



48 Norman Road

Flood Risk Assessment

Job Number: 1156

Date	Version	Notes/Amendments
December 2021	1	For Information

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Figure 1. Site Location

Figure 2. Existing and Proposed development

Figure 3. Environment Agency Flood Risk from Rivers or Sea Map (gov.uk, 2021)

Figure 4. Environment Agency - Product 4 Information (EA, 2021)

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Figure 6. Environment Agency Flood Risk from Surface Water Map (gov.uk, 2021)

Figure 7. Environment Agency Flood Risk from Reservoirs Map (gov.uk, 2021)

Acronyms	
AOD	Above Ordnance Datum
CIRIA	Construction Industry Research and Information Association
EA	Environment Agency
FRA	Flood Risk Assessment
NPPF	National Planning Policy Framework
PPG	Planning Practice Guidance

Introduction

Flume Consultants have been appointed to undertake a Flood Risk Assessment for the proposed development at 48 Norman Road, Manchester, M14 5LE.

This FRA has been carried out in accordance with the National Planning Policy Framework (NPPF) and the Planning Practice Guidance 'Flood Risk and Coastal Change'. This FRA also incorporates advice and guidance from the Environment Agency (EA), the Strategic Flood Risk Assessment (SFRA) produced by Manchester City Council and CIRIA documents.

The Environment Agency's (EA) indicative floodplain map shows that the site is located in Flood Zone 2, in an area which also benefits from flood defences. Our assessment will therefore focus on the flood risk to the site from watercourses as well as from other sources.

Site Description and Location

The development is located to the south side of Norman Road, and comprises of an existing residential two storey building of traditional brick build with pitched tiled roof. Hardstanding areas surround the building including a number of car parking spaces,. Vehicular and Pedestrian access are from the north of the site from Norman Road.

The Chorlton Platt Gore, a largely culverted section of watercourse which runs south of the development, and is the source of the fluvial flood risk to the development.

The site postcode is M14 5LE and the OS grid reference is SJ 85601 94863.



FIGURE 1. SITE LOCATION

Development Proposal

The proposed development is for the construction of a rear extension and conversion of the existing development to facilitate an additional dwelling - Figure 2.

The proposals do not increase the amount of hardstanding areas. Pedestrian and Vehicular access from Norman Road is unaffected.



FIGURE 2. EXISTING AND PROPOSED DEVELOPMENT

Flood Risk Assessment

Flood Risk from Watercourses

The EA's indicative floodplain map shows that the site is located in Flood Zone 2 and is at risk of flooding from the Chorlton Platt Gore, and as such the Local Planning Authority has requested a site specific Flood Risk Assessment to be carried out. Land in this flood zone is assessed as having annual probability of river flooding of between 0.1% and 1%. The EA's indicative fluvial/tidal flood risk maps, Figure 3, suggest that the site is located in an area which benefits from flood defences however the EA's website also states that not all defences are shown on the map.

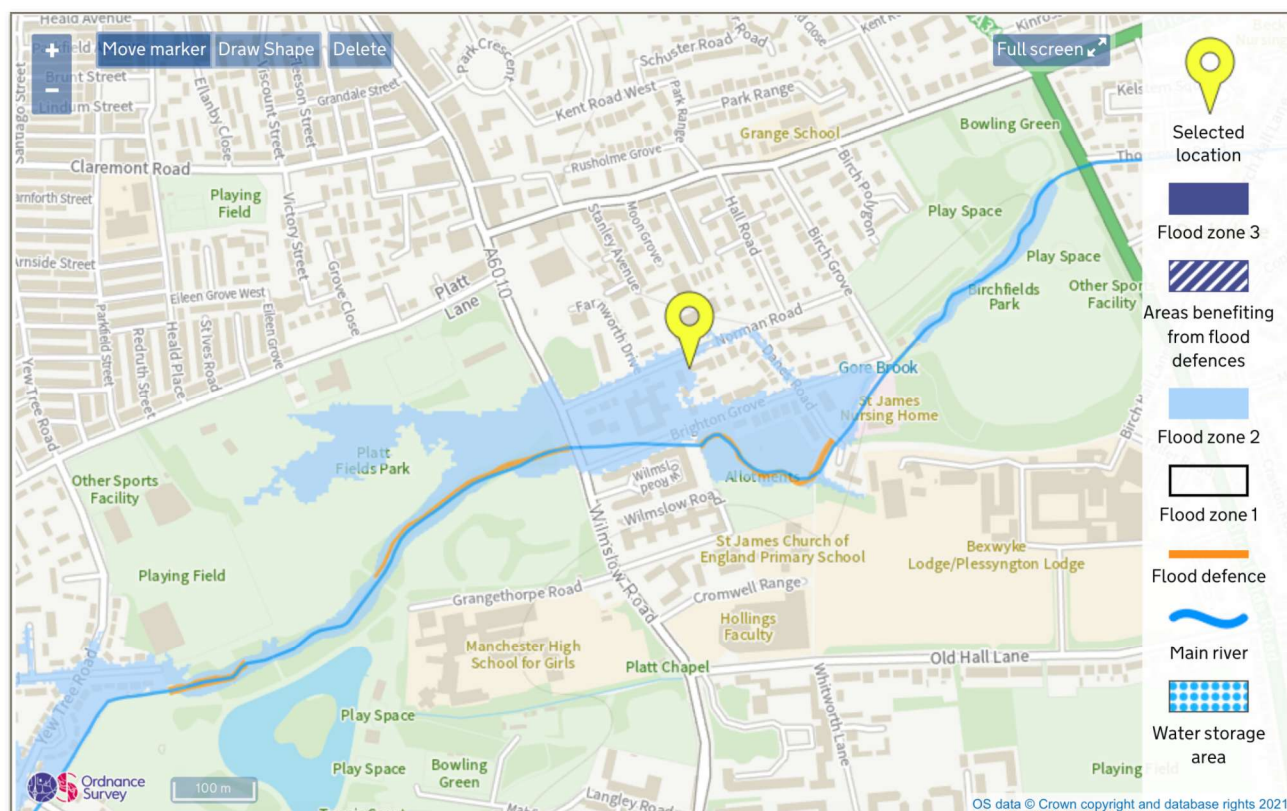
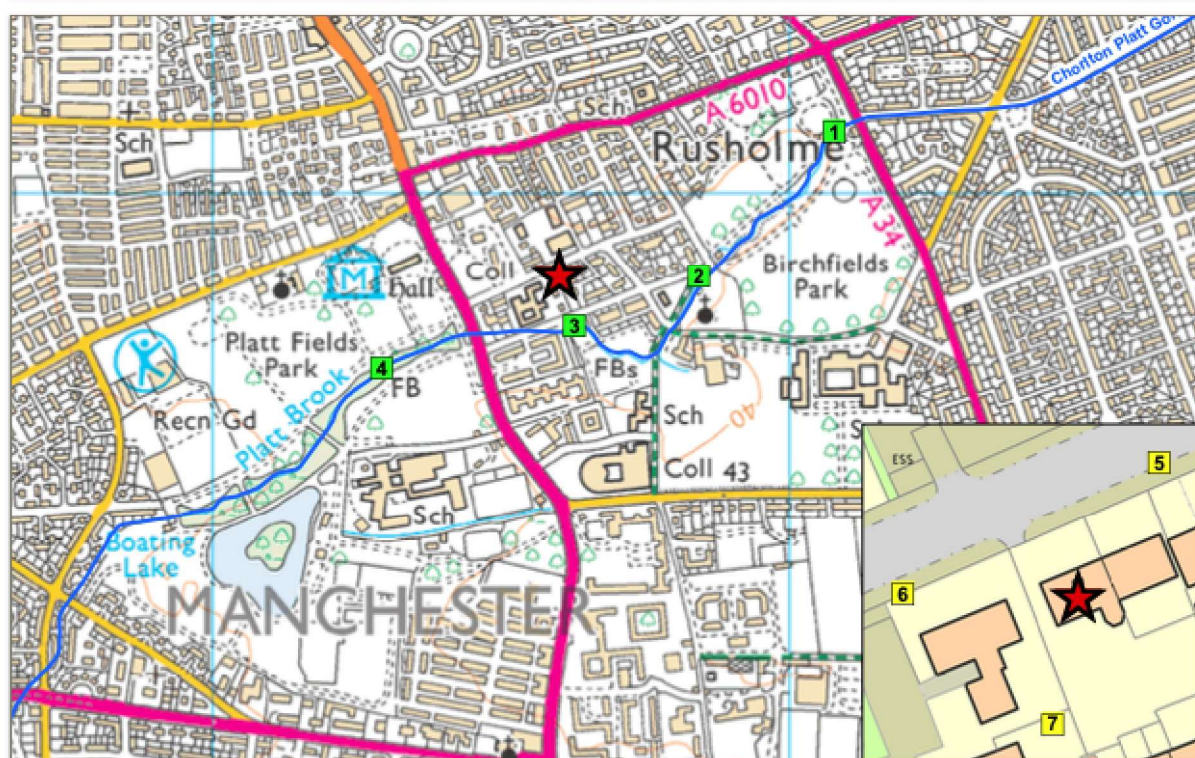
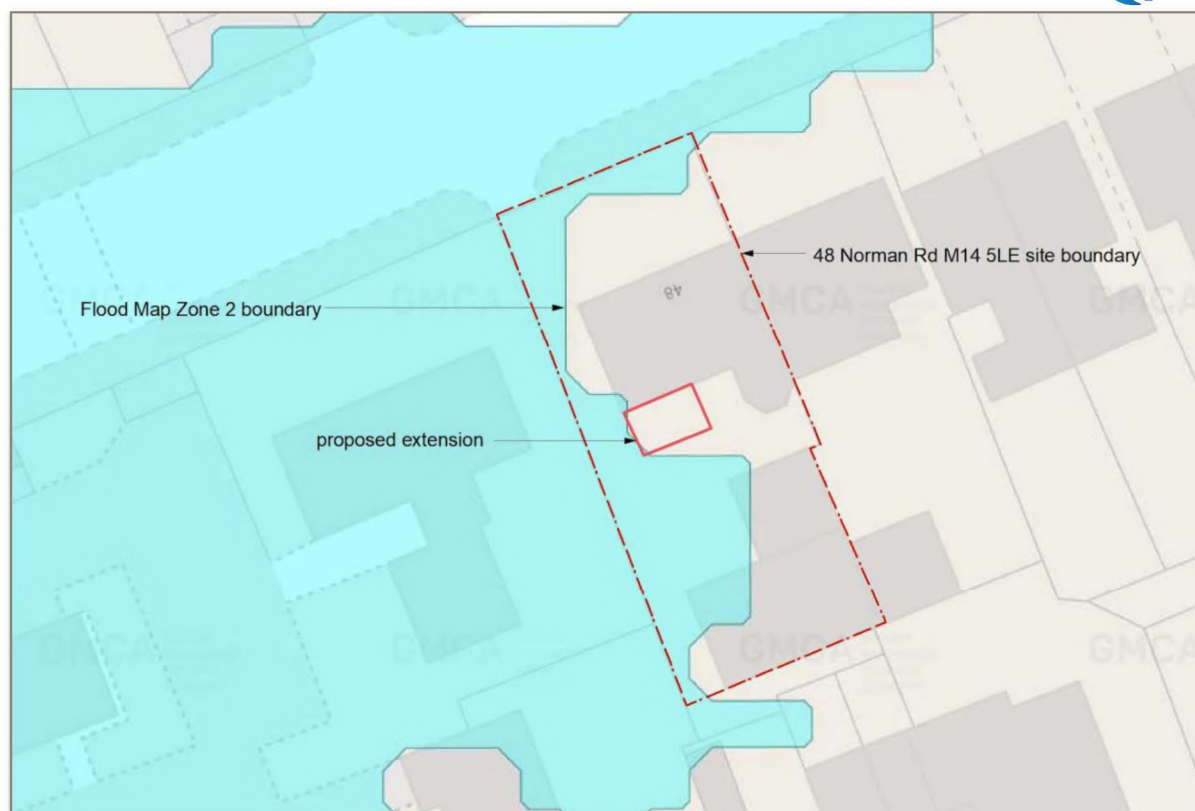


