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LAND AT WESTWOOD STREET/ RABY STREET
MOSS SIDE, MANCHESTER

FLOOD RISK ASSESSMENT
& DRAINAGE STATEMENT

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Report Title: *Land at Westwood Street/ Raby Street Moss Side, Manchester*
Flood Risk Assessment & Drainage Statement

Client: *MSV Housing Group*

Report Status: *Version: First Issue*

Date of First Issue: *June 2026*

Date of Last Issue: *N/A*

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Version	Date	Initials	Comments
-	23.06.2026	AM	First Issue

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SECTION 1 SITE INVESTIGATION

INTRODUCTION

1.1. Shepherd Gilmour Infrastructure Ltd (SGi) has been engaged by MSV Housing Group to prepare a Flood Risk Assessment and Drainage Statement sufficient to support of a full planning application for Land at Westwood Street/ Raby Street Moss Side, Manchester.

1.2. The Flood Risk Assessment has been prepared in accordance with the Flood Risk and Coastal Change Planning Practice Guidance (PPG) and the National Planning Policy Framework (NPPF). It contains information from sources such as the Environment Agency (EA), Local Sewerage Undertaker, District Council and Site Owner.

1.3. The Drainage Statement has been prepared in line with the Non-Statutory Technical Standards for Sustainable Drainage (NSTSSD) and CIRIA Report C753. It also defines the outline proposal for the disposal of surface water runoff and foul effluent from the site.

EXISTING SITE DESCRIPTION

1.4. The proposed development site (PDS) is located off Westwood Street in Moss Side, Manchester. The site spans over approximately 0.13 hectares and is currently a cleared hardstanding and gravel compound, bounded by Westwood Street to the west and Raby Street to the south. Historic maps show that the site was previously developed, therefore the site is classed as Brownfield.

1.5. The existing topography of the site is mostly flat. The current site levels vary from approximately 32.70m to 33.15m.



Figure 1.1 Site Location (© OpenStreetMap Contributors)

1.6. A copy of the latest topographical survey has been included within **Appendix A**.

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PROPOSED SITE LAYOUT

1.7. The site is proposed to be developed as a temporary construction compound with associated parking access road, security turnstile and temporary power supply. The compound is proposed to accommodate 7 double-stacked 32ft modular container units along with a 10ft guard office. Current site arrangement proposal is shown in Figure 1.2.



Figure 1.2 Proposed Site Compound

1.8. A full-size site compound layout plan has been included within **Appendix B**.

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SECTION 2 POTENTIAL SOURCES OF FLOODING

2.1. There are several sources of flooding that could potentially impact a development.

- *Fluvial/Tidal,*
- *Ground Water,*
- *Artificial Waterbodies (canals, reservoirs etc) and,*
- *Pluvial.*

2.2. The risk of flooding from the above sources has been reviewed at high level in this Section and a more detailed any sources which could impact the site are discussed in further detail in **Section 3.**

FLUVIAL FLOOD RISK

Environment Agency

2.3. According to the (EA) flood search the site is located within Flood Zone 2. The impact of this zone is discussed in further detail in **Section 3**.

2.4. An abstract of this EA Flood Map has been shown below in **Figure 2.2**.

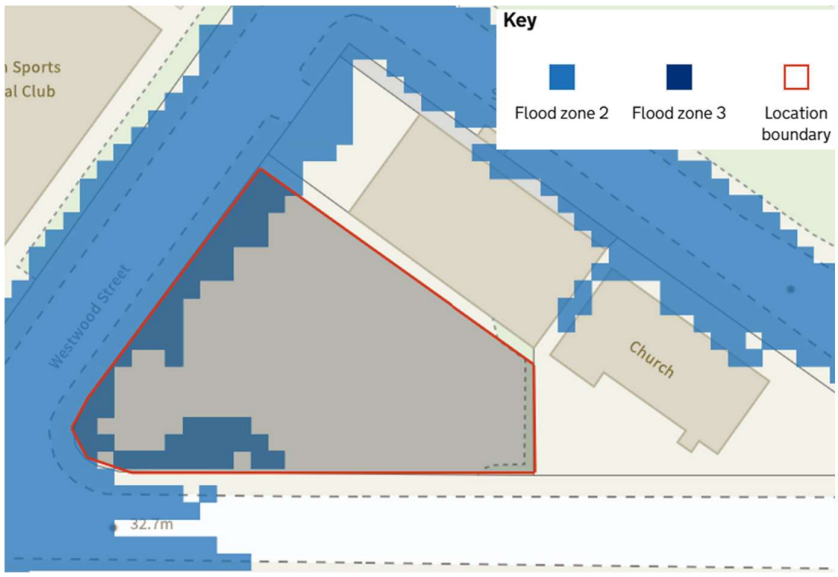


Figure 2.2 EA Flood Map showing flood zone extents

- *Flood Zone 1 – Low Probability*
- *Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)*

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- *Flood Zone 2 – Medium Probability*
- *Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)*
- *Flood Zone 3 – High Probability*
- *Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)*

Strategic Flood Risk Assessment

2.5. The NPPF requires Local Planning Authorities to produce Strategic Flood Risk Assessments (SFRA) in support of their Local Plan. These form the basis for preparing appropriate policies for flood risk management within the area and provide the framework for assessing areas of developable land.

2.6. The site is captured within the SFRA for Manchester City, Salford City and Trafford Council and was produced by JBA Consulting in March 2012. The SFRA flood data confirms that the site is partially located within the Flood Zone 2, with the flood extents being shown along the western and southern site boundary.

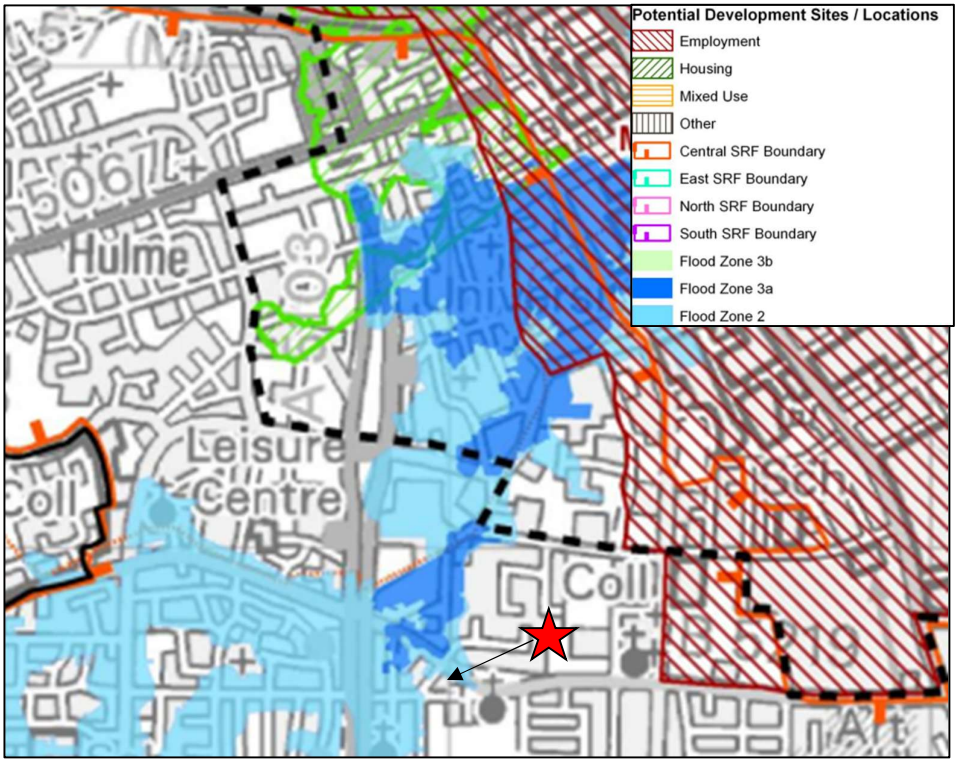


Figure 2.3 SFRA Flood Map (SFRA)

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Ordinary Watercourse

2.7. Ordinary watercourses do not form part of a 'main river' and can consist of rivers, ditches, swales, drains etc. These watercourses are the responsibility of the riparian owner who must ensure that:

- *Flows can pass freely without obstruction, pollution, or diversion (affecting the rights of others).*
- *The banks and bed of the watercourse are maintained (including vegetation).*
- *Any approved onsite watercourse structures are maintained.*

2.8. The nearest significant watercourse is Cornbrook, a culverted ordinary watercourse that flows westwards through south Manchester before discharging to the Manchester Ship Canal. Based on available mapping, the nearest section of the Cornbrook lies approximately 1 km west/north-west of the site

CANAL FLOOD RISK

2.9. Water levels within canals are maintained/regulated by sluice gates along the waterway and whilst a breach or overtopping is unlikely, the possible risk should be assessed.

Canal & River Trust

2.10. Many of canals in England and Wales are owned, maintained, and operated by the Canal & River Trust (CRT). The closest CRT canal to site is the Rochdale Canal approximately 1.7km north of the site.

2.11. The SFRA indicates that the site is located outside of any CRT Flood Risk.

GROUNDWATER FLOOD RISK

2.12. Unlike flooding from rivers and the sea, groundwater does not pose a significant risk to life. It is more associated with damage to the building, due to the flooding persisting over several weeks.

2.13. The SFRA indicates that the site is located inside an area that is not considered to be prone to groundwater flooding (**Figure 2.4**).

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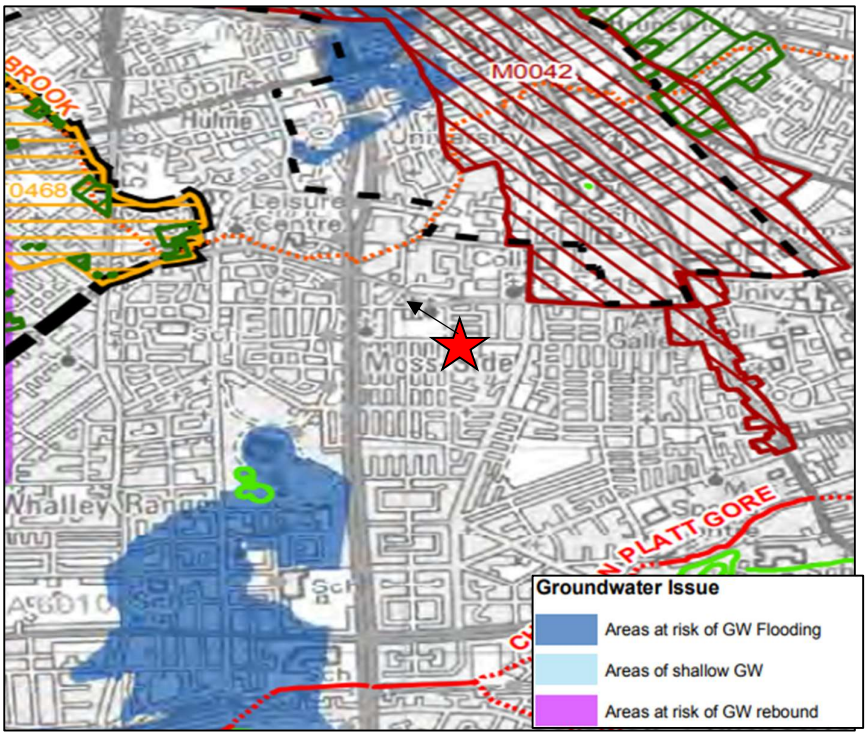


Figure 2.4 Groundwater Flood Map (SFRA)

ARTIFICIAL WATERBODIES

2.14. The reservoirs in the area are owned and operated by United Utilities and are covered by the Reservoirs Act 1975. Whilst the probability of a catastrophic dam failure occurring is relatively low the consequences of such an event are severe.

2.15. Reservoir flood plans are still required and are prepared by their owners. These documents are considered sensitive due to national security, and only indicative plans are made available by the Environment Agency.

