



Flood risk, water and environment

Flood Risk Assessment AEG0826_M14_Manchester_01

Site Address: 1B Waverton Road
Manchester
M14 7EB

UK Experts in Flood Modelling, Flood Risk
Assessments, and Surface Water Drainage Strategies



Flood risk, water and environment

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Project: Flood Risk Assessment

Prepared for: Alina Raina

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Site Location: 1B Waverton Road, Manchester, M14 7EB

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Summary

Development Description	Existing	Proposed
Development Type	A Residential Dwelling	A single storey extension to the current residential dwelling to provide greater habitable space.
EA Vulnerability Classification	More Vulnerable	More Vulnerable
Ground Levels	Elevation on site ranges from 32.04m AOD to 32.38m AOD.	No change. FFLs of proposed extension should be set no lower than existing FFLs in line with EA Standing Advice for Minor Developments.
Level of Sleeping Accommodation	First floor	No change (First floor)
Surface Water Drainage	N/A ¹	Runoff from extension could be discharged via existing system given that proposal is Minor Development. Betterment could be provided through small-scale SuDS such as rainwater planters and water butts.
Site Size	515m ²	No change
Risk to Development	Summary	Comment
EA Flood Zone	Flood Zone 2	
Flood Source	Fluvial and Pluvial	Site is located in Flood Zone 2, affected solely by the 0.1% AEP modelled fluvial flood event, and within the extents of the 0.1% AEP pluvial flood event.
SFRA Available	Manchester SFRA (2010/2011)	
Management Measures	Summary	Comment
Ground floor level above extreme flood levels	N/A ²	Finished Floor Levels (FFLs) of extension should be set no lower than the existing FFLs in line with EA Standing Advice for Minor Developments
Safe Access/Egress Route	N/A ²	Access/ egress arrangements would not differ from existing as proposal is Minor Development.
Flood Resilient Design	Yes	Extension should be constructed in flood resilient manner in accordance with CLG Report Improving the Flood Performance of New Buildings - Flood Resilient Construction ¹ (2007).
Site Drainage Plan	N/A ¹	Runoff from extension could be discharged via existing system given that proposal is Minor Development. Betterment could be provided through small-scale SuDS such as rainwater planters and water butts.

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https://assets.publishing.service.gov.uk/media/602d673ee90e0709e8d085d8/Improving_the_Flood_Resilience_of_Buildings_Through_Improved_Materials_Methods_and_Details_Technical_Report.pdf

Flood Warning & Evacuation Plan	N/A ¹	Access/ egress arrangements would not differ from existing as proposal is Minor Development. Sign up to the EA Flood Warning and Alert service available in this location (Chorlton and Platt Brooks at Whalley Range and Chorlton-cum-Hardy).
Offsite Impacts	Summary	Comment
Displacement of floodwater	Negligible	Proposal is Minor Development which may not result in significant impact of floodplain storage in isolation in accordance with paragraph 051 of the PPG Flood Risk and Coastal Change
Increase in surface run-off generation	N/A ¹	Runoff from extension could be discharged via existing system given that proposal is Minor Development. Betterment could be provided through small-scale SuDS such as rainwater planters and water butts.
Impact on hydraulic performance of channels	No	Site is not within the vicinity of any EA Main Rivers or ordinary watercourses.

¹ not required for this assessment

² data not available.

1. Introduction

- 1.1. Aegaea were commissioned by Alina Raina to undertake a Flood Risk Assessment (FRA) to facilitate a planning application for the proposed development. This FRA has been prepared in accordance with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance.
- 1.2. This FRA is intended to support a full planning application and as such the level of detail included is commensurate and subject to the nature of the proposals.

Site Overview

- 1.3. The site of the proposed development is 1B Waverton Road, Manchester, M14 7EB (Figure 1).

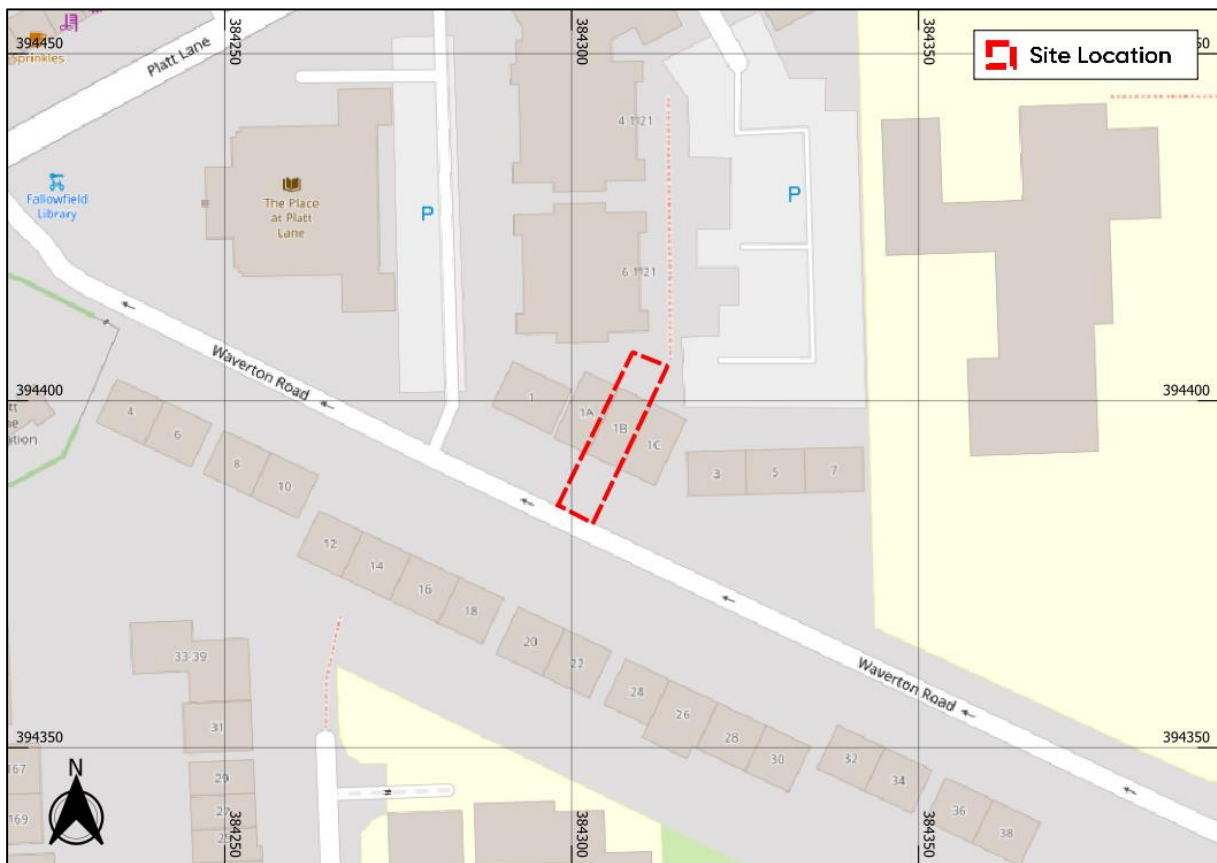


Figure 1: Site Location (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors.)

- 1.4. The proposed development is for the construction of single storey rear extension to provide greater habitable space.
- 1.5. In the absence of a topographical survey, Environment Agency Light Detection and Ranging (LiDAR) data Digital Terrain Model (1m resolution) has been utilised to review the topography of the site (Figure 2). The site elevations are shown to range from 32.04m AOD to 32.38m AOD.

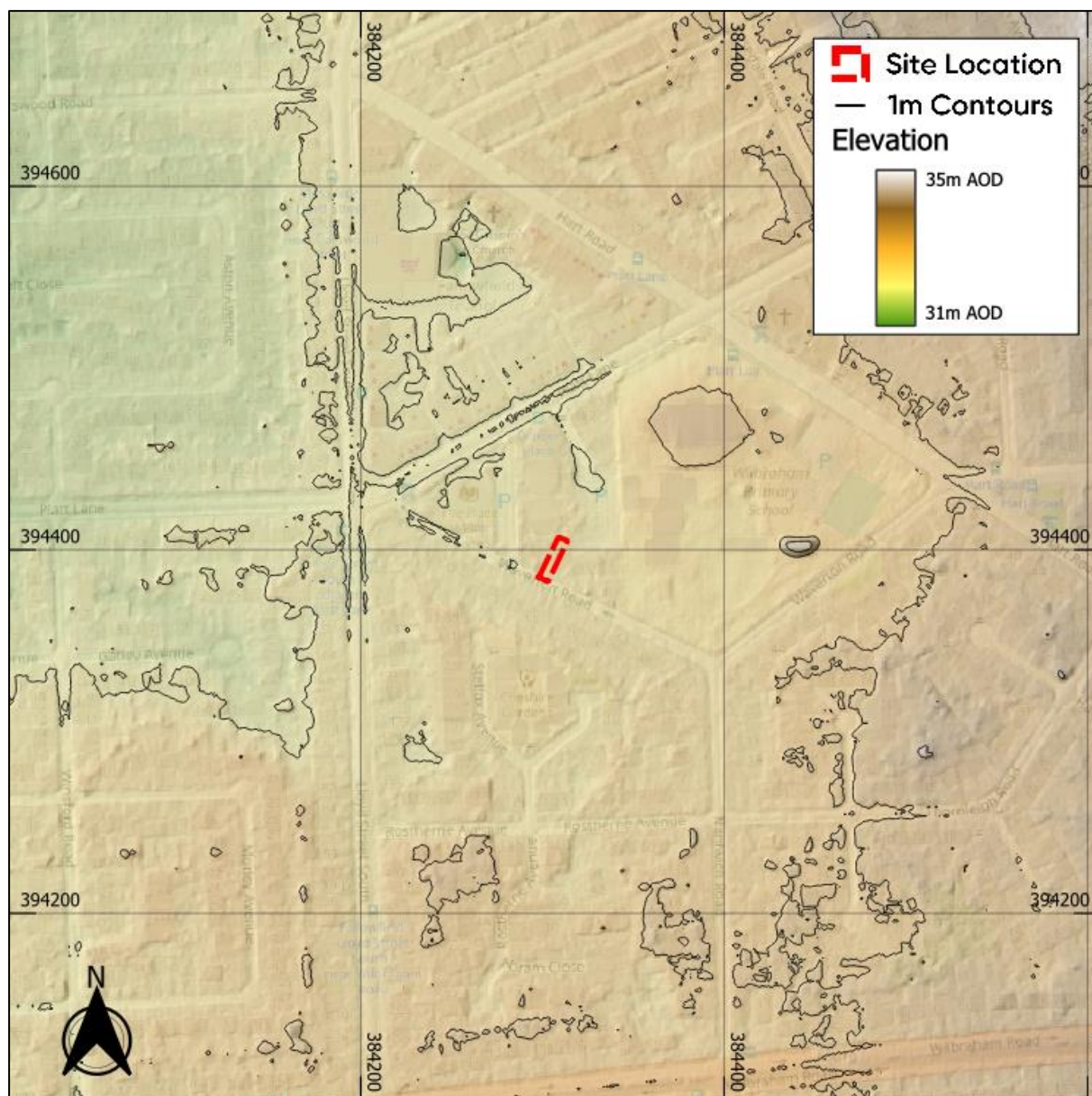


Figure 2: Site Topography (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors.)

- 1.6. Manchester City Council is the Local Planning Authority (LPA) for the site, and also the designated Lead Local Flood Authority (LLFA). The site sits within the Environment Agency's Greater Manchester Merseyside and Cheshire region.

Planning Policy and Guidance

1.7. UK government planning guidance states² that an FRA is required for sites which are:

- *In Flood Zone 2 or 3 including minor development (in terms of flood risk) and change of use*
- *More than 1 hectare in Flood Zone 1*
- *Less than 1 ha in Flood Zone 1, including a change of use in development type to a more vulnerable class (for example from commercial to residential), where they could be affected by sources of flooding other than river and the sea (for example surface water drains or reservoirs)*
- *In an area within Flood Zone 1 which has critical drainage problems as notified by the Environment Agency*

1.8. The site is located within Flood Zone 2 and therefore an FRA is required in accordance with the NPPF.

1.9. The objective of this FRA is to demonstrate that the proposals are acceptable in terms of flood risk. This report summarises the findings of the study and specifically addresses the following issues in the context of the current legislative regime:

- Fluvial flood risk
- Surface water flood risk
- Risk of flooding from other sources

² <https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications#when-you-need-an-assessment>

2. Planning Policy

National Planning Policy Framework

- 2.1. Inappropriate development in a flood risk area could pose significant risk in terms of personal safety and damage to property for the occupiers of the development or for people elsewhere. The approach taken in the assessment of flood risk at the planning stage is set out in national, regional, and local planning policy and associated guidance. This section summarises the key policies and guidance relevant to the proposed development.
- 2.2. The National Planning Policy Framework³ (NPPF) (DLUHC, 2021) which includes UK Government policy on development and flood risk states:

“159. Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere.

167. When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:

- a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;*
- b) the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;*
- c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;*
- d) any residual risk can be safely managed; and*
- e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan.*

168. Applications for some minor development and changes of use should not be subject to the sequential or exception tests but should still meet the requirements for site-specific flood risk assessments set out in footnote 55. “

- 2.3. Paragraph 051 of the Flood Risk and Coastal Change Planning Practice Guidance (PPG) states:

³ <https://www.gov.uk/guidance/national-planning-policy-framework>, last updated July 2021

Minor development means:

- *minor non-residential extensions (industrial/commercial/leisure etc): extensions with a floorspace not in excess of 250 square metres.*
- *alterations: development that does not increase the size of buildings, e.g. alterations to external appearance.*
- *householder development: for example, sheds, garages, games rooms etc within the curtilage of the existing dwelling, **in addition to physical extensions to the existing dwelling itself**. This definition excludes any proposed development that would create a separate dwelling within the curtilage of the existing dwelling (eg subdivision of houses into flats) or any other development with a purpose not incidental to the enjoyment of the dwelling.*

2.4. As such, the proposal would be considered a Minor Development under the PPG.

2.5. Footnote 55 of the NPPF states:

“A site-specific flood risk assessment should be provided for all development in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.”

2.6. Flood Zones in England are defined as follows:

Table 1: Flood Zone Definitions

Flood Zone	Definition
Zone 1 Low Probability	Land having less than 1 in 1,000 annual probability of river or sea flooding (all land outside Zones 2 and 3).
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding.
Zone 3b The Functional Floodplain	This zone comprises land where water from rivers or the sea has to flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. Functional floodplain will normally comprise:

land having a 3.3% or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively; or

land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability of flooding).

Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

- 2.7. An FRA should be appropriate to the scale, nature, and location of the development. It should identify and assess the risk from all sources of flooding to and from the development and demonstrate how any flood risks will be managed over the lifetime of the development.

Sequential and Exception Tests

- 2.8. The Sequential and Exception Tests are applied in specific cases defined by UK Government policy. Their purpose is to drive development to areas of low flood risk and to support developments which improve flood risk for developments in areas at risk of flooding.
- 2.9. Under the NPPF all new planning applications should undergo a Sequential Test unless a minor development or a change of use application in accordance with paragraph 168 and footnotes 55 and 56.
- 2.10. As such, a site-specific Sequential Test and Exception Test for the proposed developments is not considered necessary given that the proposal is for a Minor Development (in terms of flood risk).

Local Plan

- 2.11. The Local Plan prepared by the Local Planning Authority, Manchester City Council, sets out the policies for development in the local area. This is titled the 'Core Strategy Development Plan Document'⁵ (2012).
- 2.12. Policy EN 14 relates to flood risk. It states:

- *In line with the risk-based sequential approach contained within PPS25, development should be directed away from sites at the greatest risk of flooding, and towards sites with little or no risk of flooding; this should take account of all*

⁵ Manchester Local Plan, https://www.manchester.gov.uk/info/200074/planning/6573/core_strategy_2012-2027, 2012

sources of flooding identified in the Manchester-Salford-Trafford Strategic Flood Risk Assessment (SFRA).

- *In addition to the requirements for site-specific Flood Risk Assessments (FRAs) set out in PPS25, an appropriate FRA will also be required for all development proposals, including changes of use, on sites greater than 0.5ha within Critical Drainage Areas (CDAs) and Canal Hazard Zones identified in the SFRA.*
- *All new development should minimise surface water run-off, including through Sustainable Drainage Systems (SUDS) and the appropriate use of Green Infrastructure. Developers should have regard to the surface water run-off rates in the SFRA User Guide. In CDAs, evidence to justify the surface water run-off approach / rates will be required.*
- *The City of Manchester contains many sections of rivers which are culverted or 'hidden'; where these are indicated in the SFRA beneath the proposed development site, further investigation will be required and the development proposal should take this into account; where feasible and appropriate development should seek to open up culverted/hidden rivers to reduce the associated flood risk and danger of collapse, taking advantage of opportunities to enhance biodiversity and Green Infrastructure.*

Summary

- 2.13. This flood risk assessment has been prepared with due consideration to the above local and national policy.

3. Consultation and Review

Consultation

- 3.1. The site is within the remit of Environment Agency's Greater Manchester Merseyside and Cheshire region. A data request was submitted for the site and the information provided has been used throughout this report and is included in Appendix B.

Sources of Information

Documents

- 3.2. Local Governments and Lead Local Flood Authorities provide documents which contain data and policies on flood risk and new development in their areas. These documents are introduced and briefly summarised below. For the purposes of this FRA, these documents have been reviewed for relevant information and any relevant data is discussed within the appropriate sub heading of this report.
- 3.3. The following sources of information have been reviewed for this assessment:
- The Interactive Flood Risk Mapping available on the Environment Agency (EA) website⁶.
 - The National Planning Policy Framework (NPPF) technical guide (Communities and Local Government, 2019).
 - British Geological Survey – Geoindex Onshore (British Geological Survey, 2022).
 - Manchester Local Plan ⁷ (2012).
 - Manchester Preliminary Flood Risk Assessment⁸ (PFRA), (2011).
 - Manchester Strategic Flood Risk Assessment Level 1⁹ (SFRA) (2010).
 - Manchester Strategic Flood Risk Assessment Level 2¹⁰ (SFRA) (2011).

6 Environment Agency, Flood Map for Planning, <https://flood-map-for-planning.service.gov.uk/>, 2017

7 Manchester Local Plan,

https://www.manchester.gov.uk/info/200074/planning/6573/core_strategy_2012-2027, 2012

8 Manchester Borough Council, Preliminary Flood Risk Assessment,

https://www.manchester.gov.uk/egov_downloads/MCC_PFRA.pdf, 2011

9 Manchester City, Salford City and Trafford Councils, Level 1 Strategic Flood Risk Assessment,

https://www.manchester.gov.uk/info/500207/planning_and_regeneration/4700/strategic_flood_risk_assessment, 2010

10 Manchester City, Salford City and Trafford Councils, Level 2 Strategic Flood Risk Assessment,

https://www.manchester.gov.uk/info/500207/planning_and_regeneration/4700/strategic_flood_risk_assessment, 2011

- Greater Manchester Strategic Flood Risk Assessment Level 1¹¹ (2019)
- Greater Manchester Surface Water Management Plan¹² (SWMP) (2012).

Preliminary Flood Risk Assessment (PFRA)

- 3.4. The PFRA, adopted in 2011, is a high-level appraisal of flood risk across Lead Local Flood Authority Manchester. The flood risk from all sources, including fluvial, surface water, groundwater and surcharged sewers is evaluated. It is the basis upon which the Local Flood Risk Management Strategy (described below) is produced.
- 3.5. The PFRA summarises historical flood incidents in Manchester. The site is not recorded as having been affected by any historical flood event.

Strategic Flood Risk Assessment (SFRA)

- 3.6. The Level 1 SFRA, published in 2010 and 2019, utilises existing data to make an assessment of flood risk from all sources now and in the future. It looks at the risk of flooding from rivers, canals, reservoirs, groundwater, and surface water and sewers.
- 3.7. The Level 2 SFRA, published in 2011, provides the evidence base for the Local Planning Authority Manchester Local Plan and guidance for consideration when determining planning applications. The SFRA seeks to place new development into areas of lower flood risk, taking into account current flood risk, future flood risk and the effect a proposed development would have on the risk of flooding.

Greater Manchester Surface Water Management Plan (SWMP)

- 3.8. The Surface Water Management Plan (SWMP) is a study of surface water flood risk, recognising the cause and effect of flood hazard between districts and communities in Greater Manchester.
- 3.9. The SWMP has been reviewed in preparation of this report and referenced where appropriate.