FIGURE 3. ENVIRONMENT AGENCY FLOOD RISK FROM RIVERS OR SEA MAP (GOV.UK, 2021)



		Undefended		Defended	
		1 % AEP (1 in 100 year) + 70% Increase flow	0.1 % AEP (1 in 1000 year)	1 % AEP (1 in 100 year) + 70% Increase flow	0.1 % AEP (1 in 1000 year)
5	2D Measurement	38.51	38.56	38.51	38.57
6	2D Measurement	38.44	38.49	38.44	38.50
7	2D Measurement	38.66	38.70	38.66	38.70

FIGURE 4. ENVIRONMENT AGENCY - PRODUCT 4 INFORMATION (EA, 2021)

As can be seen in Figure 4, the outline of Flood Zone 2 resides outside the existing and proposed building footprint. Therefore, the actual risk of fluvial flooding to the building is low, as the footprint of the building resides outside the floodplain.

Flood Risk from Groundwater

Flooding from groundwater typically occurs following prolonged periods of wet weather within low laying areas underlain by permeable aquifers. When aquifers are fully saturated, flooding at surface level can occur from the sub-surface strata.

The SFRA's Flood Risk from Groundwater maps indicate the site does not reside in a region of increased potential for elevated groundwater, Figure 5.

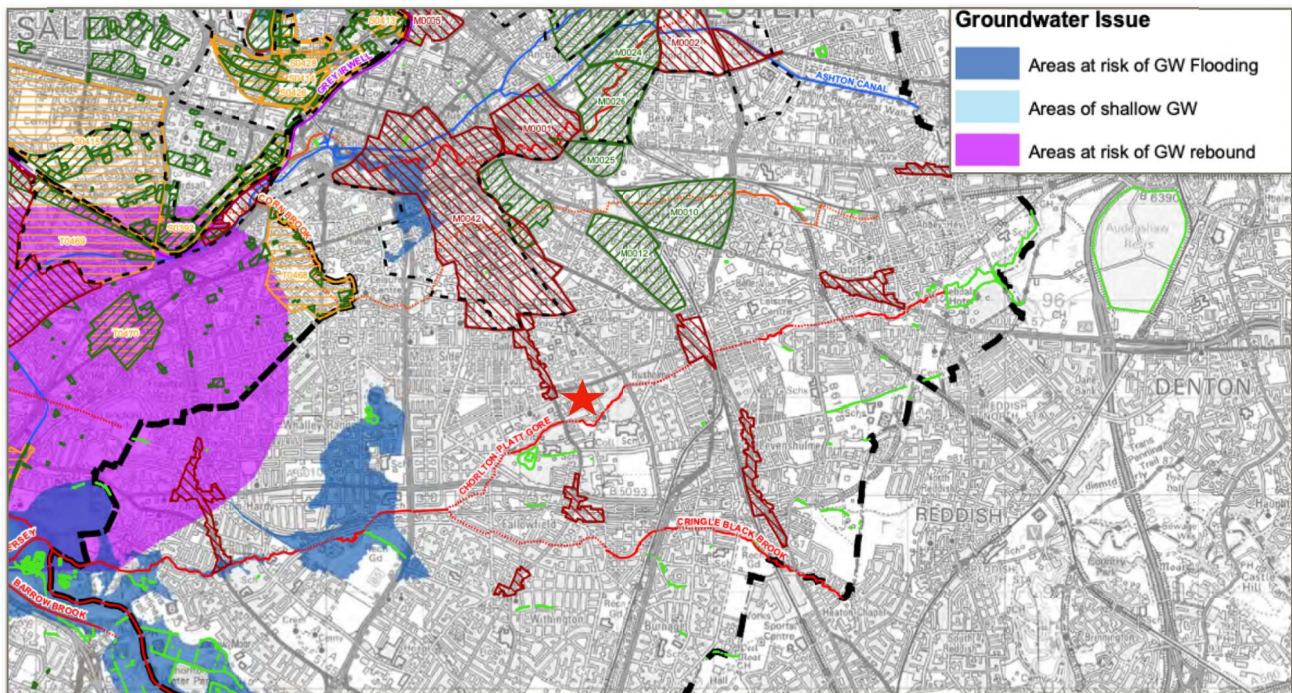


FIGURE 5. FLOOD RISK FROM GROUNDWATER MAP (SFRA, 2011)

Furthermore, Groundwater flooding is an important consideration for subterranean basements. However, no basements are proposed in this instance, and no change in FFLs will be introduced. Therefore, the likelihood of groundwater flooding is considered to be low risk.

Flood Risk from Surface Water and Overland Flows

Surface water flooding occurs when intense rainfall is unable to infiltrate into the ground or overwhelms the drainage system. This surface water runs across the surface of the ground causing flooding. Overland flows can also be generated by burst water mains, failed dams and any failure in a system storing or transferring water.

The EA's indicative Surface Water Flooding Map, Figure 6, shows that the site is at *Very Low* risk of surface water flooding, with very small patches of Low surface water flood risk within the site boundary and predominantly along Norman Road and the footpath within the public domain.

