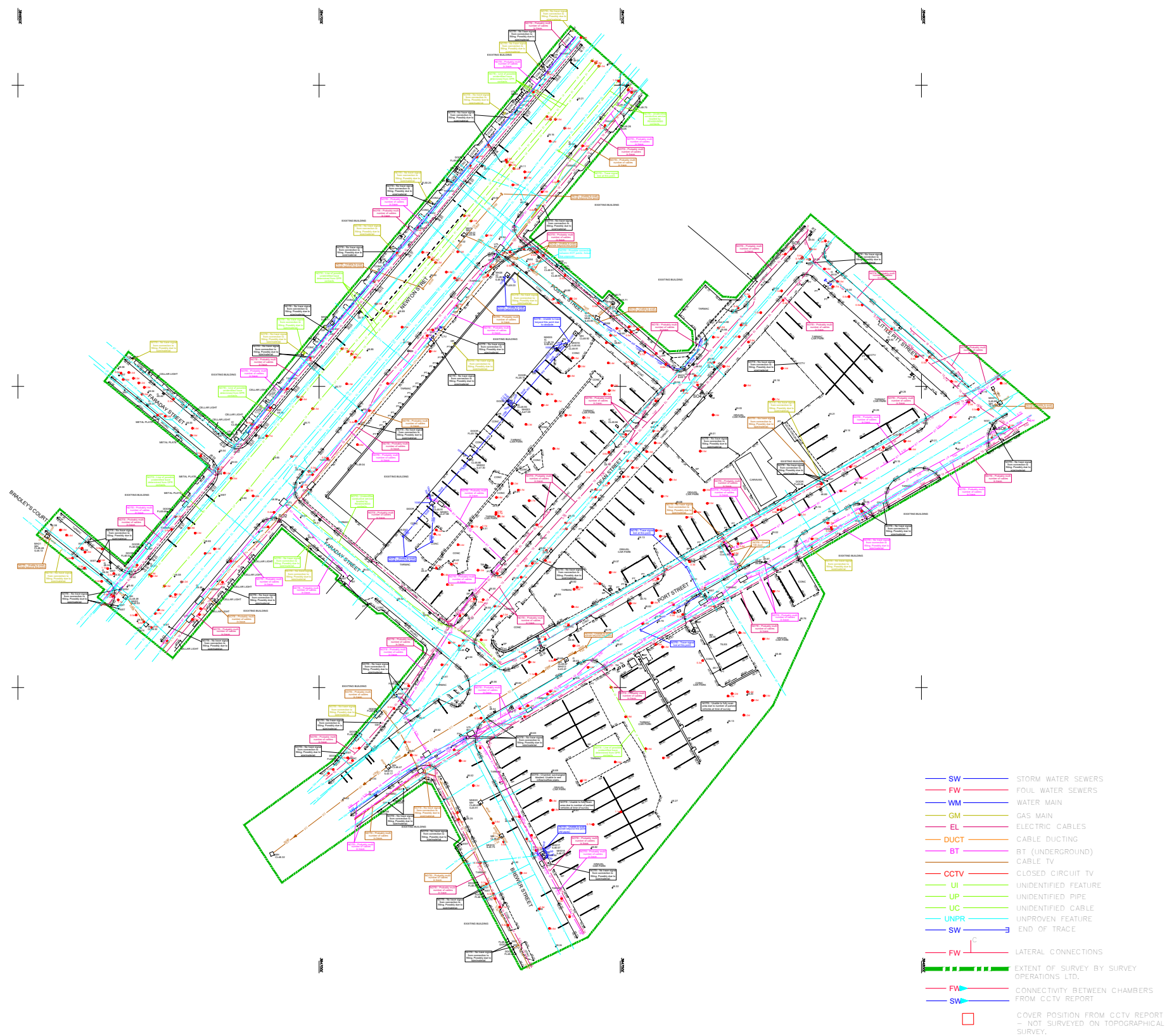


Image 6 - Existing Drainage Network

4.2 Private Drainage Network

The GPR survey mentioned above shows an existing drainage network on site. However, due to the nature of the development, the majority of the existing drainage will be demolished with the exception of the existing outfall to the sewers which is proposed to be reused. This existing outfall drains onto Postal Street to the north-east and can be seen below in Image 6 from the GPR survey.

4.3 Existing Surface Water Runoff Rates

The existing site runoff rates have been calculated based on the available site information. The site is taken as fully impermeable due to the full hardstanding coverage on site. The Modified Rational Method can be used to obtain the existing peak runoff rates for the 1 in 2 year (FEH data does not include 1 in 1 year), 1 in 30 year and 1 in 100 year rainfall events for 15-minute storm durations in accordance with formula:

$Q = 3.61 \times C_v \times i \times A$

Where C_v is the volumetric runoff coefficient, A is the catchment area in hectares and i is the peak rainfall intensity in mm/hr using FEH data. A C_v value of 1.0 has been used for the impermeable areas.

Return Period	Rainfall (mm)	Rainfall Intensity (mm/hr)	Catchment Area (ha)	Runoff Rate (l/s)
1 in 2 years	7.37	29.48	0.16	17.03
1 in 30 years	18.44	73.76	0.16	42.60
1 in 100 years	23.32	93.28	0.16	53.88
1 in 100 year + 45% CC	33.81	135.26	0.16	78.12

Table 3 - Existing Surface Water Runoff Rates

5. Proposed Drainage Arrangements

Separate foul and surface water drainage networks are proposed to collect surface water runoff and wastewater from the site as per Building Regulations Part H prior to discharge to the combined sewer. It is the intention to use SuDS for the capture of surface water runoff to provide multi-functional benefits and to re-use the existing outfalls to the combined sewer as far as feasible.

The drainage proposals for this scheme consists of the privately owned area circa 0.16ha, given that the public highway will discharge as per S278 works in the public highway. Therefore, all calculations shown for the drainage strategy shall refer to the privately owned area only.

5.1 Drainage Hierarchy

To establish the most suitable means of discharge water, a detailed SuDS assessment has been carried out referencing the government’s “Guidance for Flood Risk and Coastal Change” drainage hierarchy, priority given to SuDS which provide multi-functional benefits.

SUDS Technique	Feasible	Explanation
Discharge into the ground (infiltration)	No	Considering best practice recommendations CIRIA C753 The SuDS Manual, concentrated infiltration structures should not be placed within 5m of a structure. Considering foundation locations to support Architectural proposals infiltration is therefore considered unfeasible.
Discharge to a surface water body	No	No watercourses were found in the vicinity of the site.
Discharge to a surface water sewer, highway rain or other drainage system	No	As supported by the GPR survey and United Utilities asset map, no surface water sewers were found in the vicinity of the site.
Discharge to a combined sewer	Yes	As supported by the GPR survey and United Utilities asset map, combined water sewers were found in the vicinity of the site and are thus considered feasible. Surface and foul water drainage will follow Building Regulations Part H requirement for separate systems within the site prior to a combined outfall to the combined sewer.

Table 4 - Gov.UK Guidance for Flood Risk and Coastal Change Drainage Hierarchy

5.2 Climate Change Allowances

In 2021, the EA issued updated climate changes allowances for peak rainfall allowances. According to the EA website “Flood risk assessments: climate change allowances guidance”.

The site lies in the Irwell Management Catchment. The climate change allowance for this catchment is presented in Table 5.

In accordance with EA guidance, developments with a lifetime beyond 2100 must be designed so that for the upper end allowance of the 1% annual exceedance probability event (1 in 100 year) for the 2070 epoch (2061 to 2125), there is no increase in flood risk elsewhere and the development will be safe from surface water flooding. As such, the proposed SuDS strategy has been designed considering the 45% value for climate change allowance.

River Basin District	Allowance Category	Total potential change anticipated for the '2050s' (<2060)	Total potential change anticipated for the '2070s' (2061 and 2125)
Irwell Management Catchment	Upper End	40%	45%
	Central	25%	30%

Table 5 - Irwell Management Catchment Peak Rainfall Allowances (1% annual exceedance rainfall event)

5.3 Greenfield Runoff

The aim for this development is to use SuDS techniques to reduce the peak run-off from the design storm to as close as possible to Greenfield as feasible, while avoiding the inclusion of below-ground piped systems and underground attenuation tanks as far as feasible. Instead maximizing the use of green infrastructure and multifunctional SuDS.

The greenfield run-off rate has been calculated using the UKSuDS calculation tool, rates presented in Table 6 below using the privately owned area of 0.16 hectares.

Rainfall Event	Greenfield Rates per hectare	Greenfield Rates (0.16ha)
Q_{bar}	8.4 l/s	1.3 l/s
Q_1	7.3 l/s	1.2 l/s
Q_{30}	14.2 l/s	2.3 l/s
Q_{100}	17.4 l/s	2.8 l/s

Table 6 - Greenfield Run-off Rates

Refer to Appendix F for a copy of the greenfield runoff rate calculations.

5.4 Proposed Surface Water Discharge Rates

The previous preliminary drainage strategy completed for the development site in September 2022 calculated a peak surface water discharge of 5l/s for the 1:100-year storm event + 45% climate change, which obtained approval in principle from MCC as the LLFA and United Utilities at the time.

HTS contacted United Utilities via a pre-development application enquiry to reconfirm this requirement. Their approval can be seen in Appendix I. This is approval is set to expire in November 2025, discussions to renew this approval are currently ongoing.

As detailed in Section 5.6 of this report, 5 l/s is achievable through the implementation of blue roofs.

5.5 Proposed SuDS Features

It is the intention for surface water drainage to be designed to incorporate SuDS into the fabric of the building, with priority given to SuDS which provide multi-functional benefits, providing biodiversity and amenity value, alongside improving water quality and managing water quantity, whilst also providing elements of rainwater re-use in the aim to reduce demand on the wider public supply network.

Proposed SuDS are to be designed in line with best practice and have been coordinated with Architect proposals. These comprise blue roofs where feasible.

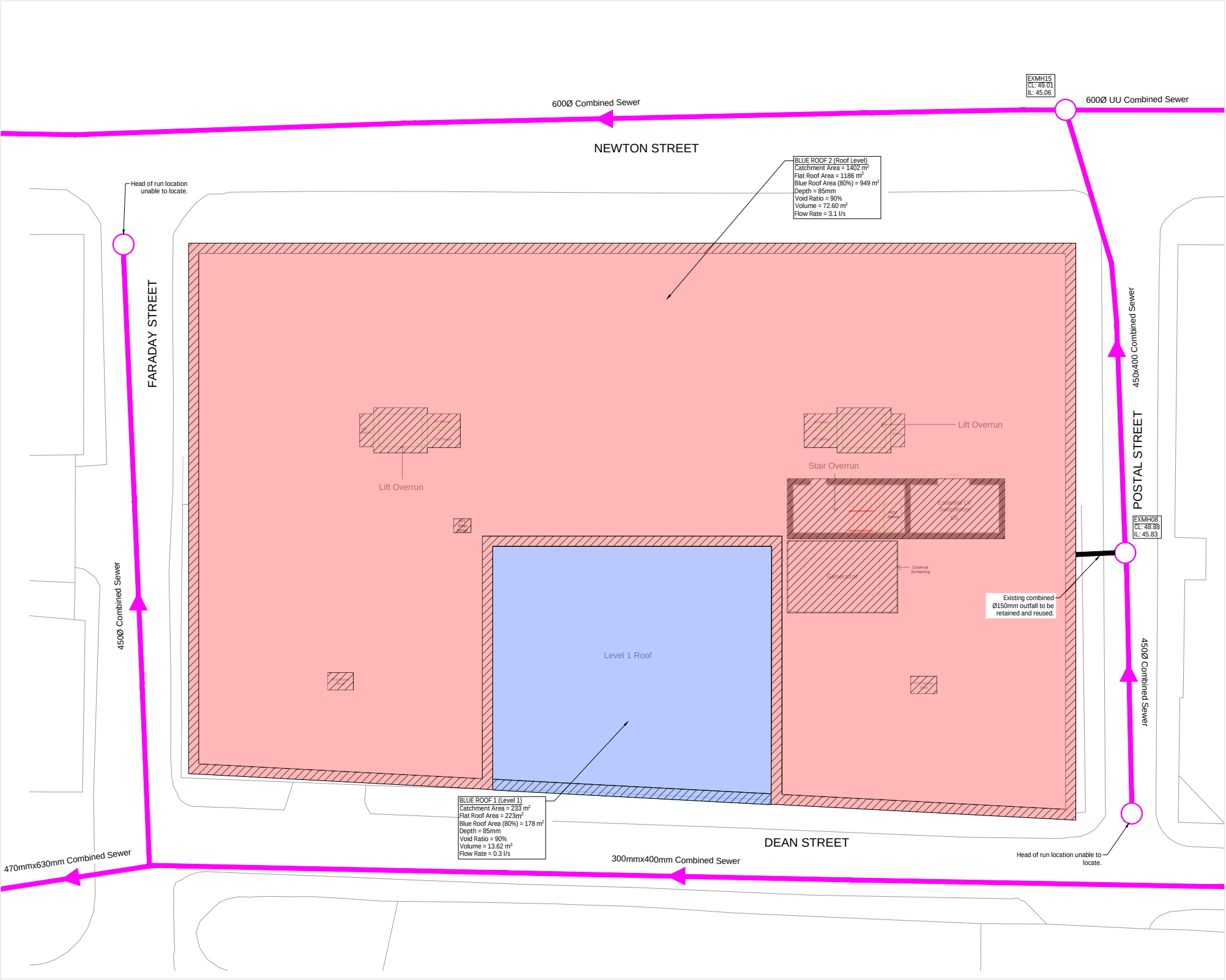
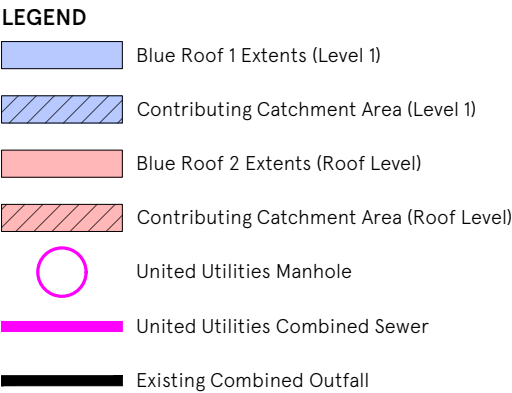


Image 7 - Proposed Preliminary Drainage Strategy

5.6 Blue Roofs

The intent is to have blue roofs wherever feasible; these are proposed across the majority of roof levels where flat surfaces provide the ability to attenuate surface water at source.