¹¹ <https://www.greatermanchester-ca.gov.uk/what-we-do/planning-and-housing/places-for-everyone/supporting-documents/?folder=%5C04%20Sustainable%20and%20Resilient%20Places#fList>

¹² Greater Manchester Surface Water Management Plan, <http://www.bury.gov.uk/CHttpHandler.ashx?id=11439>, 2012

4. Sources of Flood Risk

Fluvial Flood Risk

- 4.1. Flooding from watercourses arises when flows exceed the capacity of the channel, or where a restrictive structure is encountered, resulting in water overtopping the banks into the floodplain.

Main Rivers and Ordinary Watercourses

- 4.2. The site is located 450m from the nearest EA Main River, the Platt Brook, which is culverted within this location.
- 4.3. There are no other watercourses in the vicinity of the site.

Historical Flooding

- 4.4. The site is located outside the extent of any past historical flooding events.

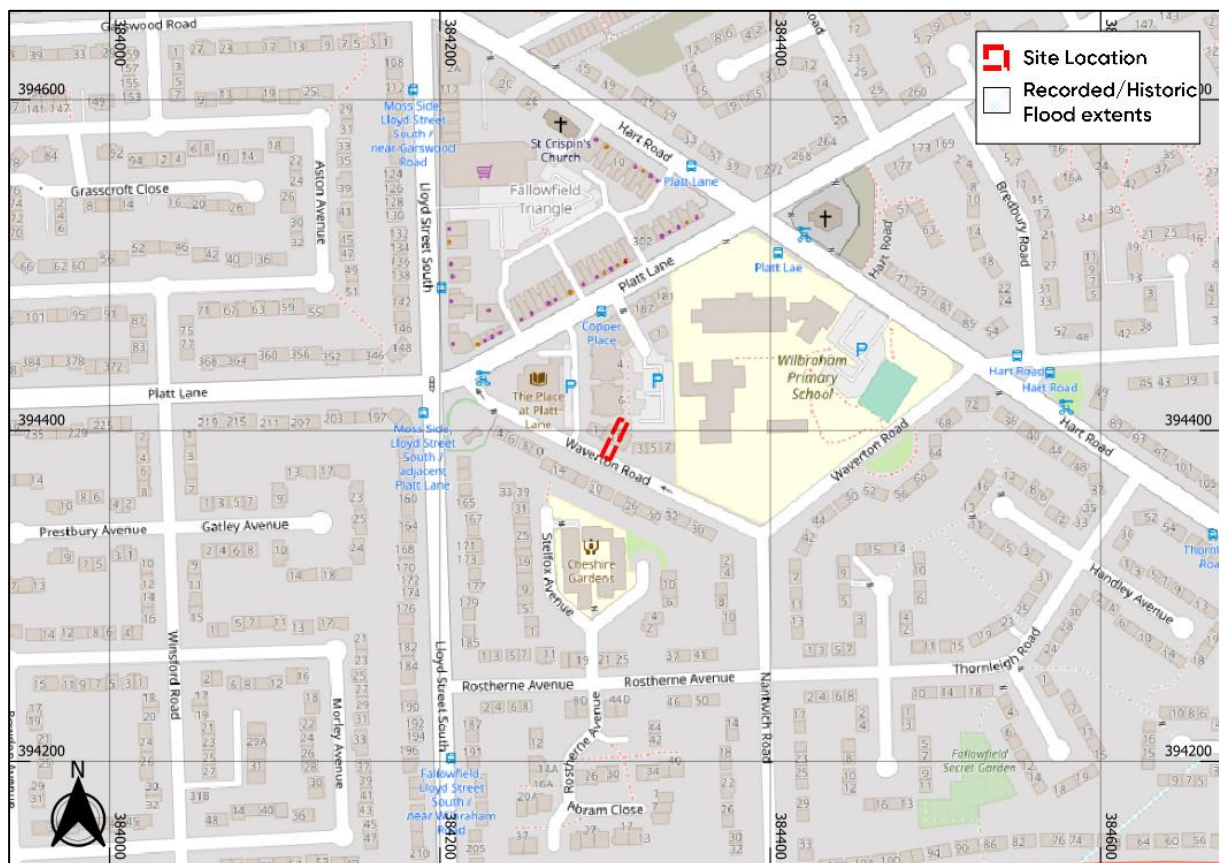


Figure 3: EA Historic Flood Mapping (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors.)

EA Flood Map for Planning

- 4.5. In accordance with the EA Flood Map for Planning, the site is located within Flood Zone 2 (Figure 4). Flood Zone 2 denotes a risk of flooding from fluvial sources between a 1 in 100 (1%) and 1 in 1,000 (0.1%) annual exceedance probability event.

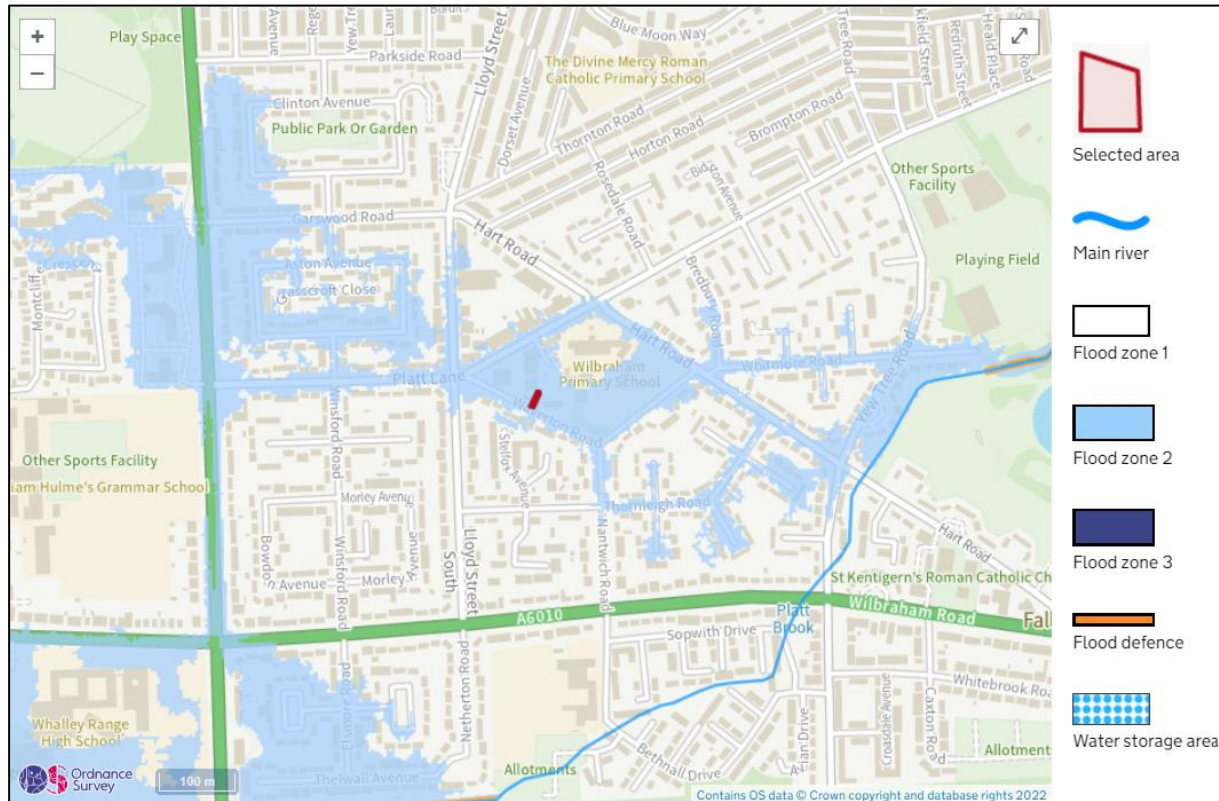


Figure 4: EA Flood Map for Planning

Modelled Flood Data

- 4.6. Results from the Chop 2012 D model, Corn Brook 2017 and the Cringle Brook 2018 model were supplied within a product 4 data request submitted for the site to the EA. Full details are featured in Appendix B.
- 4.7. The site is located within the Irwell Management Catchment which has a central 2080s climate change flow allowance of 35%. The product 4 data request has supplied climate change scenarios for the 1% AEP + 70%cc and a 0.1% AEP + 30%cc which have been reviewed.
- 4.8. The site is shown to remain unaffected within the Corn Brook and Cringle Brook Model outputs for all present day and future scenarios (Figure 5, Figure 6, Figure 7).
- 4.9. The site is shown to be affected within the Chop 2012 D Model within the 0.1% AEP event only (Figure 8). No climate change scenario was supplied for this model and as such the 0.1% AEP event has been considered representative of the 1% AEP + 35%cc event in the absence of any other data. Only in-channel node data was supplied and as such the nearby node (node 6) has been applied to the site based on topographic LiDAR data. Within the 0.1% AEP event, this node

is shown to have a flood level of 32.20m AOD. With a minimum onsite elevation of 32.04m AOD, this would result in maximum flood depths on site of 0.16m. The area of development however is found to have an elevation of 32.29m AOD to 32.30m AOD and as such this should remain unaffected within this flood event.

4.10. As such, the site can be considered to be at low risk of fluvial flooding.

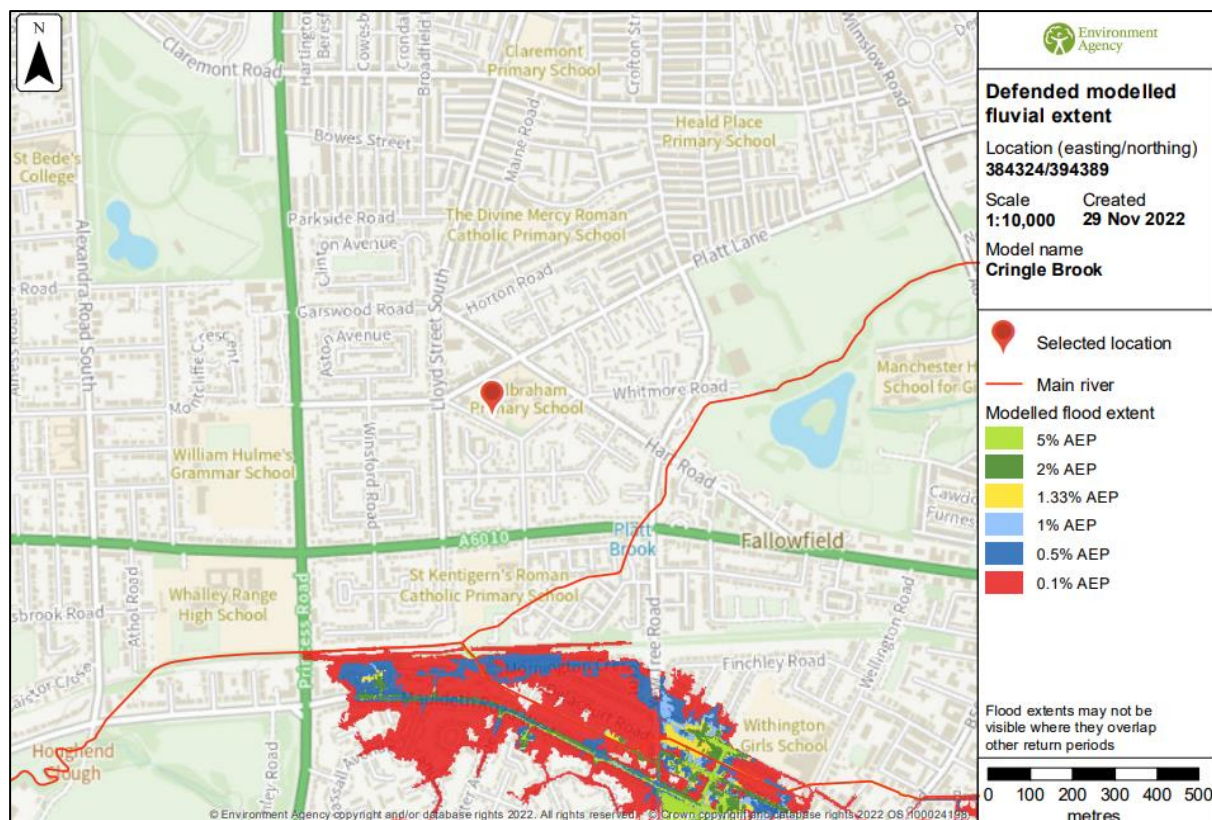


Figure 5: Cringle Brook (2018) Modelled Fluvial Flood Extents

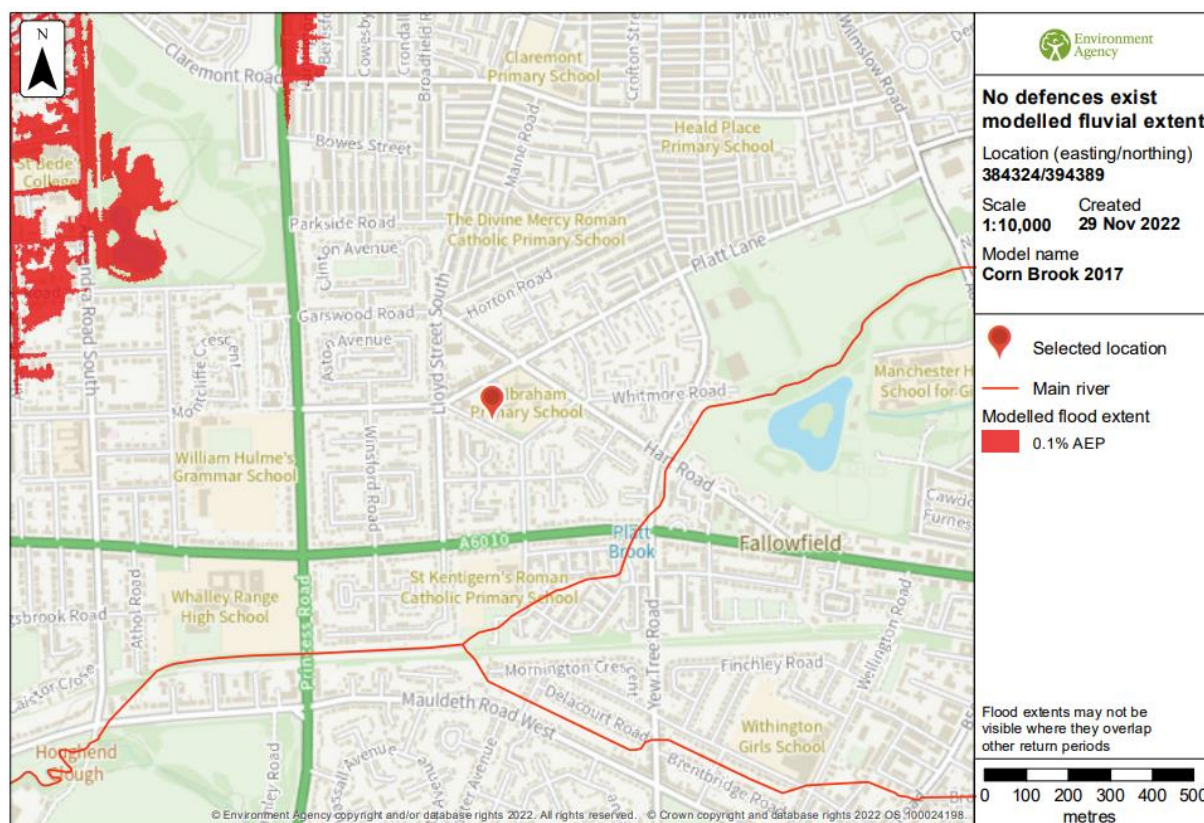


Figure 6: Corn Brook (2017) Modelled Fluvial Flood Extents

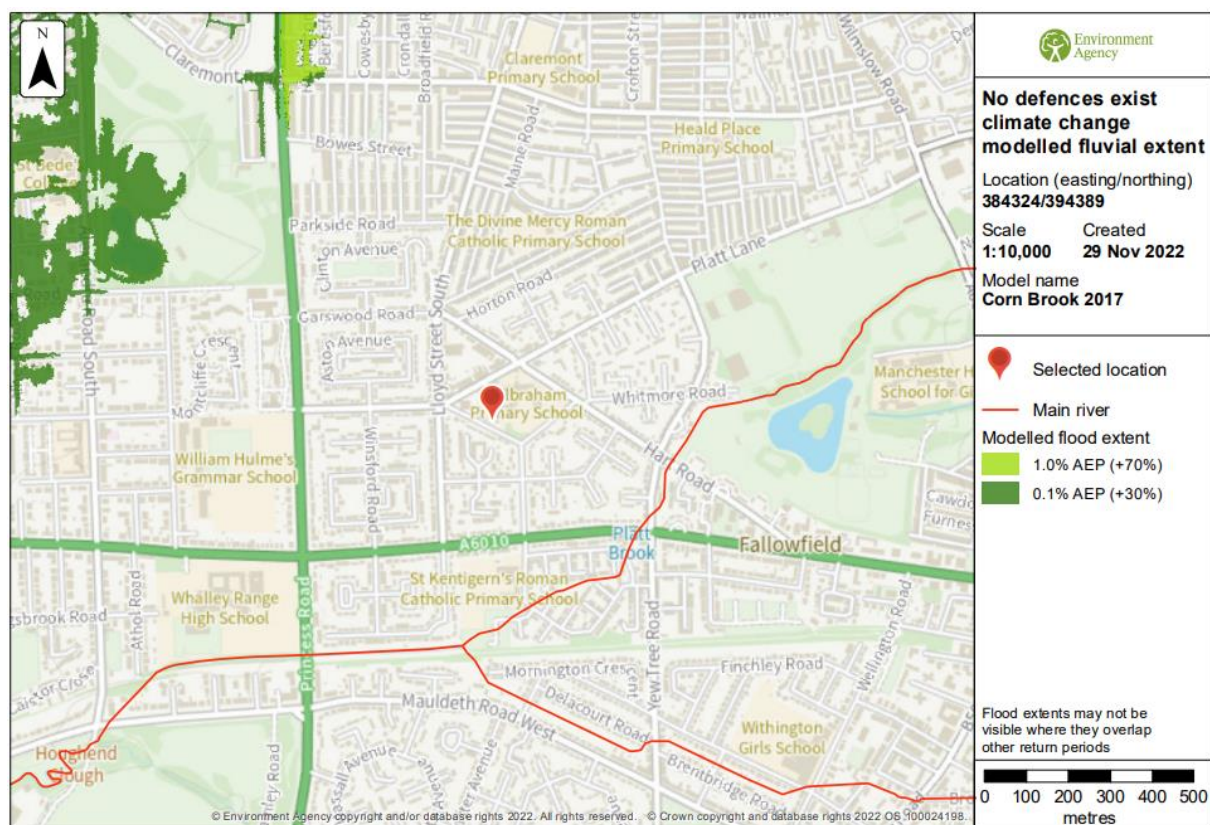


Figure 7: Corn Brook (2017) Modelled Fluvial Flood Extents

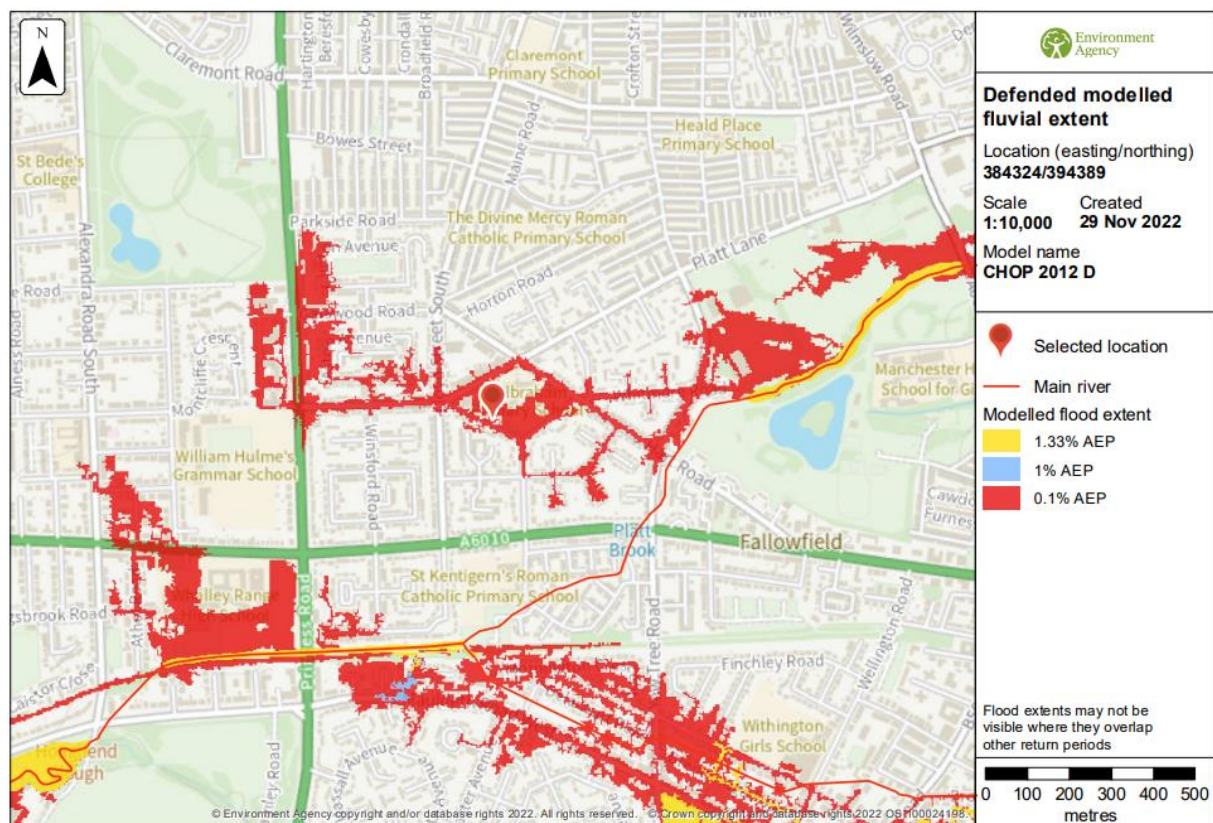


Figure 8: Chop (2012) Modelled Fluvial Flood Extents

Tidal Flooding

- 4.11. Tidal flooding occurs when a high tide and high winds combine to elevate sea levels. An area behind coastal flood defences can still flood if waves overtop the defences or break through them. Tidal flooding can also occur a long way from the coast by raising river levels. Water may overtop the river bank or river defences when tide levels are high.
- 4.12. The site is a significant distance from any tidal source and above the anticipated extreme tidal levels, even when considering the impacts of climate change. The risk of flooding from tidal sources is low.