2.16. The reservoir flood plan (**Figure 2.5**) indicates that the site is at risk in the event of a breach.

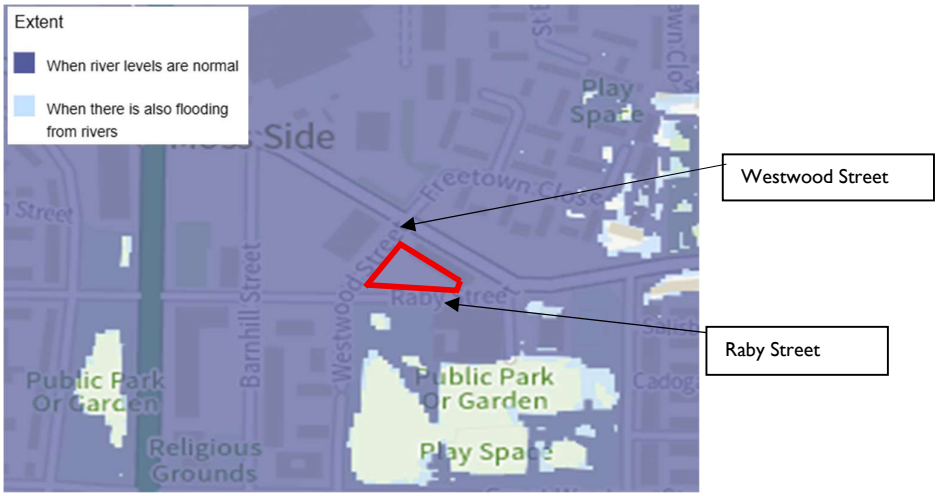


Figure 2.5 EA Flood Map Showing Reservoir Flood Risk

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PLUVIAL RUNOFF

2.17. Pluvial flooding is defined as 'flooding from rainfall generated overland flow before the runoff infiltrates into the ground, enters any watercourse or sewer.' It is usually associated with high-intensity rainfall events.

2.18. EA Flood maps for planning (**Figure 2.6**) indicates that there is some slight flooding reaching up to 150mm in depth within the public footpath along Westwood Street, to the west of the site. No surface water flooding is shown within the proposed site boundary.

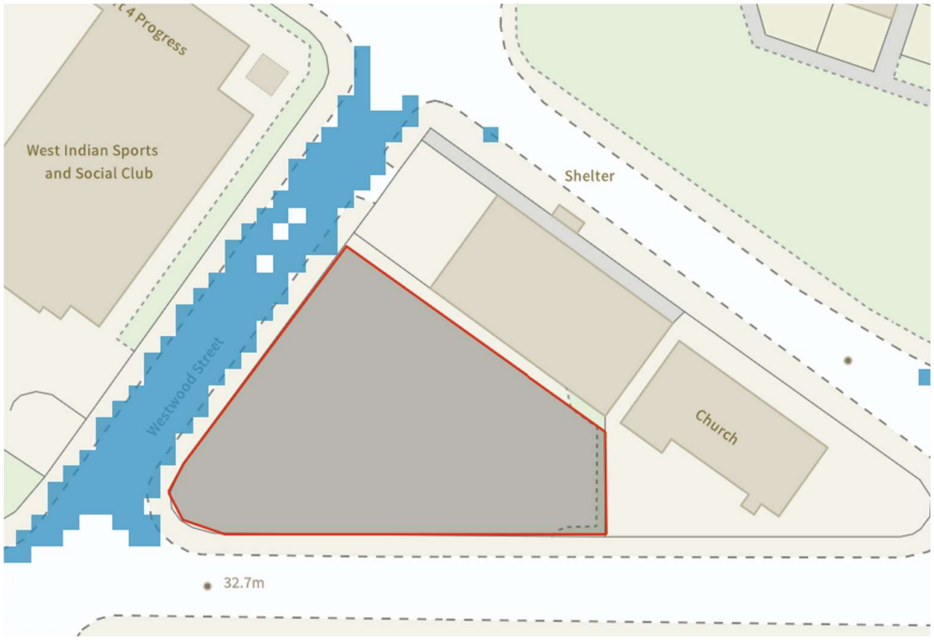


Figure 2.6 EA Flood Map - Surface Water Flooding Extent Up To 150mm

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CRITICAL DRAINAGE AREA

2.19. Critical Drainage Areas (CDA) are areas that are particularly sensitive to an increase in surface water runoff, either as direct overland flow or from the existing sewer network.

2.20. Maps within the SFRA confirm that the site is located within the conurbation core.

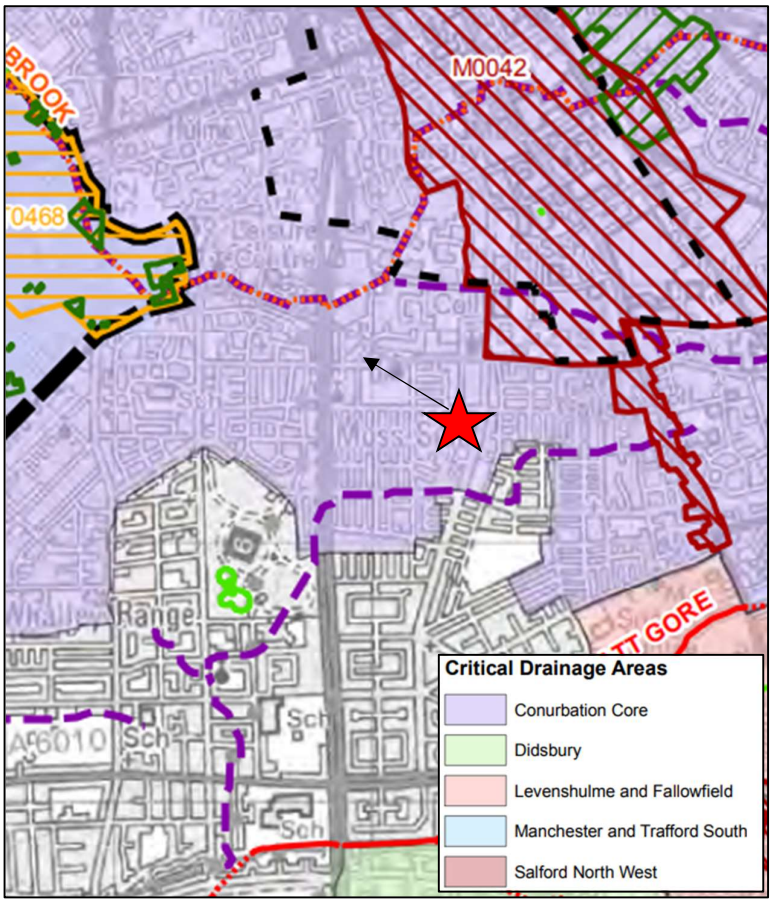


Figure 2.7 Critical Drainage Areas (SFRA)

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FLOOD RISK OVERVIEW

2.21. The potential sources of flooding which could be experienced have been summarised in **Table 2.1**. Those posing the greatest flood risk to the site have been investigated further in **Section 3** to determine the potential mitigation measures.

Source of Flooding	Potential Flood Risk	Site Description
Fluvial/Tidal	Risk Identified	The Environment Agency maps indicate that the site is in Flood Zone 2
Ordinary Watercourse	Unlikely	No Ordinary Watercourses were identified.
Canal	Unlikely	Maps within the SFRA indicate that the PDS is outside of any canal flood risk.
Ground Water	Unlikely	Maps within the SFRA show that the site in not in an area prone to ground water flooding.
Artificial Waterbodies (Reservoir)	Risk Identified	The EA flood maps indicate that the site is at risk from reservoir flooding
Pluvial Runoff	Unlikely	Surface Water flooding up to 150mm could affect the public footpath along the Westwood Street. No surface water flooding recorded within site boundary.
Critical/Sensitive Drainage Areas	Risk Identified	The SFRA maps show the site to be in the Conurbation Core.

Table 2.1 Potential Sources of Flooding Overview

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SECTION 3 FLOOD RISK ANALYSIS

FLUVIAL FLOODING

Environment Agency Data

3.1. The Environment Agency has provided estimated flood data at specific node points along Cornbrook. Much of the Cornbrook has been enclosed within culverts and underground drainage structures as Manchester expanded during the nineteenth and twentieth centuries. Local records and historical mapping indicate that it remains largely culverted through the urban area before joining the River Irwell. This flood data along with the topographical survey will be used to set the minimum finished floor levels on the proposed development.

3.2. A copy of the Environment Agency data is included within **Appendix C**.

3.3.

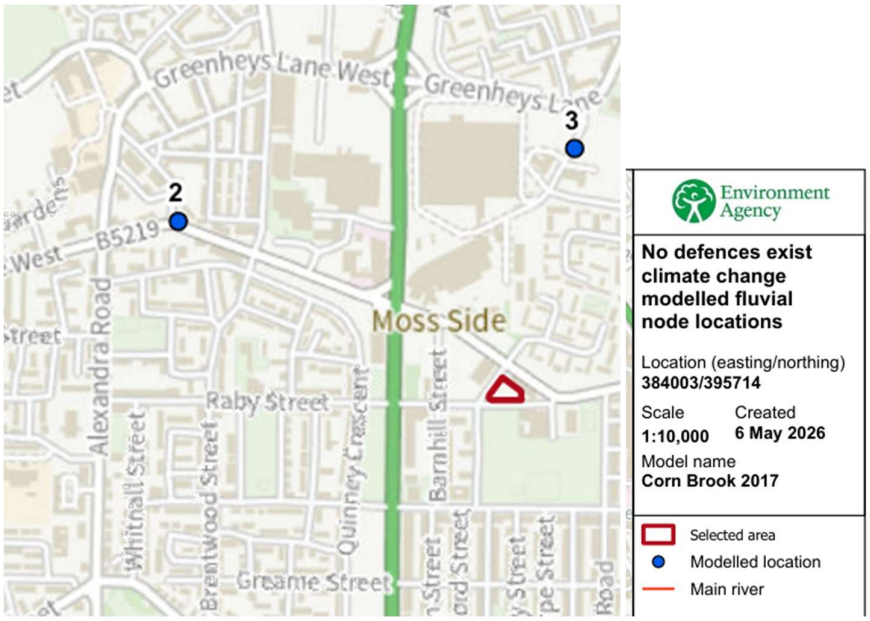


Figure 3.1 Environment Agency Modelled Fluvial Extent (0.1% AEP +30%CC)

Node	100 Year -1% AEP (+30% CC)	100 Year -1% AEP (+35% CC)	100 Year -1% AEP (+70% CC)	1000 Year – 0.1% AEP (+30% CC)
2	32.78m	32.81m	32.99m	33.39m
3	33.75m	33.79m	34.02m	34.46m

Table 3.1 Estimated Cornbrook Flood Levels – Undefended (Environment Agency)

Climate Change Allowance

3.4. The Environment Agency changed the way climate change was applied to river levels in 2016. Rather than a one size fits all approach it is now applied based on the development type, the development size, and the sites associated flood zone. The following steps confirm the climate change allowance required for the development

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Proposed Development Site – Temporary Employment/Compound = Less Vulnerable

- *Minor: 1-9 dwellings/ less than 0.5 ha | Office / light industrial under 1ha | General industrial under 1 ha | Retail under 1 ha | Gypsy/traveller site between 0 and 9 pitches (applicable to this site at 0.13 ha)*
- *Small-Major: 10 to 30 dwellings | Office / light industrial 1ha to 5ha | General industrial 1ha to 5ha | Retail over 1ha to 5ha | Gypsy/traveller site over 10 to 30 pitches*
- *Large-Major: 30+ dwellings | Office / light industrial 5ha+ | General industrial 5ha+ | Retail 5ha+ | Gypsy/traveller site over 30+ pitches | any other development that creates a non-residential building or development over 1000 sq m.*

Vulnerability Classification	Flood Risk Assessment Type			
	Flood Zone	Minor	Small-Major	Lager-Major
Highly Vulnerable	Flood Zone 2	Intermediate/Basic	Intermediate/Basic	Detailed
	Flood Zone 3a	Not Appropriate		
	Flood Zone 3b	Not Appropriate		
More Vulnerable	Flood Zone 2	Basic	Basic	Intermediate/Basic
	Flood Zone 3a	Basic	Detailed	Detailed
	Flood Zone 3b	Not Appropriate		
Less Vulnerable	Flood Zone 2	Basic	Basic	Intermediate/Basic
	Flood Zone 3a	Basic	Basic	Detailed
	Flood Zone 3b	Not Appropriate		

Table 3.2 Flood Risk Assessment Guide

- ***Basic:*** *Developer can add an allowance to the 'design flood' (i.e. 1% annual probability) peak levels to account for potential climate change impacts. The allowance should be derived and agreed locally by Environment Agency teams.*
- ***Intermediate:*** *Developer can use existing modelled flood and flow data to construct a stage-discharge rating curve, which can be used to interpolate a flood level based on the required peak flow allowance to apply to the 'design flood' flow.*

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- ***Detailed:*** *Perform detailed hydraulic modelling, through either re-running Environment Agency hydraulic models (if available) or construction of a new model by the developer.*

3.5. Based on the above EA guidance the site would require a basic Flood Risk Assessment to be undertaken. A 'Basic' assessment has been deemed adequate by SGi due to the level of risk onsite.