Depths of blue roof have been derived based on the ACO blue roof system, proposing a minimum crate depth of 85mm at a void ratio of 95%. Depths have been developed in collaboration with the design team and consider limitations derived from building height and access thresholds.

Although current rates have been calculated using the ACO system, as the design progresses through to detailed design, depths and rates of blue roofs may vary slightly with the choice of manufacturer and subtle layout changes. This means there is scope for the final discharge rates to vary depending on the development of the final design and chosen supplier at construction.

The discharge rate from the blue roofs will be controlled using orifice flow controls in outlets from the blue roof system. A suitable overflow system will be designed in accordance with flat roof design standard (BS 6229) to ensure suitable drainage in an exceedance event. This will be picked up in detail in the above ground drainage design package.

The proposed blue roof layout can be found in Appendix G and supporting calculation in Appendix H.

The total discharge rate achieved using blue roofs is 3.4 l/s for the 1 in 100 year + 45% climate change peak storm event, calculated using FEH rainfall data. A breakdown of depths and run-off rates is included in Table 7.

Roof Ref.	Level	Blue Roof Area	Catchment Area	Volume Required	Peak Run-off Rate	Blue Roof Depth
Blue Roof A	Top Roof	949 m²	1402 m²	72.13 m³	3.10 l/s	85mm
Blue Roof B	Level 1 Roof	178 m²	223 m²	13.44 m³	0.30 l/s	85mm
Total		1127 m²	1625 m²	85.57 m³	3.40 l/s	

Table 7 - Blue Roof Summary

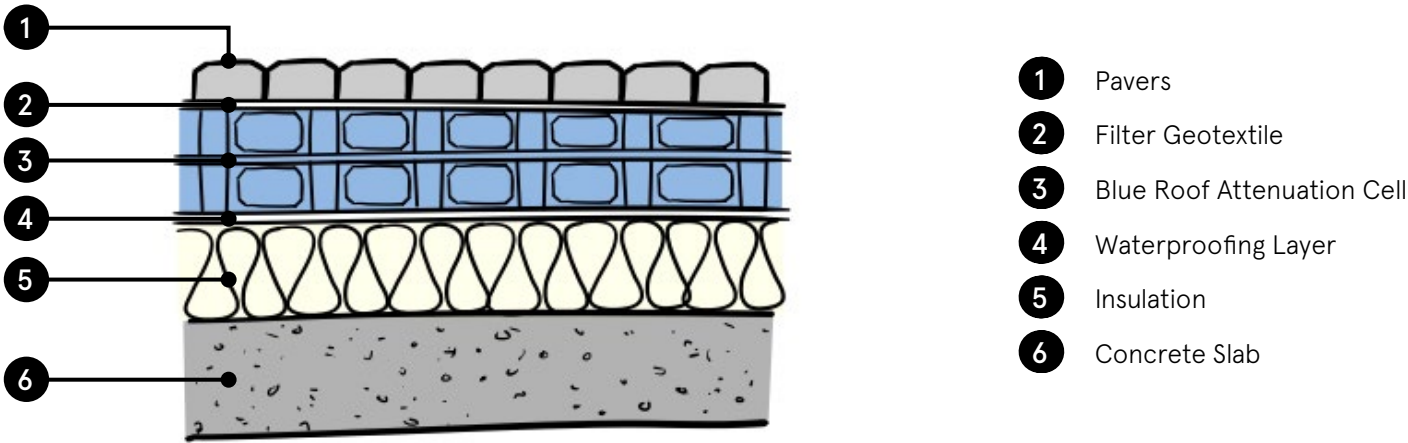


Image 8 - Typical Blue Roof Detail

Refer to Image 9 for indicative proposed drainage schematic.

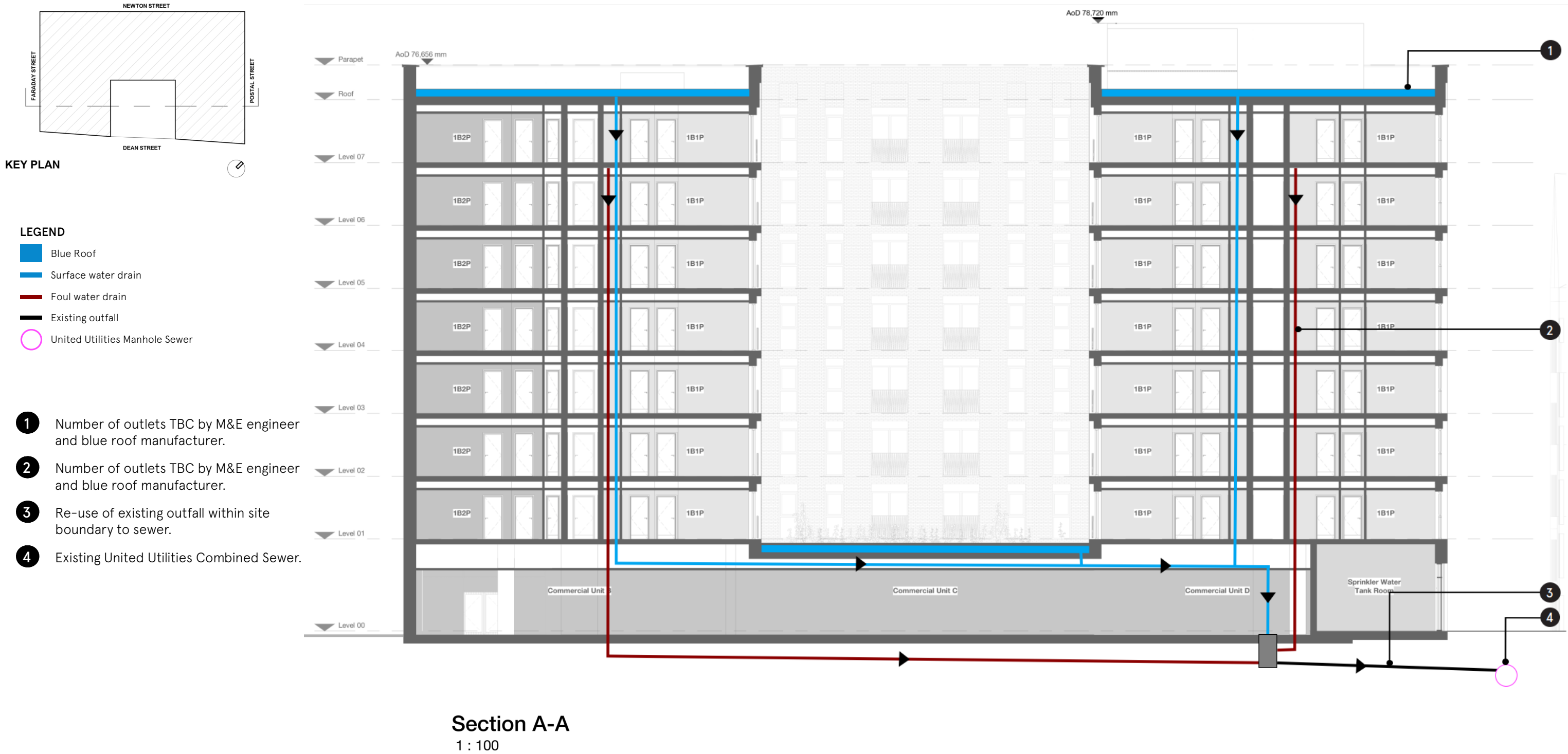


Image 9 - Indicative proposed drainage schematic

5.7 SuDS Design Summary

SuDS have been incorporated into the proposed development considering The Manchester Core Strategy and SuDS Design guidance as far as feasible.

Proposals utilise blue roofs to attenuate the 1 in 100 year + 45% storm to as close to greenfield rates as possible while discharging no greater than the 5l/s maximum discharge rate agreed with UU.

A summary of run-off rates from the development in the existing and proposed scenarios are presented in Table 8. Through the proposed SuDS features, a significant reduction to the peak surface water run-off from the development is achieved; 96%, comparing existing and proposed rates for the design storm.

Flow rates from blue roofs have been included assuming a constant discharge up to and including the critical storm duration.

Rainfall Event	Greenfield Rates	Existing Rates	Proposed Rates	Betterment over existing rates
Q _{1/2}	1.2 l/s	17.03	3.4 l/s	80%
Q ₃₀	2.3 l/s	42.60	3.4 l/s	92%
Q ₁₀₀	2.8 l/s	53.88	3.4 l/s	94%
Q _{100+45%}		78.12	3.4 l/s	96%

Table 8 - Comparison of Existing and Proposed Run-off Rates

	Component	Pollution Hazard Level	Total Suspended Soilds (TSS)	Metals	Hydrocarbons
Land Use	Roof	Very Low	0.2	0.2	0.05
Minimum Pollution Index for treatment			0.5	0.4	0.4

Table 9 - CIRIA C753 Simple Index Approach

5.8 Water Quality

The proposed SuDS strategy aims to provide sufficient mitigation to the surface water run-off. To assess this, the CIRIA C753 Simple Index Approach has been used as shown in Table 9.

As per CIRIA C753, the minimum pollution index that demands mitigation is greater than the pollution index from the roof drainage. Roof drainage is generally considered clean and uncontaminated runoff, therefore the risk to water quality is considered very low and no mitigation is needed.

5.9 Exceedance

The proposed building occupies the entire site area up to the public highway boundary. This means that run off is entirely generated on roof areas and will drain through the internal building drainage system and to the sewer outfall.

The blue roof design is to account for exceedance events in the design of a suitable overflow system. Requirements of BS 6229 & BS EN 12056. This will ensure excess flows are routed off the roofs and towards the public sewer without restriction.

Areas of public highway are to maintain existing falls away from proposed building thresholds to prevent exceedance flows from off-site impacting the building. Refer to Appendix D for the topographical survey which illustrates the existing falls.

6. Proposed Foul Water Drainage Strategy

Due to the nature of the redevelopment, existing foul drainage reusability is not achievable. As such, a new drainage system will be designed in accordance with Building Regulations part H to serve the proposed building. At this stage of design, it is the intention for foul discharge to be via gravity drainage. The existing outfalls will be retained as feasible. Where this is not possible, a new sewer connection will be agreed with United Utilities.

As mentioned above, the foul and surface drainage systems will be kept separate, prior to discharge to the combined sewer.

7. Drainage Inspection and Maintenance Strategy

In accordance with CIRIA C625 it is recommended that a private SuDS maintenance agreement is agreed as a simple contract between the property owner/ tenant (customer) and the maintenance provider (the maintainer). It is mainly to facilitate continuing maintenance of the SuDS that are in private ownership. The maintenance requirements are in accordance with the CIRIA C753 SuDS Manual 2015.

Refer to J for the SuDS maintenance plan.

8. Conclusions

This SuDS strategy has been prepared in accordance with local and national planning policy and guidance, aiming to comply with local and national planning policy as far as reasonably practicable.

This report found that the site is at low risk from all sources with the inclusion of mitigation measures as detailed within Table 4. This has been assessed to be the case with the inclusion to a suitably designed waterproofing system to prevent groundwater ingress and basement level and mitigation against sewer surcharge in line with best practice.

The suitability of different SuDS techniques was explored in accordance with the drainage hierarchy within the government's "Guidance for Flood Risk and Coastal Change, priority given to SuDS which provide multi-functional benefits. Surface water attenuation will be provided in the form of blue roofs to reduces rates to greenfield rates.

Through this SuDS strategy, achieves a significant betterment sitewide of up to 96% against the existing runoff rates considering the most onerous storm conditions. A total rate of 3.4 l/s for the 1 in 100-year storm event plus 45% climate change is achieved through the current blue roof strategy. However, through design development and change in blue roof supplier, the rate may vary. The ultimate restriction that should be achieved at a minimum is 5l/s as agreed with United Utilities.

Foul water will be discharged via gravity re-using the existing outfall location to the east of the site.

Appendix A

Proposed Architectural Plans

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Rev	Description	Date
P01	Issued for Coordination	21.02.2025
P02	Issued for Coordination	26.02.2025
P03	Issued for Planning Submission Review	26.02.2025
P04	Issued for Planning Submission Review	19.03.2025
P05	Issued for Planning	21.03.2025
P06	Issued for Planning	25.03.2025
P07	Issued for Review and Comment	31.10.2025

Key
Application Boundary

26-28 Hilton Street
Manchester M1 2EH
mail@hawkinsbrown.com
hawkinsbrown.com

Hawkins\Brown

Project
Postal Street
Manchester
M1 2EH

Drawing
Proposed Floor Plan - Ground Floor

Scale @ A1
1 : 100
Date
February 2025

Drawn By
HECW
Checked By
JT

Job Number 210258	Status S3	Purpose of Issue Review & Comment
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Rev	Description	Date
P01	Issued for Coordination	21.02.2025
P02	Issued for Planning Submission Review	28.02.2025
P03	Issued for Planning Submission Review	19.03.2025
P04	Issued for Planning	21.03.2025
P05	Issued for Review and Comment	31.10.2025

Key
Application Boundary

26-28 Hilton Street
Manchester M1 2EH
mail@hawkinsbrown.com
hawkinsbrown.com

Hawkins\Brown

Project
Postal Street
Manchester
M1 2EH

Drawing
Proposed Floor Plan - Level 01

Scale @ A1
1 : 100
Date
February 2025

Drawn By
HECW
Checked By
JT

Job Number
210258
Status
S3
Purpose of Issue
Review & Comment

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Rev
P05



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Rev	Description	Date
P01	Issued for Coordination	21.02.2025
P02	Issued for Planning Submission Review	28.02.2025
P03	Issued for Planning Submission Review	19.03.2025
P04	Issued for Planning	21.03.2025
P05	Issued for Review and Comment	31.10.2025