Canals

- 4.13. The Canal and River Trust (CRT) generally maintains canal levels using reservoirs, feeders, and boreholes and manages water levels by transferring it within the canal system.
- 4.14. Canals were not detected within 1000m of the site, so should pose no risk.

Pluvial Flood Risk

- 4.15. Pluvial flooding can occur during prolonged or intense storm events when the infiltration potential of soils, or the capacity of drainage infrastructure is overwhelmed leading to the accumulation of surface water and the generation of overland flow routes.

- 4.16. Examination of EA's Flood Risk from Surface Water mapping for the 3.3% (high risk), 1% (medium risk) and 0.1% (low risk) AEP flood events shows the site is impacted within the 0.1% AEP modelled flood event (Figure 9). Under this scenario, the rear of the site is shown to be impacted by flood depths of less than 300mm within the 0.1% AEP event (Figure 8).
- 4.17. The road providing access to the property is impacted within the 0.1% AEP event and 1% AEP event. The flood depths is less than 600mm within the 0.1% AEP event (Figure 10) and less than 300mm within the 1% AEP event (Figure 12). The resulting hazard ratings for the site are 'significant' within the 0.1% AEP event (Figure 11), and 'low' to 'moderate' within the 1% AEP event (Figure 13). As such, safe access should be available within the 1% AEP event but not within the 0.1% AEP event.
- 4.18. The site is not identified as being located within a critical drainage area as defined within the Manchester SFRA (Figure 14).
- 4.19. As such, the risk of pluvial flooding has been considered low, with access/egress arrangements remaining the same as existing due to the development being considered a minor development.

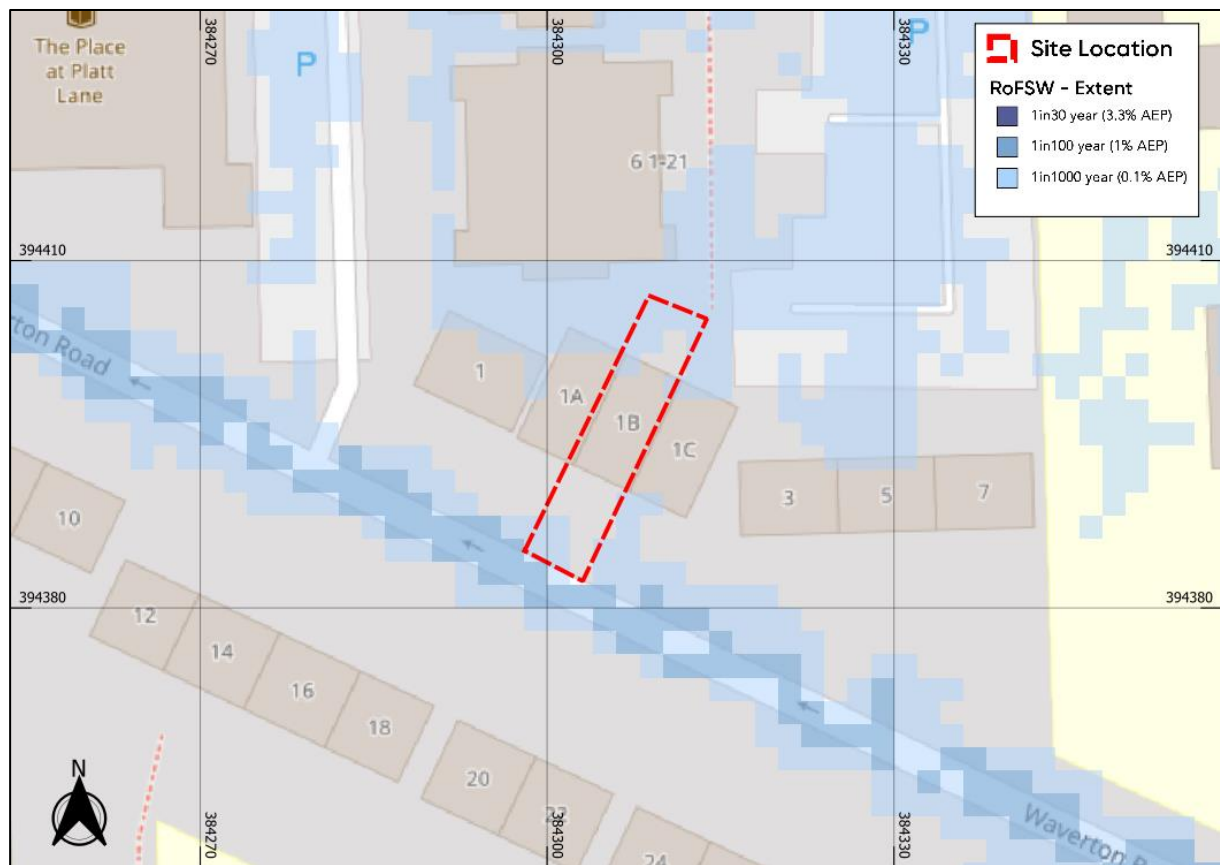


Figure 9: EA Surface Water Flood Risk Mapping (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors.)

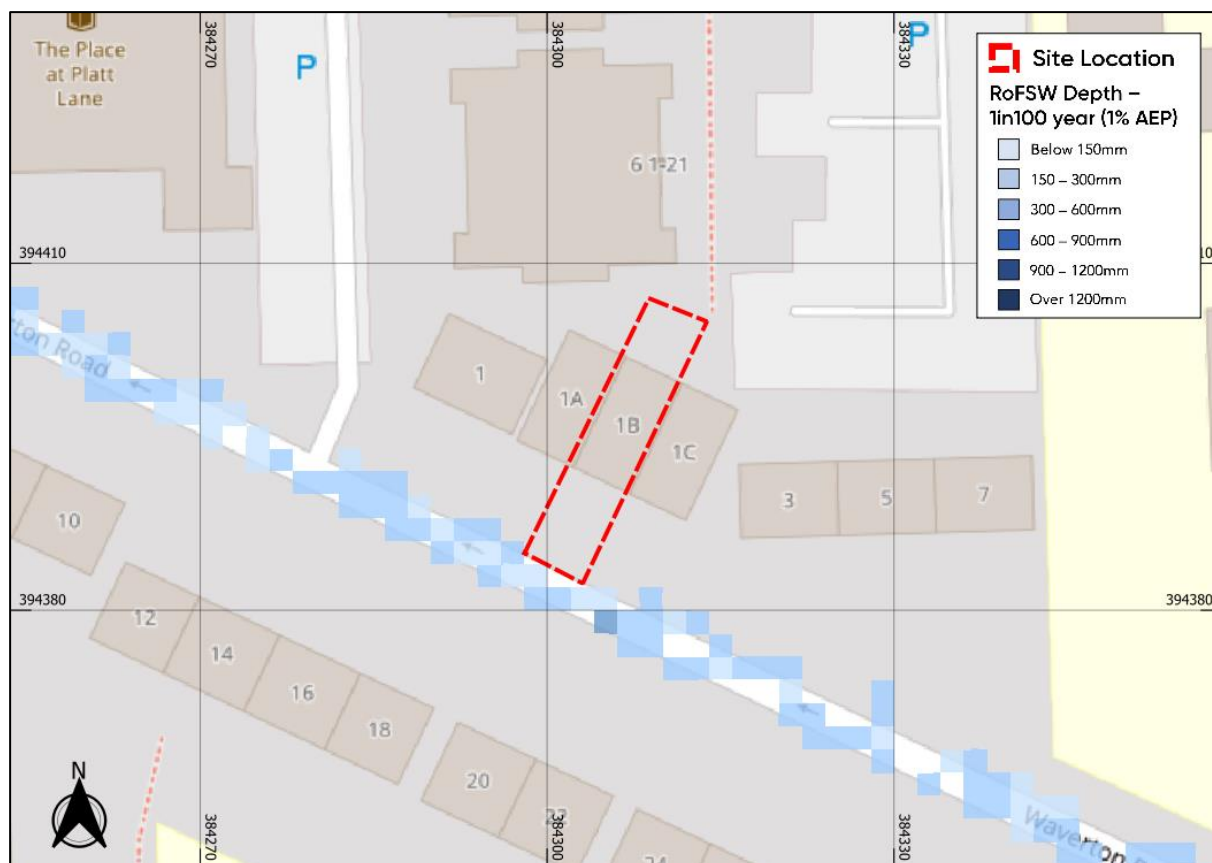


Figure 10: 1% AEP Pluvial Flood Depths (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA).
© <https://www.openstreetmap.org> and contributors.)

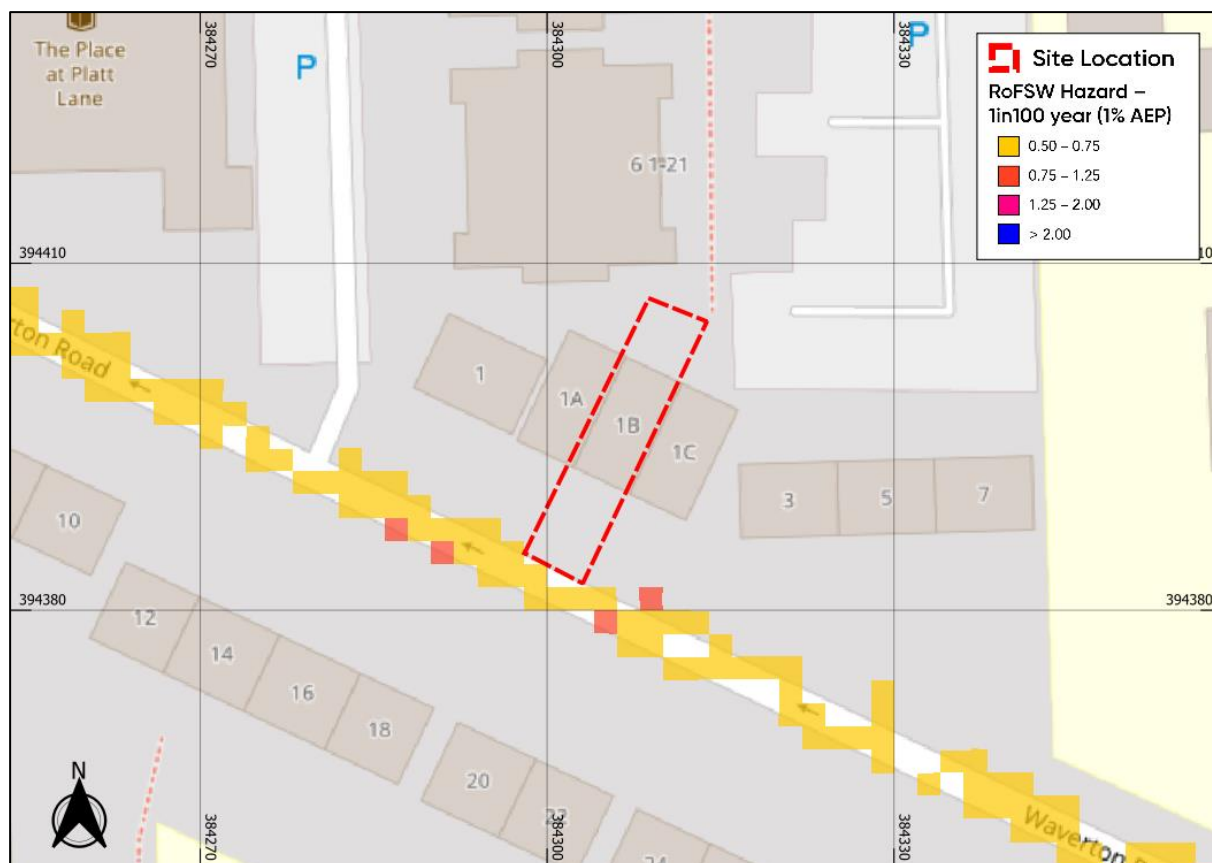


Figure 11: 1% AEP Pluvial Flood Hazard Ratings (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors.)

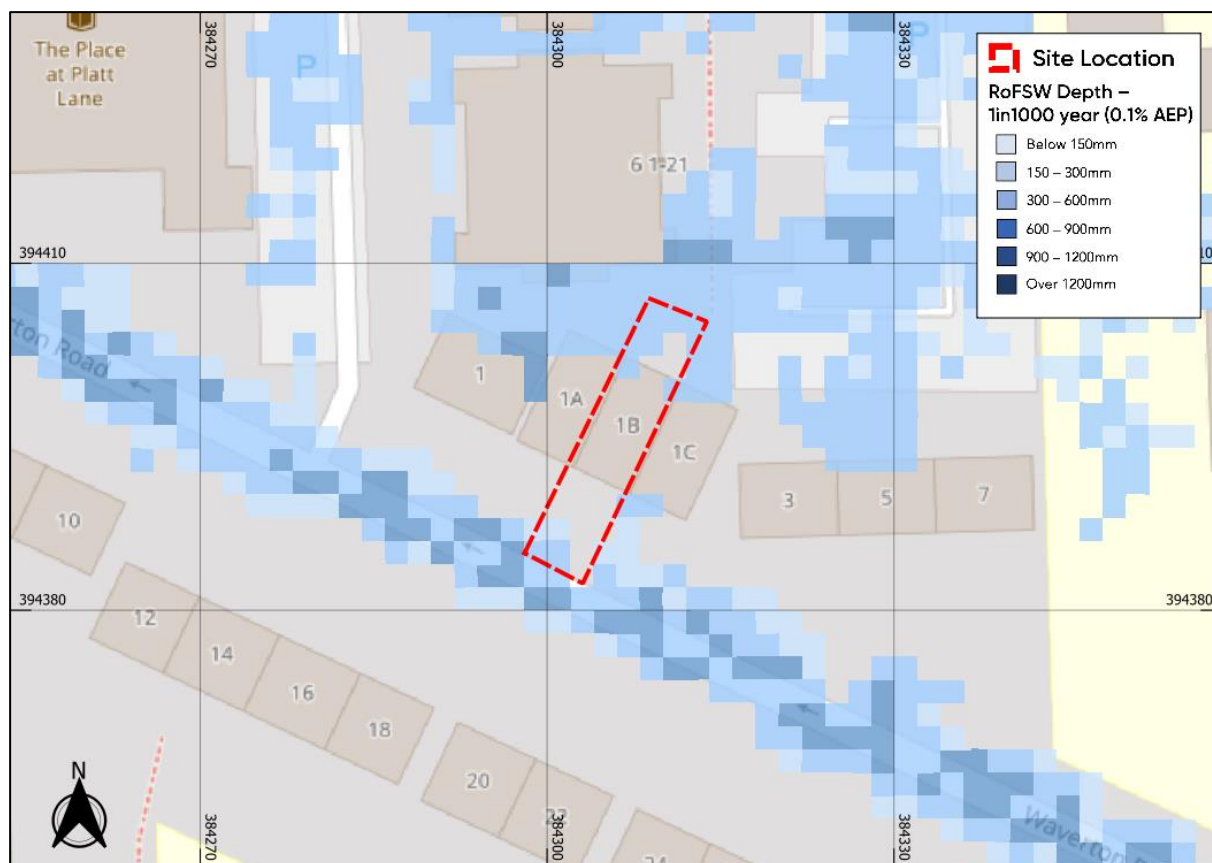


Figure 12: 0.1% AEP Pluvial Flood Depths (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA).
© <https://www.openstreetmap.org> and contributors.)

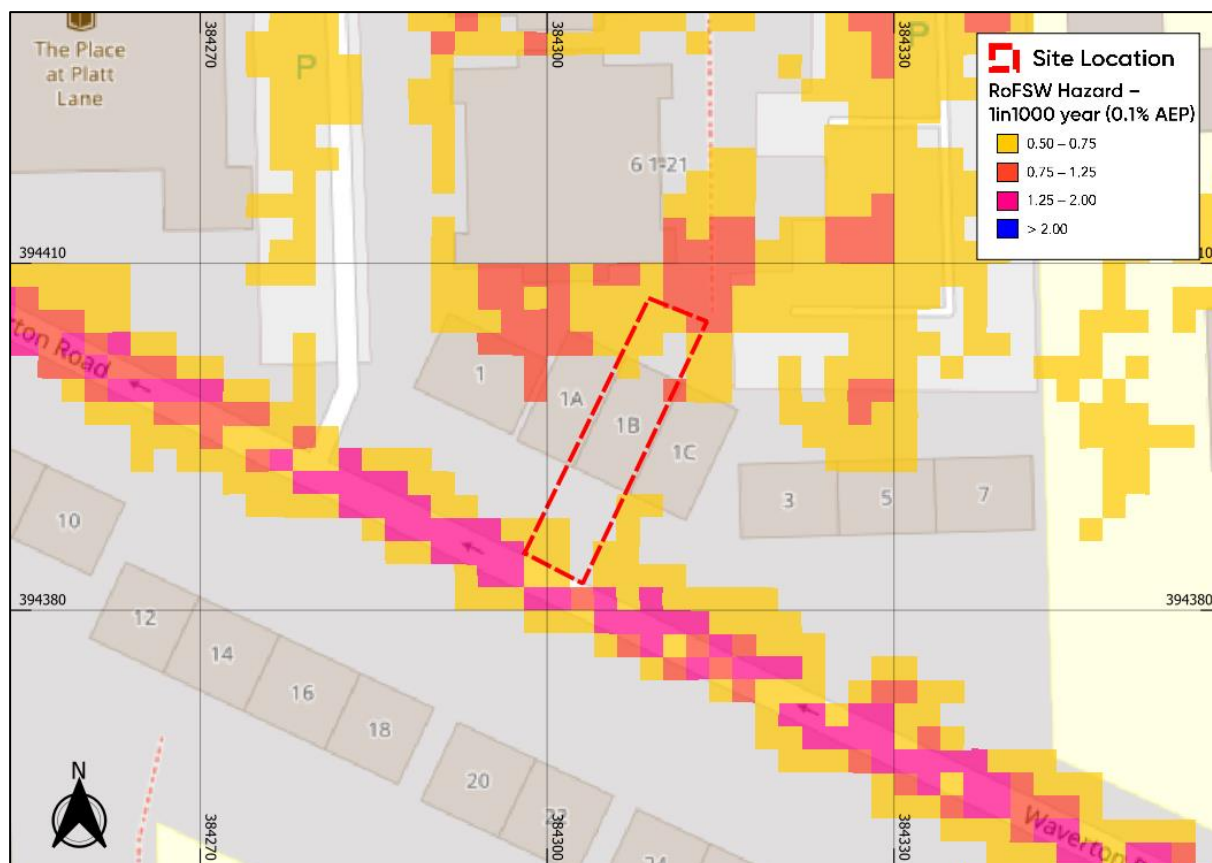


Figure 13: 0.1% AEP Pluvial Flood Hazard Ratings (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors.)