- *For **Highly Vulnerable developments** in flood zone 2, the **'higher central'** climate change allowance is our minimum benchmark for flood risk mitigation. In sensitive locations it may be necessary to use the **upper end** allowance. For **More Vulnerable developments** in flood zone 2, the '**central**' climate change allowance is our minimum benchmark for flood risk mitigation, and in flood zone 3 the '**higher central**' climate change allowance is our minimum benchmark for flood risk mitigation. In sensitive locations it may be necessary to use the **higher central** (in flood zone 2) and the **upper end** allowance (in flood zone 3).*
- *For **More Vulnerable developments** in flood zone 2, the '**central**' climate change allowance is our minimum benchmark for flood risk mitigation, and in flood zone 3 the '**higher central**' climate change allowance is our minimum benchmark for flood risk mitigation. In sensitive locations it may be necessary to use the **higher central** (in flood zone 2) and the **upper end** allowance (in flood zone 3).*
- *For **Less Vulnerable** development (e.g. commercial), the '**central**' climate change allowance for the epoch that most closely represents the lifetime of the development is our minimum benchmark for flood risk mitigation. In sensitive locations it may be necessary to use the **upper end** allowance (particularly in flood zone 3) to inform built in resilience.*

Mitigation Measures

3.6. The finished floor levels of the proposed buildings that are located within the extents of Flood Zone 2 must be set at least 600mm above lowest site level. This will ensure that the most sensitive elements of the development are protected from fluvial flood risk.

3.7. The minimum finished floor level must be set at 600mm above the lowest site level of 32.70m giving a minimum finished floor level of 33.30m.

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Lowest Site Level	Freeboard	Minimum Finished Floor Levels
32.70m	+600mm	33.30m

Table 3.3 Minimum Finished Floor Levels

3.8. Minimum finished floor level for the units at ground floor is 33.30m.

Mitigation Measures – Essential Infrastructure

3.9. Essential infrastructure should be set at or above the estimated 100-year flood level with a Central allowance included. The minimum level for all essential infrastructure would therefore be 32.81m as shown in **Table 3.1**.

Fluvial Flood Risk = Low risk after mitigation measures are applied

ARTIFICAL WATERBODIES

3.10. The reservoirs in the UK have an extremely good safety record and are carefully maintained. However, the EA flood maps indicate that the site could be at risk during a breach (**Figure 2.5**).

Mitigation Measures

3.11. The maps are prepared for emergency planning purposes and reflect a credible worst-case scenario. This means that if a reservoir failure did occur, it would most likely be far less severe than the scenario shown on the map.

3.12. Proposing any mitigation measure to defend against such an event would be impractical and cost prohibitive. So, a residual risk from this source would remain.

Reservoir flood risk = Residual risk remains, however this is unlikely due to ongoing monitoring and maintenance

PLUVIAL FLOODING

3.13. The surface water flooding from EA flood maps for planning indicate that the site not at risk of surface water flooding. Some area adjacent to the western side of the site such as the public footpath along Westwood Street and the Westwood Street itself are exposed to up to 150mm Surface Water flooding.

3.14. Extents of the Pluvial Flooding are shown in (**Figure 3.1**).

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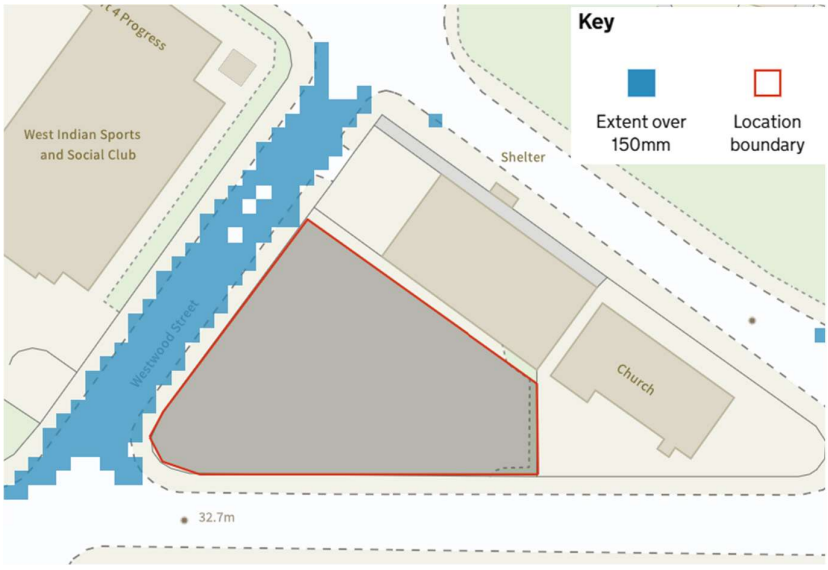


Figure 3.1 EA Flood Map - Surface Water Flooding Extent Up To 150mm

Mitigation Measures

3.15. No mitigation measures related to the Pluvial Flooding are required for the site.

CRITICAL DRAINAGE AREAS

3.16. The site is located within the Conurbation Core Critical Drainage Area CDA, which identifies a highly urbanised area where drainage networks may be sensitive to increased surface water runoff. However, the proposed development compromises a temporary site compound and will not include permanent buildings, significant new impermeable surfaces, or changes to the existing drainage regime. Therefore, the development is not expected to have a material impact on drainage capacity or flood risk within the CDA, and detailed drainage design is not considered necessary.

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SECTION 4 FLOOD ZONE REQUIREMENTS

4.1. Based on the current information the site is located within Flood Zone 1 and Flood Zone 2.

- *Flood Zone 1 Low Probability - Land having a less than 1 in 1,000 annual probability of river or sea flooding.*
- *Flood Zone 2 Medium Probability - Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.*

Proposed Development Type

4.2. In accordance with the National Planning Policy Framework Practice Guidance on flooding, the development proposals would be classed as less vulnerable and are permitted within Flood Zone 1 and Flood Zone 2.

Flood Zone	Flood Risk Vulnerability Classification				
	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
1	✓	✓	✓	✓	✓
2	✓	Exception Test Required	✓	✓	✓
3a	Exception Test Required	x	Exception Test Required	✓	✓
3b	Exception Test Required	x	x	x	✓

Key: ✓ Development is appropriate x Development should not be permitted

Table 4.1 Flood Risk Classification (NPPF)

Finished Floor Level Restrictions

4.3. The minimum finished floor level for the proposed development located within Flood Zone 2 is 33.30m, being 600mm above the lowest site spot level of 32.70m.

Flood Compensation

4.4. Not applicable for developments within Flood Zone 2.

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Safe Access and Egress

4.5. The proposed site compound will be based on finished floor levels that are above the existing flood levels (**Table 3.2**), therefore post-development the site will be classed as free from flood risk during the 1:100 +35%cc event. A small part of the site currently shows as within the flood zone 2 extents therefore the below figure illustrates the proposed safe route for the pedestrians to access the public areas with no flood risk.

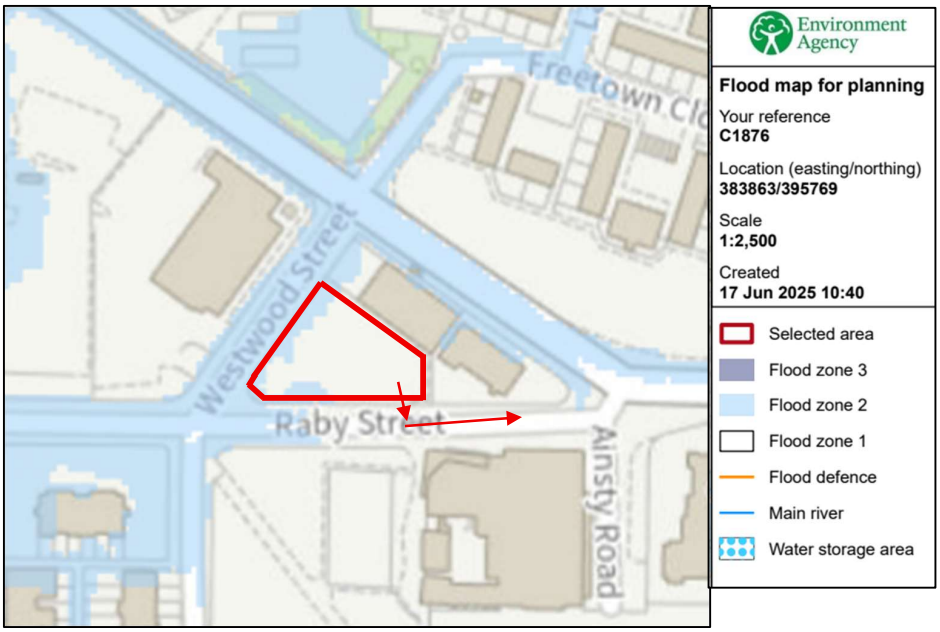


Figure 4.1 Proposed Access and Egress Route

4.6. It is proposed that site users access the compound via the vehicular access on Raby Street. This access point is located within Flood Zone 1.

4.7. At this stage, if required, we would advise that all site users and the compound manager be informed of how to sign up to EA flood warning service. The flood warning service will provide alerts if flooding within the adjacent areas is expected.

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SECTION 5 EXISTING DRAINAGE INFORMATION

PUBLIC SEWERS

5.1. The public sewers in the area are owned and maintained by United Utilities (UU). A copy of these records has been included within **Appendix D.**

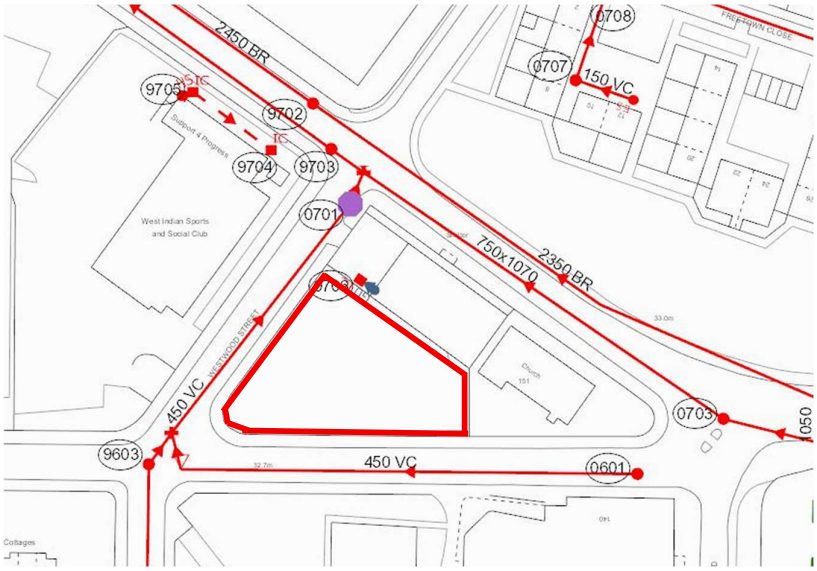


Figure 5.1 Sewer Records (UU)

Surface Water Sewers

5.2. No surface water sewers identified on or around the site.

Foul Water Sewers

5.3. No foul water sewers identified on or around the site.

Combined Water Sewers

5.4. There are combined water sewers adjacent to the site. UU records indicate these include:

- Combined sewer within Westwood Street, to the west of the site.
- Combined sewer within Raby Street, to the south of the site.
- Combined sewer within Barnhill Street, to the east of the site.
- Underground surface water and foul water drainage detected via GPR survey within the site boundary.