Key
Application Boundary

26-28 Hilton Street
Manchester M1 2EH
mail@hawkinsbrown.com
hawkinsbrown.com

Hawkins\Brown

Project
Postal Street
Manchester
M1 2EH

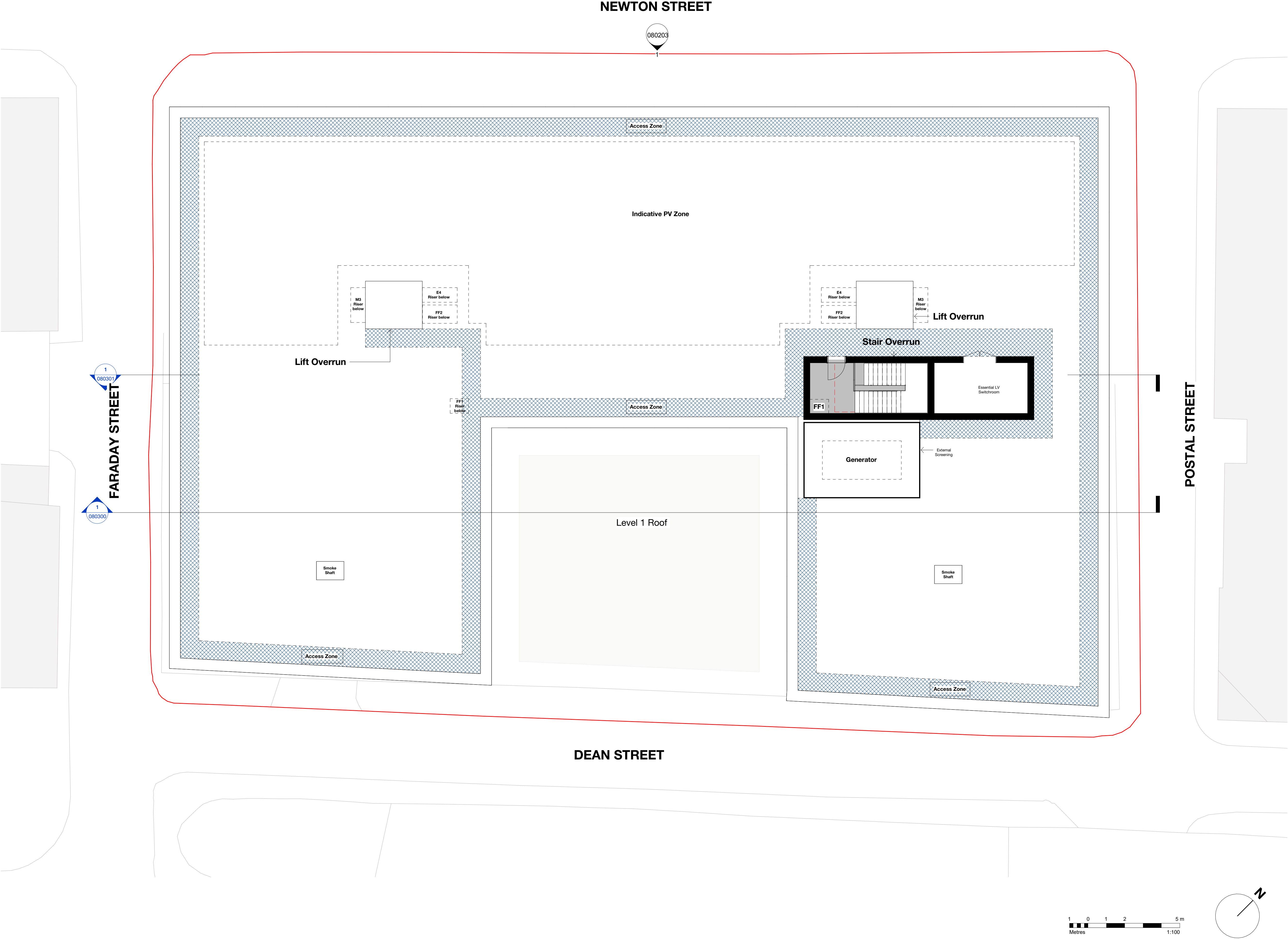
Drawing
Proposed Roof Plan

Scale @ A1
1 : 100
Date
February 2025

Drawn By
HECW
Checked By
JT

Job Number 210258	Status S3	Purpose of Issue Review & Comment
----------------------	--------------	--------------------------------------

Drawing No. POST-HBA-SW-RF-DR-A-080108	Rev P05
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Appendix B

Flood and Geology Maps

Get a boundary report

- Edit
- Delete

Datasets

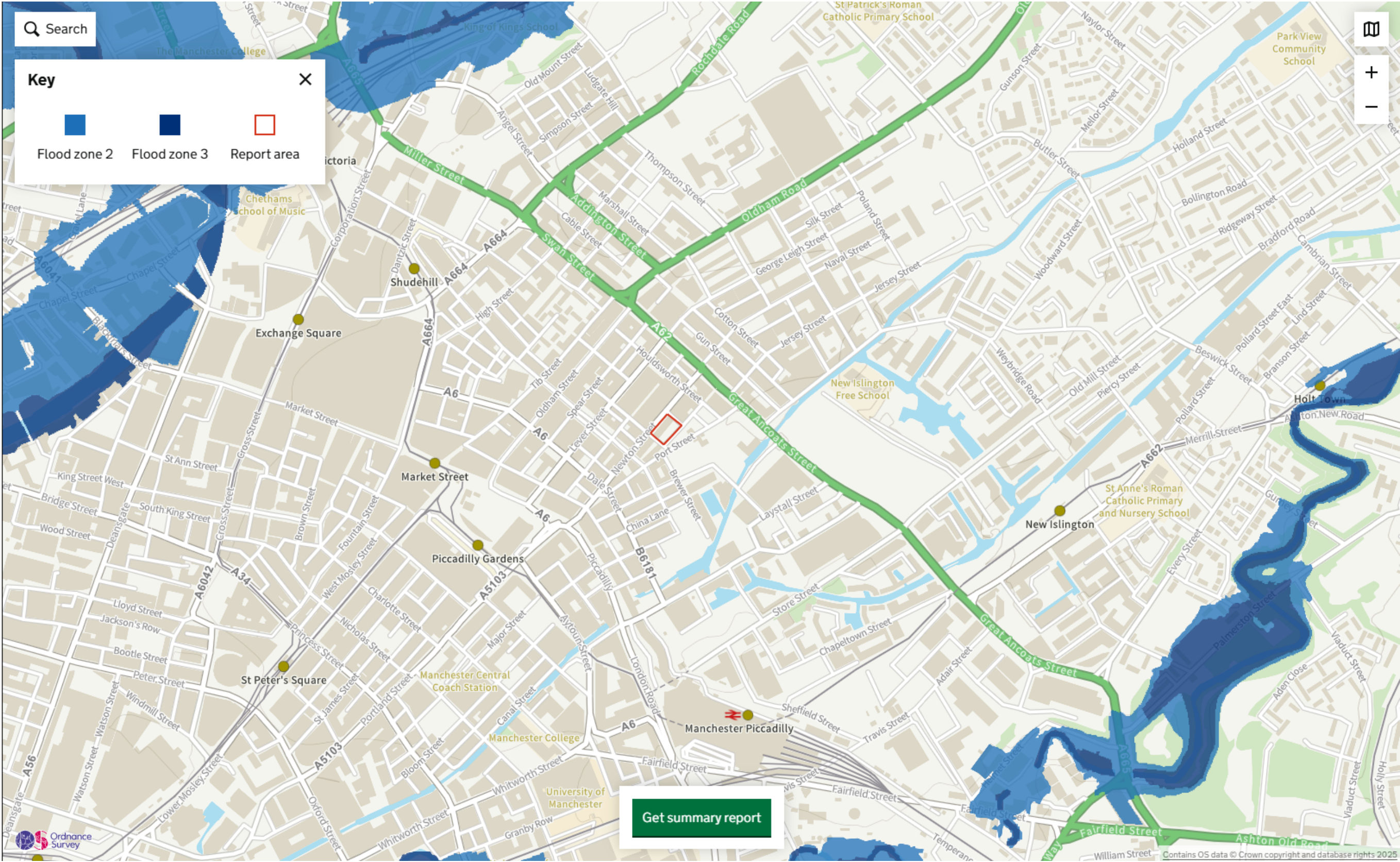
- ☒ Flood zones 2 and 3
- ☐ Surface water
- ☐ None

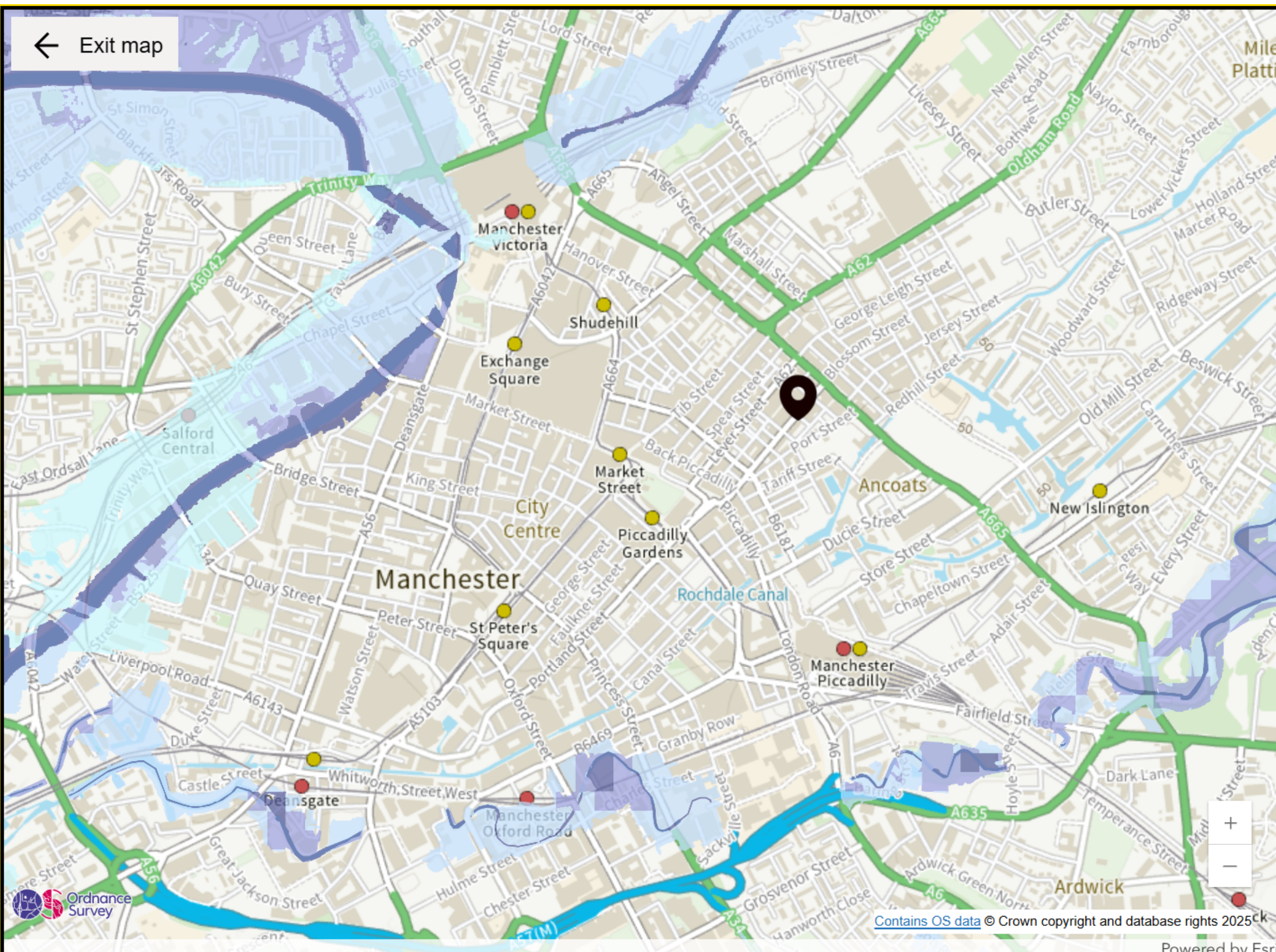
Climate change

- ☒ Present day
- ☐ 2070 to 2125

Map features

- ☐ Water storage
- ☐ Flood defence
- ☐ Main Rivers





Rivers and sea map

Yearly chance of flooding

● Flood area (extent)

High chance

Medium chance

Low chance

Very low chance

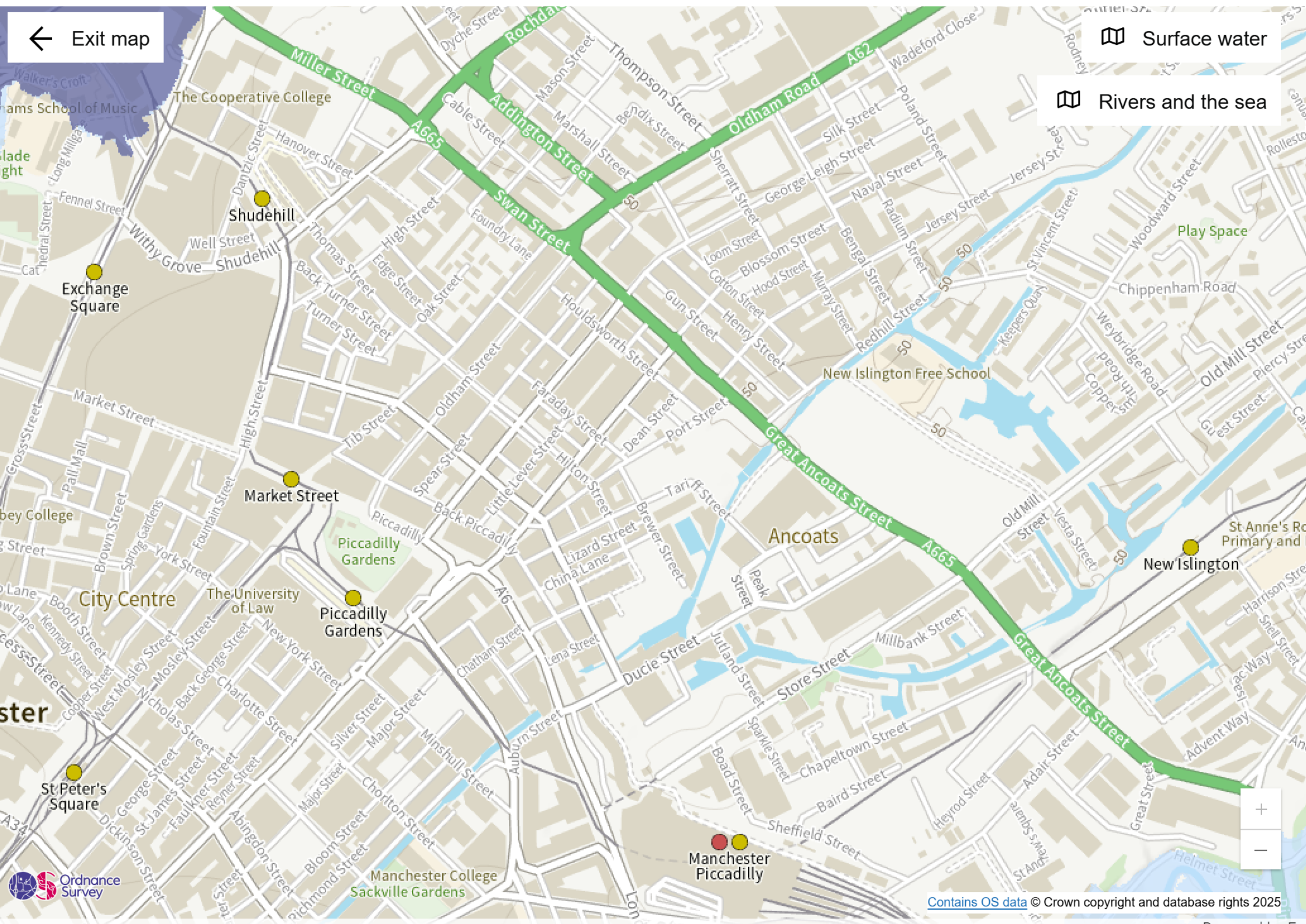
Yearly chance of flooding between 2036 and 2069