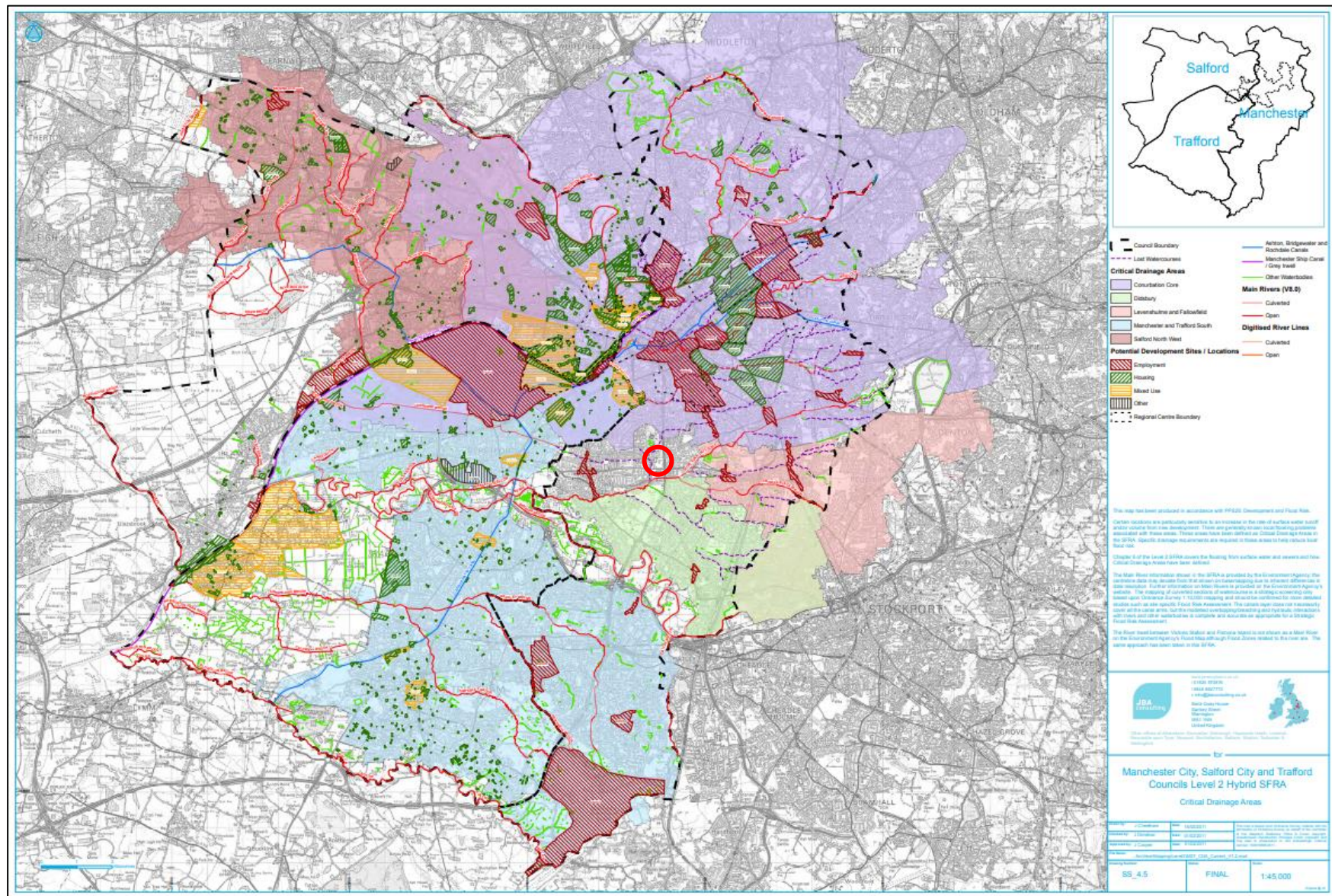


Figure 14: Manchester SFRA Critical Drainage Areas with Site Location in Red Circle. Areas coloured are defined as Critical Drainage Areas. The site remains outside these areas.

Reservoirs

- 4.20. Flooding can occur from large waterbodies or reservoirs if they are impounded above the surrounding ground levels or are used to retain water in times of flood. Although unlikely, reservoirs and large waterbodies could overtop or breach leading to rapid inundation of the downstream floodplain.
- 4.21. According to the EA's Flood Risk from Reservoirs mapping the site is at risk of flooding in the event of a breach at multiple reservoirs. The site is shown to be flooded during a 'dry day' scenario meaning that it could be caused by reservoir walls failing due to old age, accident, or because excess flood water has been added to the reservoir.
- 4.22. According to the EA, there has been no loss of life in the UK from reservoir flooding since 1925. All large reservoirs must be inspected and supervised by reservoir panel engineers as detailed by the enforcement authority for the Reservoirs Act 1975 in England. The EA are responsible to ensure that reservoirs are inspected regularly, and essential safety work carried out. As reservoir flooding is unlikely and the modelled flood depths are based on the worst-case scenario, flooding from this source may be considered as a relatively low risk.

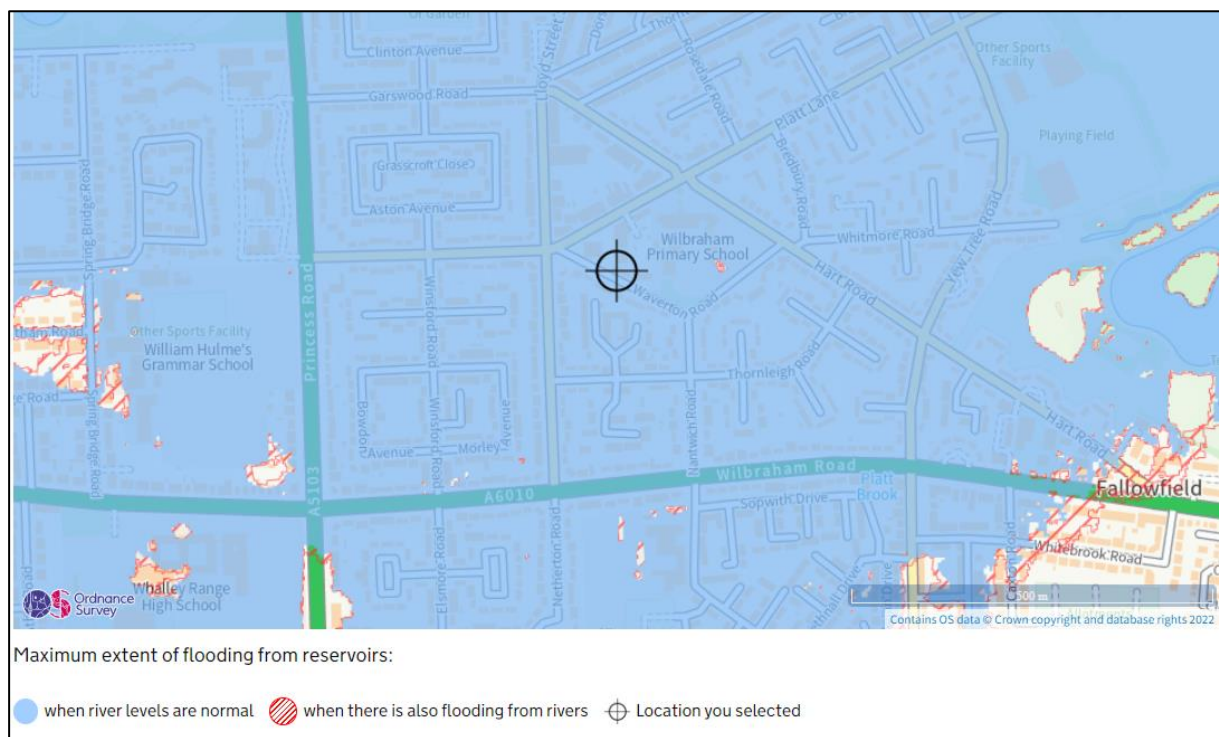


Figure 15: EA Reservoir Flood Risk Mapping (© Environment Agency)

Groundwater

- 4.23. Groundwater flooding occurs in areas where underlying geology is permeable, and water can rise within the strata sufficiently to breach the surface.
- 4.24. The British Geological Survey's (BGS) mapping shows Till, Devensian – Diamicton superficial deposits underlying the site with a bedrock underlying the site of Wilmslow Sandstone Formation

– Sandstone. This bedrock is defined as a principal aquifer within the EA Magic Map meaning the bedrock can be defined as permeable, while the superficial deposits are defined as secondary (undifferentiated).

- 4.25. Historical BGS borehole SJ89SW459 within 400m of the site did not strike any groundwater within the borehole (2.25m below ground level).
- 4.26. The SFRA states that there are no known historic groundwater flood events within the region. It does state that areas of Trafford appear to suffer from a high water table and there are some issues with waterlogged ground within Salford. These should not impact the site.
- 4.27. The site is not located within an area that is defined as being at risk of groundwater flooding within the SFRA (Figure 16).
- 4.28. As such, the risk of groundwater flooding has been considered low.

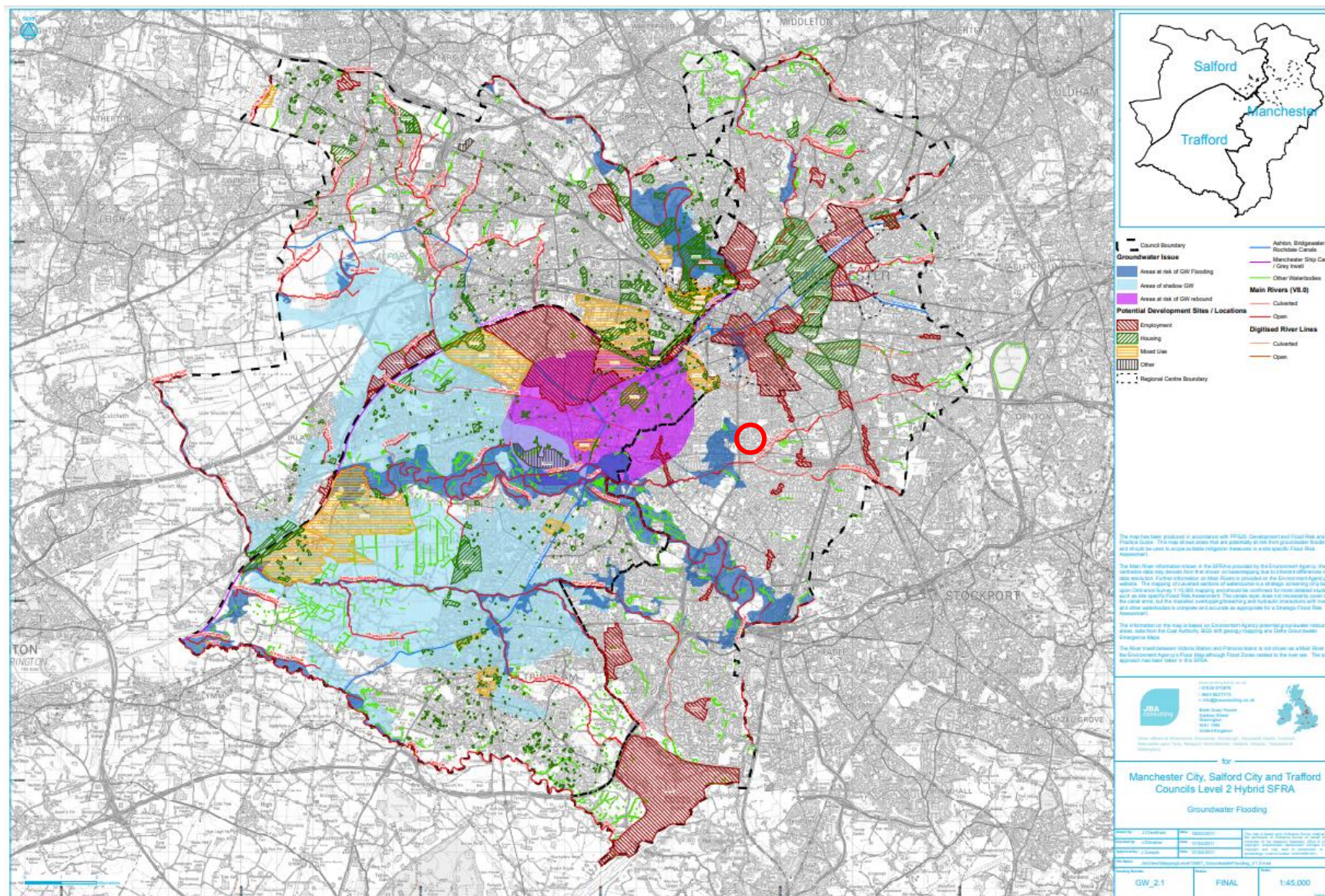
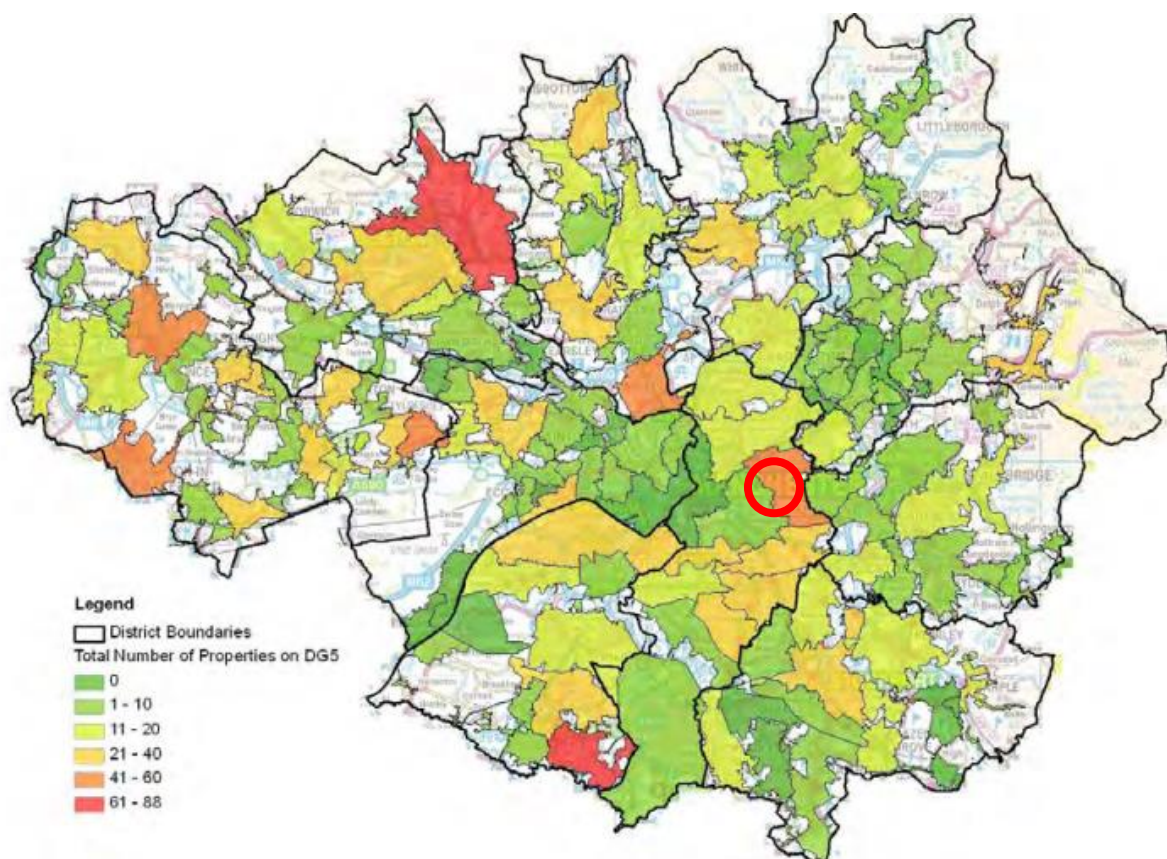


Figure 16: Manchester SFRA Groundwater Flood Risk Mapping with Site Location in Red Circle. Areas Coloured in Light and Dark Blue or Purple are Defined as Areas At Risk From Groundwater Flooding.

Sewer Flooding

- 4.29. Surface water sewers can be a cause of flooding where the drainage network has become overwhelmed, either by blockage or due to local development beyond the designed capabilities of the drainage system.
- 4.30. The SWMP includes high-level mapping of the DG5 register and the site is estimated to be located within an area that has experience 41- 60 past events (Figure 17).
- 4.31. The SFRA does state *“that other SFRA’s and authorities have identified sewer flooding concerns within the large urban areas of the borough. In Manchester, sewer and drainage problems have been identified during rainfall events, with issues in Northenden, Didsbury, Fallowfield and in the city centre”*.
- 4.32. Land levels surrounding the site indicate a downwards flow route towards the site within the road and as such any flooding from nearby sewers may flow towards the site.
- 4.33. Review of the nearby topography indicates a downward flow route from east to west. As such, any sewer flooding that may occur within the road should flow down past the house within the road. As such, the area outside the property may be affected however, the development itself, which is occurring at the rear of the property, should remain unaffected and as such risk from this source of flooding can be considered low.



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Figure 17: DG5 Register with Approximate Site Location in Red Circle

5. Flood Risk Mitigation

Fluvial

- 5.1. The proposed development is considered to be at low risk of fluvial flooding due to its location in Flood Zone 2 affected solely within the 0.1% AEP fluvial flood event from the 2012 Chop D Model. This event has been utilised as representation of the climate change scenario due to a lack of data. Within this event, the site may flood by depths of 0.16m, however, the proposed development should remain unaffected as it is located above the flood level. Mitigation measures are recommended to reduce the risk from an event larger than reviewed within this report and to be implemented where possible.
- 5.2. The proposal is a Minor Development and can adhere to the EA Standing Advice for Minor Developments. The Finished Floor Levels (FFLs) of the proposed extension will be set no lower than those of the existing dwelling.
- 5.3. Furthermore, the extension should be constructed in a flood resilient manner in accordance with the CLG Report Improving the Flood Performance of New Buildings - Flood Resilient Construction (2007), including, but not limited to, measures such as the below:
 - Solid floors with waterproof screed.
 - Raised wiring and power outlets at ground level.
 - Kitchen units to be raised on legs above plinth.
 - Waterproof plasterboard used at ground floor.
 - Air brick covers to be installed.
 - Non-return valves should be installed on all new drainage.
 - All new plumbing insulation to be of closed cell design.
 - Damp Proof Membranes (d.p.m.) should be included in any design to minimise the passage of water through ground floors.
 - Patio doors may be susceptible to ingress of flood water. Any PVC window/door sills should be adequately sealed. Double glazing should be used to provide resistance against external flood water pressure. Of concern would be excessive water pressure on the glazing of patio doors.

Tidal, Canals, Pluvial, Reservoirs, Groundwater and Sewers

- 5.4. Flood risk from other sources to the proposed development are considered low as all and as such no further specific mitigation is required.

Increase to Flood Risk Elsewhere

- 5.5. Paragraph 051 of the Flood Risk and Coastal Change Planning Practice Guidance (PPG) states:

Minor developments are unlikely to raise significant flood risk issues unless:

- *they would have an adverse effect on a watercourse, floodplain or its flood defences;*
- *they would impede access to flood defence and management facilities, or;*
- *where the cumulative impact of such developments would have a significant effect on local flood storage capacity or flood flows.*

Even minor developments can affect flood risk within or beyond the property, particularly in areas susceptible to flooding. Applications for minor development involving extensions or additions should still meet the requirements to provide a site-specific flood risk assessment (as per footnote 55 of the National Planning Policy Framework). A pragmatic approach should be taken to the scope and level of detail of the assessment – a shorter, simpler assessment is likely to be sufficient in most such cases. As a minimum, the assessment needs to show that the development will be safe for its users for the intended lifetime of the development, without increasing flood risk elsewhere, and be sufficiently flood resistant and resilient to the level and nature of the flood risk.

- 5.6. Runoff from the extension could be discharged via existing system given that proposal is Minor Development. Betterment could be provided through small-scale SuDS such as rainwater planters and water butts.
- 5.7. As such, the proposed development in isolation should have a negligible impact on flood risk elsewhere.

EA Flood Warning Service

- 5.8. As a further precaution and risk reduction, the owner of the site should sign up the EA flood warning service (The Chorlton and Platt Brooks at Whalley Range and Chorlton-cum-Hardy). This service allows site owners to register an address, which is at risk of flooding, along with contact details so that in the event of a flood being forecast, the site owner will be sent an alert directly to their chosen method of contact.
- 5.9. Flood warnings/alerts can be enforced at any time of the day or night. Signing up for this service provides site owners some notice before a flood event. The amount of time afforded before a flood occurs depends on the site-specific location (e.g. proximity to the source of flooding, topography of the surrounding area) and the flood mechanism (e.g. bank over topping versus a breach event).
- 5.10. Flood alerts and warnings provide site managers with time to take necessary action, e.g. communication of the risk of flooding to occupants, evacuation of occupants offsite or to a safe level, removal of valuable items out of reach of flooding and the mounting of site specific flood defences.