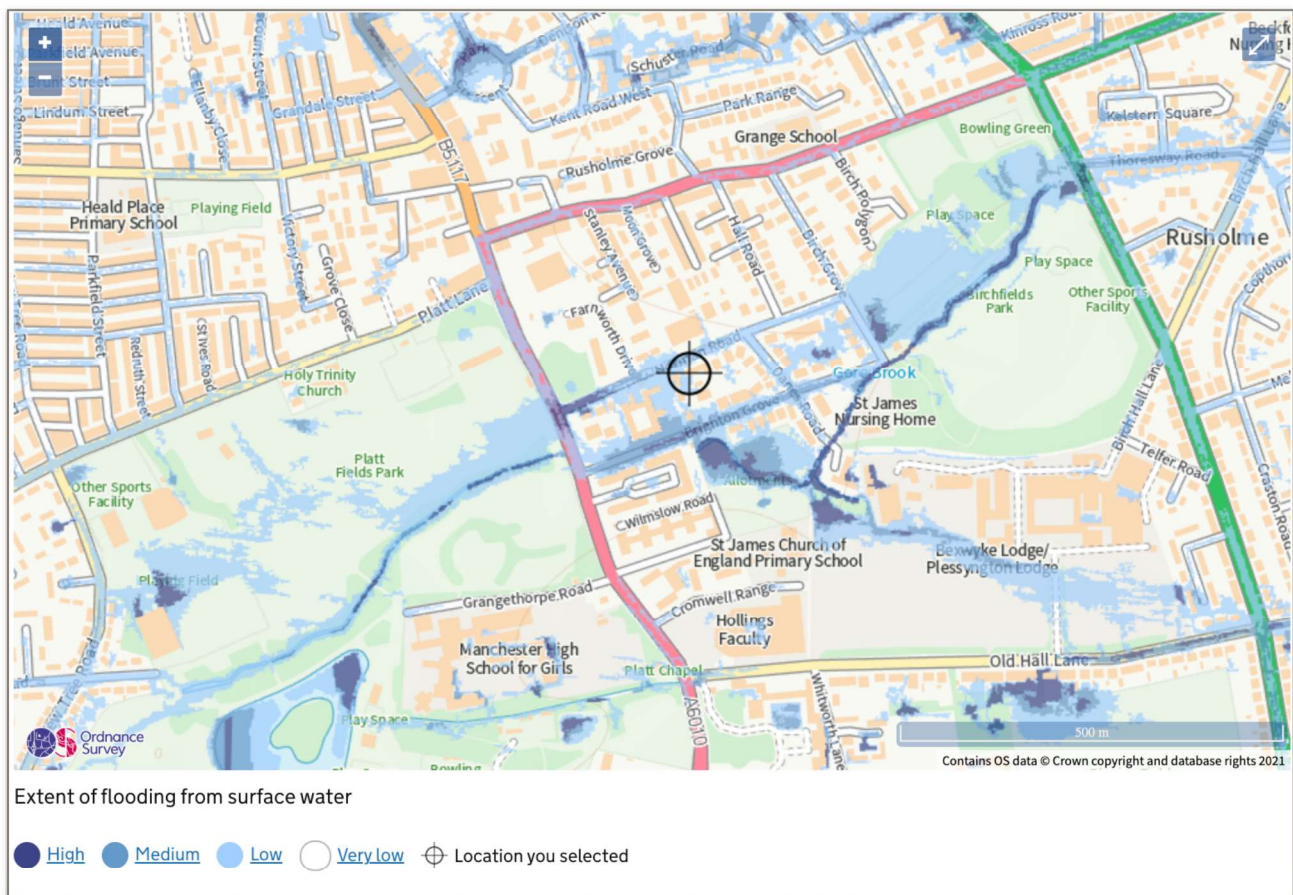


FIGURE 6. ENVIRONMENT AGENCY FLOOD RISK FROM SURFACE WATER MAP (GOV.UK, 2021)

As part of the extension, permeable paving and other SuDS features should be promoted within the design. External ground levels immediately outside of the building will fall away from the building thresholds, ensuring the minimisation of storm water ingress. This can be achieved by either reducing the external ground levels below internal floor levels, and/or incorporating channel drainage system along the entrance into the building to positively drain overland flows.

Therefore, the likelihood of surface water flooding is considered to be low risk.

Flood Risk from Reservoir and Infrastructure Failure

The EA's information states that reservoir flooding is extremely unlikely to happen and there has been no loss of life in the UK from reservoir flooding since 1925. The Reservoir Act of 1975 ensures that reservoirs are inspected regularly and essential safety work is carried out.

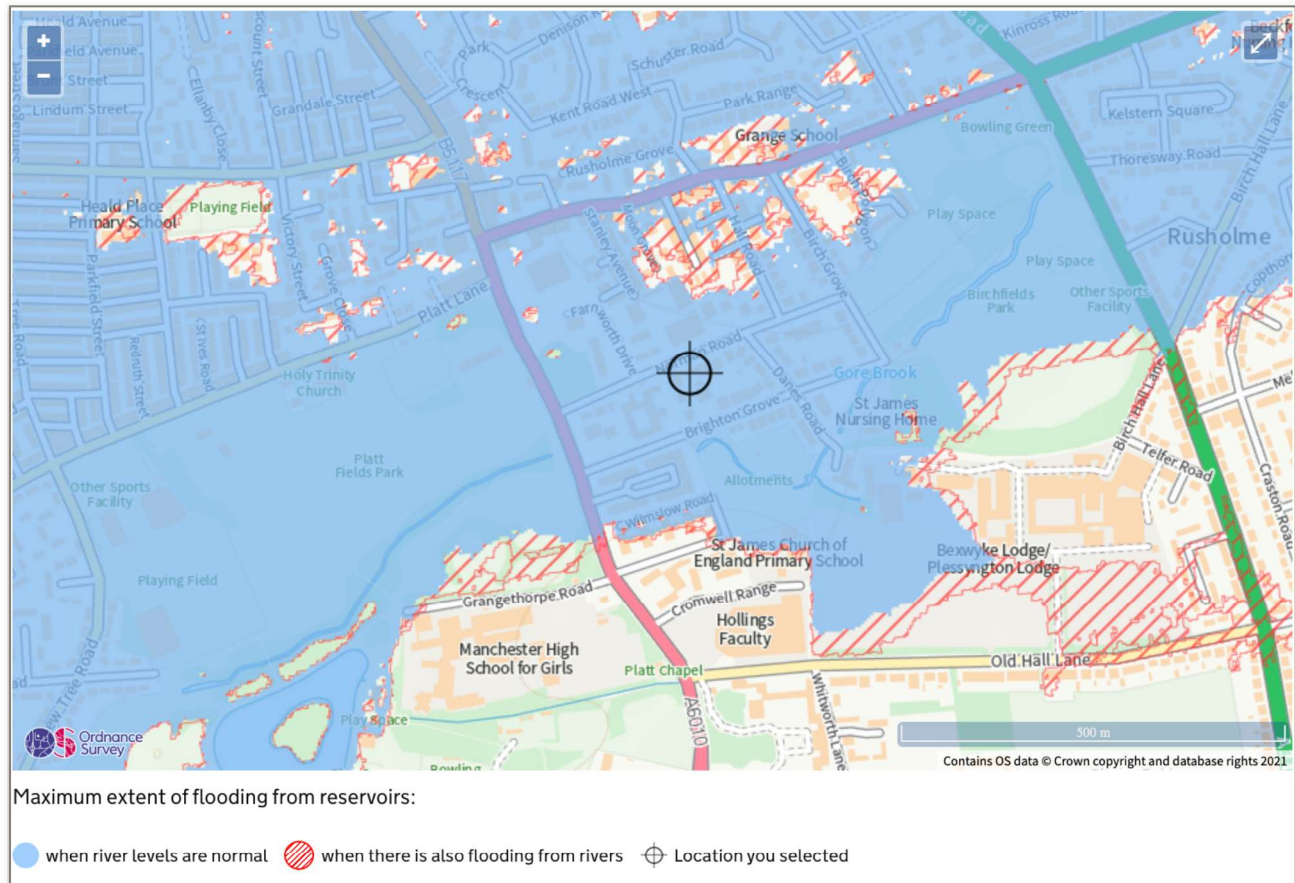


FIGURE 7. ENVIRONMENT AGENCY FLOOD RISK FROM RESERVOIRS MAP (GOV.UK, 2021)

The Environment Agency dataset '*Risk of Flooding from Reservoirs*' identifies areas that could be flooded if a large reservoir was to fail and release the water it holds. The site is identified as having the potential to be inundated should a reservoir fail (Figure 7).

Reservoirs in the UK have an extremely good safety record. The Environment Agency is the enforcement authority for the Reservoirs Act 1975 in England and Wales. All large reservoirs must be inspected and supervised by reservoir panel engineers. It is assumed that these reservoirs are regularly inspected and essential safety work is carried out. These reservoirs therefore present a minimal risk.

Flood Mitigation Measures

The NPPF encourages developers to undertake a 'Sequential Approach' in the planning process for new developments. This is the process of ensuring that sensitive or vulnerable areas of the new building or development are located outside the areas of greatest risk, and into regions which are subject to the lowest risk of flooding. The proposed development adheres to this approach. The ground floor of the extension will also be used for living space only, and will not be used for sleeping accommodation. The development does not increase the vulnerability classification of the development, and designed to ensure that the building footprint is located outside the floodplain extents - as is shown in Figure 4.