○ Flood area (extent)

Map details

☒ Show flooding

☒ Selected address

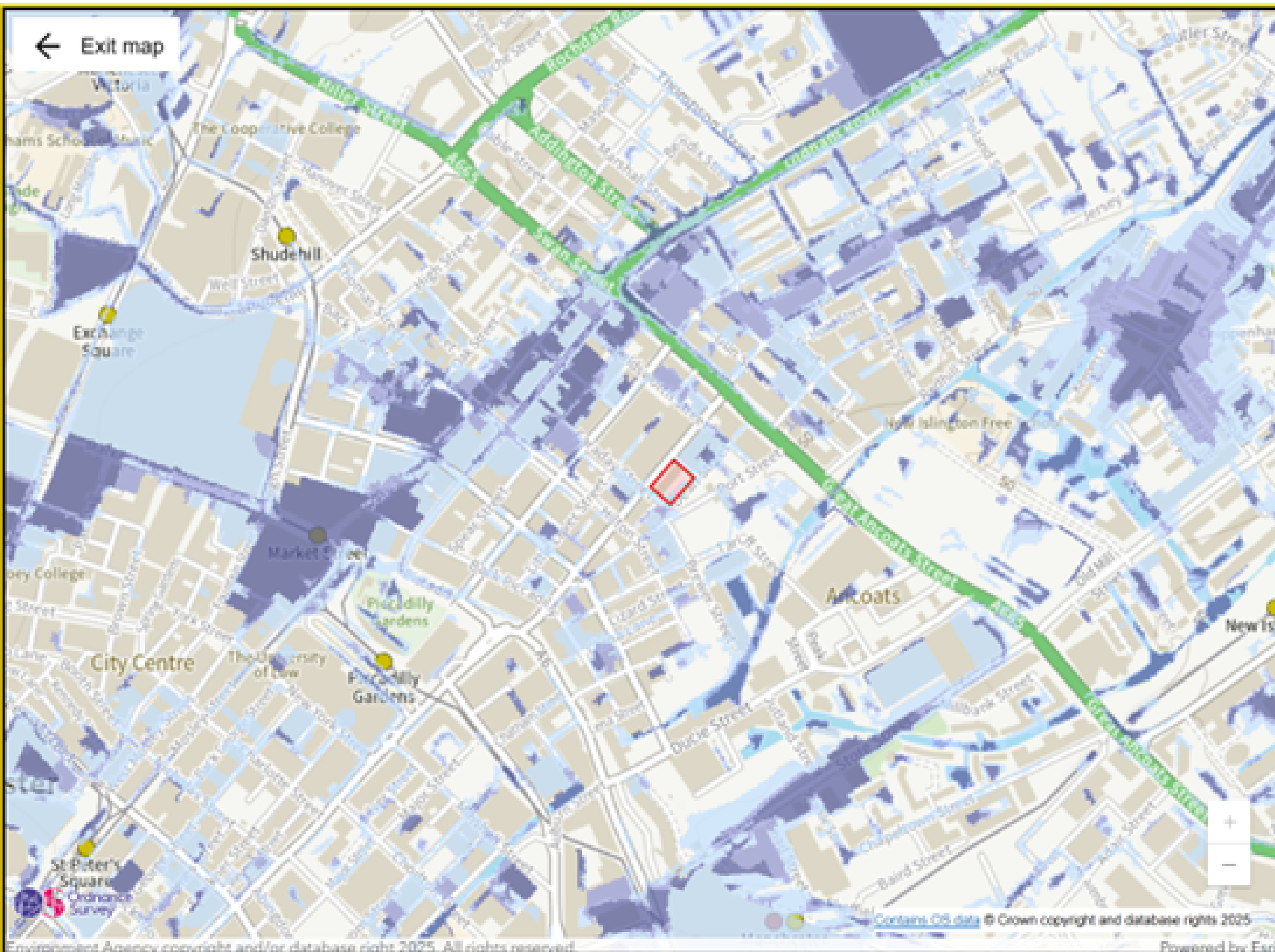


Reservoirs map

- ☒ Extent
 - When river levels are normal
 - When there is also flooding from rivers

Map details

- ☒ Show flooding



Surface water map

Yearly chance of flooding

○ Flood area (extent)

Yearly chance of flooding between 2040 and 2060

⦿ Flood area (extent)

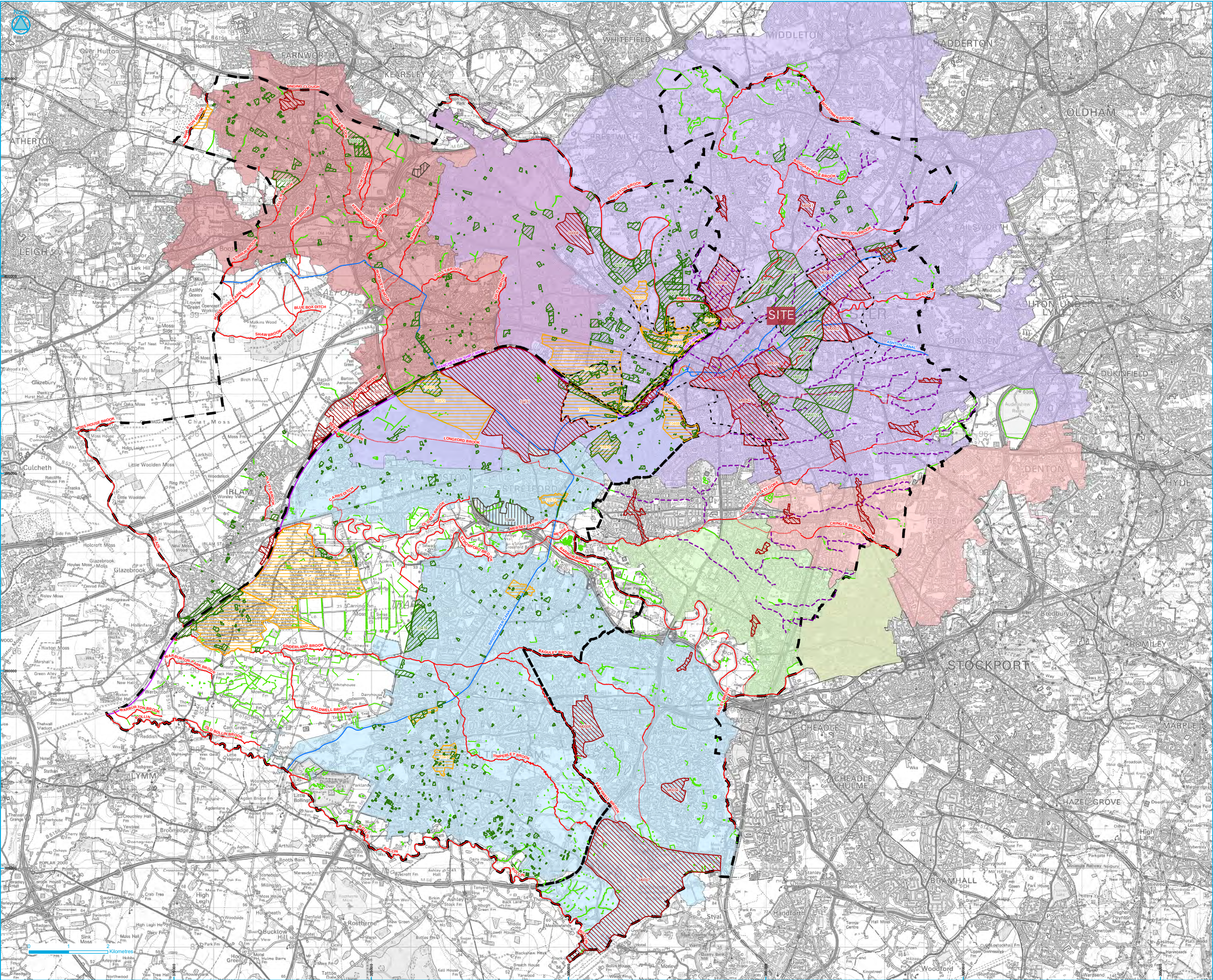
■ High chance

■ Medium chance

■ Low chance

Map details

☒ Show flooding



- Council Boundary
- - - Lost Watercourses
- Critical Drainage Areas**
- Conurbation Core
- Didsbury
- Levenshulme and Fallowfield
- Manchester and Trafford South
- Salford North West
- Potential Development Sites / Locations**
- Employment
- Housing
- Mixed Use
- Other
- - - Regional Centre Boundary
- Ashton, Bridgewater and Rochdale Canals
- Manchester Ship Canal / Grey Inwell
- Other Waterbodies
- Main Rivers (V8.0)**
- Culverted
- Open
- Digitised River Lines**
- Culverted
- Open

This map has been produced in accordance with PPS25: Development and Flood Risk.

Certain locations are particularly sensitive to an increase in the rate of surface water runoff and/or volume from new development. There are generally known local flooding problems associated with these areas. These areas have been defined as Critical Drainage Areas in the SFRA. Specific drainage requirements are required in these areas to help reduce local flood risk.

Chapter 5 of the Level 2 SFRA covers the flooding from surface water and sewers and how Critical Drainage Areas have been defined.

The Main River information shown in the SFRA is provided by the Environment Agency; the centreline data may deviate from that shown on basemapping due to inherent differences in data resolution. Further information on Main Rivers is provided on the Environment Agency's website. The mapping of culverted sections of watercourse is a strategic screening only based upon Ordnance Survey 1:10,000 mapping and should be confirmed for more detailed studies such as site specific Flood Risk Assessment. The canals layer does not necessarily cover all the canal arms, but the modelled overtopping/breaching and hydraulic interactions with rivers and other waterbodies is complete and accurate as appropriate for a Strategic Flood Risk Assessment.

The River Inwell between Victoria Station and Pomona Island is not shown as a Main River on the Environment Agency's Flood Map although Flood Zones related to the river are. The same approach has been taken in this SFRA.



www.jeremybain.co.uk
t 01925 570876
f 0845 862772
e info@jbaconsulting.co.uk

Bank Quay House
Sankey Street
Warrington
WA1 1NN
United Kingdom

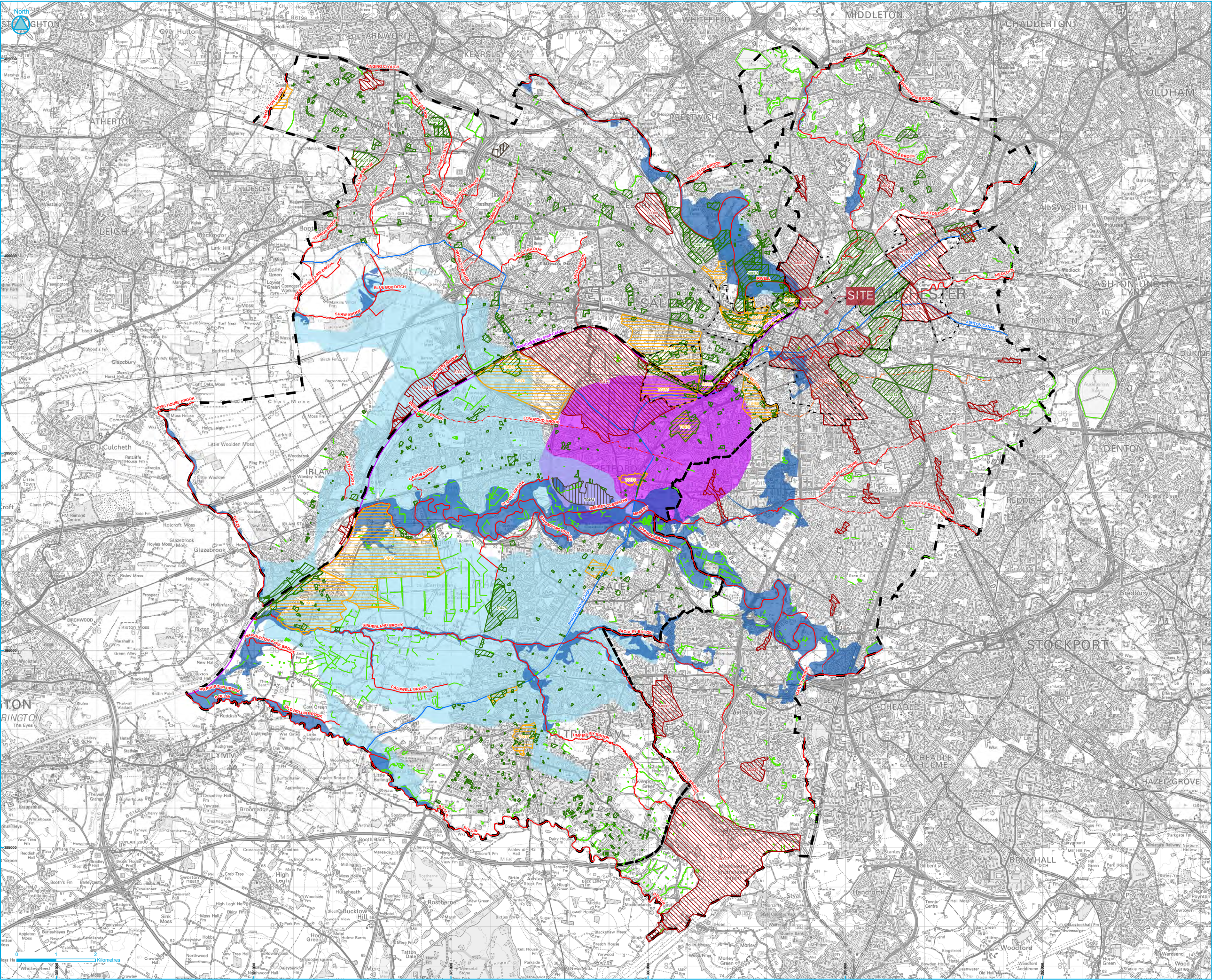
Other offices at Altherstone, Doncaster, Edinburgh, Haywards Heath, Limerick, Newcastle upon Tyne, Newport, Northallerton, Saltire, Skipton, Tadcaster & Wellingford



Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA

Critical Drainage Areas

Drawn by: J Cheetham	Date: 16/03/2011	This map is based upon Ordnance Survey material with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office. © Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Licence number: 100019558 2011.
Checked by: J Dimelew	Date: 01/02/2011	
Approved by: J Cooper	Date: 01/02/2011	
File Name: ArcViewMappingLevel2MST_CDA_Current_V1.2.mxd		
Drawing Number: SS_4.5	Status: FINAL	Scale: 1:45,000
Original @ A1		



- Council Boundary**
- Groundwater Issue**
 - Areas at risk of GW Flooding
 - Areas of shallow GW
 - Areas at risk of GW rebound
- Potential Development Sites / Locations**
 - Employment
 - Housing
 - Mixed Use
 - Other
- Main Rivers (V8.0)**
 - Culverted
 - Open
- Digitised River Lines**
 - Culverted
 - Open
- Ashton, Bridgewater and Rochdale Canals**
- Manchester Ship Canal / Grey Inwell**
- Other Waterbodies**

The map has been produced in accordance with PPS25: Development and Flood Risk and its Practice Guide. This map shows areas that are potentially at risk from groundwater flooding and should be used to scope suitable mitigation measures in a site specific Flood Risk Assessment.

The Main River information shown in the SFRA is provided by the Environment Agency; the centreline data may deviate from that shown on basemapping due to inherent differences in data resolution. Further information on Main Rivers is provided on the Environment Agency's website. The mapping of culverted sections of watercourse is a strategic screening only based upon Ordnance Survey 1:10,000 mapping and should be confirmed for more detailed studies such as site specific Flood Risk Assessment. The canals layer does not necessarily cover all the canal arms, but the modelled overtopping/breaching and hydraulic interactions with rivers and other waterbodies is complete and accurate as appropriate for a Strategic Flood Risk Assessment.

The information on the map is based on Environment Agency potential groundwater rebound areas, data from the Coal Authority, BGS drift geology mapping and Defra Groundwater Emergence Maps.

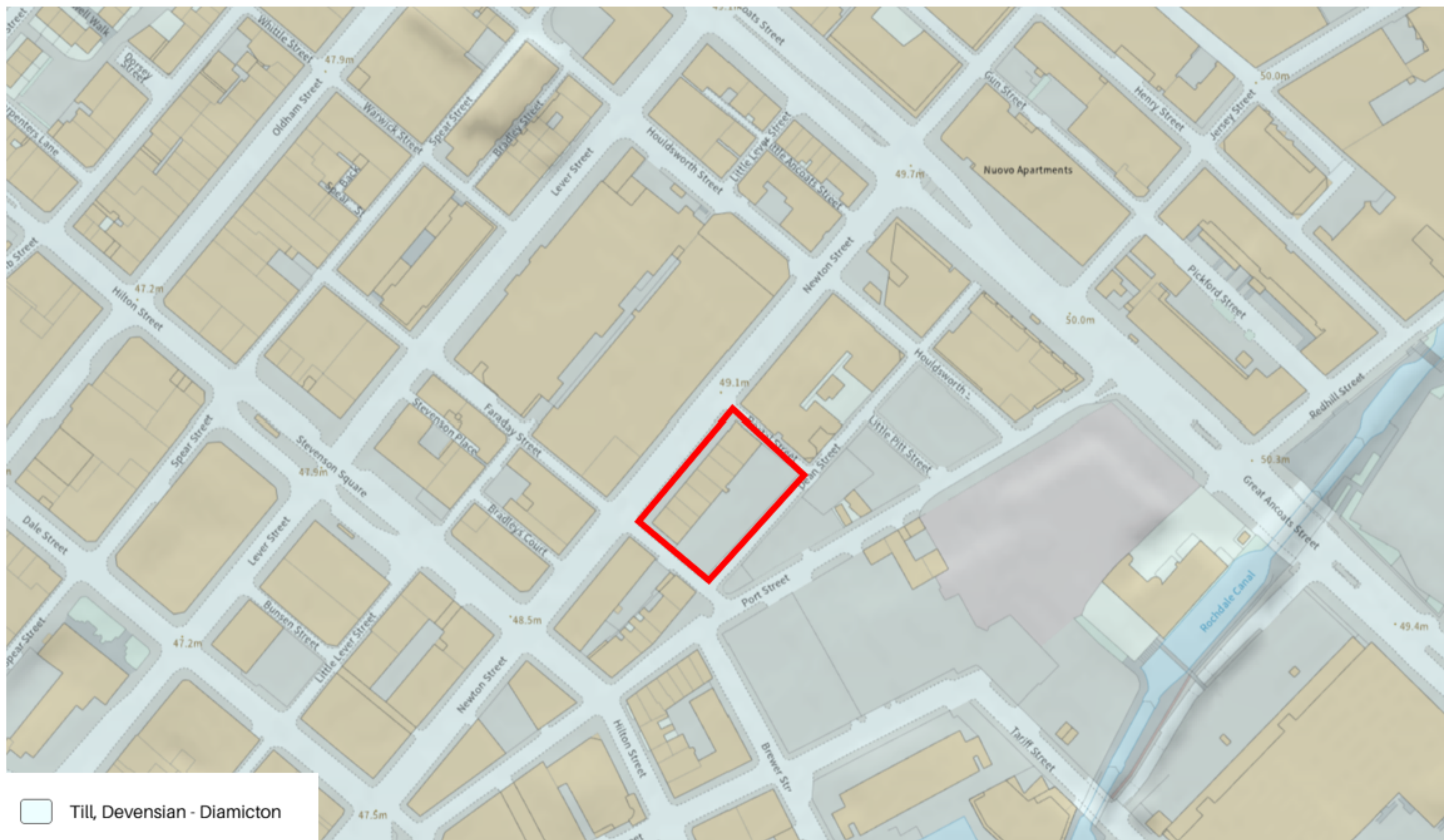
The River Inwell between Victoria Station and Pomona Island is not shown as a Main River on the Environment Agency's Flood Map although Flood Zones related to the river are. The same approach has been taken in this SFRA.

Other offices at Atherstone, Doncaster, Edinburgh, Haywards Heath, Limerick, Newcastle upon Tyne, Newport, Northampton, Salford, Skipton, Tadcaster & Walsingham

for
Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA
Groundwater Flooding

Drawn by: J Cheetham	Date: 08/03/2011	This map is based upon Ordnance Survey material with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office © Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings. Licence number: 100018688.2011
Checked by: J Dimelew	Date: 01/02/2011	
Approved by: J Cooper	Date: 01/02/2011	
File Name: ArcView/Mapping/Level1/MSF_GroundwaterFlooding_V1.3.mxd		
Drawing Number:	Status:	Scale:
GW_2.1	FINAL	1:45,000

Original &



Appendix C

United Utilities Asset Map

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.

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

Your Ref: P080401.000 PO No. CSMA748
Our Ref: UUPS-ORD-345111
Date: 17/11/2021

Curtins Consulting Ltd

51-55
Tithebarn Street,
Liverpool,
L2 2SB

FAO:

Dear Sirs

Location: ARABESQUE APPARREL LTD 68-70 NEWTON STREET, MANCHESTER, M1 1EE

I acknowledge with thanks your request dated 16/11/2021 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



Reho	Cover	Func	Invert	Size x	Size y	Shape	Matl	Length	Grad
7511			150				VC	9.831849	
6438	49.35	42.27	150				VC	2.552308	
7708	49.34	46.06	375				VC	30.80584	
6712			150				VC	54.7175	
6619			150				VC	1.990936	
5425			150				VC	10.26026	
5135			500				VC	5.733982	
4508			150				VC	8.703888	
7708			150				VC	1.125611	
6206			300				VC	3.605551	
6403			1600				VC	8.60428	
6316			150				VC	14.20068	
6419			225				VC	5.433378	
9703	50.23	45.28	410				BR	14.76482	
6424			150				VC	4.41288	
8604			410				VC	3.162278	
7309			150				VC	20.12815	
6334			150				VC	4.840213	
6451			150				VC	7.79177	
5709			150				VC	7.35709	
6214			150				VC	13.83322	
6462			225				VC	8.49692	
9614			300				VC	5.593719	
6337			150				VC	5.335555	
4510			150				VC	4.634072	
6601	48.38	44.89	300				VC	11.40775	
6613			150				VC	2.468739	
4308			150				VC	7.743198	
6219			150				VC	5.842734	
7520			100				VC	6.486805	
6214	47.37	43.27	225				VC	16.89392	
5218			450				VC	19.29037	
7607			300				VC	3.884445	
7305			300				VC	18.32628	
6619			300				VC	6.013783	
6605	48.82	41.46	570				BR	23.62173	
6709			0	1000			BR	25.6125	
7208	46.77	43.93	375				CO	18.37468	1 in 367
6423			150				VC	2.281087	
7523			150				VC	1.905544	
6619	50.46	45.94	600				BR	15.47577	
5133			500				VC	31.0403	
9603			150				VC	5.703955	
7205	45.73	44.04	375				CO	41.58804	1 in 418
5334			150				VC	3.15052	
7702			300				VC	5.554542	
5717			225				VC	7.304853	
4425			150				VC	2.719707	
6443			150				VC	3.835082	
4601			150				VC	4.379509	
6705			0	1000			CO	23.60085	
9619	49.38	43.99	300				BR	10.82307	1 in 181
7310			150				VC	41.84429	
4329			150				VC	7.112699	
5603	47.87	43.25	225				VC	6.800702	
6437			150				VC	3.502997	
7309	47.19	43.87	375				VC	8.793239	1 in 419
6441			150				VC	12.46028	
8403			375				VC	5.381165	
8403			0	100			VC	14.14214	
6391	47.44	46.1	300				BR	25.07887	1 in 42
7702	49.65	45.51	225				VC	11.7047	1 in 53
7301	47.3	45.5	600				BR	18.76307	1 in 171
6302	47.55	43.68	450				VC	47.01064	1 in 73
8705	49.84	43.5	600				BR	45.55085	1 in 95
7201			150				VC	3.59119	
6409	48.05	43.55	600				CO	3	
8504	50.01	45.48	450				BR	39.22223	1 in 55
8702	50.11	48.65	225				VC	79.26278	1 in 78
6282	47.4	44.46	450				CO	47.83394	1 in 127
5202	48.2	40.88	1500				VC	22.21841	1 in 114
7706	49.98	44.23	580				BR	12.52996	
9611	50.45	47.52	225				VC	30.59021	1 in 127
5302	47.14	42.93	450				CO	17.92639	1 in 114
9308			100				VC	3.88598	
7591	49.26	46.18	300				VC	12.04159	1 in 67
4302	46.72	40.05	850				BR	8.639193	1 in 73
9620			300				VC	6.881458	
5613	47.79	43.97	450				VC	40.36087	1 in 85
9306	47.24	43.72	225				VC	50.9902	1 in 164
7590	49.11	46.5	300				VC	25.6125	1 in 70
6302	47.46	41.42	1500				VC	60.74537	1 in 10
8704	48.67	41.28	225				VC	13.16441	
6607	48.38	43.65	280				VC	3.605551	
8605	50.01	44.84	540				BR	7.820552	
5290	48.8	42.55	600				VC	17.49286	1 in 67
5504	48.87	43.93	225				VC	12.80625	1 in 31
7403	48.97	45.08	600				VC	81.40779	1 in 94
8411	50.24	45.51	600				BR	34.84028	1 in 94
7601	48.59	43.02	450				VC	7.432798	
7703	49.84	47.47	225				VC	4.472136	1 in 39
7415			470				VC	16.12452	
9713	50.3	47.28	225				VC	26.80701	1 in 144
7602	49.17	41.85	1500				VC	55.96591	1 in 143
4407	46.79	41.21	600				VC	12.72762	1 in 58
7290	47.22	43.84	300				VC	37.81025	1 in 158
6182	48.93	43.2	300				CO	10	1 in 67
4203	46.31	41.38	300				VC	158.4037	1 in 170
7701	49.51	45.28	580				BR	11.9619	1 in 42
6606	46.54	45.37	300				VC	26.54891	
8409			300				VC	53.62443	
6402	45.47	44.19	600				VC	23.40075	1 in 28
5407	47.9	42.82	150				VC	5	1 in 10
5618	47.28	43.68	150				VC	28.87441	1 in 56
4202	46.43	45.38	150				VC	21.37756	1 in 1
6608	48.21	43.67	300				VC	30.41381	1 in 56
9508	47.7	41.65	100				VC	1.860465	1 in 1
7304	48.07	43.39	600				VC	38.48375	1 in 170
6603	48.67	41.26	700				BR	137.4513	1 in 1
7390	48.46	43.3	470				VC	34.4093	8.89677815
7704	49.59	44.69	580				BR	21.83331	1 in 50
8703	50.25	44.57	460				BR	42.94182	1 in 88
8607	50.34	44.4	580				BR	19.78889	1 in 84
7402	48.83	44.98	300				VC	23.32381	1 in 41
6411	46	42.72	600				BR	24.75804	
8626			100				VC	3.569394	
8401	49.45	46.3	300				VC	35.80077	
6308	48.41	42.97	1600				VC	25.54511	1 in 639
8750	48.5	45.02	450				VC	4.80276	1 in 76
5503	46.87	42.29	1500				VC	13.45362	1 in 63
7501	49.11	46.05	600				VC	39.63203	1 in 17
7505	49.27	44.2	450				BR	12.04159	1 in 17
8301	48.38	41.18	300				BR	33.30165	1 in 41
7504	49.34	45.74	600				VC	62.0808	1 in 59
9501	48.16	44.28	600				VC	21.47094	1 in 59
8400	49.89	46.7	300				VC	22.36088	1 in 79
7509	47.96	44.25	100				VC	47.86809	1 in 79
9612			300				VC	22.80351	1 in 61
6216			150				VC	4.512776	1 in 61
4201	45.53	41.4	1200				VC	87.37457	1 in 61
8308			0	375			VC	38.18377	1 in 54
5616	47.81	42.57	375				VC	45.80383	1 in 75
4690	47.35	44.45	450				VC	25.6125	1 in 75
5408	47.65	41.82	300				VC	46.01087	1 in 75
5207	47.28	40.3	1500				VC	36.34477	1 in 75
4403	47	41.53	400				VC	7.071088	
6201	46.98	42.51	450				VC	8.844003	
9702	50.32	45.23	450				BR	21.0238	1 in 68
8710			0	1000			BR	19.34943	1 in 69
7502	49.57	43.21	1500				VC	62.70187	1 in 52
6502	48.39	44.37	600				VC	56.89487	1 in 52
8511			150				VC	13.19972	1 in 52
6183	46.78	43.03	300				VC	32.20248	1 in 52
9401	50.56	45.68	900				VC	4.24264	1 in 119
6401	48.44	44.49	225				VC	5	1 in 31
9405	48.24	45.51	1500				VC	23.70554	1 in 85
6503	48.79	45.05	600				VC	56.22277	1 in 72
8301	48.37	41.18	300				BR	34.55545	1 in 72
5606			300				BR	78.02137	1 in 72
6194	48.2	42.88	600				VC	47.86355	1 in 53
9503	50.2	46.84	300				VC	7.263883	1 in 25
5553			150				VC	9.013853	1 in 91
5201	46.26	41.39	480				BR	6.486803	1 in 91
5304	47.21	40.73	600				BR	2.220668	1 in 25
8404	46.33	44.73	1500				VC	4.24264	1 in 91
4405	47.2	41.78	375				VC	10	1 in 91
9616	46.97	43.22	300				VC	20.51593	1 in 52
6346	47.87	45.6	150				VC	5.498758	1 in 68
8380			300				VC	74.68601	1 in 60
7292	47.35	43.5	450				VC	15.21155	1 in 50
7216	46.07	41.68	500				BR	22.52271	1 in 50
4508	46.78	42.02	500				BR	2	1 in 157
5603	48.37	44.54	300				VC	36.36938	1 in 157
8720			150						