Sewer Diversions

5.5. None expected.

Private Drainage

5.6. No changes will be made to the existing drainage. Runoff from the site is anticipated to be the same as current without any changes to the site levels or drainage.

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SECTION 6 PRELIMINARY DRAINAGE COMMENTS

6.1. As this development is a temporary one, and the current site already connects to surrounding sewers, we propose to make use of existing connections to surrounding sewers.

SURFACE WATER STRATEGY

6.2. Runoff from the site will remain as current with no changes to any existing drainage.

FOUL WATER STRATEGY

Foul Water Drainage

6.3. It will be the responsibility of the contractor to provide temporary connections following consultations with United Utilities. The public sewers in the area are owned and maintained by United Utilities (UU). A copy of these records has been included within **Appendix D.**

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SECTION 7 CONCLUSION

7.1. A Flood Risk Assessment is required to satisfy all requirements of the National Planning Policy Framework (NPPF) and the Flood Risk and Coastal Change Planning Practice Guidance (PPG).

7.2. This Flood Risk Assessment as far as reasonably practical; determines the potential flood risk associated with the site and has concluded the following:

a) A small area of the proposed site, on the western edge near the kerb line is located within Flood Zone 2 (Medium probability risk of fluvial flooding). While the EA Flood Maps show the majority of the site not to be at risk of flooding.

b) The allowable foul water temporary connection agreement must be confirmed with United Utilities by the contractor prior to site construction commencement.

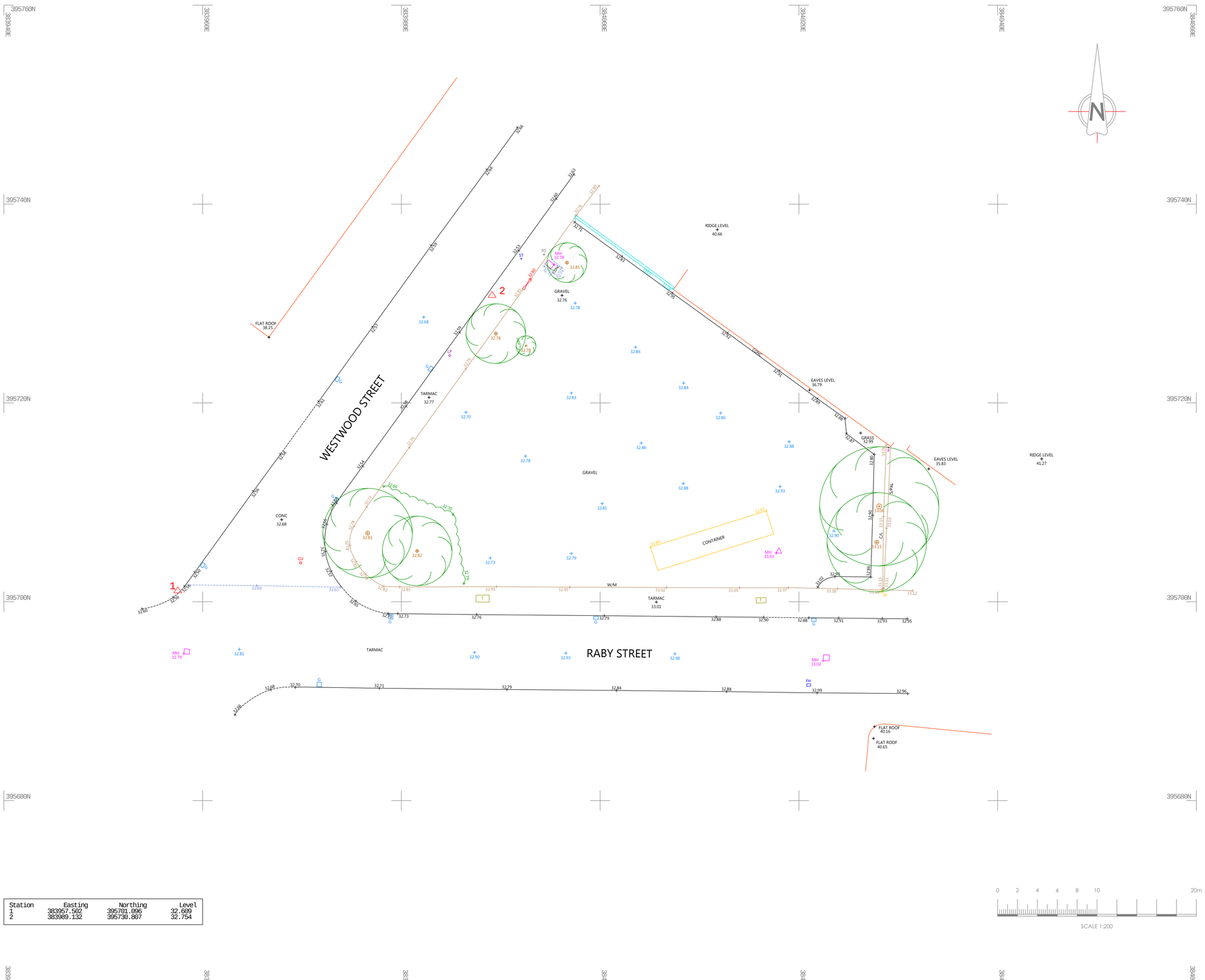
c) The proposed temporary connections must not contribute to any offsite flood risk or overland flow risk. Any residual risk must be effectively managed onsite with the use of appropriate drainage and/or topographical level consideration.

7.3. SGi recommends that the Local Planning Authority accept this Flood Risk Assessment and Drainage Strategy in support of the Planning Applications.

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APPENDIX A1



Station	Easting	Northing	Level
1	383957.582	395701.096	32.609
2	383989.132	395730.807	32.754

Abbreviations/Symbols (Measured Building Surveys):

C:	Window Cill Height
H:	Window Head Height
BH:	Beam Height
DH:	Door Height
COL:	Column
SVP:	Soil Vent Pipe
FL:	Floor Level
TH:	Threshold Level
2.50	Floor to Ceiling Height
	Vaulted Ceiling

Line types

	Hedge Lines
	Drainage Runs
	Overhead Electricity Cables
	Overhead Telephone Cables

Symbols

	Tree/Bush		Glass House
	Control Station		Osbm
	Borehole		
	Trial Hole		

Abbreviations (Topographic Survey):

AH:	Arch Height
AV:	Air Valve
BB:	Bellsha Beacon
BOX:	Electricity Box, Cables Box, Etc.
BOL:	Bollard
BT/IC:	British Telecom Inspection Chamber
BS:	Bus Stop
BS/LP:	Bus Stop / Lamp Post
CATV:	CATV Inspection Chamber
CCTV:	Closed Circuit Television
CL:	Cellar Light
C.PIT:	Catch Pit
ER:	Earth Rod
EC:	Electricity Inspection Chamber
EP:	Electricity Pole
FH:	Fire Hydrant
FP:	Flag Pole
GV:	Gas Valve
G:	Gully
IC:	Inspection Chamber
KO:	Kerb Outlet
LP:	Lamp Post
LB:	Letter Box
LC:	Lighting Column
MKR:	Marker
MH:	Manhole
MP:	Mooring Point
MS:	Mile Stone
NTNEX:	Nynex Inspection Chamber
O/H:	Over Hang
P:	Post
PO/IC:	Post Office Inspection Chamber
R/S:	Road Sign
RE:	Rodding Eye
RTW:	Retaining Wall
S/P:	Sign Post
SNP:	Street Name Plate
ST:	Stop Tap
SV:	Stop Valve
T:	Telecom Inspection Chamber
TCB:	Telephone Call Box
TH:	Threshold Level
TL:	Traffic Light
TP:	Telegraph Pole
TROUGH:	Trough
WO:	Water Outlet
WM:	Water Meter

Fence Descriptions:

B/W:	Barbed Wire
C/B:	Close Boarded
C/BARRIER:	Crash Barrier
C/L:	Chain Link
C/P:	Chestnut Paling
C/I:	Corrugated Iron
I/R:	Iron Railing
MISC:	Miscellaneous
P/R:	Post & Rail
P/W:	Post & Wire
P/C:	Post & Chain
S/PAL:	Steel Palisade
W/M:	Wire Mesh

Survey Notes:

Coordinates and Levels related to Ordnance Survey Datum - GPS OSGB36.

Revision	Date	Description

CPLS
ices
Chris Partington Land Surveyors
44a Green Lane
Sale
Cheshire
M33 5PP
t: 0161 976 1194
www.cpls.co.uk e:survey@cpls.co.uk

Client: MSV Housing Group

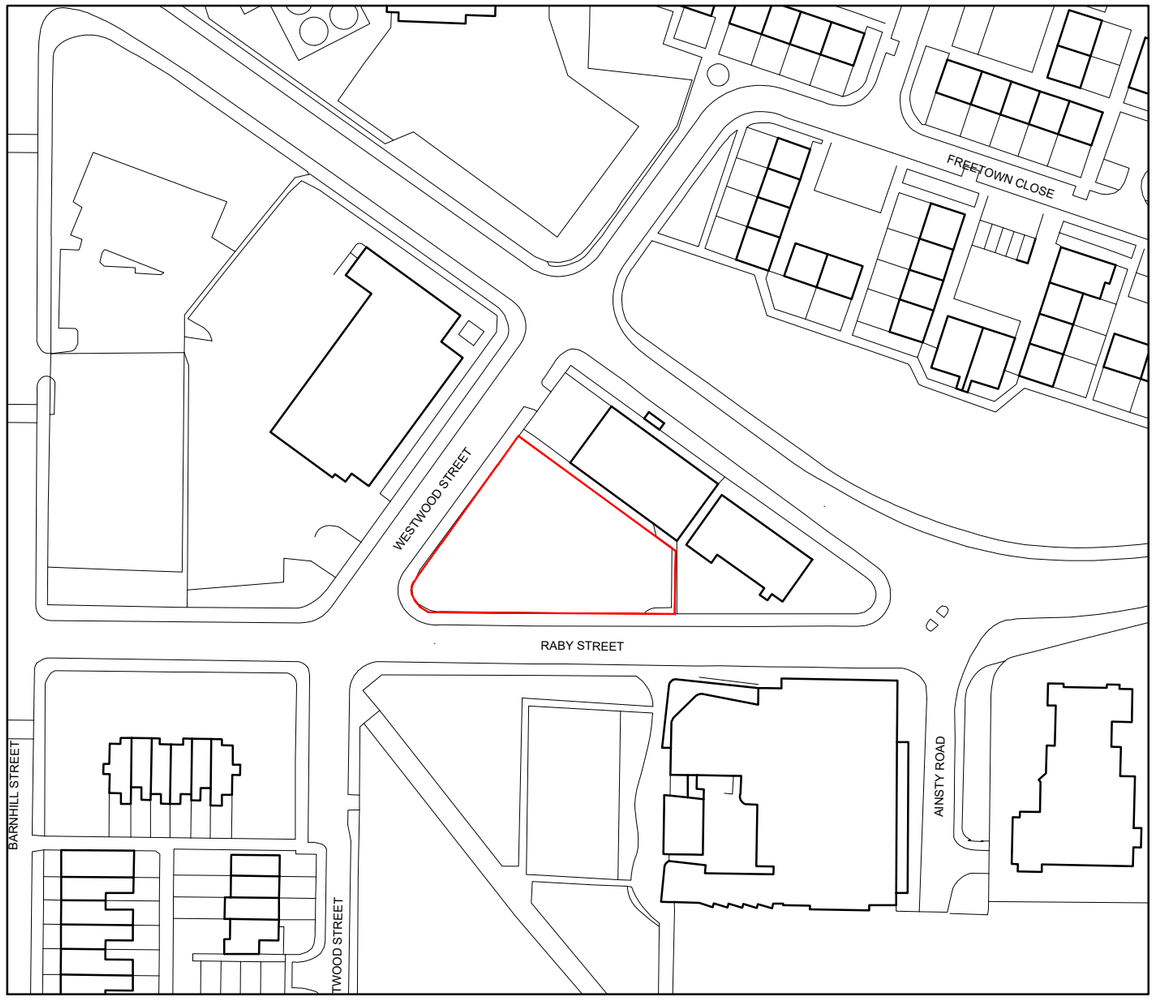
Project: Westwood St/Raby St, Manchester (Site 3) Site Survey