Given the proposals are to construct an extension to the existing building, it is proposed that the Finished Floor Level (FFL) of the new ground floor extension remains the same as the existing building's ground floor FFLs. These proposals are in accordance with the EA's Standing Advice¹, which states that if floor levels cannot be raised above the estimated flood level, you need to consider extra flood resistance and resilience measures. However, to further reinforce the flood resilience of the building, any construction works at ground level should include an appropriate damp proof membrane. Furthermore, it is proposed flood resilient² materials will be used for flooring and on the walls up to minimise the potential for damage, in the unlikely event of flood water inundating the building footprint. Finally, all drainage systems should be routinely maintained to reduce the risk of blockage and surface water flood risk, with external ground levels immediately outside the building set to fall away from the building thresholds, ensuring the minimisation of storm water ingress. If this is not possible, channel drainage along the building thresholds at the entrance should be introduced to positively drain overland flows.

¹ <https://www.gov.uk/guidance/flood-risk-assessment-standing-advice>

² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7730/flood_performance.pdf

Conclusions

The EA's flood risk from watercourses map shows that the site is in Flood Zone 2. However, the footprint of both the existing and proposed buildings resides outside the extents of the floodplain. In accordance with the EA's Standing Advice, it is proposed that the FFL of the new ground floor extension will remain the same as the existing ground floor FFLs, or higher. Flood resilience measures will be incorporated within this new extension.

The proposed extension will not increase the impermeable areas on the site, as the external area is currently hardstanding. It will therefore not increase the flood risk from surface water, as there will be no increase in the surface water run-off rate or volumes.

If not already listed, it is recommended that the property is registered with the EA's Flood Warning Service.

The FRA has further demonstrated that the proposed development has an acceptable flood risk within the terms and requirements of the NPPF and accompanying technical guidance.

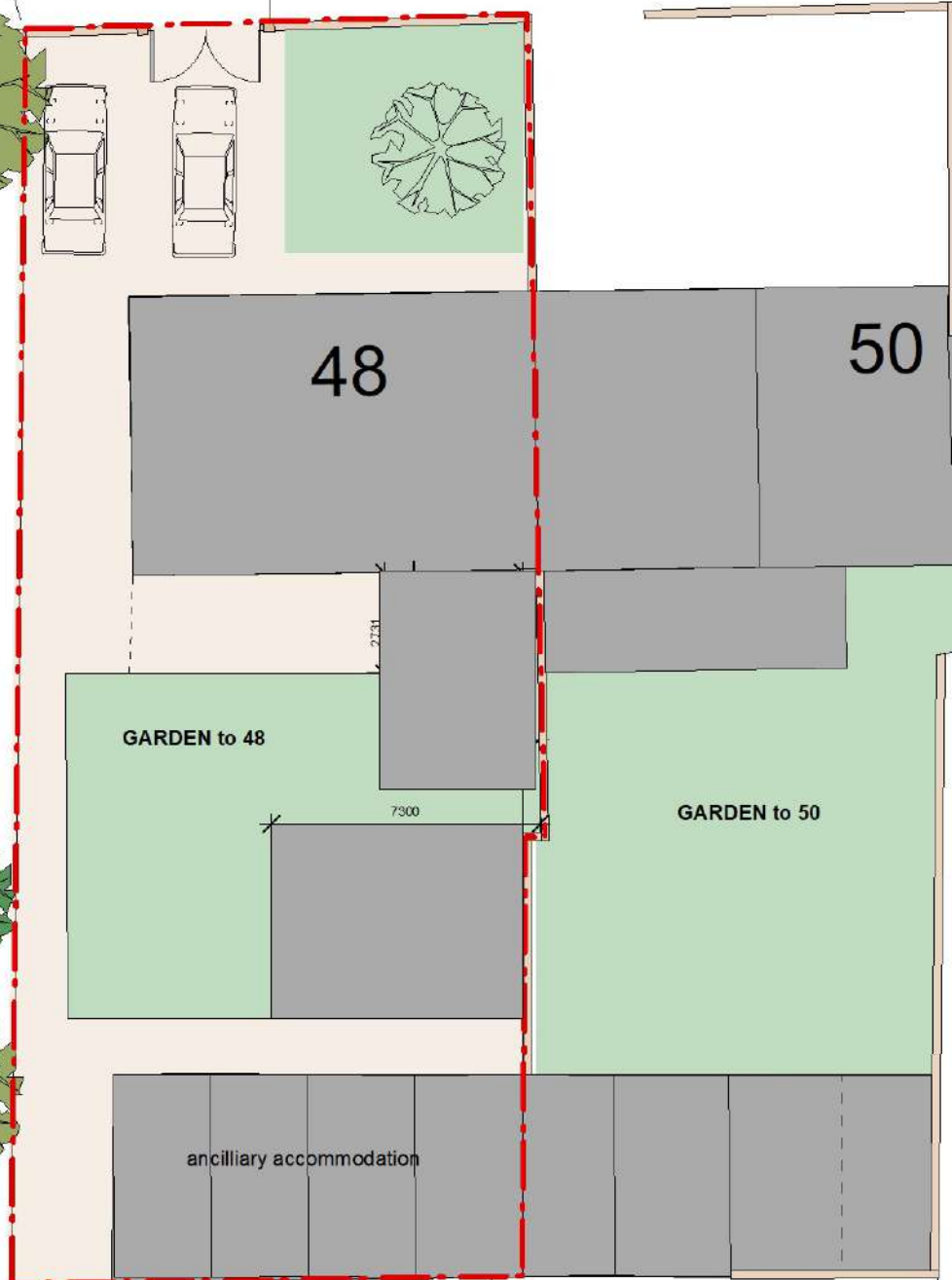
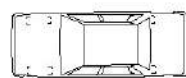
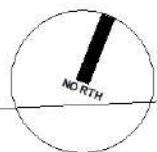
Note:

This report has been prepared for the purposes of submitting for planning to the local planning authority for review, in relation to the associated flood risk for the proposed development and uses the most up-to-date information available to us at the time. It should not be relied upon by anyone else or used for any other purpose. This report is confidential to our Client; it should only be shown to others with their permission. We retain copyright of this report which should only be reproduced with our permission.

	Prepared By	Checked By	Approved for issue
Name	Tom Quigg BSc MSc CEng MICE	Magaly Sedeño BA	Tom Quigg BSc MSc CEng MICE
Signature			
Date	17 December 2021	17 December 2021	17 December 2021