Appendix D

Site Survey

Appendix E

Existing Runoff Rate Calculations

Pre-development Peak Rainfall

From FEH 2022 Point Rainfall Data at 384804,398472

Rainfall Depths (M5 - 60minutes)

M5-60 = 19.8 mm

Time of concentration

T_c = 15 mins

Design Storm Return Period

P = 2 years

Rainfall Depths (M2 - 15minutes)

M2-15 = 7.4 mm

*FEH data cannot be used to generate a 1 in 1 year rainfall profile

Therefore, average point intensity = 29.5 mm/hr

Design Storm Return Period

P = 30 years

Rainfall Depths (M30 - 15minutes)

M30-15 = 18.4 mm

Therefore, average point intensity = 73.8 mm/hr

Design Storm Return Period

P = 100 years

Rainfall Depths (M100 - 15minutes)

M100-15 = 23.3 mm

Therefore, average point intensity = 93.3 mm/hr

Rainfall Depths (M100 +45% - 15minutes)

M100 +45%-15 = 33.8 mm

Therefore, average point intensity = 135.3 mm/hr

Site Area = 1,600 m²

C_v = 1.00

Q _p = 3.61 x C _v x i x A			
Therefore, Q ₂ =	17.03 litres/sec	Volume during storm, Q ₂ =	12 m ³
Q ₃₀ =	42.60 litres/sec	Q ₃₀ =	30 m ³
Q ₁₀₀ =	53.88 litres/sec	Q ₁₀₀ =	37 m ³
Q _{100 +45%} =	78.12 litres/sec	Q _{100 +45%} =	54 m ³

Appendix F

Greenfield Runoff Rate Calculation

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

Project details

Date

24/10/2025

Calculated by

Reference

Model version

2.2.1

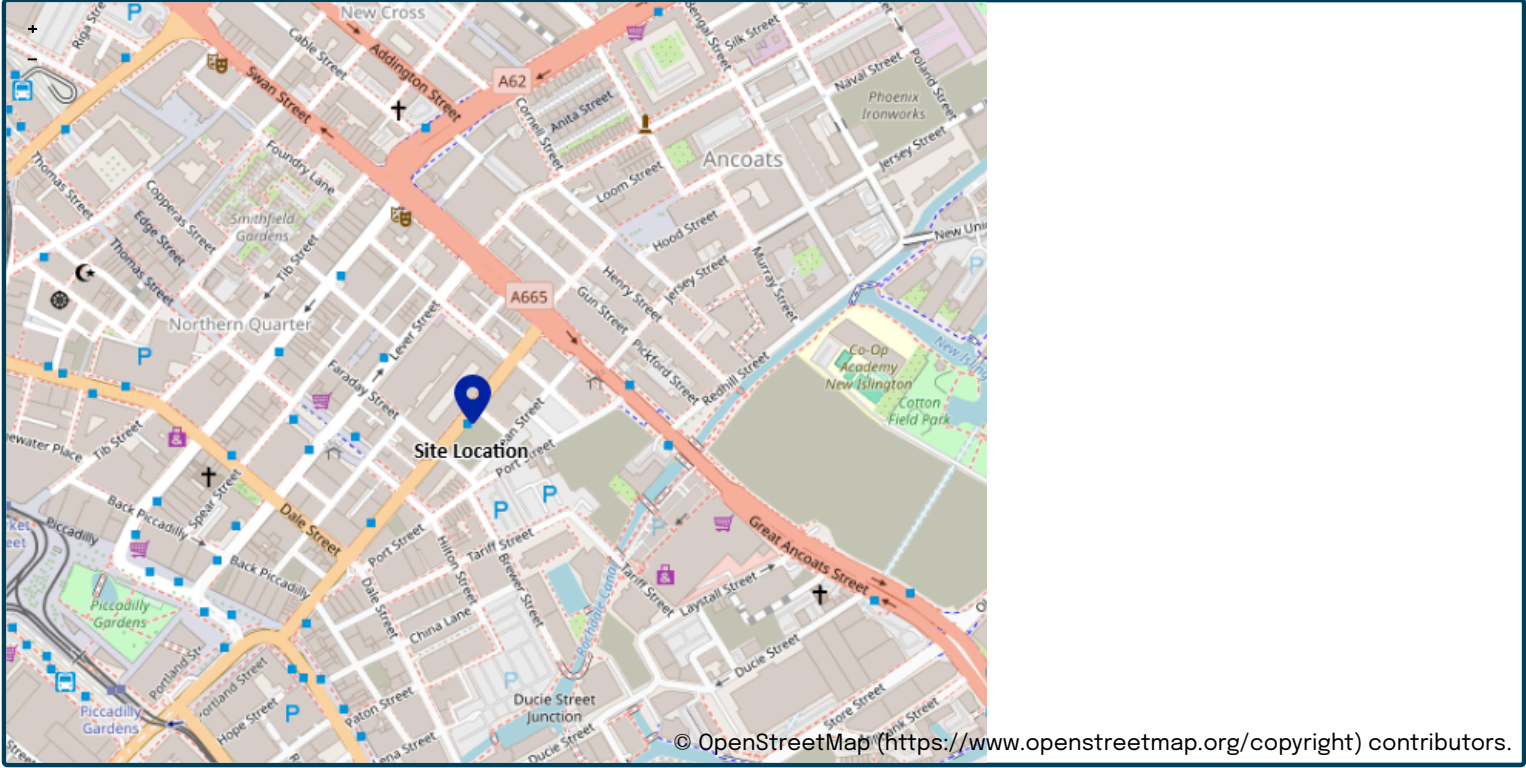
Location

Site name

Postal Street

Site location

Manchester



Site easting (British National Grid)

384724

Site northing (British National Grid)

398439

Site details

Total site area (ha)

0.16

ha

Greenfield runoff

Method

Method

FEH statistical (2025)

FEH statistical (2025)

	<u>My value</u>	<u>Map value</u>
SAAR9120 (mm)	911	mm
BFIHOST19scaled	0.333	
QMed-QBar conversion	1.075	1.075
QMed (l/s)	1.2	l/s
QBar (FEH statistical 2025) (l/s)	1.3	l/s

Growth curve factors

	<u>My value</u>	<u>Map value</u>
Hydrological region	10	10
1 year growth factor	0.87	
2 year growth factor	0.93	
10 year growth factor	1.38	
30 year growth factor	1.7	
100 year growth factor	2.08	
200 year growth factor	2.37	

Results

Method	FEH statistical (2025)	
Flow rate 1 year (l/s)	1.2	l/s
Flow rate 2 year (l/s)	1.2	l/s
Flow rate 10 years (l/s)	1.8	l/s
Flow rate 30 years (l/s)	2.3	l/s
Flow rate 100 years (l/s)	2.8	l/s
Flow rate 200 years (l/s)	3.2	l/s

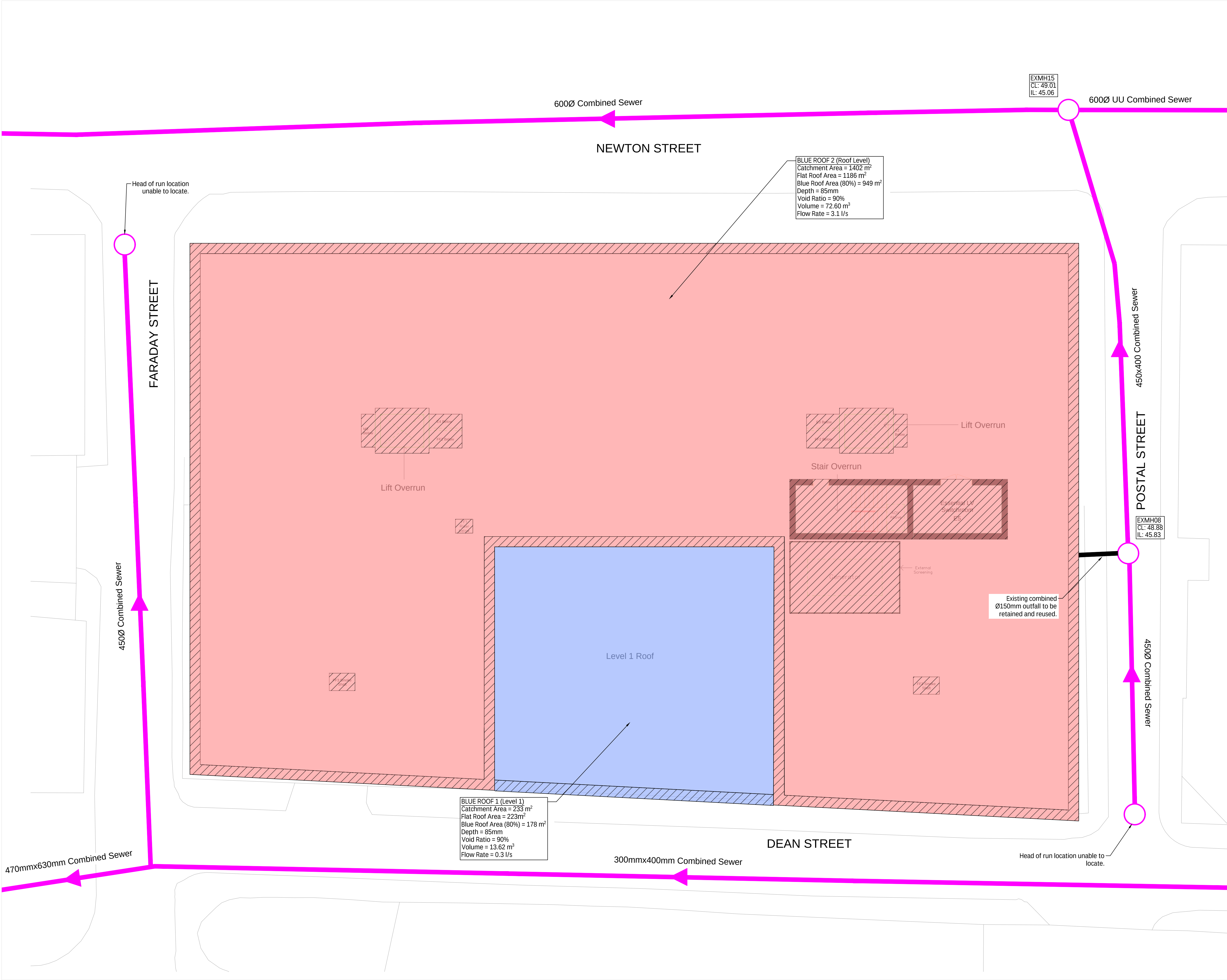
Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent ‘zero’ figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.1) developed by HR Wallingford and available at uksuds.com (https://www.uksuds.com/). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at uksuds.com/terms-conditions (https://www.uksuds.com/terms-conditions). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

Appendix G

Proposed SuDS Strategy



100mm @ A1 (50mm @ A3)

- This drawing is to be read in conjunction with all relevant Architects, Engineers and specialists drawings and specifications.
- Do not scale from this drawing in either paper or digital form. Use written dimensions only. To check drawing has been printed to the intended scale the above bar should be 100mm
- This drawing has been based on the following external inputs:
 - Topo Survey: Survey Operations
Drawing title: 22A143/001
Date issued: 01.03.2022
 - Utility GPR Survey: Survey Operations
Drawing title: 22C064/001
Date issued: 01.03.2022
 - Architect: Hawkins Brown
Drawing title: POST-HBA-SW-RF-DR-A-080108
Date issued: 31.10.2025