6. Conclusions

- 6.1. This FRA has been undertaken with reference to the requirements of NPPF and Planning Practice Guidance with respect to the development at 1B Waverton Road, Manchester, M14 7EB. It has been written to support a planning application and has been prepared with due consideration to the nature of the proposed development to provide the appropriate level of detail.
- 6.2. The FRA supports the planning application and demonstrates that there is an acceptable level of flood risk to the site if the mitigation strategies recommended are implemented in the scheme. The development does not increase flood risk off site or to the wider area.

Source of Flooding	Flood Risk Summary
Fluvial	The site is located within Flood Zone 2 and is therefore considered to be at low risk of fluvial flooding. Analysis of the product 4 data has indicated the site remains unaffected within all events bar the 0.1% AEP event from the Chop D 2012 Model. This has been utilised as the design flood event due to no climate change runs being supplied resulting in a flood depth on site of 0.16m however the proposed development should remain unaffected as it is located above the flood level. FFLs of the development are to be set at existing in line with the EA Standard for Minor Developments. Mitigation is recommended in line with the CLG Report Improving the Flood Performance of New Buildings - Flood Resilient Construction (2007).
Sewers	The site is shown to be at medium risk from sewer flooding sources but mitigation provided against fluvial flooding should be considered sufficient against this source of flooding.
Reservoirs Groundwater Pluvial Tidal Canals	The site is considered to be at low risk from other sources.

- 6.3. This Flood Risk Assessment should be submitted as part of the planning application to satisfy the requirements under NPPF.

Appendix A - Development Proposals

General Notes

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LEGEND

Site Boundary

P1 10/05/22 HG SH Initial Issue
No. Date Dwn Chk App Revision or reason for issue

Client
Alina Raina

create **it** studios
Architects & Designers

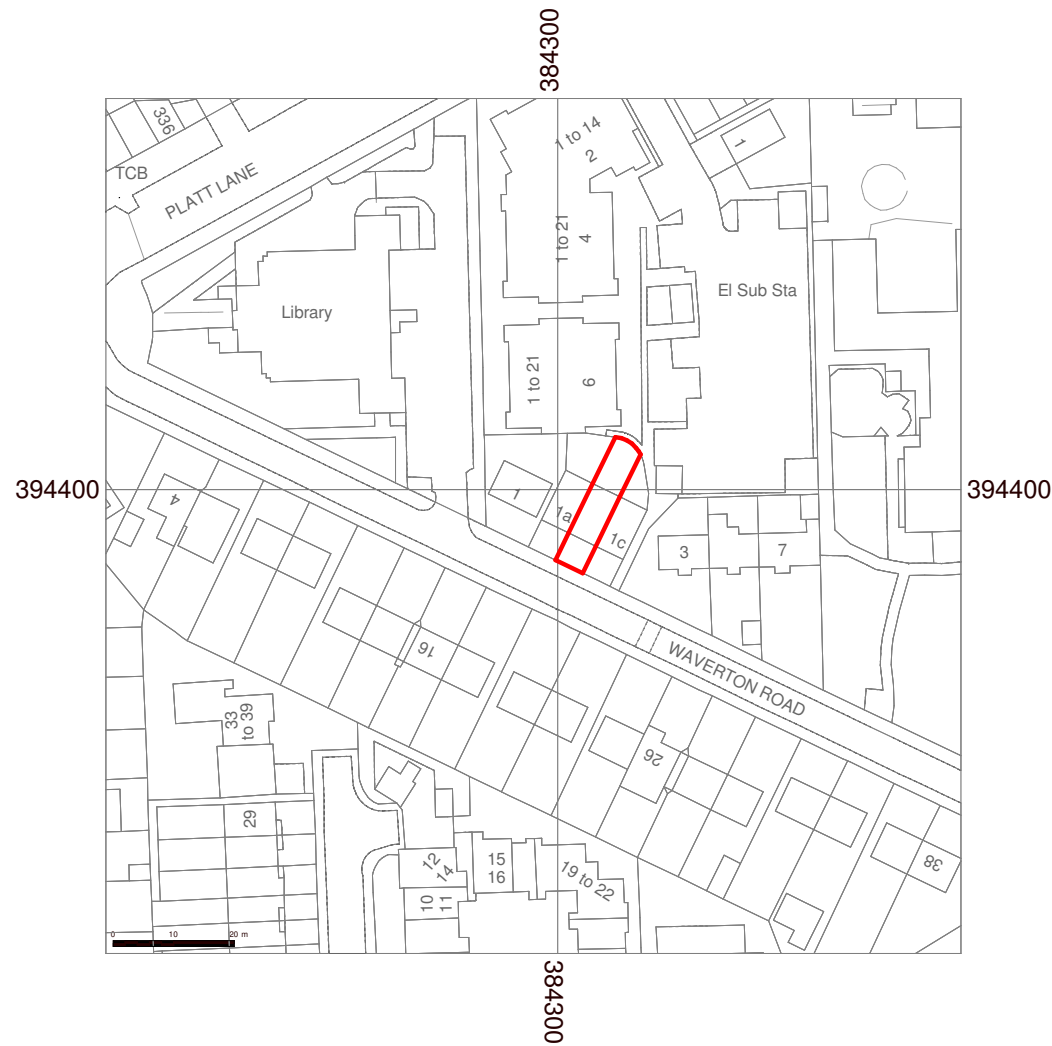
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Project Title
1B Waverton Road, Fallowfield, M14 7EB

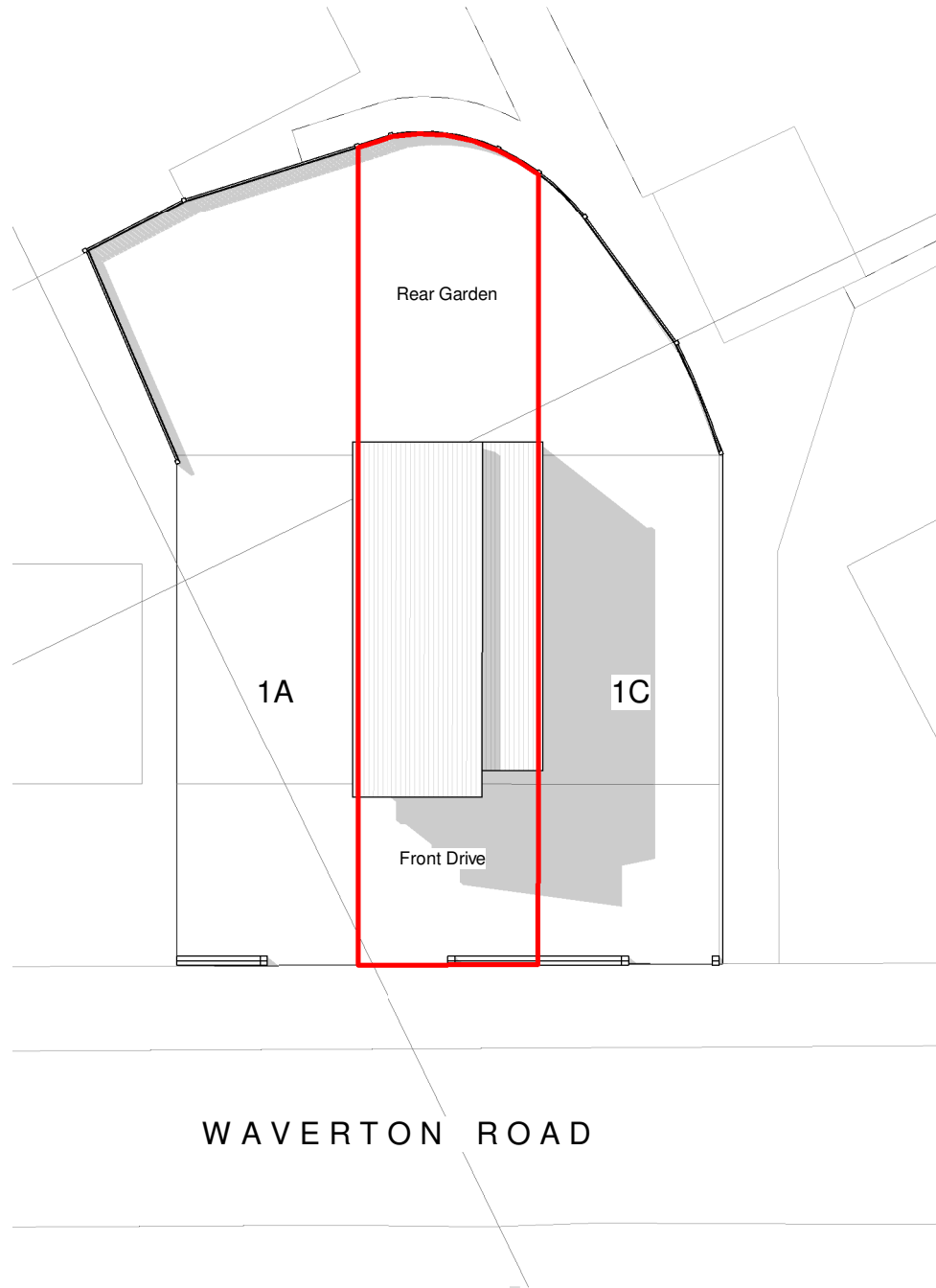
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As indicated

Drawing Title
Existing Site and Location Plan

Drawing Number
A1435(01)001
Drawing Status
Preliminary
Revision
P1



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2 Existing Site Plan
1 : 200



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1:200

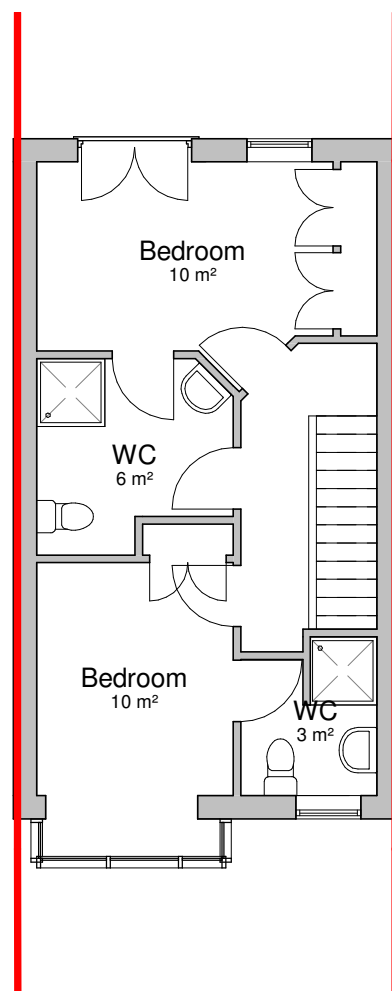
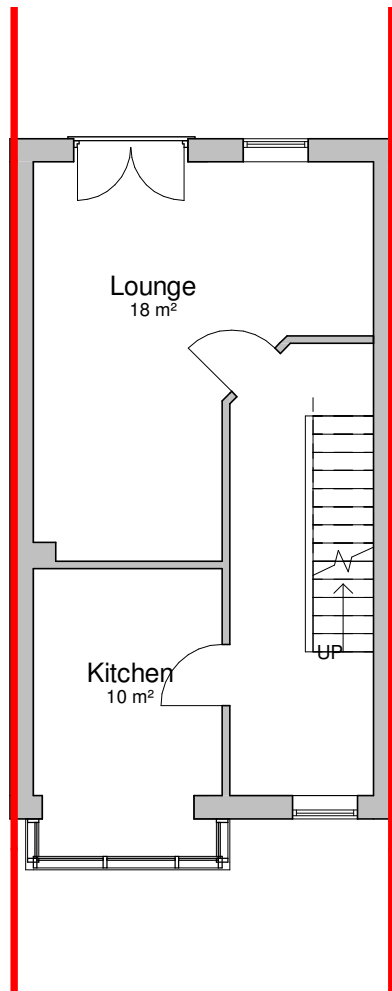
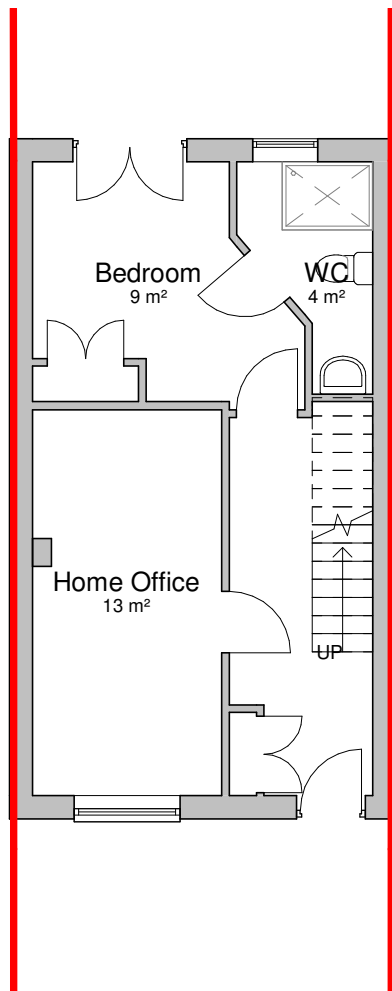
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Site Boundary



1

Existing Ground Floor Plan

1 : 100

2

Existing First Floor Plan

1 : 100

3

Existing Second Floor Plan

1 : 100

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1B Waverton Road, Fallowfield, M14 7EB

Scale / North Point

1 : 100



Drawing Title

Existing Floor Plans

Drawing Number

A1435(01)002

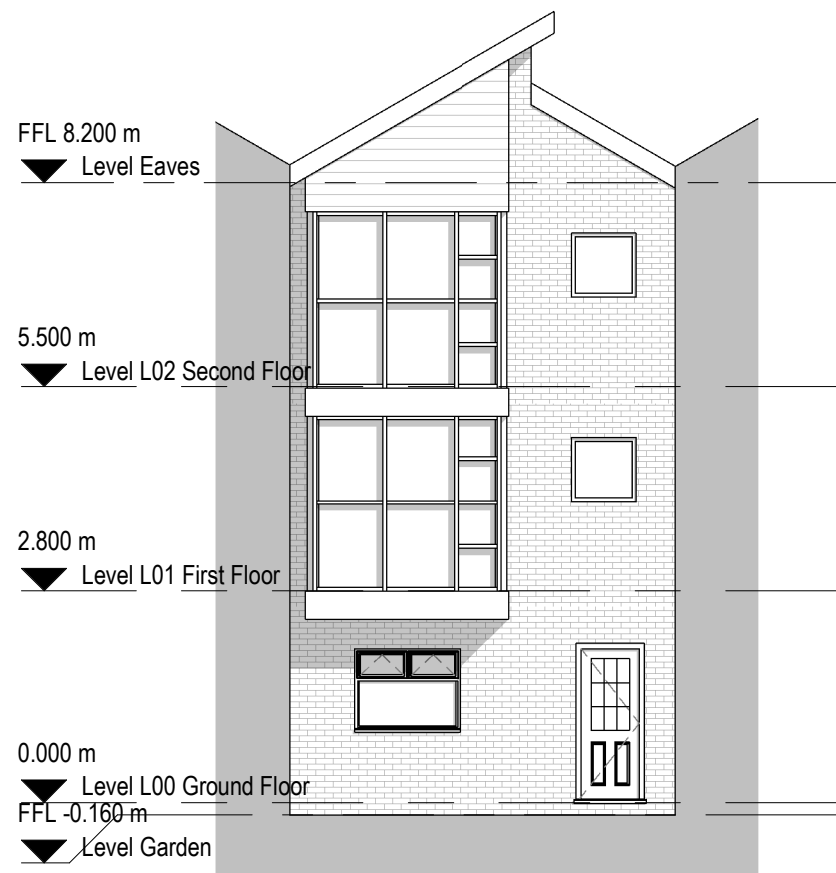
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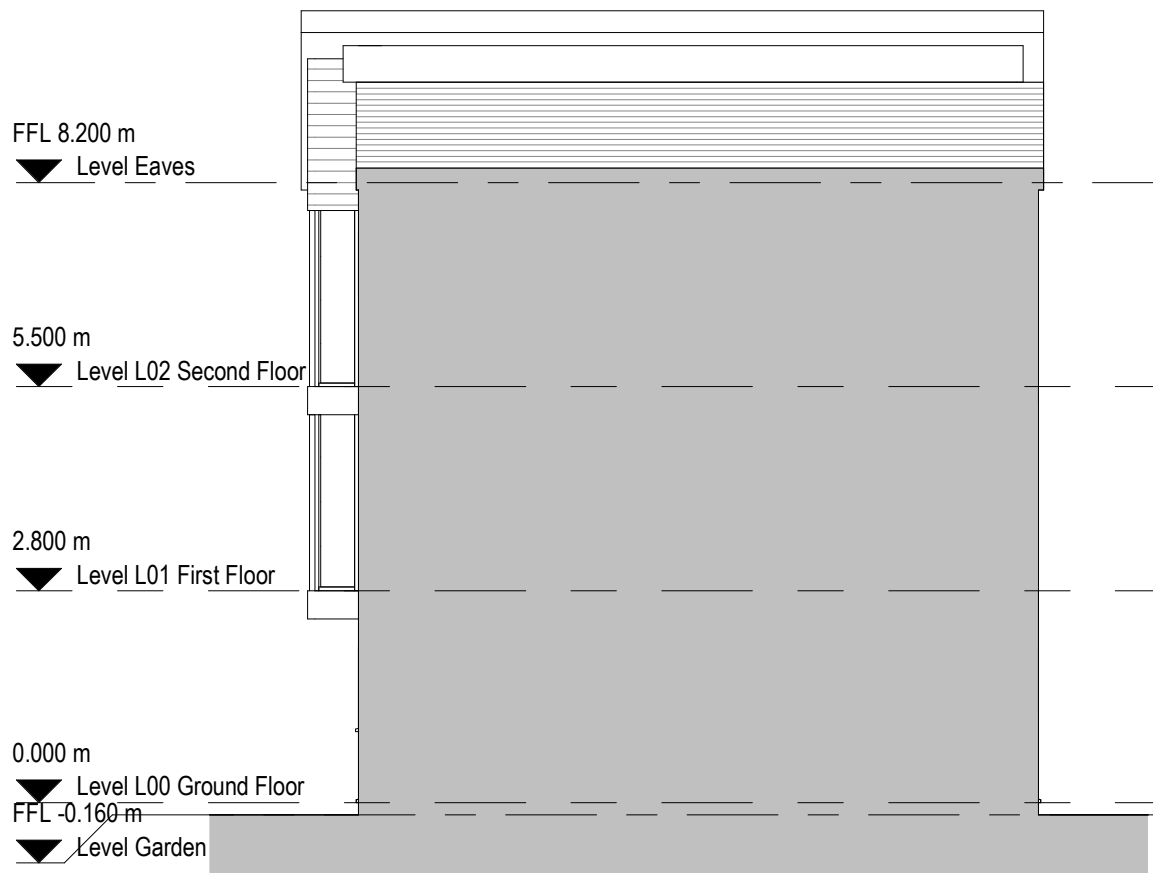
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P1