Appendix A - Proposed Architectural Plans

NORMAN ROAD



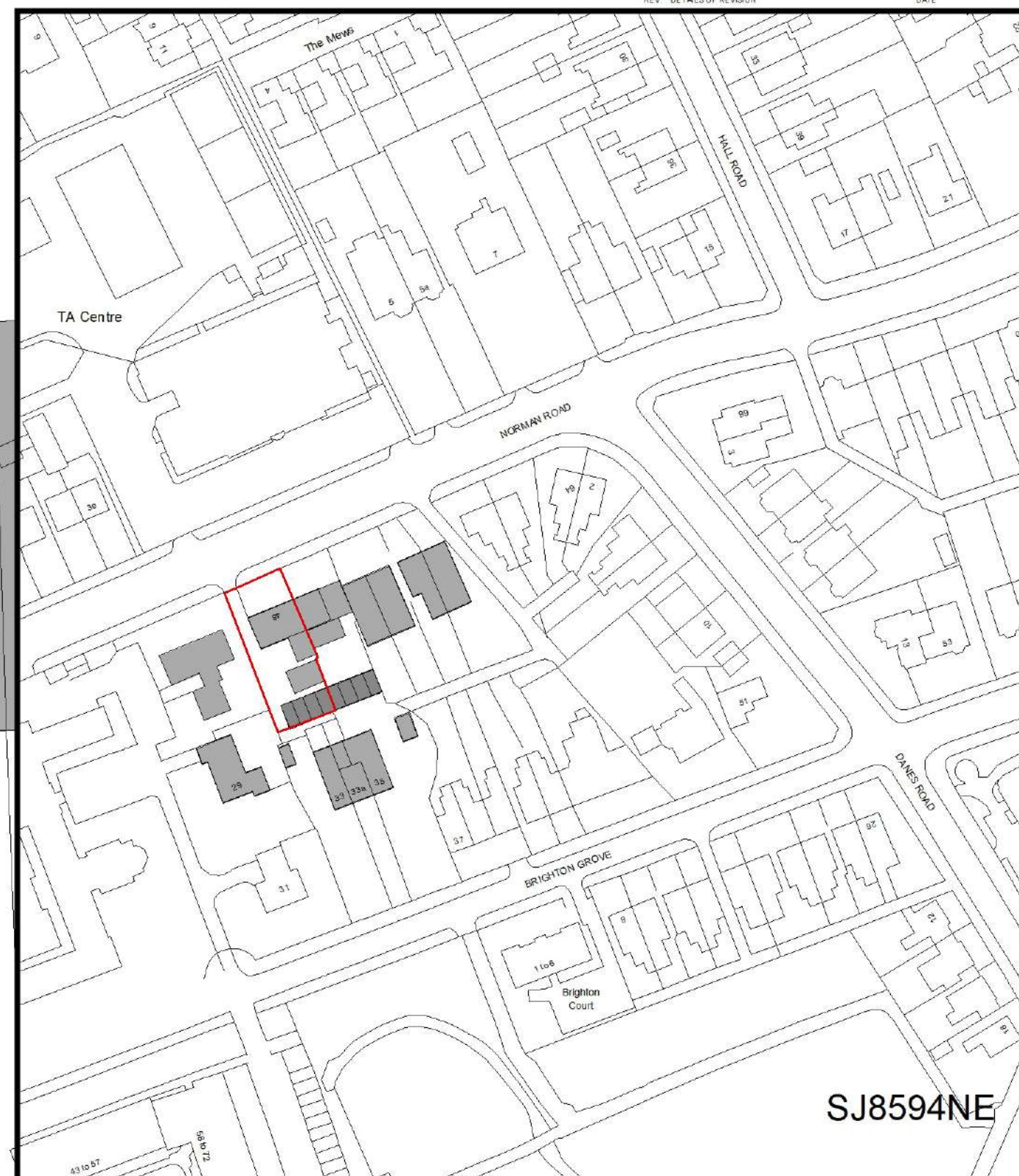
SITE PLAN AS EXISTING 1 : 200

All Dimensions should be checked on site.
Do not scale this drawing for fabrication.
Any drawing errors should be brought to the attention of the architect.
COPYRIGHT DaC Design

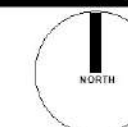
REVISIONS

REV: DETAILS OF REVISION

DATE



LOCATION PLAN 1:1250



0m 4m 8m 10m
SCALE

P01

DRAWING: LOCATION & EXISTING SITE PLAN

JOB TITLE: Remodel and Conversion to two dwellings _ 48 Norman Road, M14 5LE

CLIENT: Mr H RAHMAN

SCALE: 1:1250 & 1:200 @ A3

DATE: Oct 2021

DaC DESIGN
ARCHITECTURE & PLANNING
0776 452 3545 0161 425 3934

All Dimensions should be checked on site.
Do not scale this drawing for fabrication.
Any drawing errors should be brought to the attention of the architect.
COPYRIGHT DaC Design

REVISIONS

REV	DETAILS OF REVISION	DATE
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GARDEN to 50

50

48

5962.5

4017
LOUNGE

3431

2926

CONSERVATORY

3200

Ancillary
accommodation

Ancillary
accommodation

2731

6000

2125
HALL

5671

KITCHEN

4637

UTILITY

1946

5226.4

2750

GARDEN to 48

NORTH

SCALE

P02

DRAWING: EXISTING GROUND FLOOR PLAN

JOB TITLE: Remodel and Conversion to two dwellings _ 48 Norman Road, M14 5LE

CLIENT: Mr H RAHMAN

SCALE: 1:100 @ A3

DATE: OCT 2021

D@C DESIGN
ARCHITECTURE & PLANNING
0776 452 3545 0161 425 3934

All Dimensions should be checked on site.
Do not scale this drawing for fabrication.
Any drawing errors should be brought to the attention of the architect.
COPYRIGHT DaC Design

REVISIONS:

REV. DETAILS OF REVISION DATE

50

GARDEN to 50

48a

140L Recycling bins

240L Recycling bins

LOUNGE 3431

CONSERVATORY

KITCHEN

HALL

WC

3600 TERRACE

Ancillary accommodation demolished

Existing ancillary accommodation

WC

KITCHEN

LOUNGE

6841

4840

Garden

Existing ancillary accommodation

2750

TERRACE

8080

GROUND FLOOR PLAN

2no 3 Bed houses - no.48 at 86m2 (4 person)
no.48a at 103m2 (6person)

NORMAN ROAD

P06

DRAWING: GROUND FLOOR PLAN as PROPOSED

JOB TITLE: Remodel and Conversion to two dwellings _ 48 Norman Road, M14 5LE

CLIENT: Mr H RAHMAN

SCALE: 1:100 @ A3

DATE: OCT 2021

D@C DESIGN
ARCHITECTURE & PLANNING
0776 452 3545 0161 425 3934

Appendix B - Environment Agency Flood Information (Product 4)

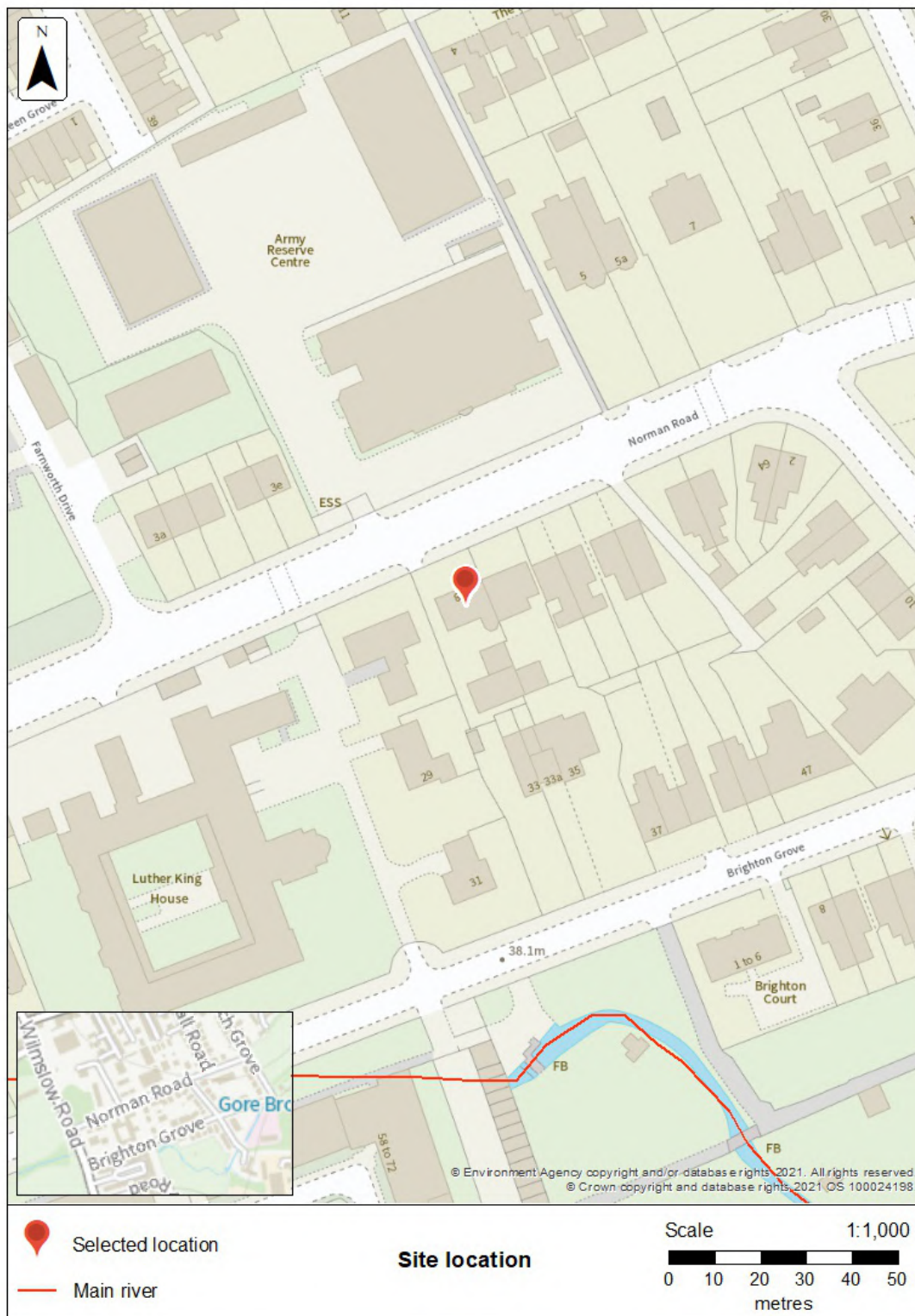
Flood risk assessment data

Location of site: 385607 / 394862 (shown as easting and northing coordinates)

Document created on: 24 November 2021

This information was previously known as a product 4.

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)
- flood defences and attributes
- modelled 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:

- historic flooding

We do not have historic flooding data for this location. 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.