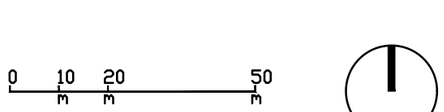
Scale	1:200	Surveyed By	J C
		Date	09.05.23
Drawing No.	090523JC-01	Checked By	CPLS
		Date	10.05.23
		Drawn By	J C
		Date	10.05.23

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APPENDIX B I

	Description	By	Date
P1	Planning Pack	JB	07.05.26





1 Site Location Plan

Scale 1 : 1250

Modern City Architecture & Urbanism
2 Commercial Street
Castlefield
Manchester
M15 4RQ
t: 0161 974 7203
e: info@mcau.co.uk
www.mcau.co.uk

Client
MSV

Project
Site 3 Compound

Description
Site Location Plan

Status
Planning

Drawn By
JB

Job Number
1215-MCAU

Scale
1:1250@A3

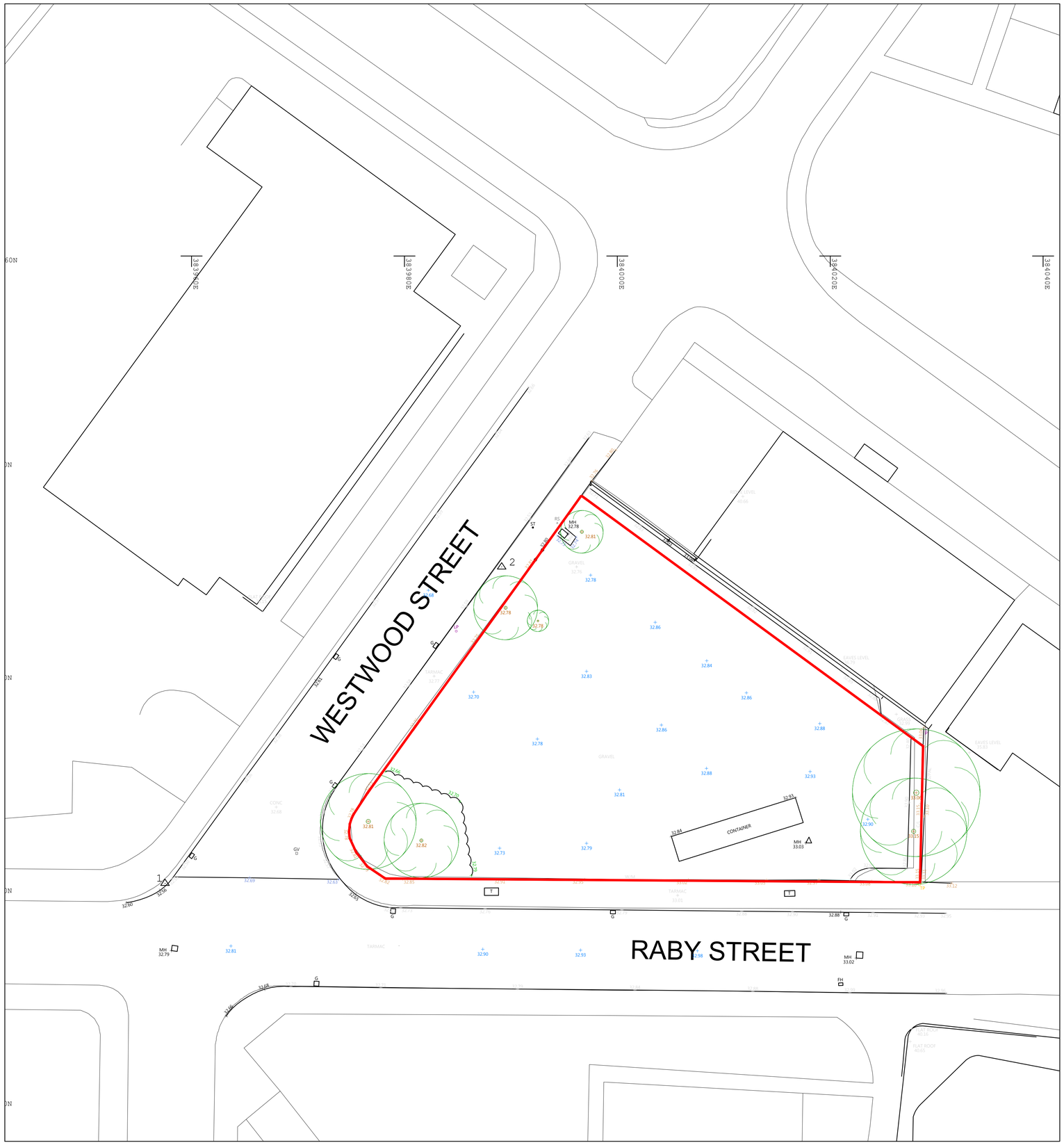
Date
May 26

Drawing Number
E.00-001

Revision
-

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	Description	By	Date
P1	Planning Pack	JB	07.05.26



1 Existing Site Plan
Scale 1 : 200

0 1m 5 m 10 m

Modern City Architecture & Urbanism

2 Commercial Street
Castlefield
Manchester
M15 4RQ

t: 0161 974 7203
e: info@mcau.co.uk
www.mcau.co.uk

Client
MSV

Project
Site 3 Compound

Description
Existing Site Plan

Status
Planning

Drawn By
JB

Job Number
1215-MCAU

Scale
1:200@A1

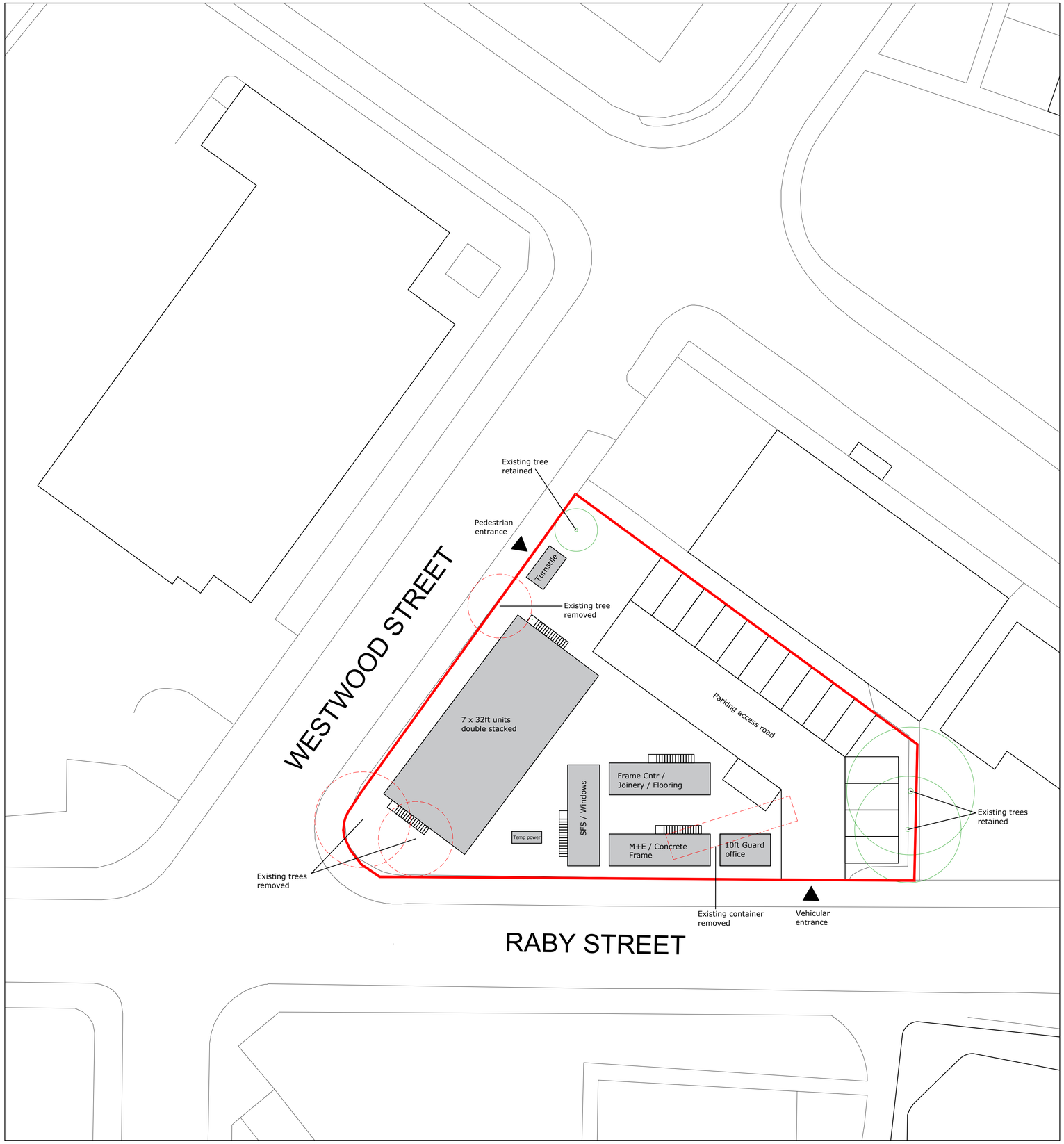
Date
May 26

Drawing Number
E.02-002

Revision

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	Description	By	Date
P1	Planning Pack	JB	07.05.26



1 Proposed Site Plan
Scale 1 : 200

0 1m 5 m 10 m

MCAU
Modern City Architecture & Urbanism
2 Commercial Street
Castlefield
Manchester
M15 4RQ
t: 0161 974 7203
e: info@mcau.co.uk
www.mcau.co.uk

Client
MSV

Project
Site 3 Compound

Description
Proposed Site Plan

Status
Planning

Drawn By
JB

Job Number
1215-MCAU

Scale
1:200@A1

Date
May 26

Drawing Number
P.02-101

Revision

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APPENDIX C1

Flood risk assessment data

Location of site: 384003 / 395714 (shown as easting and northing coordinates)
Document created on: 6 May 2026
This information was previously known as a product 4.
Customer reference number: 9UTP65VXB691

Map showing the location that flood risk assessment data has been requested for.



How to use this information

You can use this information as part of a flood risk assessment for a planning application. To do this, you should include it in the appendix of your flood risk assessment.

> **We recommend that you work with a flood risk consultant to get your flood risk assessment.**

Included in this document

In this document you'll find:

- how to find information about surface water and other sources of flooding
- information on the models used
- definitions for the terminology used throughout
- flood map for planning (rivers and the sea)
- modelled data
- modelled climate change data
- information about strategic flood risk assessments
- information about this data
- information about flood risk activity permits
- help and advice

Information that's unavailable

This document **does not** contain:

- past floods
- flood defence locations and attributes

We do not have past flooding data for this location.

Please note that:

- flooding may have occurred that we do not have records for
- flooding can come from a range of different sources
- we can only supply flood risk data relating to flooding from rivers or the sea

You can contact your Lead Local Flood Authority or Internal Drainage Board to see if they have other relevant local flood information. Please note that some areas do not have an Internal Drainage Board.

We aren't able to display flood defence locations and attributes as there are no formal flood defences in the area of interest.

Surface water and other sources of flooding

When using the surface water map on the check your long term flood risk service the following considerations apply:

- surface water extents are suitable for use in planning
- surface water climate change scenarios may help to inform risk assessments, but the available data fall short of what is required to assess planned development
- surface water depth information should not be used for planning purposes

To find out about other factors that might affect the flood risk of this location, you should also check:

- reservoir flood risk
- groundwater flood risk - you could use the British Geological Survey groundwater flooding data, groundwater: current status and flood risk and the guide on mining and groundwater constraints for development - further information may be available from the lead local flood authority (LLFA)
- your local planning authority's SFRA, which includes future flood risk

Your Lead Local Flood Authority is Manchester District (B).

For information about sewer flooding, contact the relevant water company for the area.

About the models used

Model name: Corn Brook 2017
Scenario(s): No defences exist fluvial, no defences exist climate change fluvial
Date: 31 December 2017

This model contains the most relevant data for your area of interest.