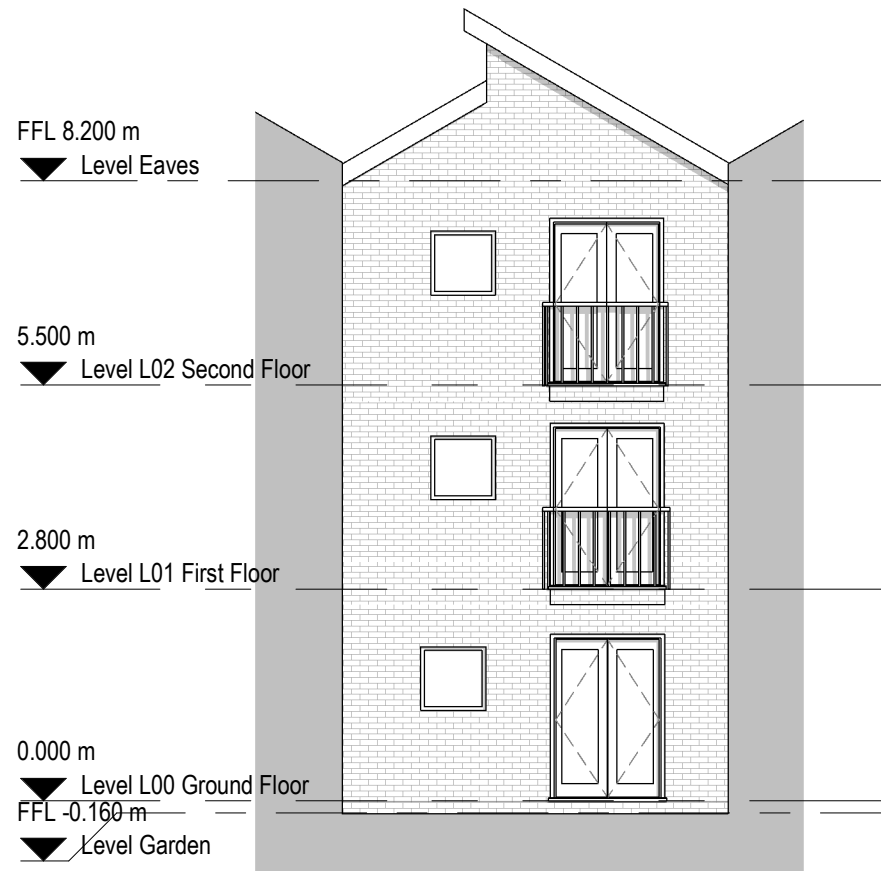
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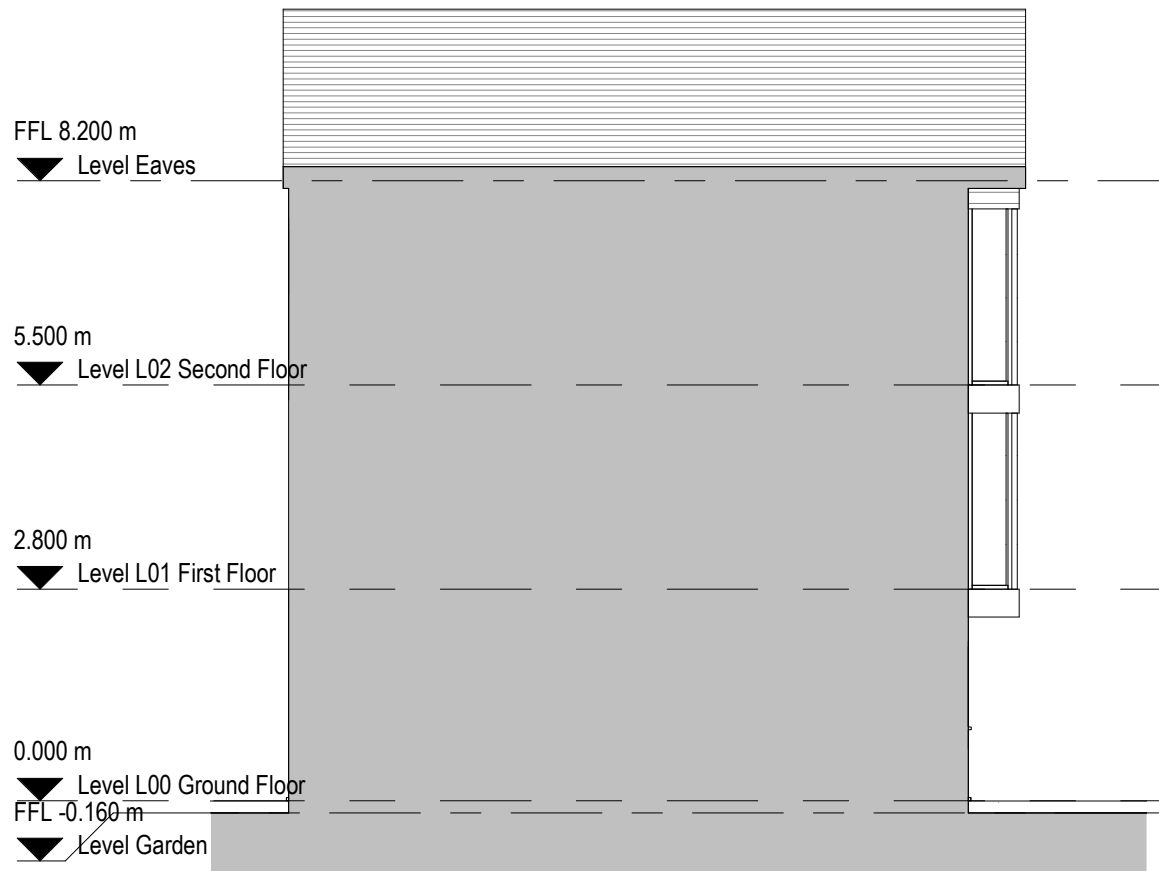
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2 Existing East Elevation
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3 Existing North Elevation
1 : 100



4 Existing West Elevation
1 : 100

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Drawing Title
Existing Elevations

Drawing Number
A1435(01)003
Drawing Status
Preliminary
Revision
P1

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Scale / North Point

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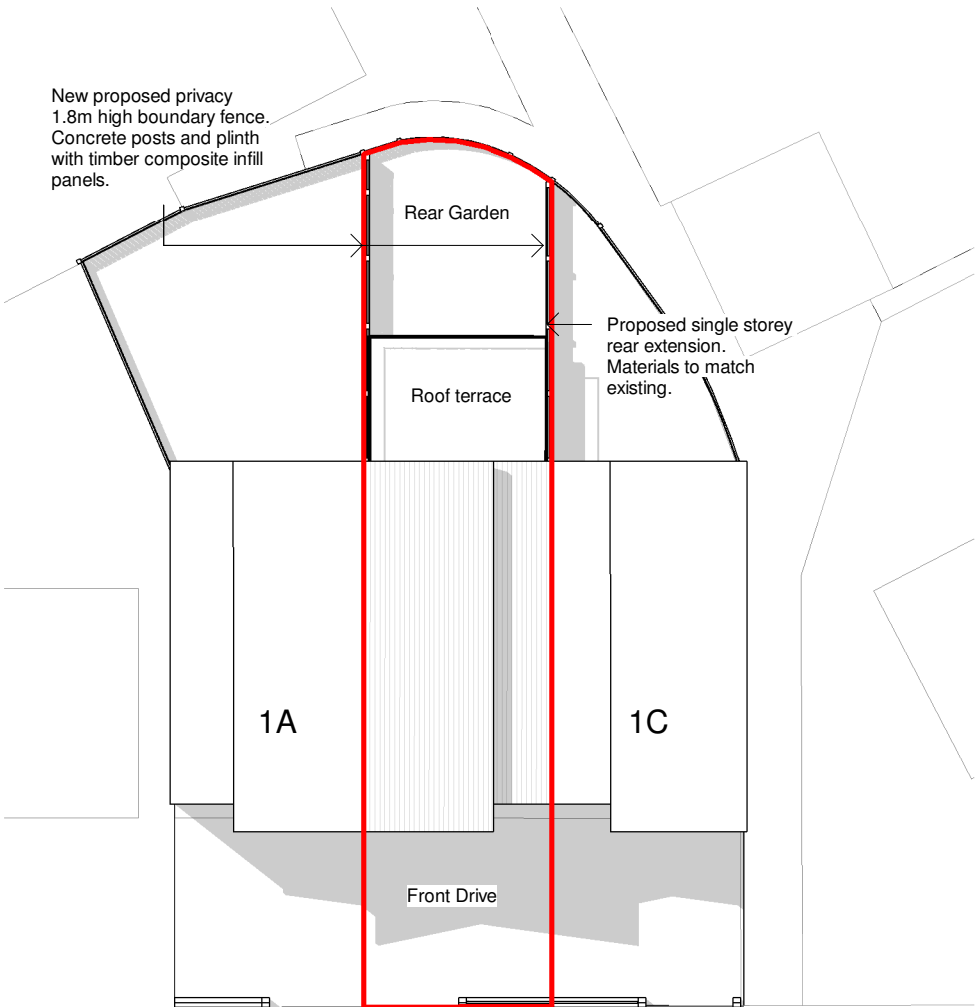
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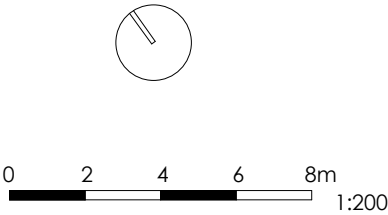
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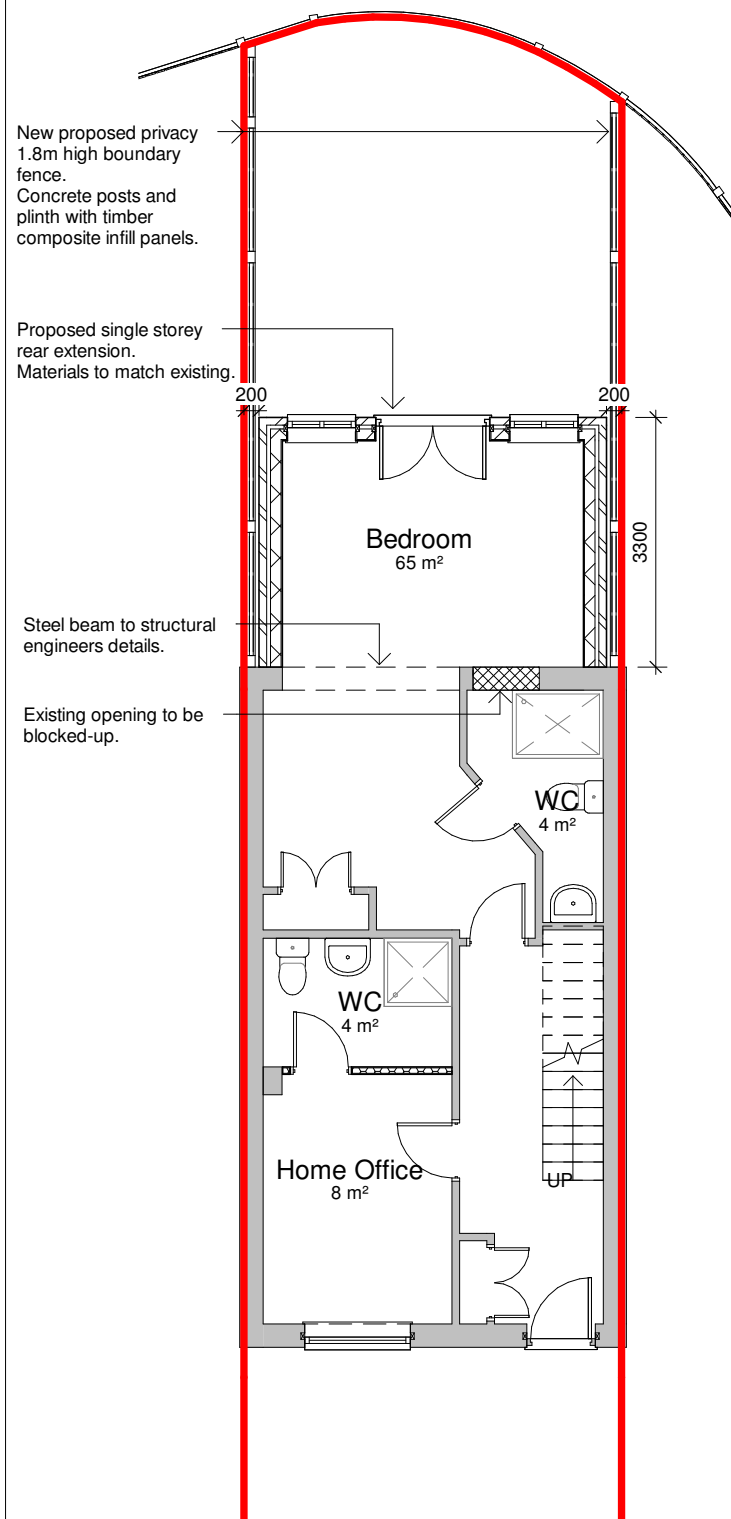


WAVERTON ROAD

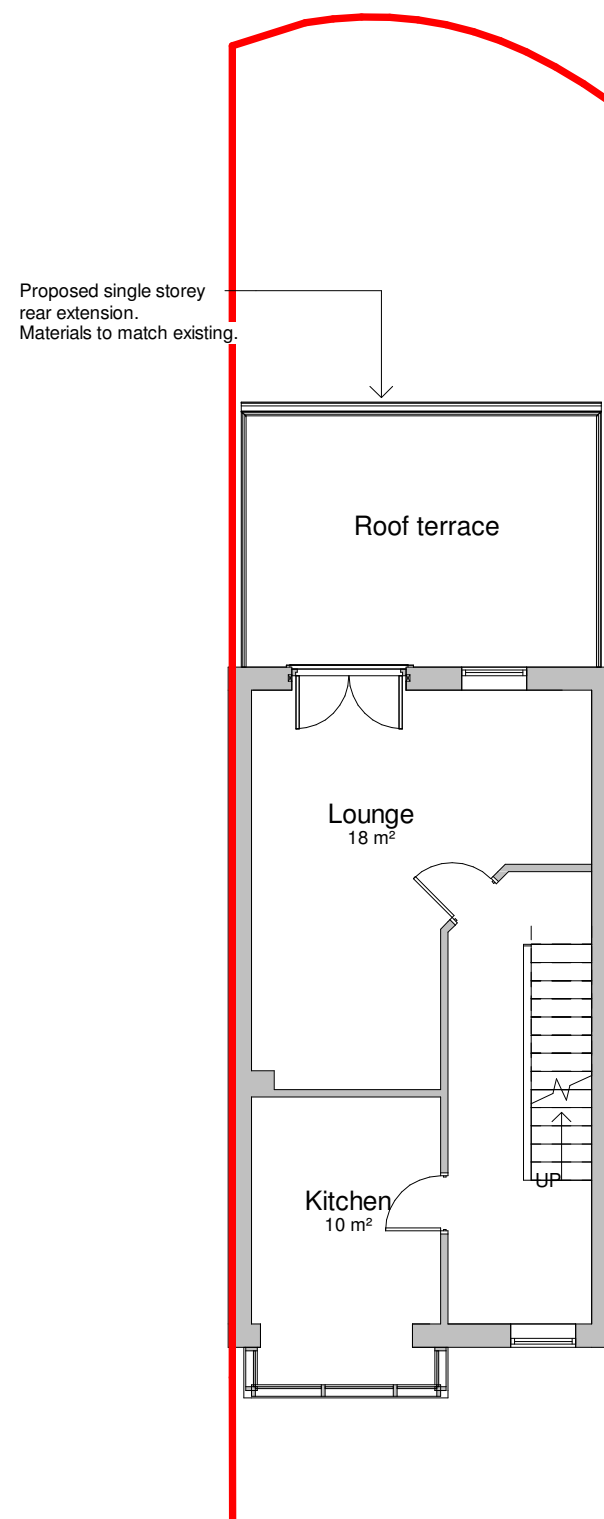
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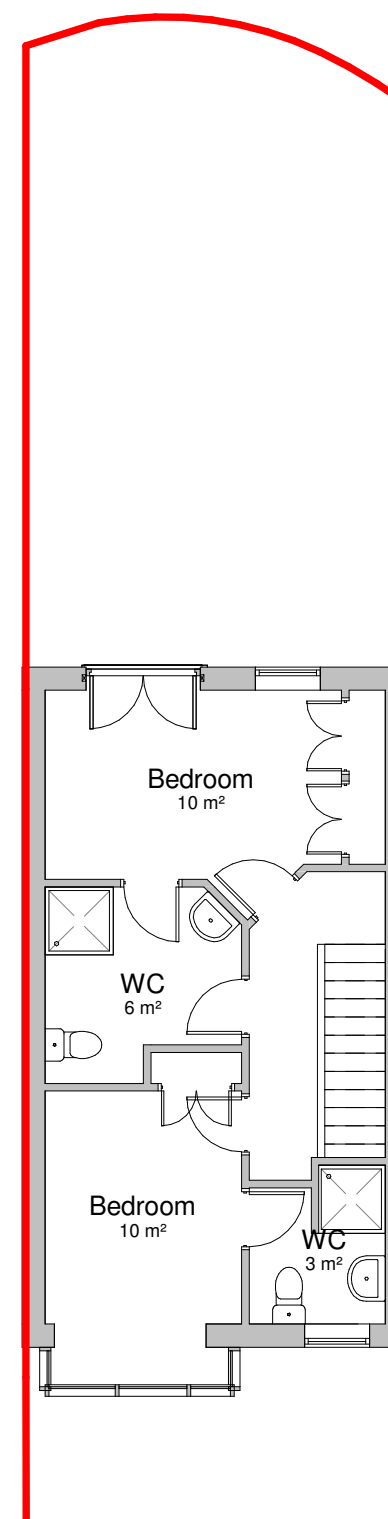
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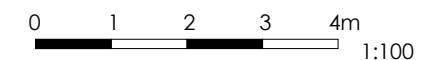
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2 Proposed First Floor Plan
1 : 100



3 Proposed Second Floor Plan
1 : 100



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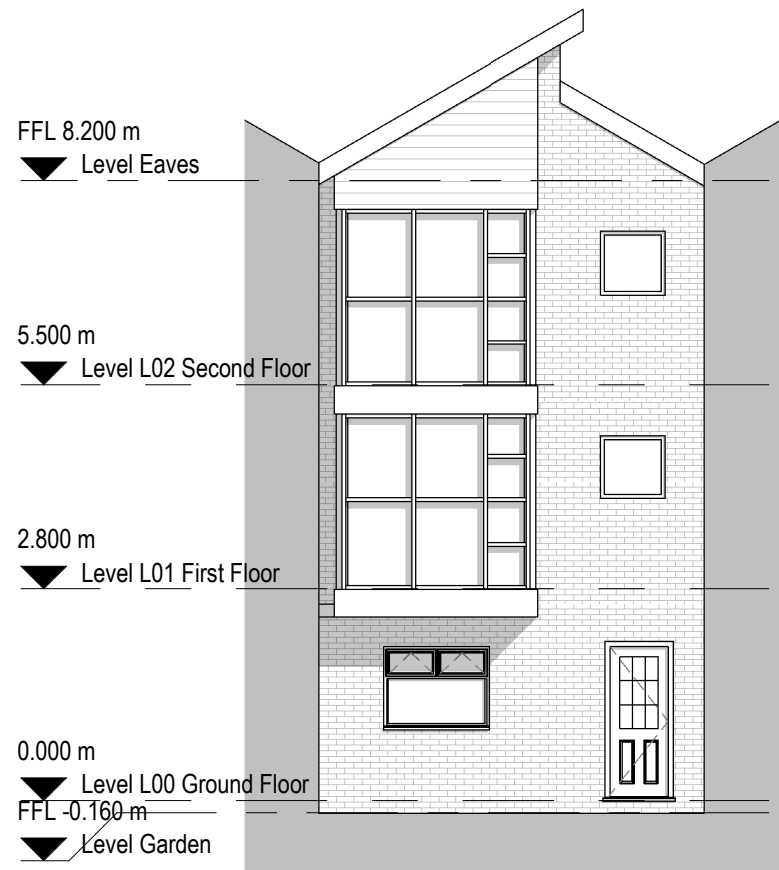
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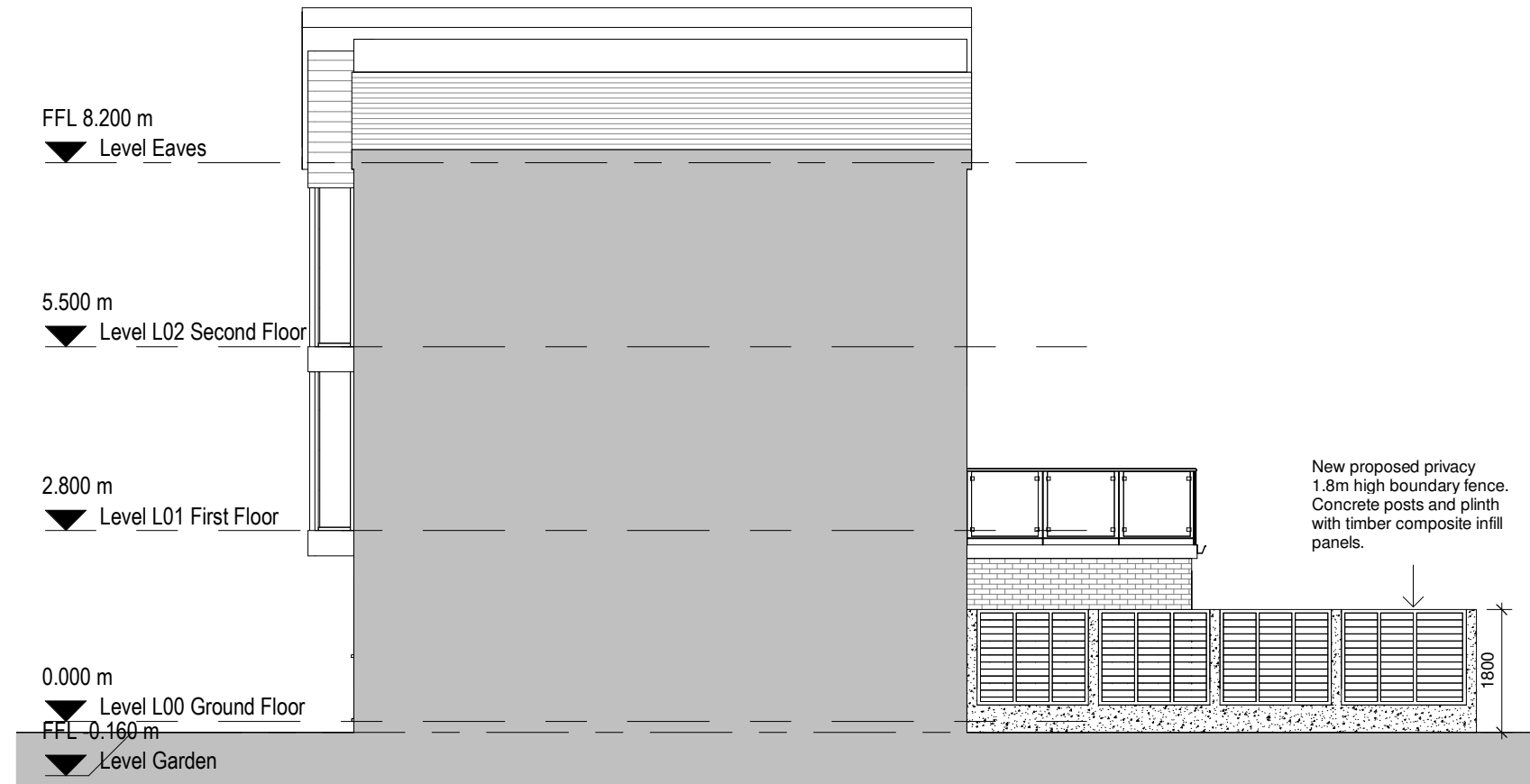