There is not any modelled climate change data for this location. This is because detailed modelling hasn't been carried out in this area. You will need to consider the [latest flood risk assessment climate change allowances](#) and factor in the new allowances to demonstrate the development will be safe from flooding.

Surface water and other sources of flooding

Use the [long term flood risk service](#) to find out about the risk of flooding from:

- surface water
- ordinary watercourses
- reservoirs

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

About the models used

Model name: Chorlton Platt Gore 2012
Scenario(s): Defended & Undefined fluvial
Date: 16 March 2012

These models contain 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 occurring 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 development is in flood zone 1.

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

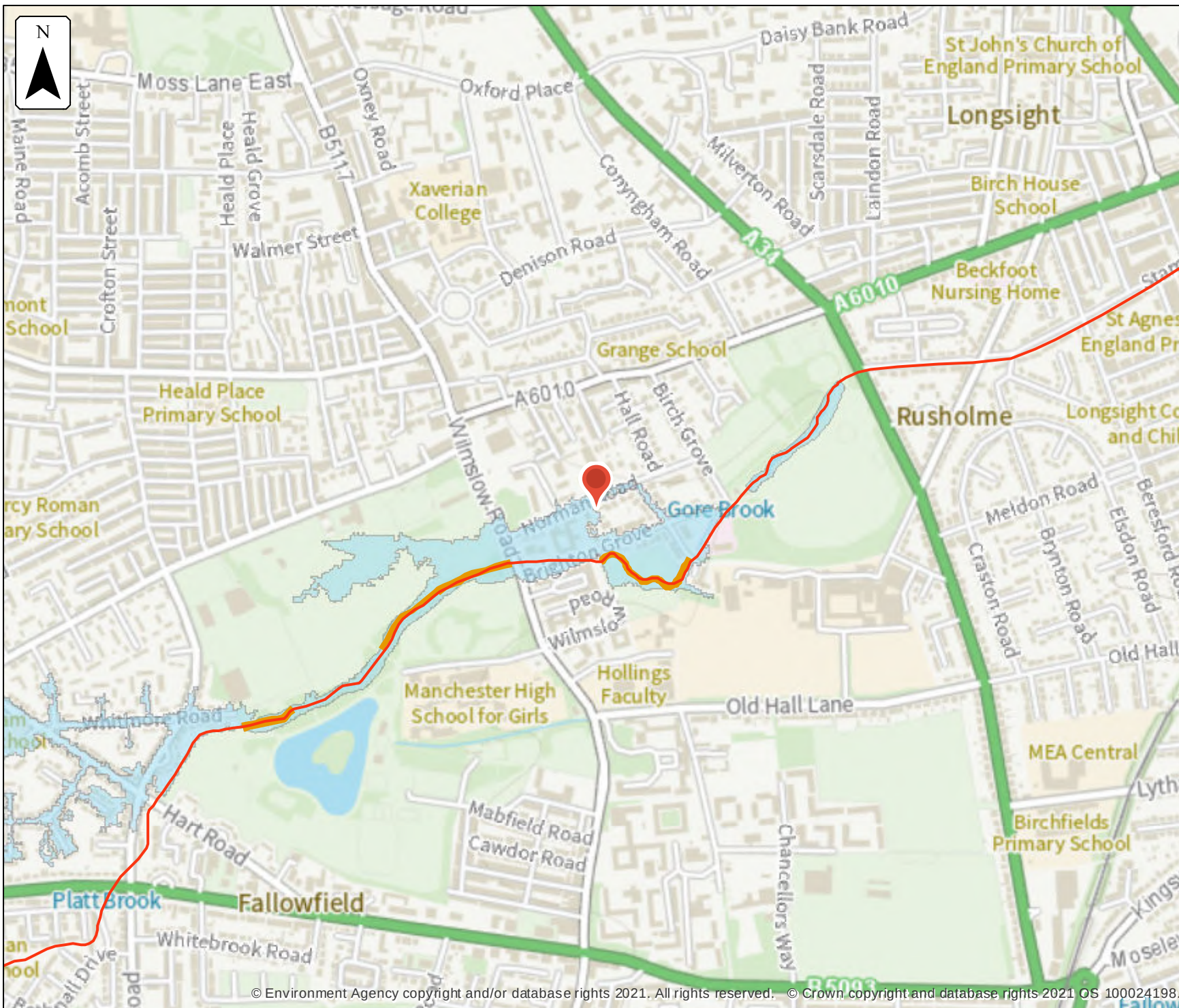
Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

- 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

This data is updated on a quarterly basis as better data becomes available.



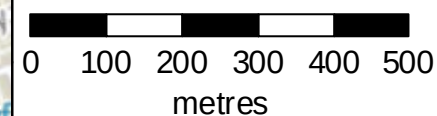
Flood map for planning

Location (easting/northing)
385607/394862

Scale
1:10,000

Created
24 Nov 2021

-  Selected location
-  Main river
-  Flood defence
-  Flood zone 2

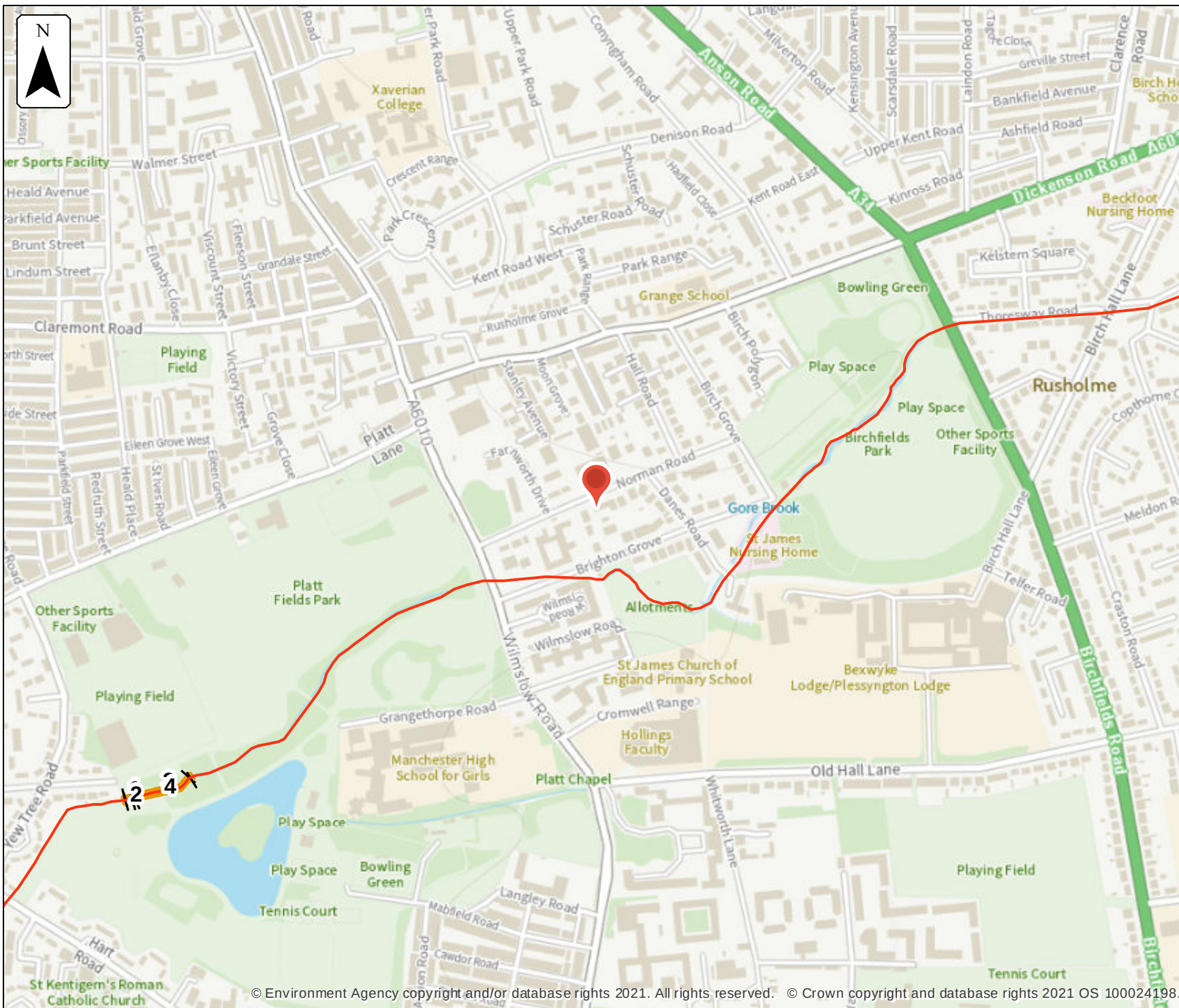


Flood defences and attributes

The flood defences map shows the location of the flood defences present.