- LEGEND
- Blue Roof 1 Extents (Level 1)
 - Contributing Catchment Area (Level 1)
 - Blue Roof 2 Extents (Roof Level)
 - Contributing Catchment Area (Roof Level)
 - United Utilities Manhole
 - United Utilities Combined Sewer
 - Existing Combined Outfall

P2	06.11.25	MQ	RH	Updates to Roof Layout
P1	28.10.25	MQ	RH	Stage 3 Issue
Rev	Date	By	Eng	Amendments

HEYNE
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STEEL

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CIVIL ENGINEERS

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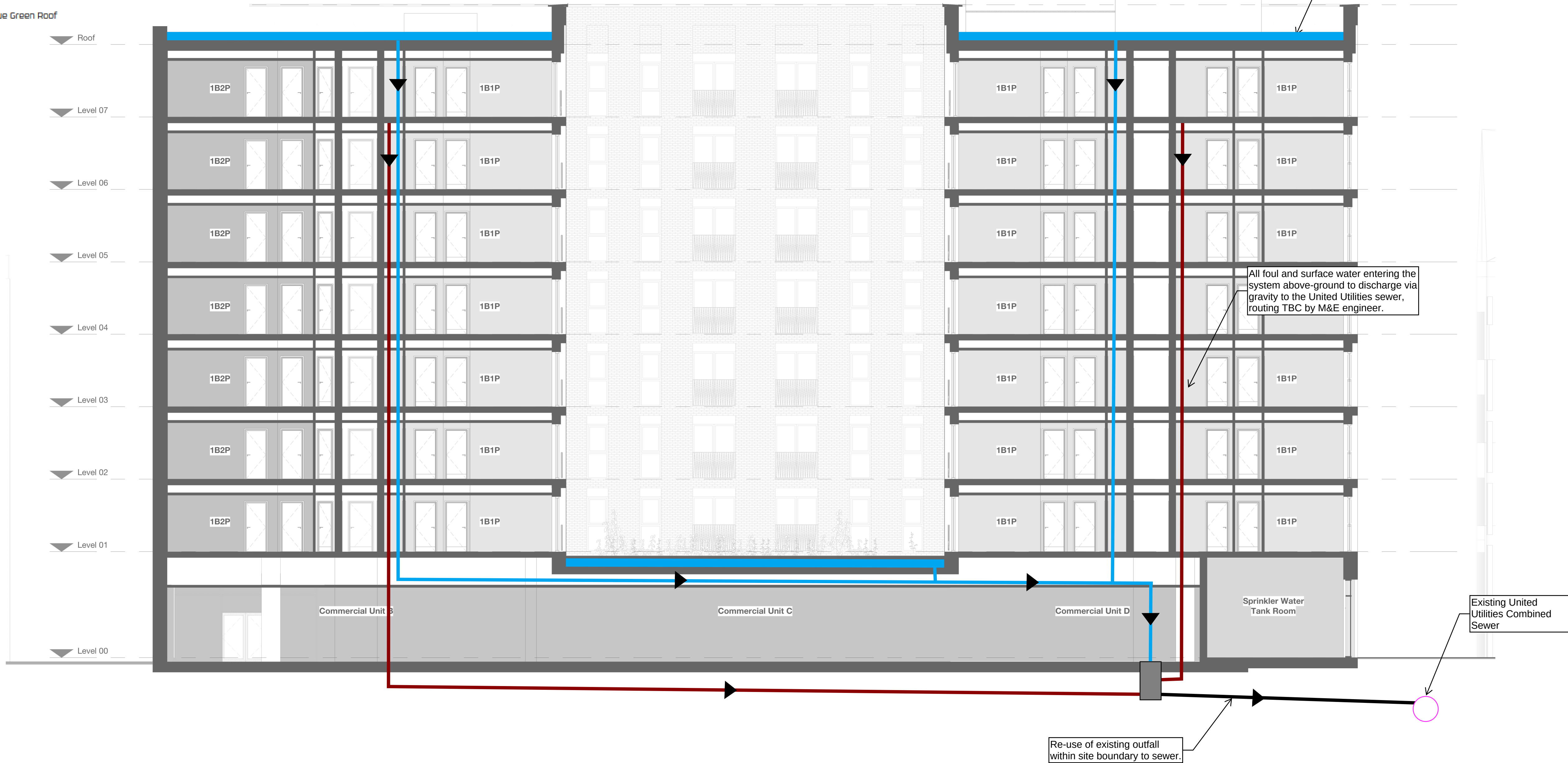
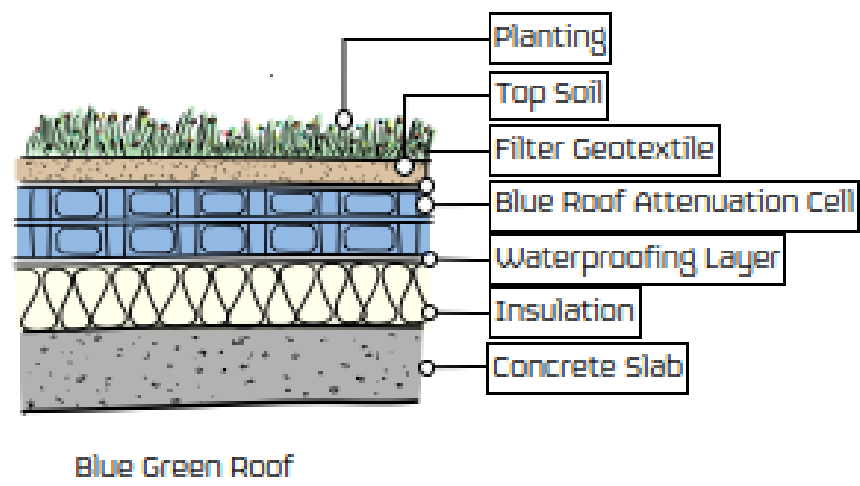
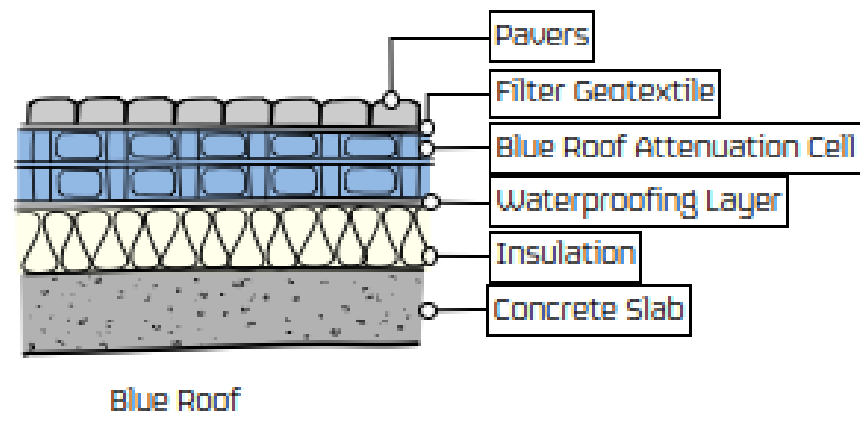
Job Name
Postal Street
Manchester, M1 1EE

Drawing Title
Proposed SuDS Strategy

Purpose of Issue Stage 3 Scale at A1 1:100

Drg No. 3315-HTS-XX-XX-DR-CD-50010

HTS Job No 3315 Rev **P2**



- Legend**
- Blue Roof
 - Surface water drain
 - Foul water drain
 - Existing outfall.
 - United Utilities Manhole Sewer

Section A-A
1 : 100

Appendix H

Proposed Blue Roof Calculations



Project Title

Postal Street

Design Number

Notes / Reference

Blue Roof A - Top Blue Roof

Design Storm Event	1:100
Climate Change	45 %
Runoff Coefficient	1.00
Location	Manchester
Roof Area m²	1402.0
Additional Contributing Areas (m²)	
Total Catchment Area (m²)	1402.0
Net Roof Area (m²)	949.0
Permitted Outflow (l/s)	3.100
Blue or Blue/Green Roof	Unknown
If B/G, Green Roof Type	Extensive
a. Permanent reservoir above or in storage void	None
b. Required Reservoir Depth (mm)	
Required Net Storm Storage Volume (m³)	72.13
Actual Depth (mm)	84
Porosity	90 %
Selected depth of storage tank (mm)	85
Provided Storage Volume (m³)	72.60
Utilisation	99.4 %

Item	kN/m²
Weight of Product (Tank / Cell)	0.116
Weight of Product (Tray)	0.000
Geotextile	0.005
Weight of Permanent Storage	0.000
Weight of Stormwater Storage	0.788

R: l/s

MS-60: mm/h

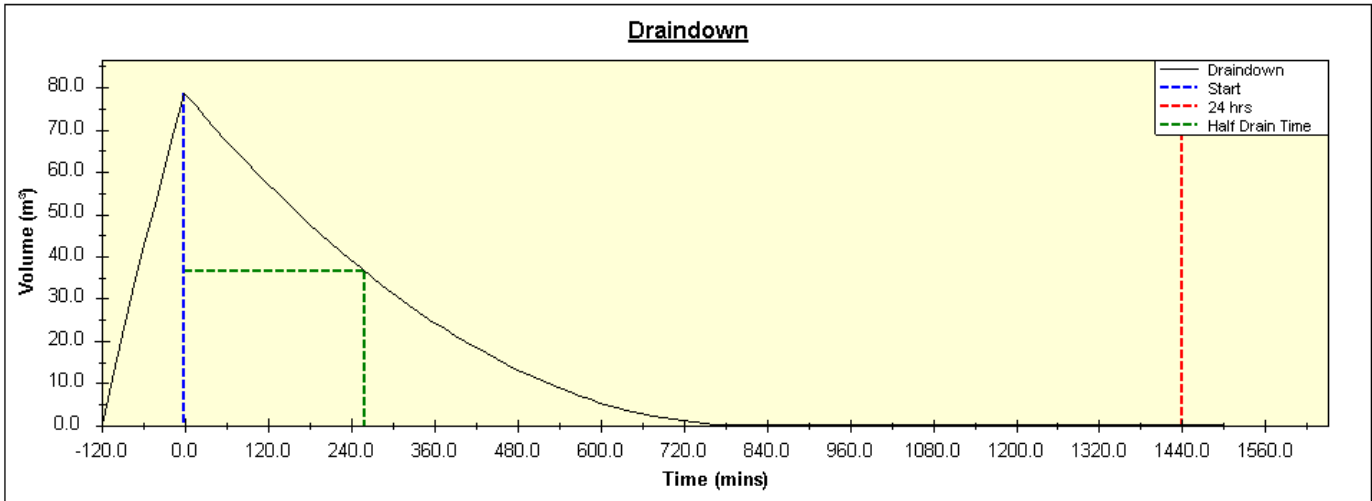
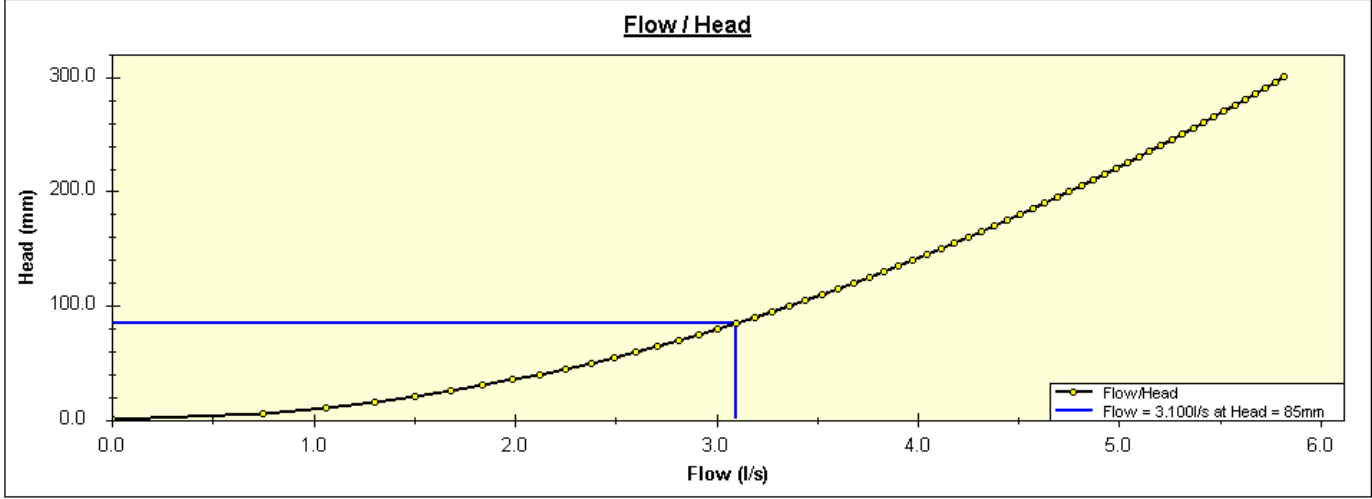
DURATION (mins)	INTENSITY (mm/h)	REQUIRED STORAGE VOLUME (m³)
5 mins	319.54	36.40
10 mins	194.47	43.58
15 mins	135.26	44.62
30 mins	90.25	57.68
1 hour	57.54	69.51
2 hours	33.68	72.13
4 hours	19.91	67.01
6 hours	14.76	57.21
10 hours	10.25	32.13
24 hours	5.54	0.00
48 hours	3.31	0.00

Required aperture / outlet plate size: 70 mm

Half Empty Time: 260 mins

Project Status: PASS

Level & Draindown Graphs



Project Title

Postal Street

Design Number

Notes / Reference

Blue Roof B - Level 1

Design Storm Event	1:100
Climate Change	45 %
Runoff Coefficient	1.00
Location	Manchester
Roof Area m²	223.0
Additional Contributing Areas (m²)	
Total Catchment Area (m²)	223.0
Net Roof Area (m²)	178.0
Permitted Outflow (l/s)	0.300
Blue or Blue/Green Roof	Unknown
If B/G, Green Roof Type	Extensive
a. Permanent reservoir above or in storage void	None
b. Required Reservoir Depth (mm)	
Required Net Storm Storage Volume (m³)	13.44
Actual Depth (mm)	84
Porosity	90 %
Selected depth of storage tank (mm)	85
Provided Storage Volume (m³)	13.62
Utilisation	98.7 %