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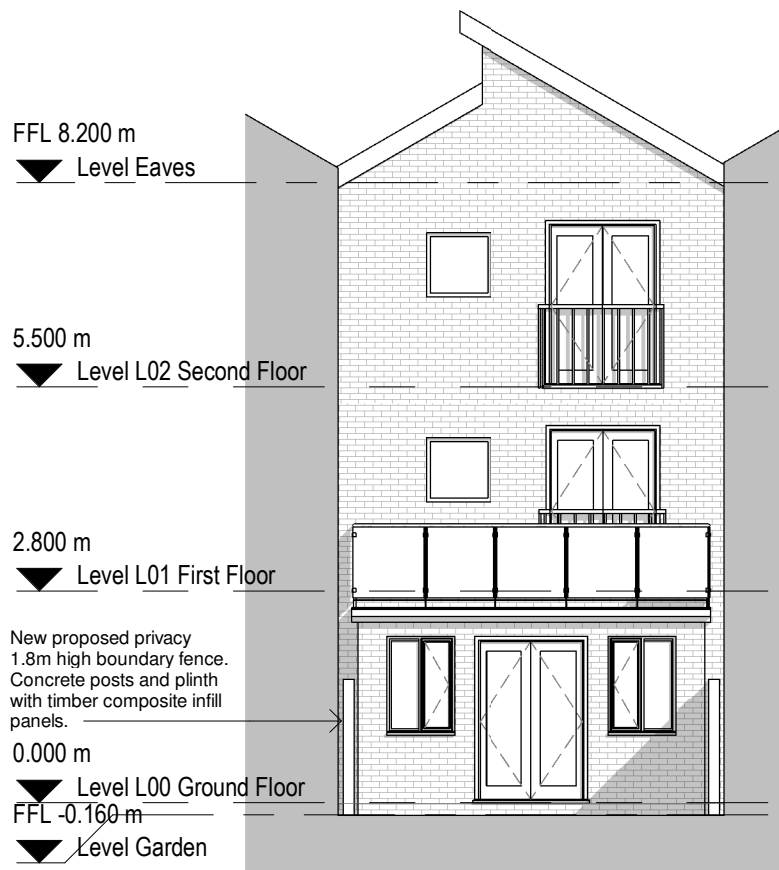
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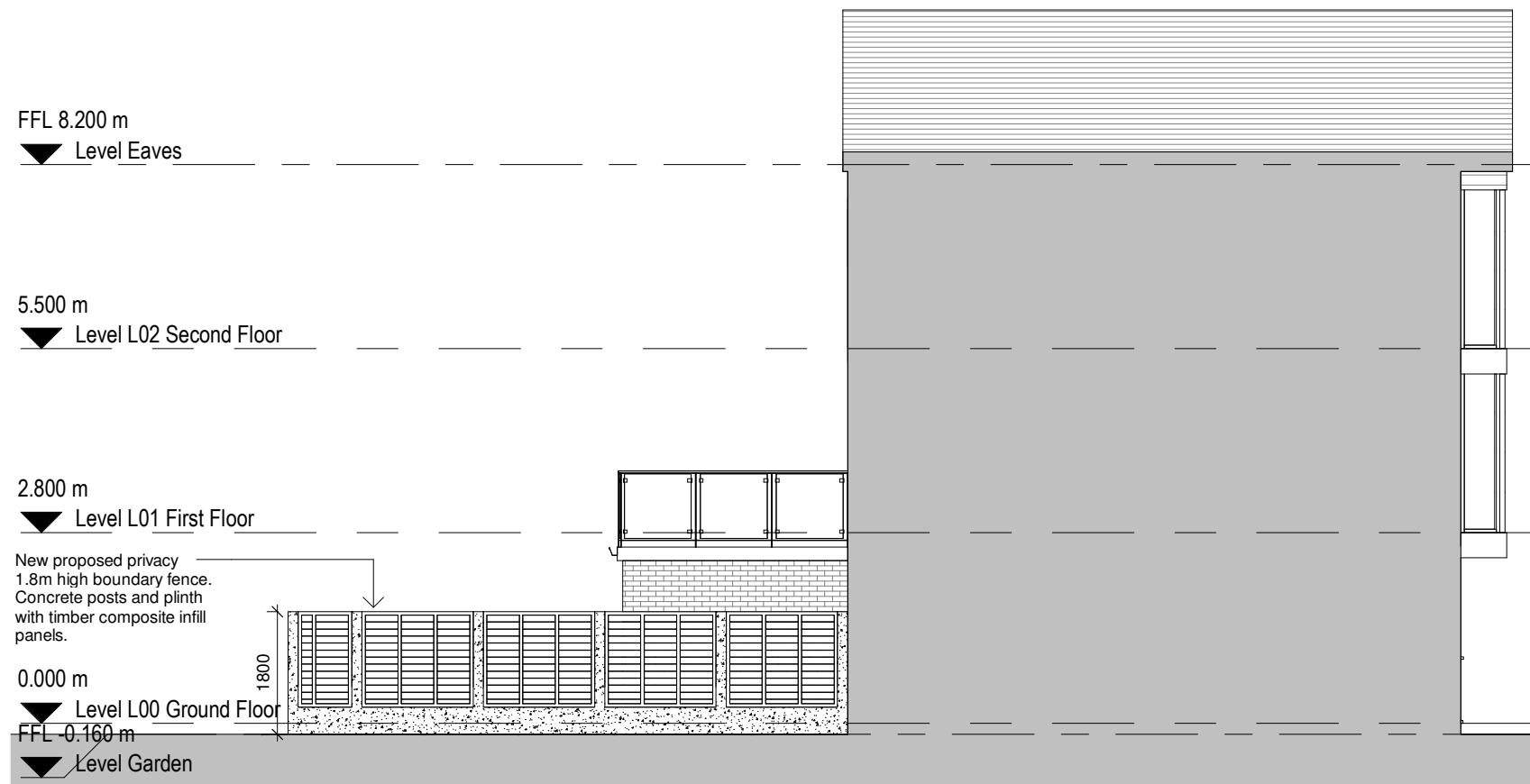
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1 : 100

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Drawing Title
Proposed Elevations

Drawing Number
A1435(02)003
Drawing Status
Preliminary
Revision
P2

Appendix B - Product 4 Data Set

Flood risk assessment data

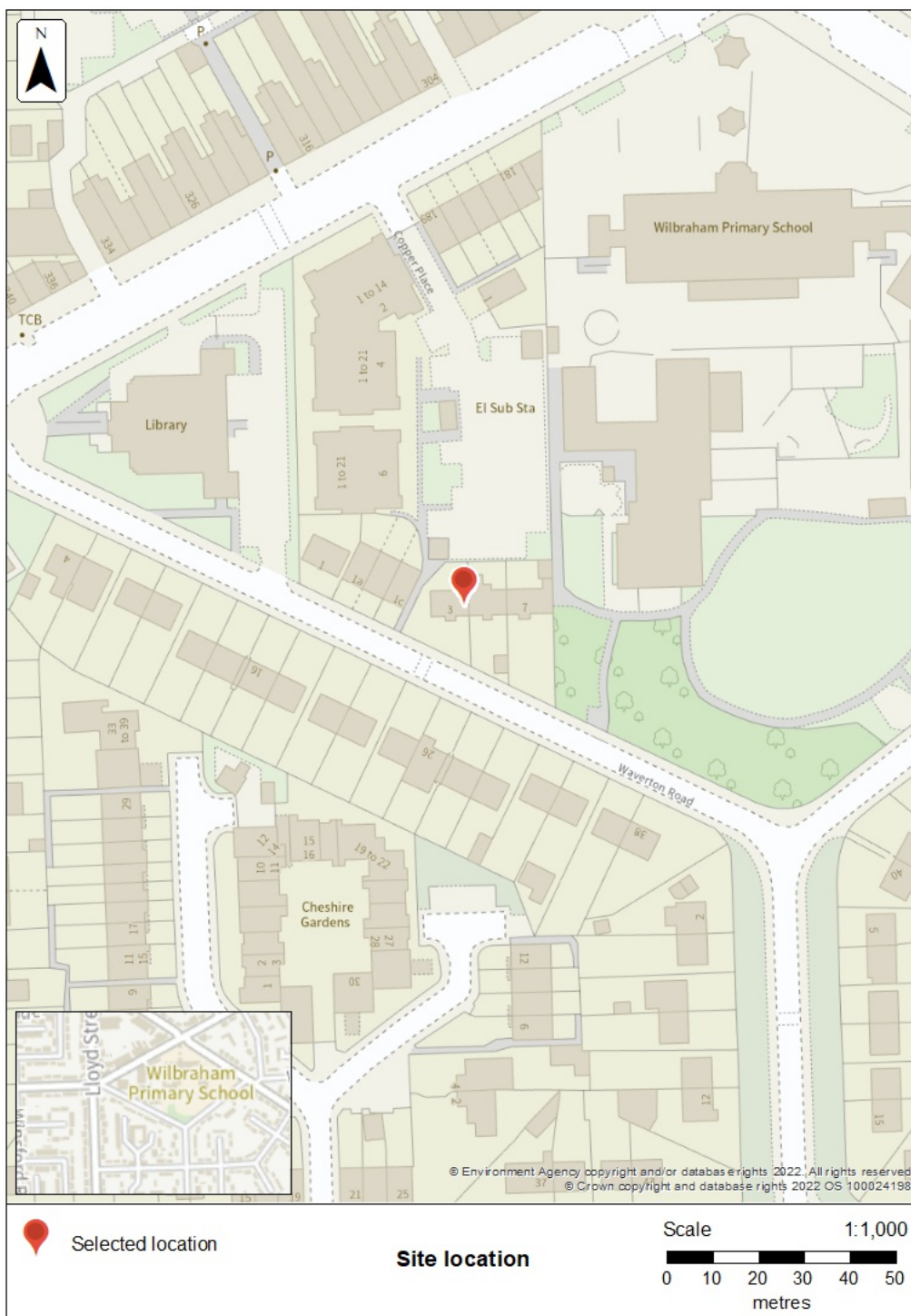
Location of site: 384324 / 394389 (shown as easting and northing coordinates)

Document created on: 29 November 2022

This information was previously known as a product 4.

Customer reference number: VMBK2EYXN3X3

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
- climate change 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.

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.

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: CHOP_2012_D
Scenario(s): Defended fluvial
Date: 16 March 2012

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

Model name: Cringle Brook
Scenario(s): Defended fluvial
Date: 17 May 2018

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 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

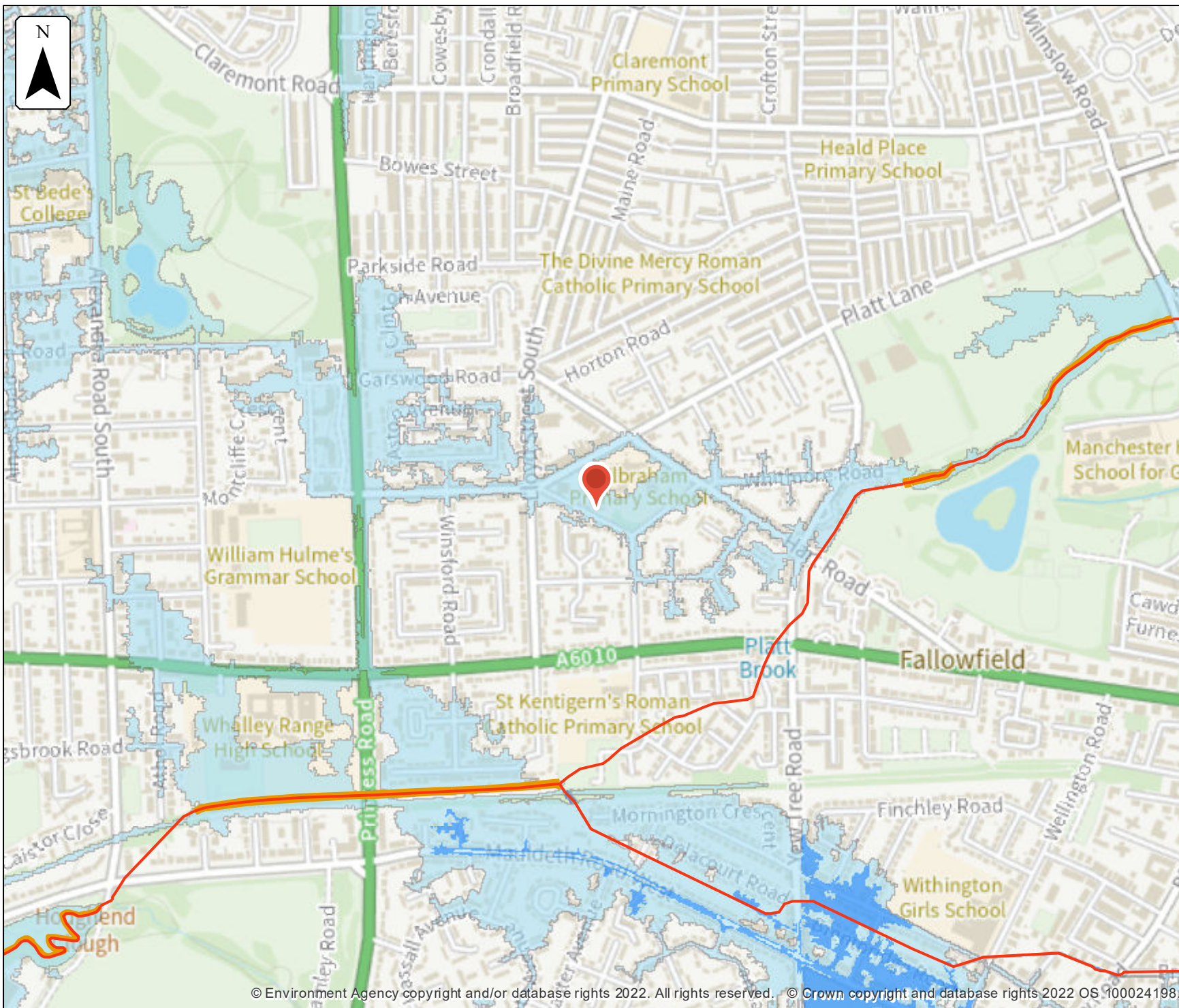
Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

- 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

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



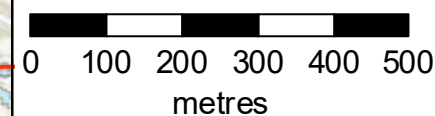
Flood map for planning

Location (easting/northing)
384324/394389

Scale
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Created
29 Nov 2022

-  Selected location
-  Main river
-  Flood defence
-  Flood zone 3
-  Flood zone 2

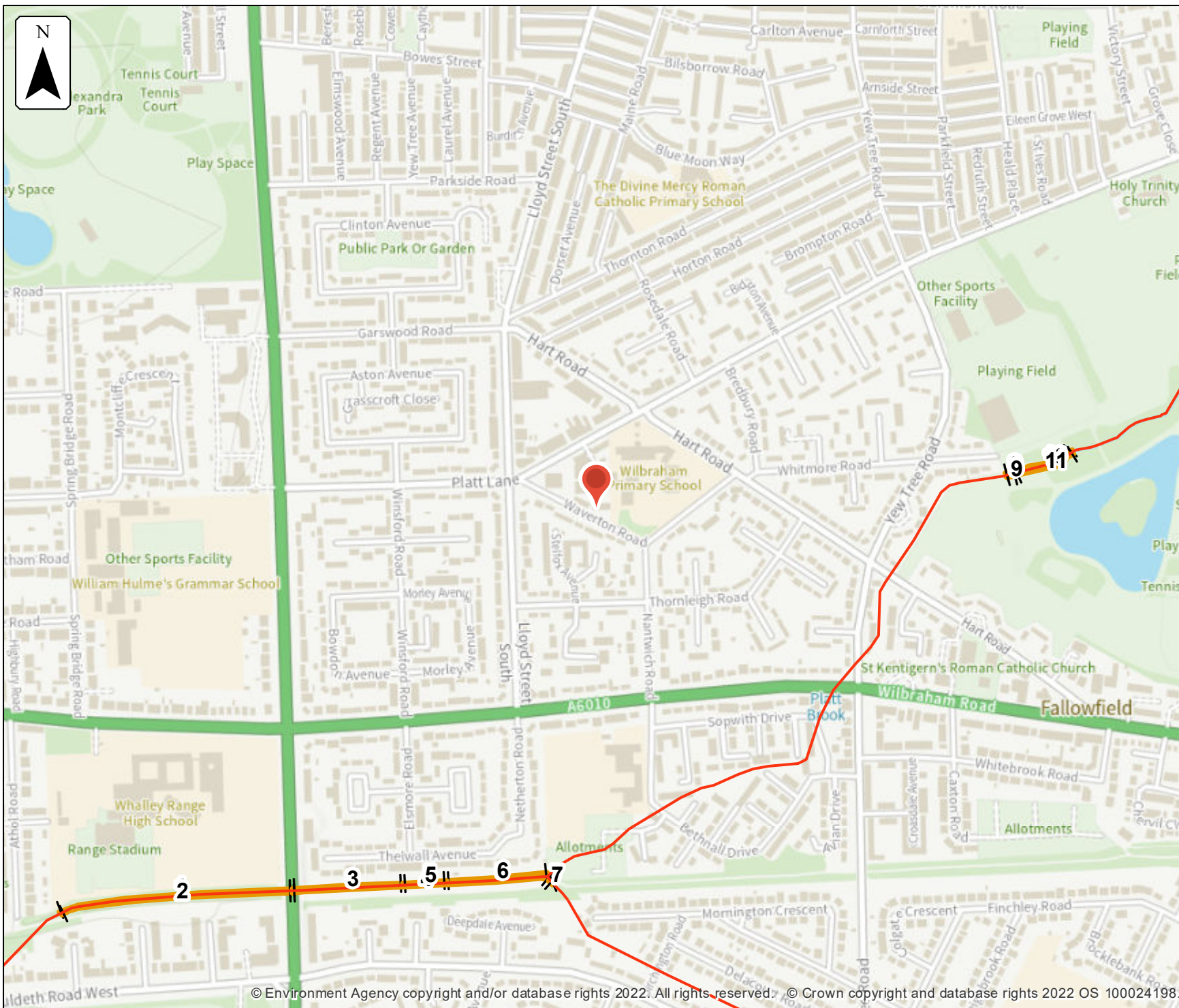


Flood defences and attributes

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.