The flood defences data table shows the type of defences, their condition and the standard of protection. It shows the height above sea level of the top of the flood defence (crest level). The height is in mAOD which is the metres above the mean sea level at Newlyn, Cornwall.

It's important to remember that flood defence data may not be updated on a regular basis. The information here is based on the best available data.



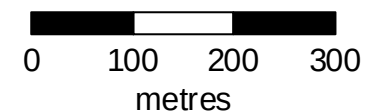
Flood defences

Location (easting/northing)
385607/394862

Scale
1:7,500

Created
24 Nov 2021

-  Selected location
-  Main river
-  Flood defence



Flood defences data

Label	Asset ID	Asset Type	Standard of protection (years)	Current condition	Downstream actual crest level (mAOD)	Upstream actual crest level (mAOD)	Effective crest level (mAOD)
1	32543	wall	100	Fair	35.74	35.76	
2	32516	wall	100	Fair	35.75	35.75	
3	120657	embankment	100	Fair	36.29	36.27	
4	59791	wall	100	Fair	36.03	36.07	

Any blank cells show where a particular value has not been recorded for an asset.

Modelled data

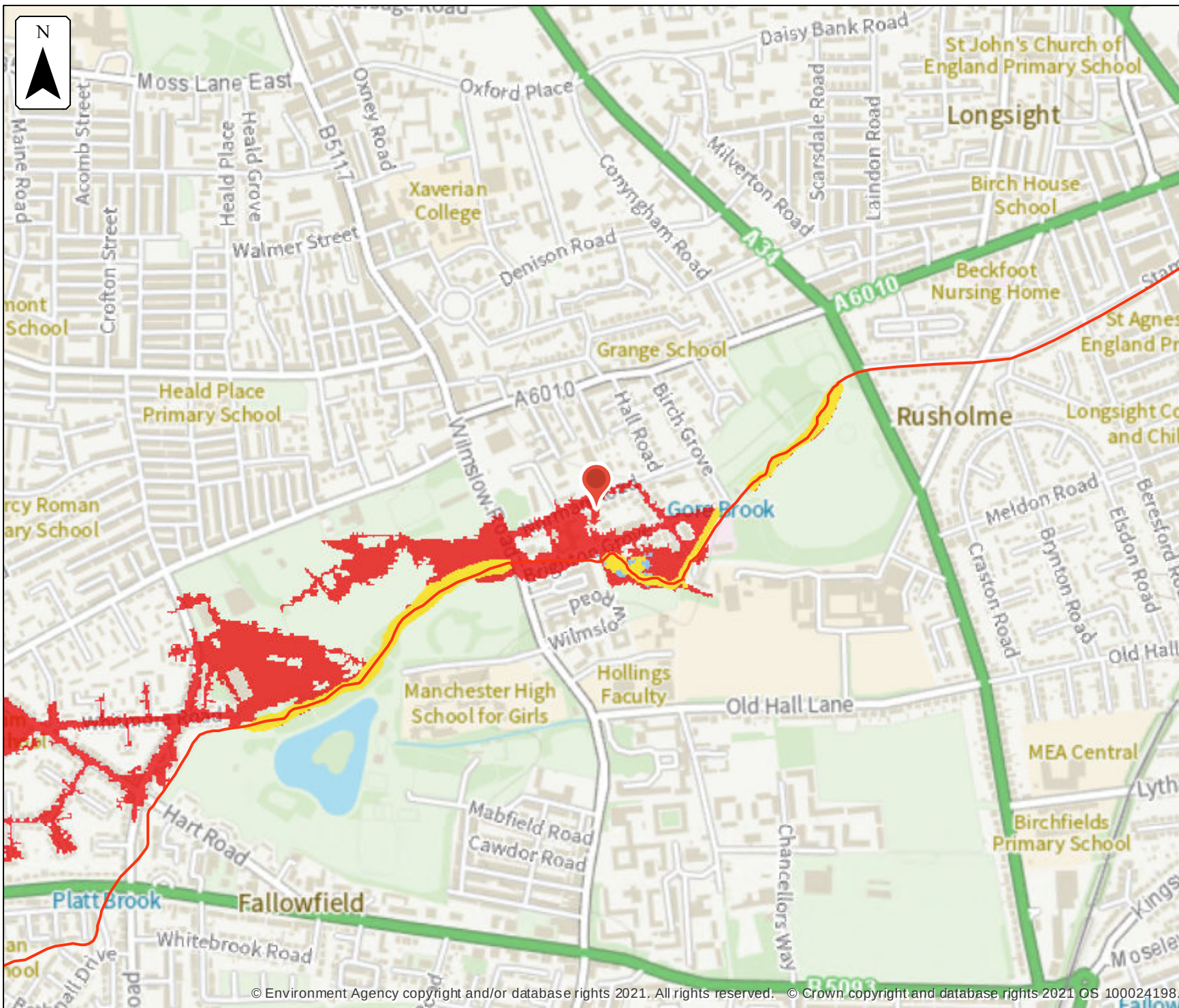
This section provides details of different scenarios we have modelled and includes the following (where available):

- outline maps showing the area at risk from flooding in different modelled scenarios
- modelled node point map showing the points used to get the data to model the scenarios
- node point tables providing details of the flood risk for different return periods

Modelled scenario maps

Maps for the following scenarios are included:

- Defended modelled fluvial extent: shows a representation of the area at risk of flooding from rivers where there are flood defences
- No defences exist modelled fluvial extent: shows a representation of the area at risk of flooding from rivers where there are no flood defences