Terminology used

Annual exceedance probability (AEP)

This refers to the probability of a flood event occurring in any year. The probability is expressed as a percentage. For example, a large flood which is calculated to have a 1% chance of occuring in any one year, is described as 1% AEP.

Metres above ordnance datum (mAOD)

All flood levels are given in metres above ordnance datum which is defined as the mean sea level at Newlyn, Cornwall.

Flood map for planning (rivers and the sea)

Your selected location is in flood zone 2.

Flood zone 3 shows the area at risk of flooding for an undefended flood event with a:

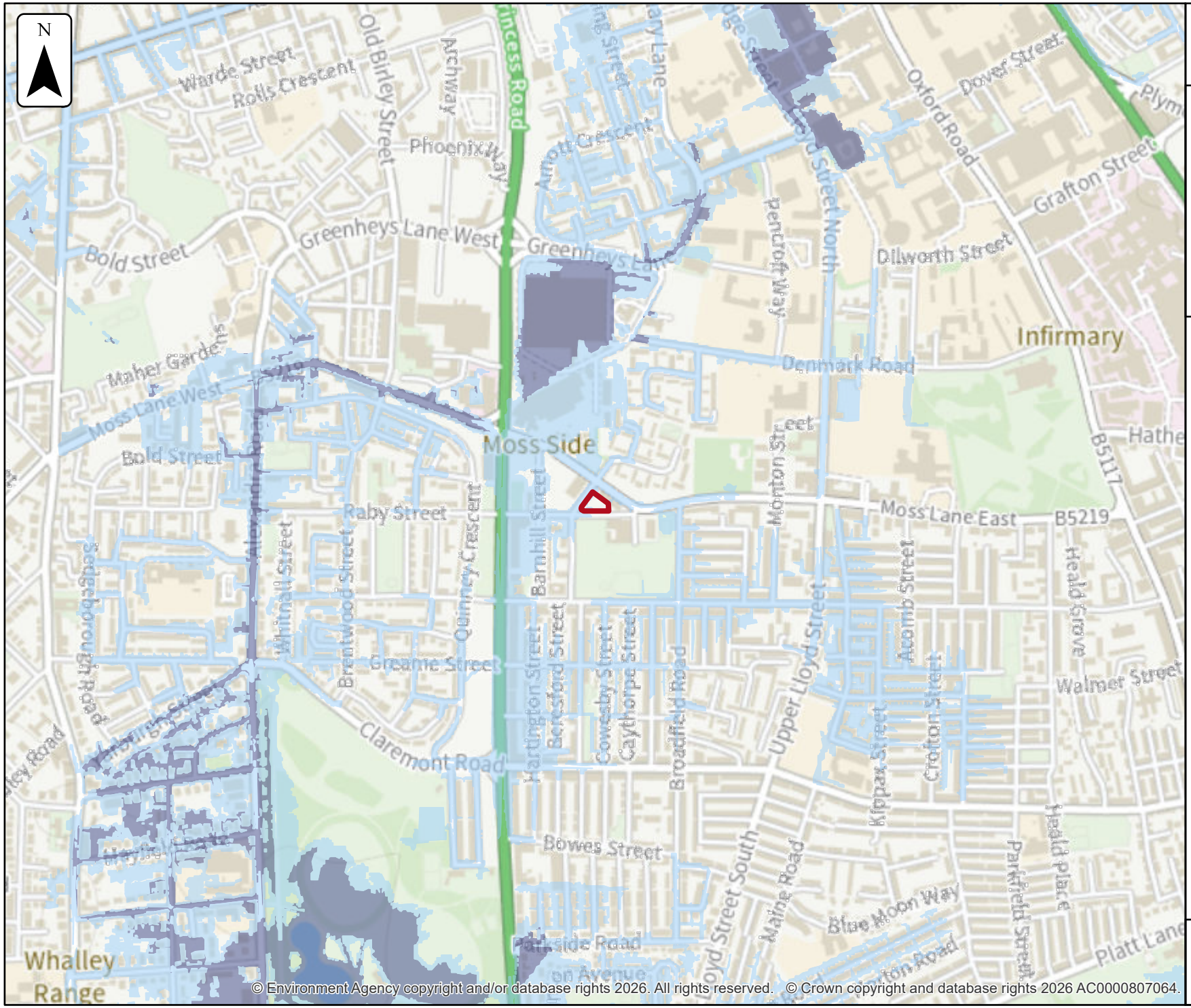
- 0.5% or greater probability of occurring in any year for flooding from the sea
- 1% or greater probability of occurring in any year for fluvial (river) flooding

Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

- between a 0.1% and 0.5% probability of occurring in any year for flooding from the sea
- between a 0.1% and 1% probability of occurring in any year for fluvial (river) flooding

It's important to remember that the flood zones on this map:

- refer to the land at risk of flooding and do not refer to individual properties
- refer to the probability of river and sea flooding, ignoring the presence of defences
- do not take into account potential impacts of climate change



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Modelled data

This section provides details of different scenarios we have modelled and includes the following (where available):

- outline maps showing the area at risk from flooding in different modelled scenarios
- modelled node point map(s) showing the points used to get the data to model the scenarios and table(s) providing details of the flood risk for different return periods
- map(s) showing the approximate water levels for the return period with the largest flood extent for a scenario and table(s) of sample points providing details of the flood risk for different return periods

Climate change

The climate change data included in the models may not include the latest flood risk assessment climate change allowances. Where the new allowances are not available you will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding.

The Environment Agency will incorporate the new allowances into future modelling studies. For now, it's your responsibility to demonstrate that new developments will be safe in flood risk terms for their lifetime.

Modelled scenarios

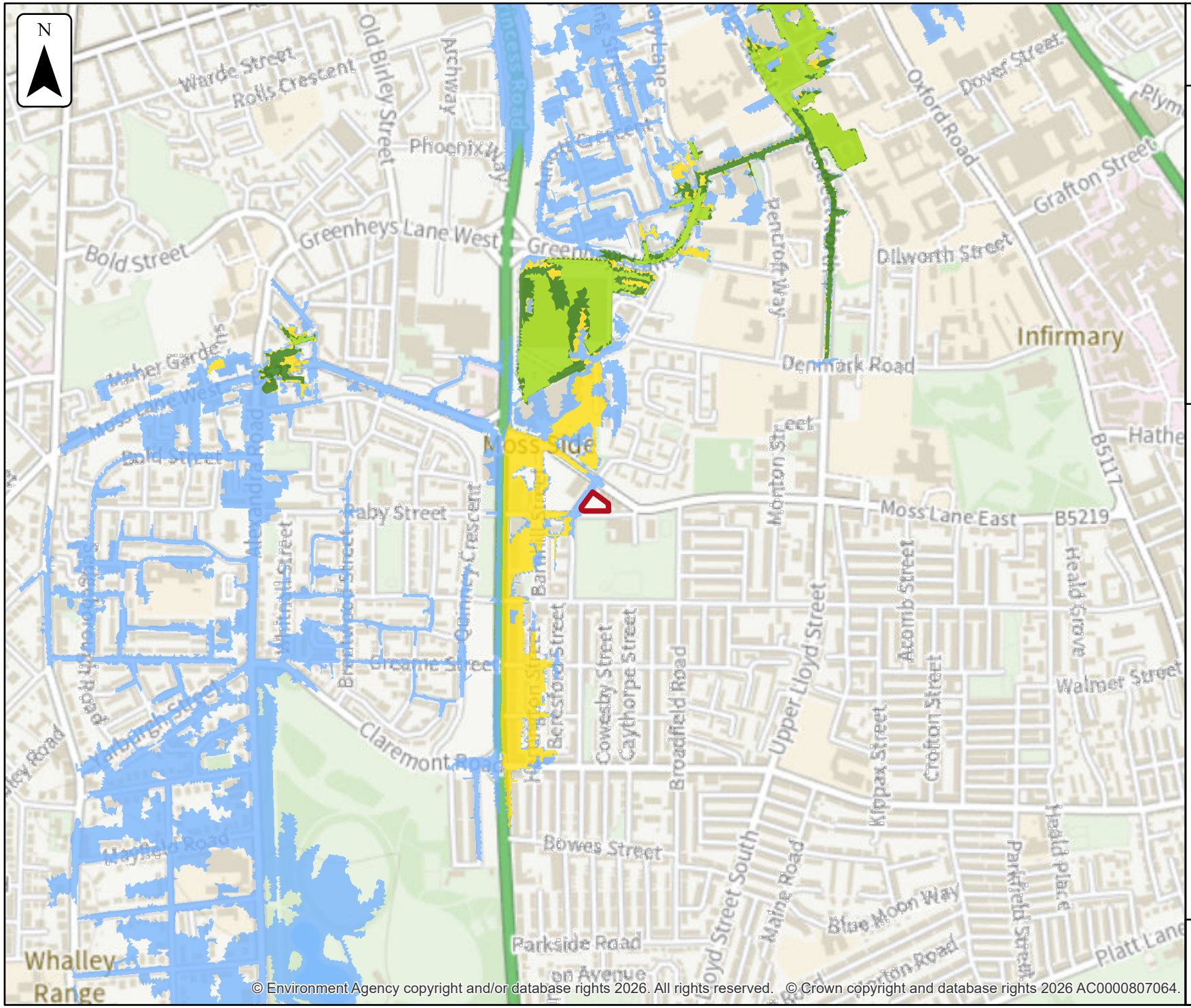
The following scenarios are included:

- No defences exist modelled fluvial: risk of flooding from rivers where there are no flood defences
- No defences exist climate change modelled fluvial: risk of flooding from rivers where there are no flood defences, including estimated impact of climate change

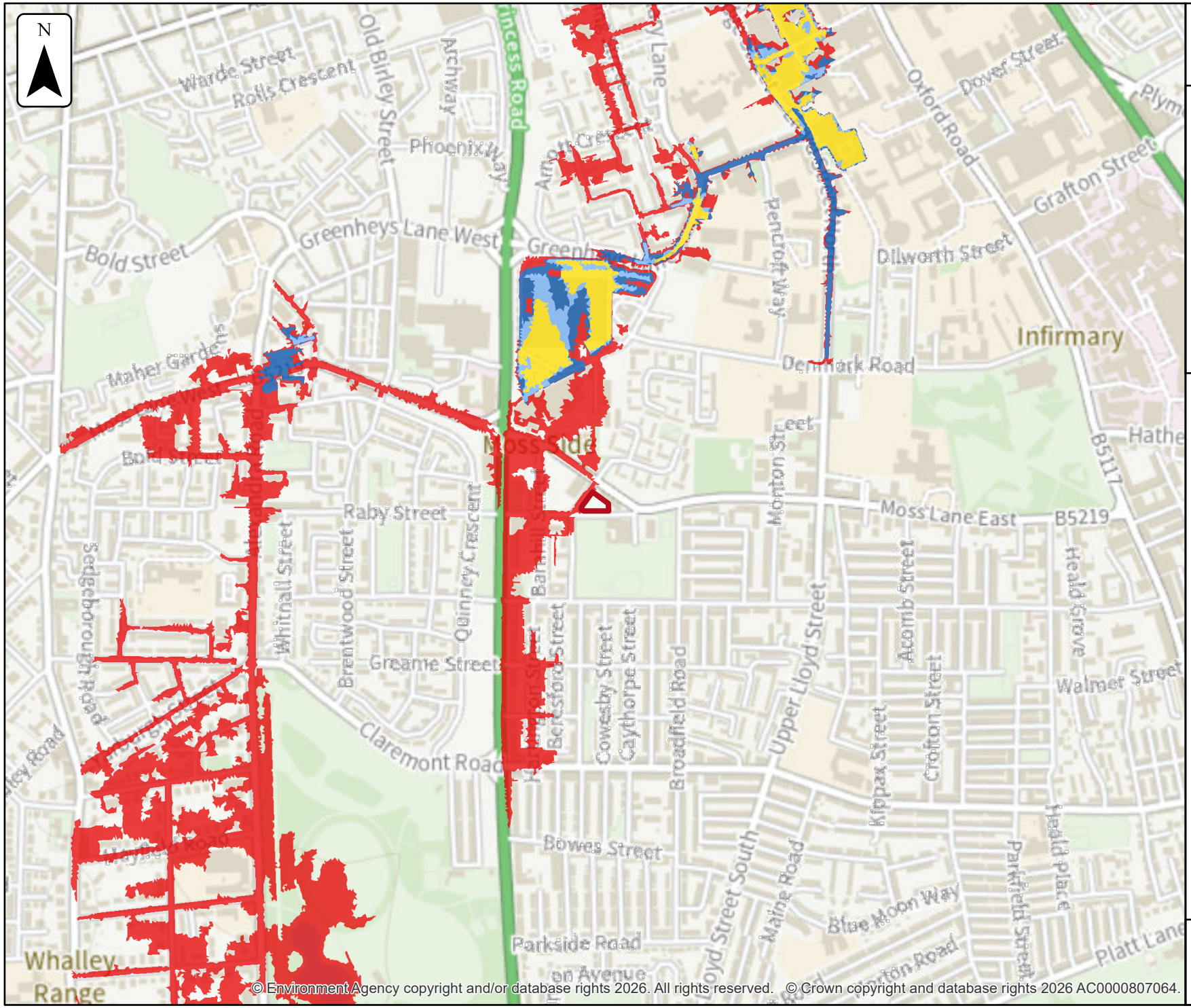
No data available

We do not have any height or depth data at this location for the following models:

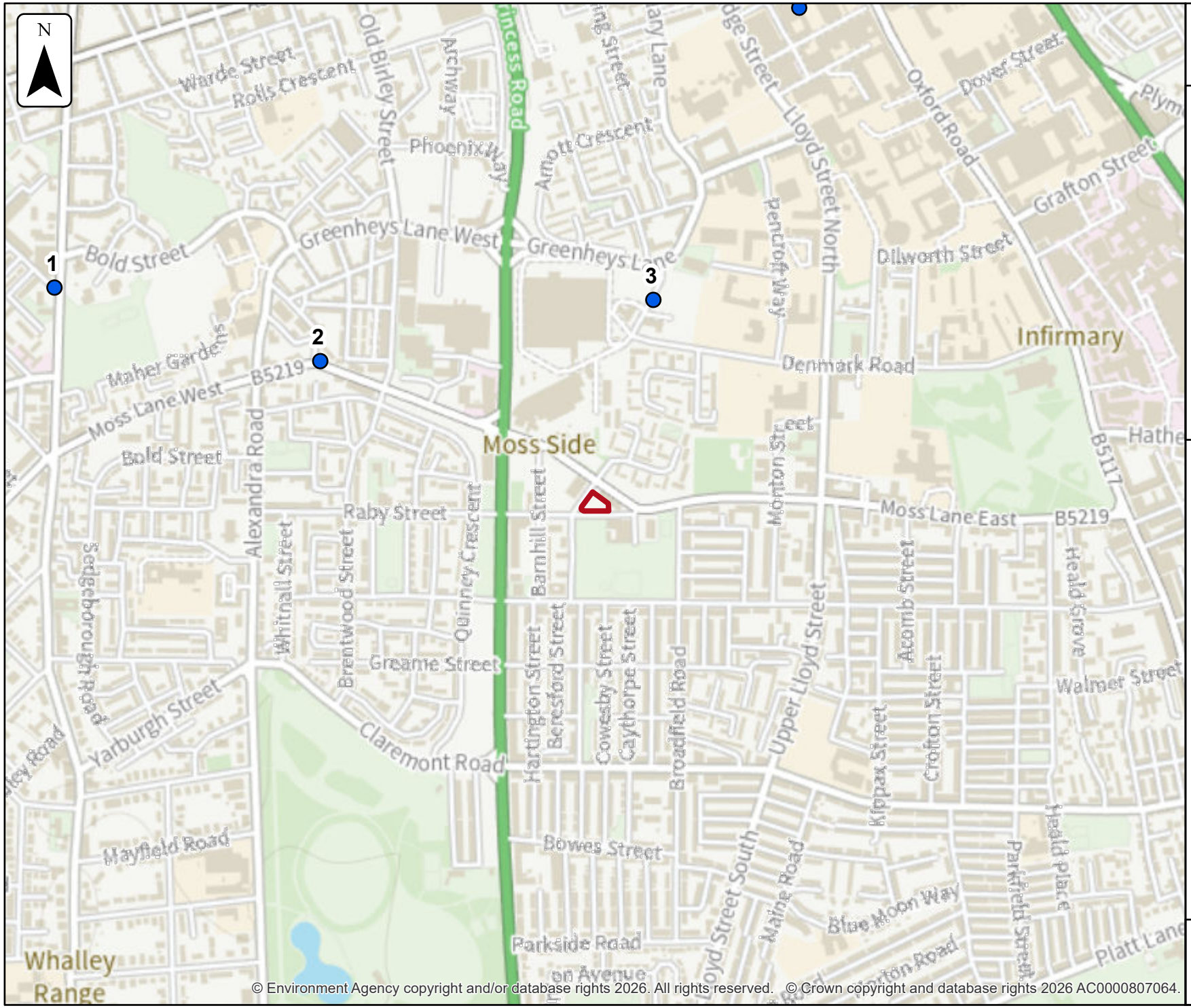
Model name: Corn Brook 2017
Scenario(s): No defences exist modelled fluvial



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Modelled node locations data

No defences exist

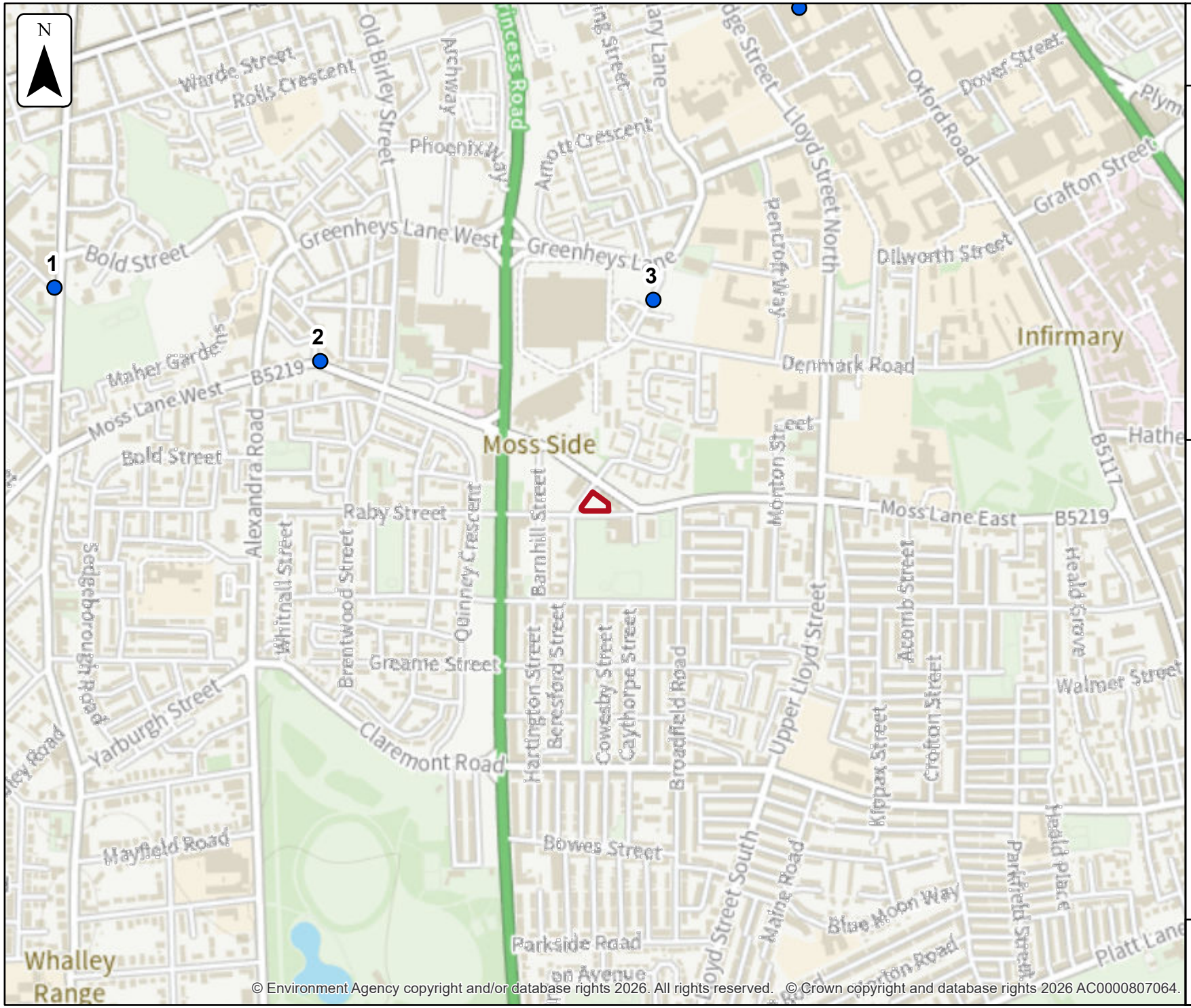
Label	Modelled location ID	Easting	Northing	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
				Level	Level	Level	Level
1	952451	382950	396136	30.07	30.16	30.47	31.73
2	952452	383467	395993	32.43	32.58	32.84	33.28
3	952465	384116	396112	33.26	33.47	33.83	34.34
4	952467	384400	396681	37.13	37.27	37.41	37.66

Data in this table comes from the Corn Brook 2017 model.
Level values are shown in mAOD, and flow values are shown in cubic metres per second.
Any blank cells show where a particular scenario has not been modelled for this location.

No defences exist

Label	Modelled location ID	Easting	Northing	1.33% AEP	1% AEP	0.5% AEP	0.1% AEP
				Flow	Flow	Flow	Flow
1	952451	382950	396136	1.46	1.72	2.47	5.10
2	952452	383467	395993	1.32	1.57	2.24	4.60
3	952465	384116	396112	1.03	1.21	1.70	3.47
4	952467	384400	396681	1.56	1.84	2.65	5.49

Data in this table comes from the Corn Brook 2017 model.
Level values are shown in mAOD, and flow values are shown in cubic metres per second.
Any blank cells show where a particular scenario has not been modelled for this location.



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Modelled node locations data

No defences exist climate change

Label	Modelled location ID	Easting	Northing	1% AEP (+30%)	1% AEP (+35%)	1% AEP (+70%)	0.1% AEP (+30%)
				Level	Level	Level	Level
1	952451	382950	396136	30.34	30.39	30.82	31.99
2	952452	383467	395993	32.78	32.81	32.99	33.39
3	952465	384116	396112	33.75	33.79	34.02	34.46
4	952467	384400	396681	37.38	37.39	37.47	37.77

Data in this table comes from the Corn Brook 2017 model.
Level values are shown in mAOD, and flow values are shown in cubic metres per second.
Any blank cells show where a particular scenario has not been modelled for this location.

No defences exist climate change

Label	Modelled location ID	Easting	Northing	1% AEP (+30%)	1% AEP (+35%)	1% AEP (+70%)	0.1% AEP (+30%)
				Flow	Flow	Flow	Flow
1	952451	382950	396136	2.24	2.33	2.93	6.63
2	952452	383467	395993	2.03	2.11	2.66	5.98
3	952465	384116	396112	1.57	1.63	2.05	4.51
4	952467	384400	396681	2.40	2.49	3.13	7.13

Data in this table comes from the Corn Brook 2017 model.
Level values are shown in mAOD, and flow values are shown in cubic metres per second.
Any blank cells show where a particular scenario has not been modelled for this location.

Strategic flood risk assessments

We recommend that you check the relevant local authority's strategic flood risk assessment (SFRA) as part of your work to prepare a site specific flood risk assessment.

This should give you information about:

- the potential impacts of climate change in this catchment
- areas defined as functional floodplain
- flooding from other sources, such as surface water, ground water and reservoirs

Your Lead Local Flood Authority is Manchester District (B).

About this data

This data has been generated by strategic scale flood models and is not intended for use at the individual property scale. If you're intending to use this data as part of a flood risk assessment, please include an appropriate modelling tolerance as part of your assessment. The Environment Agency regularly updates its modelling. We recommend that you check the data provided is the most recent, before submitting your flood risk assessment.