Item	kN/m²
Weight of Product (Tank / Cell)	0.116
Weight of Product (Tray)	0.000
Geotextile	0.005
Weight of Permanent Storage	0.000
Weight of Stormwater Storage	0.788

R: l/s

MS-60: mm/h

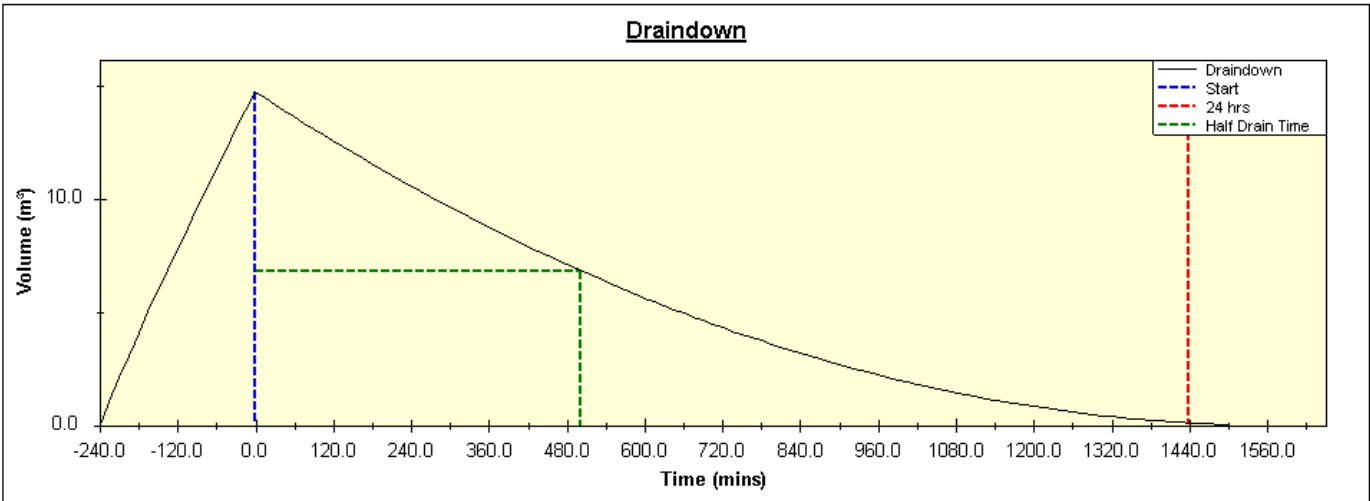
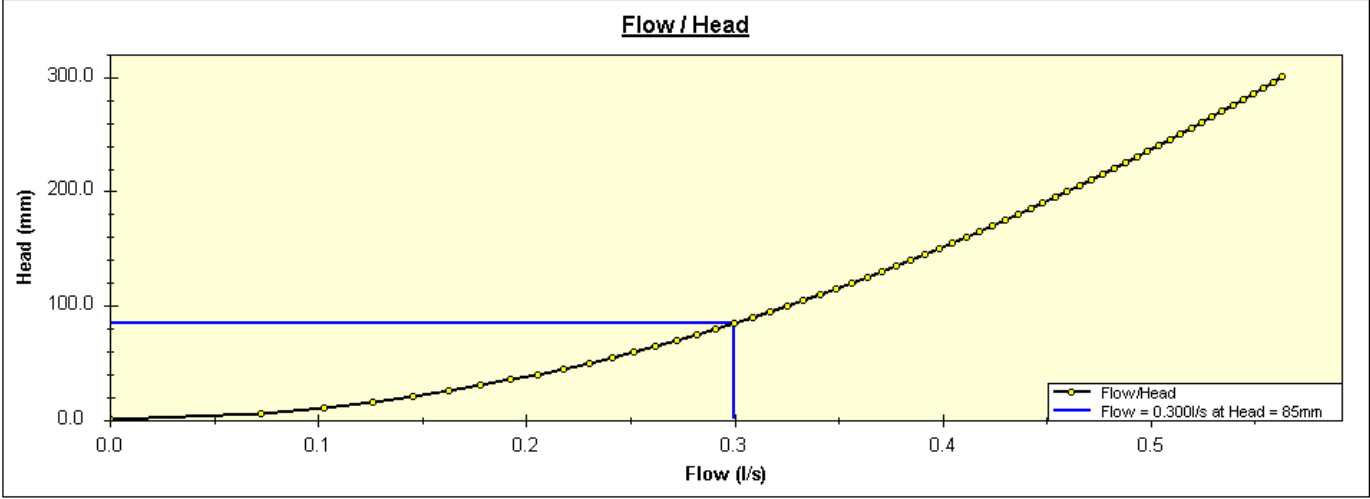
DURATION (mins)	INTENSITY (mm/h)	REQUIRED STORAGE VOLUME (m³)
5 mins	319.54	5.85
10 mins	194.47	7.05
15 mins	135.26	7.27
30 mins	90.25	9.52
1 hour	57.54	11.75
2 hours	33.68	12.86
4 hours	19.91	13.44
6 hours	14.76	13.27
10 hours	10.25	12.06
24 hours	5.54	3.72
48 hours	3.31	0.00

Required aperture / outlet plate size: 22 mm

Half Empty Time: 502 mins

Project Status: PASS

Level & Draindown Graphs



Appendix I

United Utilities Correspondence

Charlie Rudd

From: seweradoptions@uuplc.co.uk
Sent: 04 November 2024 12:25
To: Charlie Rudd
Subject: UU REF 06572632 - WW PDE – Postal Street, Manchester

You don't often get email from seweradoptions@uuplc.co.uk. [Learn why this is important](#)

Good Afternoon,

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

UU REF 06572632 - WW PDE – Postal Street, Manchester

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

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

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

Foul Water

Foul flow from this site will be allowed to drain into the public combined sewer at a point most convenient to yourself

Surface Water

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

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

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

Agency, or Internal Drainage Board (if operating in your area).
The Local Planning Authority are the determining authority for any application for planning permission and the appropriate authority for determining cost viability of a proposed drainage scheme, such assessments are outside of the jurisdiction of United Utilities.

Should the above be exhausted and a connection to the public sewer is required we have no objections to a maximum pass forward flow rate of 5 l/s to the combined sewer adjacent to the site

Regards

Anthony



Water for the North West

Anthony Laithwaite
Ww Engineer
Developer Services & Metering
Customer Services

T: 01925 429090
unitedutilities.com

----- Original Message -----
From: seweradoptions@uuplc.co.uk [seweradoptions@uuplc.co.uk]
Sent: 04/11/2024 12:15
To: crudd@hts.uk.com
Subject: RE: Wastewater Pre-Development Enquiry Submission UU Ref 06572632

Good Afternoon,

PRE DEVELOPMENT APPLICATION AT POSTAL STREET : – UU Ref 06572632

Please accept this email as receipt of your application received on 31/10/24 for the above development. This has now been logged on our system and the job reference is 06572632 we would ask that you quote this reference in all future correspondence.

I have reviewed your application (and attachments) and can confirm this is suitable to be passed to Anthony Laithwaite for technical assessment. You will receive their response on or before 14/11/24

Kind regards



Water for the North West

Emily Stockley
Customer Advisor Advanced
Developer Services & Metering
Customer Services

T: 0345 026 8989 option 4
unitedutilities.com

If you feel you have received a good service from myself, please can you take two minutes to fill in the survey below. This will be much appreciated



Visit: <https://unitedutilities.thewowawards.co.uk/nominate>

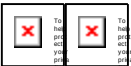
----- Original Message -----

From: [donotreply@uu-web.co.uk]
Sent: 31/10/2024 12:16
To: seweradoptions@uuplc.co.uk; webmaster@uuplc.co.uk
Subject: Wastewater Pre-Development Enquiry Submission

Question	Answer
Section 1 - Your Details	
Developer/Consultant/Land owner/Other	Consultant
Name	Charlie Rudd
Company Name	Heyne Tillett Steel
Address	16 Chart Street, London, N1 6DD
Contact Number	07494554617
Email Address	CRudd@hts.uk.com
Section 2 - Development Details	
Do you intend to offer any of the sewers for adoption by United Utilities under S104?	No
Site Address	6-23 Dean St, Manchester M1 1EE
Site Postcode	#Development postcode#
Site Name	Postal Street
Grid Reference Number	SJ 84732 98443
Development Type	Residential
Approx. Number Units	120
Total Site Area (hectares)	0.166
Does this site have planning permission?	No
Planning Reference Number	
Council Area	Manchester
Have you approached us about this site previously?	No
If yes, please provide reference number	
Is the development part of a larger site that will be developed in phases?	No
Location Plan	

Section 3: Previous Land Use

Question	Answer
Please confirm what the land was previously used for:	Brownfield
Brownfield evidence of positive drainage to the public sewer	Existing runoff rate assessment.pdf
Section 4 - Drainage Strategy	
Foul connection: How are you proposing to drain foul flows from the site?	Via a new connection to the public sewer
Via an existing connection to the public sewer?	No
Surface water connection: How are you proposing to drain your site, following the surface water hierarchy, as outlined in National Planning Policy Guidance?	Combined sewer
SuDS: Have SuDS features been considered in the surface water drainage strategy?	Yes



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Appendix J

SuDS Maintenance Plan

Drainage Inspection and Maintenance Strategy

This document has been prepared to support the inspection and maintenance of the proposed below ground drainage of the Postal Street site. The drainage network comprises surface and foul water drainage systems:

- Surface water network will route all the rainwater towards outfall manholes and United Utilities combined sewers via gravity; comprising blue/green roofs and associated piped drainage.
- Foul water network from above ground level will be routed towards outfall manholes and United Utilities combined water sewer via gravity.

In accordance with CIRIA C625 it is recommended that a private SuDS maintenance agreement is undertaken as a simple contract between the property owner and the maintenance provider (the maintainer). It is mainly to facilitate continuing maintenance of the SuDS that are in private ownership. The maintenance requirements are in accordance with the CIRIA C753 SuDS Manual 2015 and product manufacturer’s requirements.

The following Drainage / SuDS measures are proposed within the development:

- General Drainage:

Maintenance Period	Maintenance Task	Frequency
Regular maintenance	Inspect and identify areas that are not operating correctly. If required, take remedial action.	Monthly
	Inspect surface structures and covers removing obstructions and silt as necessary.	Monthly or as required
	Top-up traps to floor gullies and internal channel drains.	
	Check there is no physical damage.	
	Remove overgrown vegetation 1m min. around structures and keep hard aprons free from silt and debris.	
Occasional Maintenance	Remove sediment from pre-treatment structures (e.g. gullies, channels silt traps) and non-return valves.	Six-monthly or as required after large storm events
	Remove cover and inspect inside, ensuring water is flowing freely and that the exit route for water is unobstructed.	Annually or as required after large storm events.
	Remove debris and silt.	
	Undertake inspection after leaf fall in autumn.	
Remedial Actions	Repair/rehabilitation of inlets, outlets, overflows and vents.	As required
Monitoring	Inspect all manholes, inspection chambers, inlets, outlets, overflows and vents to ensure they are in good condition and operating as designed.	Annually or after large storms.

- Inlets, Outlets and Inspection Chambers:

Maintenance Period	Maintenance Task	Frequency
Regular Maintenance	Inspect surface structures and covers removing obstructions and silt as necessary.	Monthly or as required
	Check there is no physical damage. Remove overgrown vegetation 1m min. around structures and keep hard aprons free from silt and debris.	
	Remove cover and inspect inside, ensuring water is flowing freely and that the exit route for water is unobstructed. Remove debris and silt. Undertake inspection after leaf fall in autumn.	Annually
Occasional Maintenance	Check topsoil levels are 20mm above edges off baskets and chambers to avoid mower damage.	As necessary
Remedial Work	Unpack stone in basket features and unblock or repair and repack stone as design detail as necessary.	As required
	Repair physical damage is necessary.	

- Flow control Structures:

Maintenance Period	Maintenance Task	Frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action (for 3 months following installation).	Monthly
	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Six Monthly
	Remove sediment from pre-treatment structures.	
Monitoring	Inspect and carry out essential recovery works to return the feature to full working order.	Following all significant storm events

- Green / Blue Roofs:

Maintenance Period	Maintenance Task	Frequency
Regular Maintenance	During establishment, replace dead plants as required (for 12 months following installation).	Monthly
	Mow grasses (where required) and remove resultant clippings.	
	Remove fallen leaves and debris from deciduous plant foliage.	Six Monthly
	Remove nuisance and invasive vegetation, including weeds.	
	Remove debris & litter to prevent clogging of inlet drains and interference with plant growth.	
	Noxious weed treatment (3 times a year).	
Occasional Maintenance	Replace dead plants as required (typically in the Autumn).	Annually
	Inspect all components including soil substrate, vegetation, drains, irrigation systems (if applicable), membranes, and roof structure for proper operation, integrity of waterproofing and structural stability, act where required.	
	Inspect soil substrate for evidence of erosion channels and identify any sediment sources, act where required.	

	Inspect drain inlets to ensure unrestricted runoff from the drainage layer to the conveyance or roof drain system, act where required.	
	Inspect underside of roof for evidence of leakage, act where required.	
	Inspect and document the presence of wildlife.	
Remedial Action	Inspect and carry out essential recovery works to return the feature to full working order.	Following all significant storm events

- Overflows and Flood Routes:

Maintenance Period	Maintenance Task	Frequency
Regular maintenance	Remove any accumulated grass cuttings or other debris on top of grass weirs or stone filled baskets overflows.	Monthly
	Make visual inspection of flood routes. Check route is not blocked by new fences, walls, soil or other rubbish. Remove as necessary.	
	Jet pipes leading from overflow structures annually and check by running water through overflow. Check free flow at next SuDS feature – inlet to basin or chamber.	Annually
Remedial Actions	If overflow is not clear, then dismantle structure and reassemble to design detail.	As Required

Reference shall be made to CIRIA publication C753 (The SuDS Manual) and to the relevant maintenance guidance from the products manufacturers.