Defended modelled fluvial extent

Location (easting/northing)
385607/394862

Scale **1:10,000** Created **24 Nov 2021**

Model name
CHOP 2012 D

 Selected location

 Main river

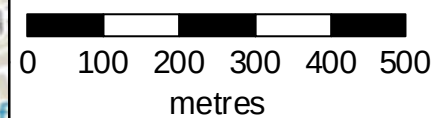
Modelled flood extent

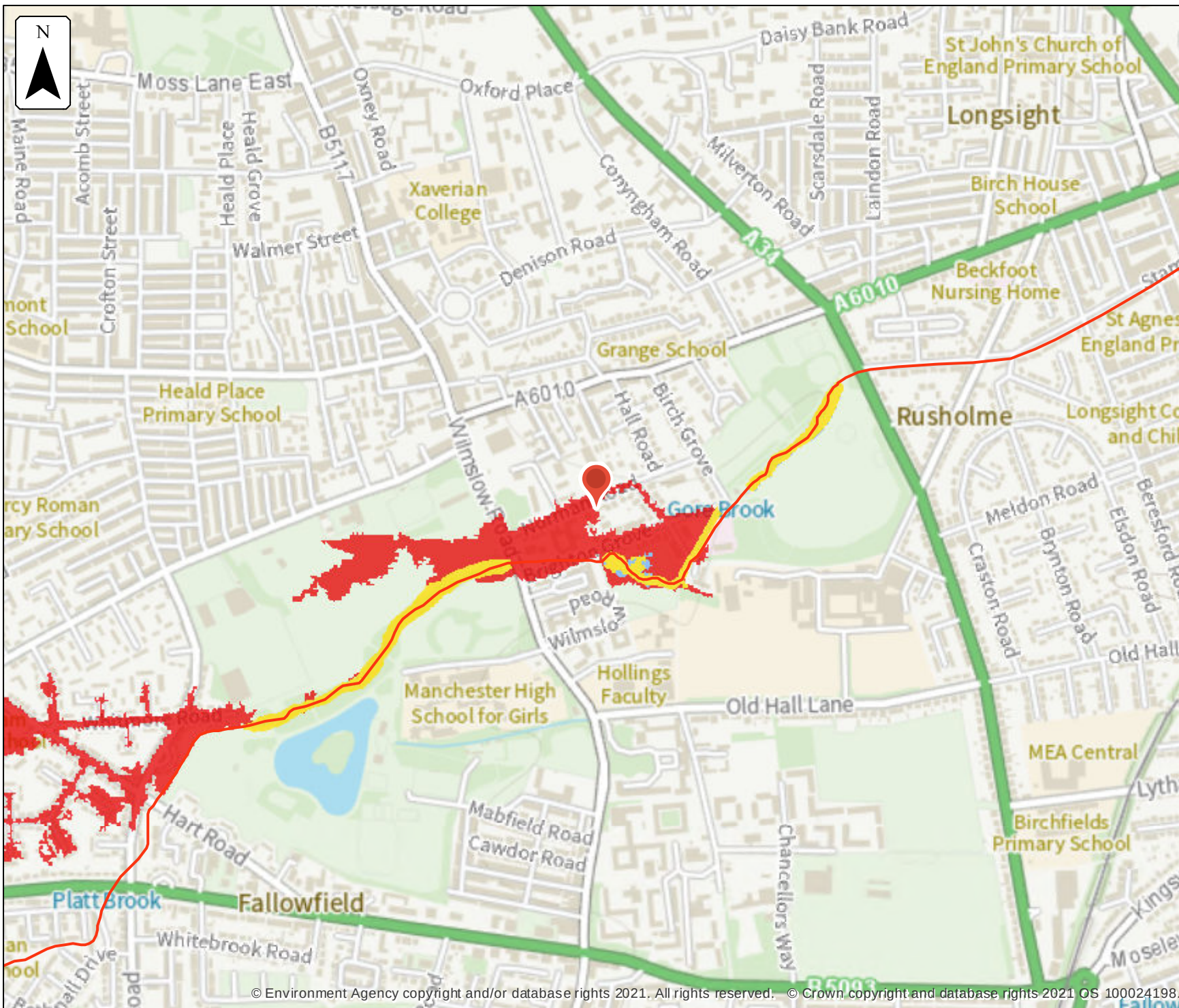
 0.1% AEP

 1% AEP

 1.33% AEP

Flood extents may not be visible where they overlap other return periods





No defences exist modelled fluvial extent

Location (easting/northing)
385607/394862

Scale Created
1:10,000 24 Nov 2021

Model name
CHOP 2012 U

 Selected location

 Main river

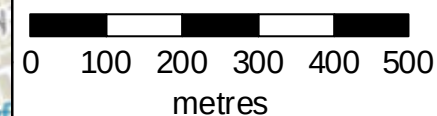
Modelled flood extent

 0.1% AEP

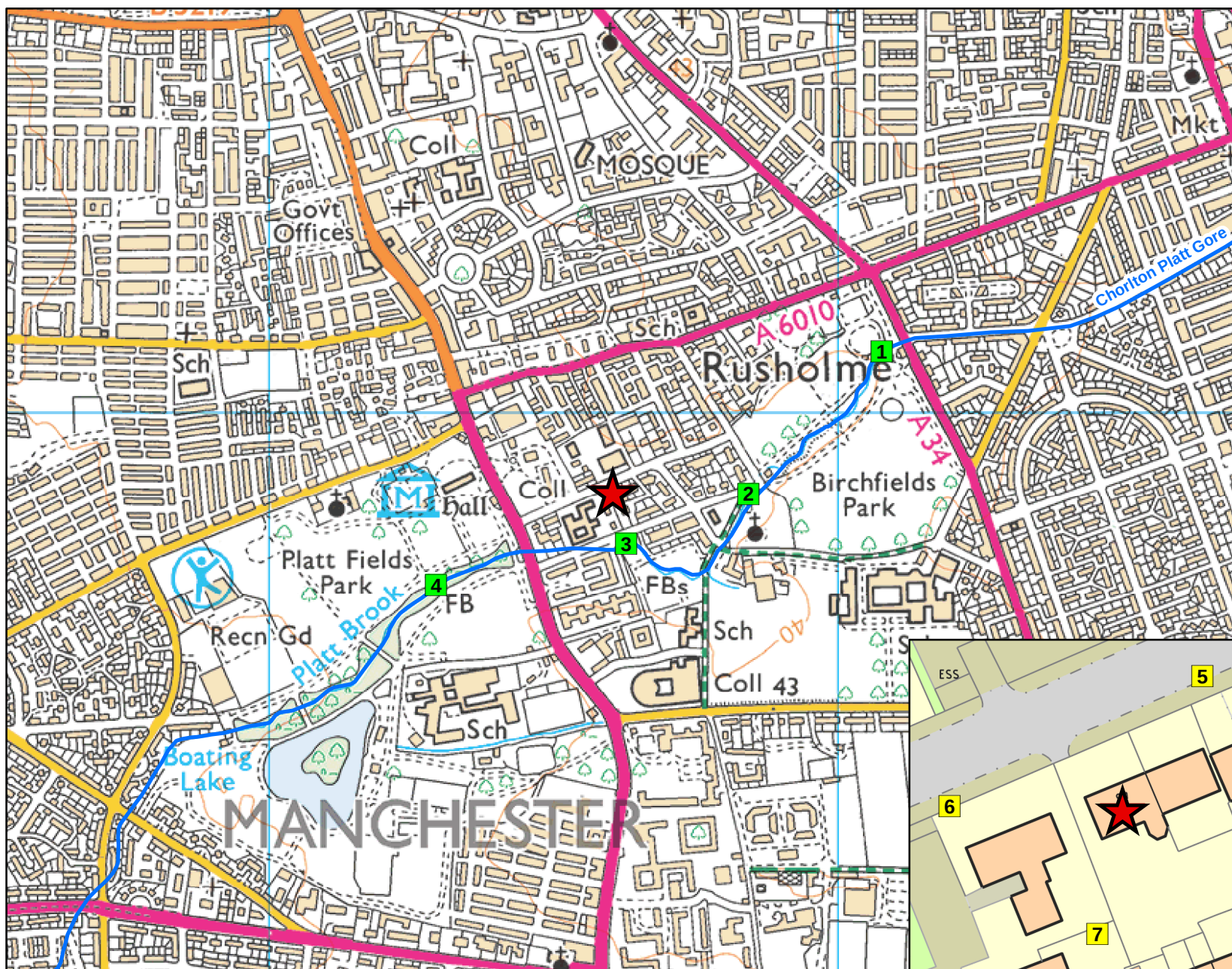
 1% AEP

 1.33% AEP

Flood extents may not be
visible where they overlap
other return periods



Model Measurement Map centred on Norman Road, Manchester, M14 5LE. Created on 24/11/2021 [GMMC241922SW]



1:10,001



Legend

-  Site Location
-  Model Measurements
-  2D Measurements
-  Main River

Map Reference	Model Node Reference	Easting	Northing	Data	Undefended								Defended									
					10 % AEP (1 in 10 year)	4 % AEP (1 in 25 year)	1.33 % AEP (1 in 75 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year) + 30% increase flow	1 % AEP (1 in 100 year) + 35% increase flow	1 % AEP (1 in 100 year) + 70% increase flow	0.1 % AEP (1 in 1000 year)	10 % AEP (1 in 10 year)	4 % AEP (1 in 25 year)	1.33 % AEP (1 in 75 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year) + 30% increase flow	1 % AEP (1 in 100 year) + 35% increase flow	1 % AEP (1 in 100 year) + 70% increase flow	0.1 % AEP (1 in 1000 year)		
1	CHOP02_1531d	386081	395107	Modelled Water Level (m aodN)	38.87	39.01	39.21	39.25	39.62	39.70	39.99	40.05	38.87	39.01	39.21	39.25	39.62	39.70	39.99	40.05		
				Modelled Flow (cumecs)	4.61	6.43	8.47	8.90	11.10	11.45	13.58	13.97	4.61	6.43	8.47	8.90	11.10	11.45	13.59	13.98		
2	CHOP02_1169d	385847	394855	Modelled Water Level (m aodN)	37.91	38.23	38.72	38.81	39.38	39.47	39.71	39.73	37.91	38.23	38.72	38.81	39.38	39.47	39.71	39.73		
				Modelled Flow (cumecs)	4.80	6.66	8.72	9.11	11.30	11.65	14.09	14.96	4.80	6.66	8.72	9.11	11.31	11.65	14.10	14.97		
3	CHOP02_084d	385632	394768	Modelled Water Level (m aodN)	36.96	37.31	37.68	37.78	38.74	38.84	39.03	39.04	36.96	37.31	37.68	37.78	38.74	38.84	39.03	39.04		
				Modelled Flow (cumecs)	5.82	8.07	10.60	11.02	11.26	11.28	11.29	11.16	5.82	8.07	10.60	11.02	11.26	11.28	11.29	11.16		
4	CHOP02_0487	385297	394698	Modelled Water Level (m aodN)	34.69	34.88	35.10	35.14	35.35	35.39	36.29	36.52	34.69	34.88	35.10	35.14	35.35	35.39	36.51	36.68		
				Modelled Flow (cumecs)	5.86	8.12	10.66	11.21	13.91	14.14	17.57	18.92	5.86	8.12	10.66	11.21	13.91	14.14	17.51	18.78		
5	2D Measurement	385619	394884	Modelled Water Level (m aodN)								38.51	38.56								38.51	38.57
6	2D Measurement	385579	394862	Modelled Water Level (m aodN)								38.44	38.49								38.44	38.50
7	2D Measurement	385603	394841	Modelled Water Level (m aodN)								38.66	38.70								38.66	38.70

Model data taken from Choriton Platt Gore 2012

AEP - Annual Exceedence Probability

m aodN - metres above ordnance datum Newlyn

cumecs - cubic metres per second

Notes: *Climate Change Scenario - 30%, 35% and 70% increases in flow calculated for the 2080's (2070 - 2115). Please see <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances> for more information regarding the new climate change guidance. The location of the site and the type (vulnerability) of development determine the climate change allowances to consider in any flood risk assessment.

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

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