Flood risk activity permits

Under the Environmental Permitting (England and Wales) Regulations 2016 some developments may require an environmental permit for flood risk activities from the Environment Agency. This includes any permanent or temporary works that are in, over, under, or nearby a designated main river or flood defence structure.

Find out more about flood risk activity permits

Help and advice

Contact the Greater Manchester Merseyside and Cheshire Environment Agency team at inforequests.gmmc@environment-agency.gov.uk for:

- more information about getting a product 5, 6, 7 or 8
- general help and advice about the site you're requesting data for

SGi Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

APPENDIX D I

United Utilities
Water for the North West

How to contact us:

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

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

Nikola Urbaczka

Phoenix House
Cross Street,
Manchester,
M2 4JF

FAO:

Your Ref: C1876
Our Ref: UUPS-ORD-627400
Date: 28/01/2025

Dear Sirs

Location: 24 BARNHILL STREET, MANCHESTER, M14 4SY

I acknowledge with thanks your request dated 21/01/2025 for information on the location of our services.

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

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

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

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

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

Yours Faithfully,

Karen McCormack
Property Searches Manager

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

Water for the North West

TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UUWL apparatus) of United Utilities Water Limited "(UUWL)".

TERMS AND CONDITIONS:

- This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.
- This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.
- In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only. UUWL strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UUWL apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
- The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.
- The position and depth of UUWL apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been made subsequent to issue and prior to any works being carried out.
- This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UUWL apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
- No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUWL apparatus by reason of the actual position and/or depths of UUWL apparatus being different from those shown on the Map and any information supplied with it.
- If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.
- This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUWL from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.

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


Hulme High Street Library
Moss Side Leisure Centre
Moss Side Community Fire Station
Bridgewater Wellness Clinic
Royal Brewery
Play Area
MOSS SIDE
DENMEL ROAD
GREAT WESTERN STREET
CROSSWELL STREET
ISABEL CLOSE
CROSSFIELD ROAD
CHARLOTTE CLOSE
Millennium Green
West Indian Sports and Social Club
Our Lady Parish Centre
Catholic Church of our Lady of Perpetual Succour
Governors Police Station
Superstore
Tesla
Tesla
Tesla

SGi Consulting Engineers 3rd Floor, Phoenix House, 45 Cross Street, Manchester M2 4JF Tel: 0161 837 1500

APPENDIX E I

Utility Survey Disclaimer:
We have endeavored to locate as many buried services as possible using the Best Available Technology (BAT) and applying the Best available Techniques as defined under guidance from the The Survey Association (TSA) and the British Standard PAS128 for Utility Surveys.

However, the user of this drawing should be aware that the results found using Best Available Technology are subject to errors and tolerances resulting from geophysical properties of the subsurface (which can be a significant limitation/inhibter to the survey) , out of the control of the operator, being surveyed/scanned. In addition survey findings are interpreted on site in real-time and thus are subject to interpretative and subjective variations. This information is given without warranty, the accuracy thereof cannot be guaranteed.

The accuracy of the findings indicated within this drawing, cannot be guaranteed or indemnified, and should only be used as a guide as defined by the Health & Safety Executives (HSE) guideline - HSG47.

Lines on this drawing indicating the presence of buried services may actually be indicating the presence of closely bundled cables or pipelines, therefore the user of this drawing should not assume that a single line is indicative of the number of services within the area. In addition services below detected utilities may be masked from detection by the shadow cast from shallower depth services.

Metal pipes, communication cables and earth bonds can 'present' electromagnetic fields similar to that of high voltage and low voltage cables under load, if alternating electromagnetic fields are in close proximity from other power cables or sub-stations etc.

The designation of the services (i.e. is the detected service a water pipe or as pipe?) is open to interpretation and is based upon a number of references such as visible surface features (water stop valves, or gas meter) and utility provider records (indicating whether high voltage or low voltage). The best technology deployed is limited in its ability to define the exact type of service. The user of this drawing should prove, by means of safe-excavation, the type of service if critical to the design.

Equipment Deployed:
IDS Dual Frequency Ground Penetrating Radar (GPR) with on-site operator interpretation.

Radiodetection RD8000 & T10 Electromagnetic Generator and Precision Cable Locator.

Quality Level of Utility Survey Outputs:

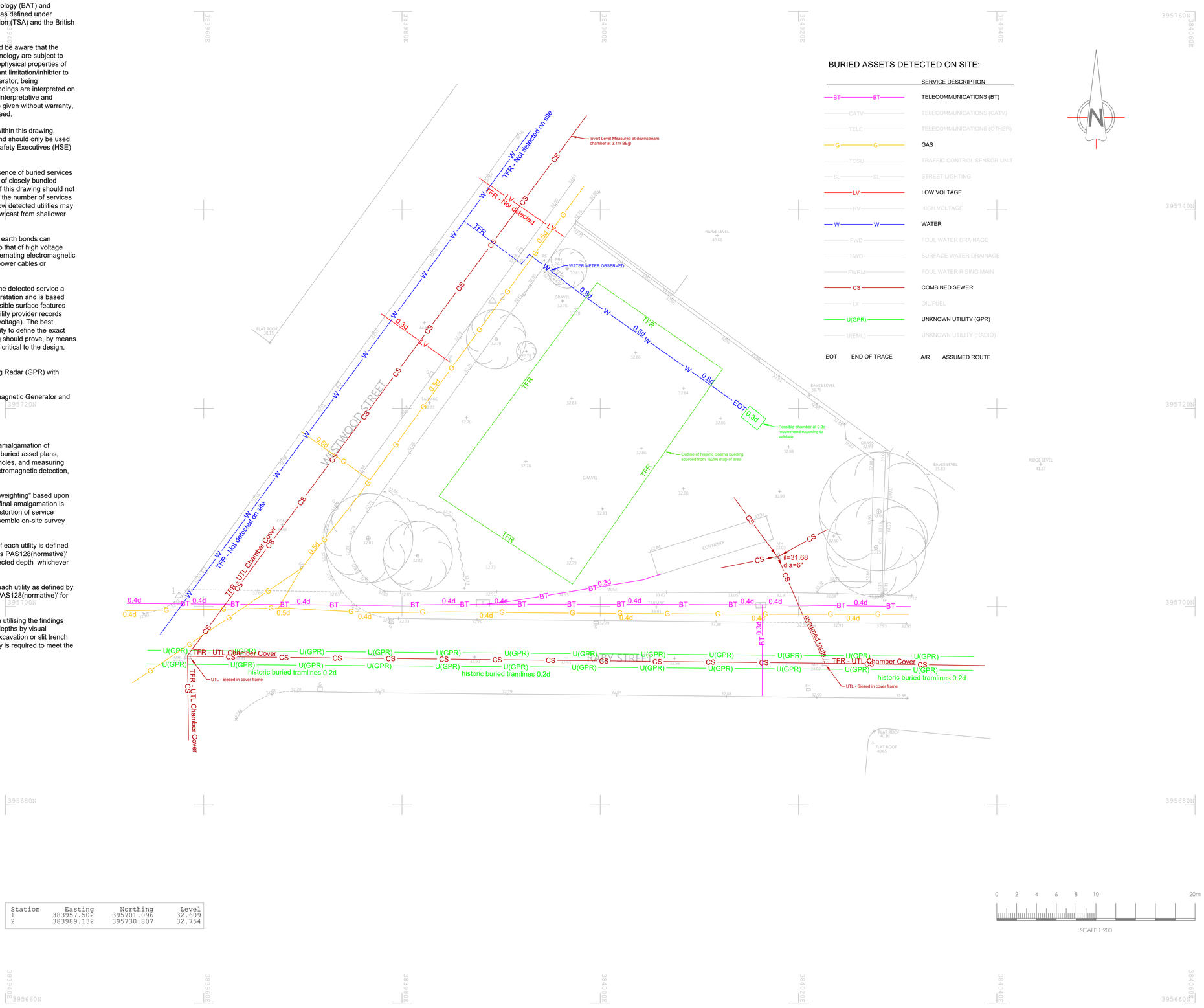
The drawing has been derived from the amalgamation of several data sets: utility service provider buried asset plans, visual confirmation by way of lifting manholes, and measuring depth, type and location of services, electromagnetic detection, and GPR scans.

All the data sets have been allocated a "weighting" based upon the likely accuracy and confidence. The final amalgamation is performed by polynomial rubber sheet distortion of service provider assets plans for a 'best fit' to resemble on-site survey data findings as close as possible

The accuracy of the horizontal location of each utility is defined by Table 1 'Quality level of survey outputs PAS128(normative)' for QL-B2P = +/-0.25m or +/-40% of detected depth whichever is greater.

The accuracy of the verticall location of each utility as defined by Table 1 'Quality level of survey outputs PAS128(normative)' for QL-B2P = +/-40% of detected depth.

Care should be taken by designers when utilising the findings within this drawing, and should confirm depths by visual confirmation/verification using vacuum excavation or slit trench technology if a higher degree of accuracy is required to meet the design brief specification.



Station	Easting	Northing	Level
1	383957.502	395701.096	32.609
2	383989.132	395730.807	32.754

0 2 4 6 8 10 20m
SCALE 1:200

Abbreviations/Symbols (Measured Building Surveys):

C:	Window Cill Height
H:	Window Head Height
BH:	Beam Height
DH:	Door Height
COL:	Column
SVP:	Soil Vent Pipe
FL:	Floor Level
TH:	Threshold Level
2.5m	Floor to Ceiling Height
	Vaulted Ceiling

Line types

	Hedge Lines
	Drainage Runs
	Overhead Electricity Cables
	Overhead Telephone Cables

Symbols

	Tree/Bush		Glass House
	Control Station		Osbm
	Borehole		
	Trial Hole		

Abbreviations (Topographic Survey):

AH:	Arch Height
AV:	Air Valve
BB:	Belisha Beacon
BOX:	Electricity Box, Cables Box, Etc.
BOL:	Bollard
BT/IC:	British Telecom Inspection Chamber
BS:	Bus Stop
BS/LP:	Bus Stop / Lamp Post
CATV:	CATV Inspection Chamber
CCTV:	Closed Circuit Television
CL:	Cellar Light
C.PIT:	Catch Pit
ER:	Earth Rod
EC:	Electricity Inspection Chamber
EP:	Electricity Pole
FH:	Fire Hydrant
FP:	Flag Pole
GV:	Gas Valve
GI:	Gully
IC:	Inspection Chamber
KO:	Kerb Outlet
LP:	Lamp Post
LB:	Letter Box
LC:	Lighting Column
MKR:	Marker
MH:	Manhole
MP:	Mooring Point
MS:	Mile Stone
NYNEX:	Nynex Inspection Chamber
O/H:	Over Hang
P:	Post
PO/IC:	Post Office Inspection Chamber
R/S:	Road Sign
RE:	Rodding Eye
RTW:	Retaining Wall
S/P:	Sign Post
SNP:	Street Name Plate
ST:	Stop Tap
SV:	Stop Valve
T:	Telecom Inspection Chamber
TCB:	Telephone Call Box
TH:	Threshold Level
TL:	Traffic Light
TP:	Telegraph Pole
TROUGH:	Trough
WO:	Water Outlet
WM:	Water Meter

Fence Descriptions:

B/W:	Barbed Wire
C/B:	Close Boarded
C/BARRIER:	Crash Barrier
C/L:	Chain Link
C/P:	Chestnut Paling
C/I:	Corrugated Iron
I/R:	Iron Railing
MISC:	Miscellaneous
P/R:	Post & Rail
P/W:	Post & Wire
P/C:	Post & Chain
S/PAL:	Steel Palisade
W/M:	Wire Mesh

Survey Notes:
Coordinates and Levels related to Ordnance Survey Datum - GPS OSGB36

Revision	Date	Description

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Client
MSV Housing Group

Project
Westwood St/Raby St, Manchester (Site 3)
Utility GPR Survey

Scale 1:200	Surveyed By CW	Date 09.05.23
Drawing No. 090523CW-01	Checked By VW	Date 14.05.23
	Drawn By CW	Date 14.05.23