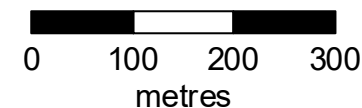
Flood defences

Location (easting/northing)
384324/394389

Scale
1:7,500

Created
29 Nov 2022

-  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	120082	Embankment	100	Fair	30.36	31.27	
2	32515	Embankment	100	Poor	30.29	31.52	
3	32518	Wall	100	Poor	31.48	31.84	
4	60038	Embankment	100	Fair	31.39	32.25	
5	59788	Embankment	100	Fair	31.81	32.82	
6	122064	Wall	100	Fair	31.84	31.90	
7	8987	Engineered High Ground	5	Fair	31.60	31.99	
8	32543	Wall	100	Fair	35.74	35.76	
9	32516	Wall	100	Fair	35.75	35.75	
10	120657	Embankment	100	Fair	36.29	36.27	
11	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(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

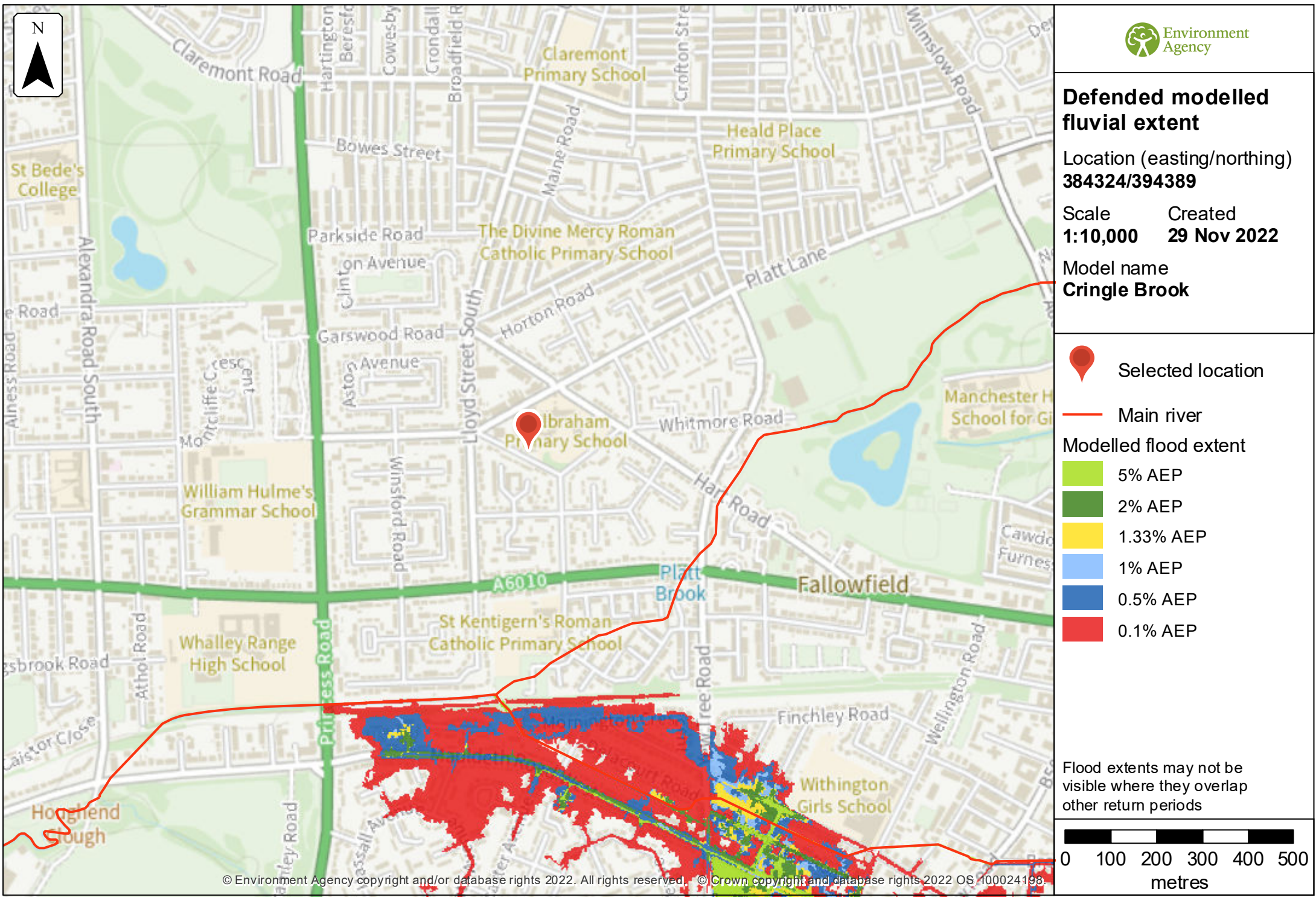
The climate change data included in the models may not include the latest [flood risk assessment climate change allowances](#). Where the new allowances are not available you will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding.

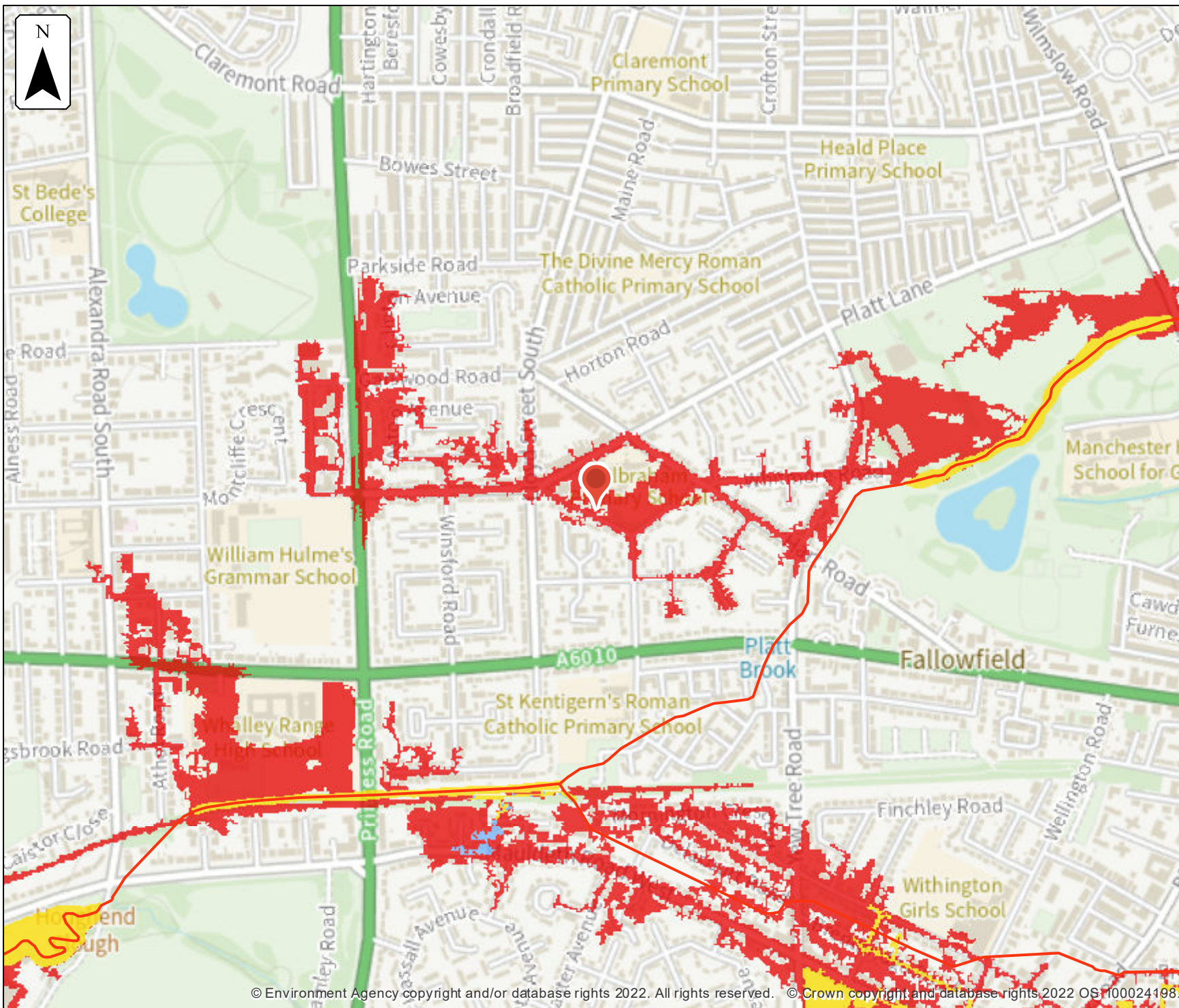
The Environment Agency will incorporate the new allowances into future modelling studies. For now, it's your responsibility to demonstrate that new developments will be safe in flood risk terms for their lifetime.

Modelled scenarios

The following scenarios are included:

- Defended modelled fluvial: risk of flooding from rivers where there are flood defences
- 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





Defended modelled fluvial extent

Location (easting/northing)
384324/394389

Scale Created
1:10,000 29 Nov 2022

Model name
CHOP 2012 D

 Selected location

 Main river

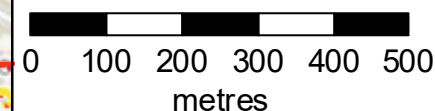
Modelled flood extent

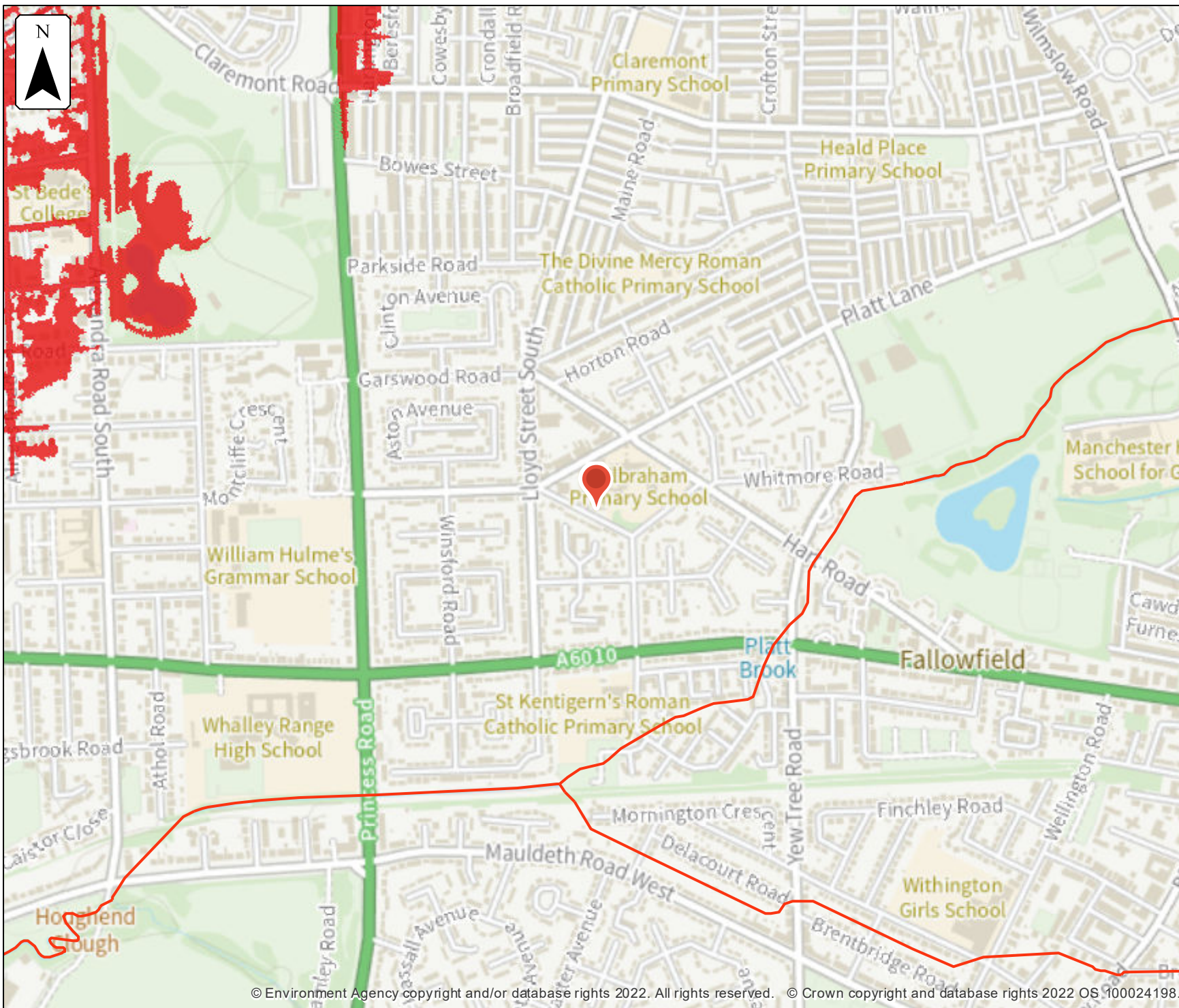
 1.33% AEP

 1% AEP

 0.1% AEP

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





No defences exist modelled fluvial extent

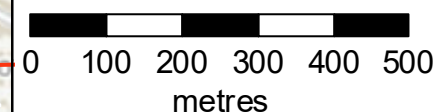
Location (easting/northing)
384324/394389

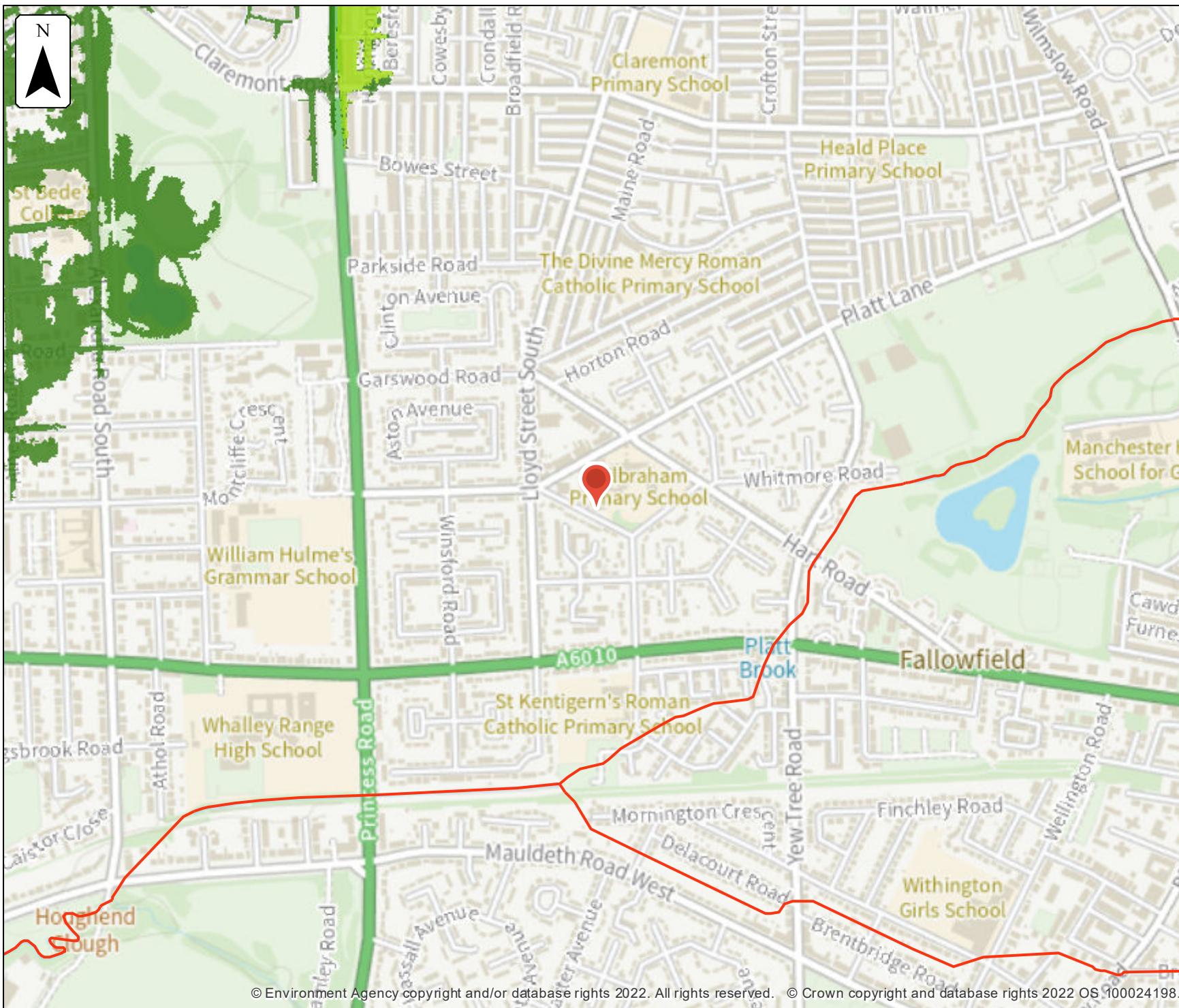
Scale Created
1:10,000 29 Nov 2022

Model name
Corn Brook 2017

-  Selected location
-  Main river
- Modelled flood extent
 -  0.1% AEP

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





No defences exist climate change modelled fluvial extent

Location (easting/northing)
384324/394389

Scale Created
1:10,000 29 Nov 2022

Model name
Corn Brook 2017

 Selected location

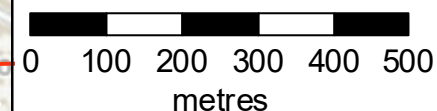
 Main river

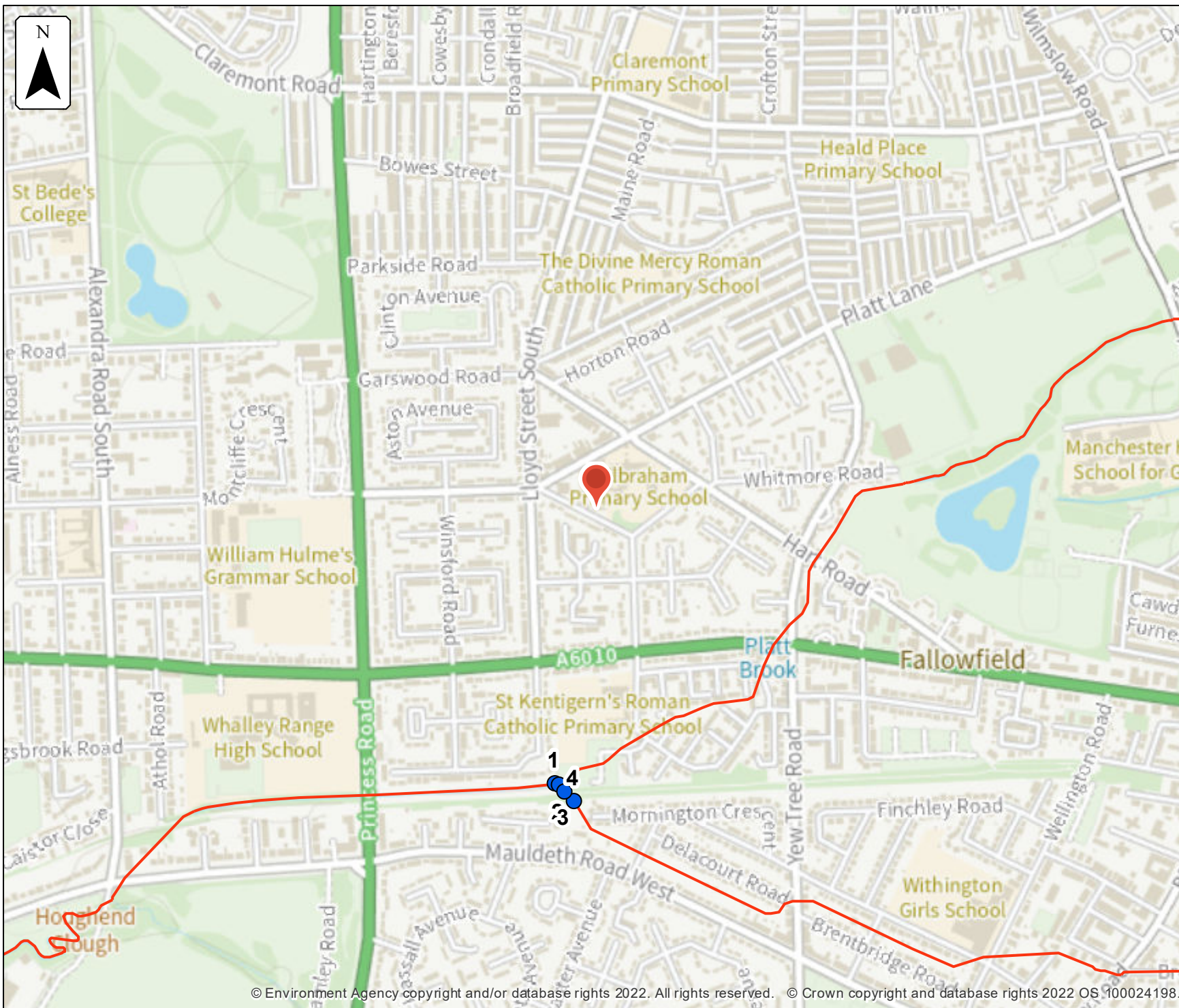
Modelled flood extent

 1.0% AEP (+70%)

 0.1% AEP (+30%)

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





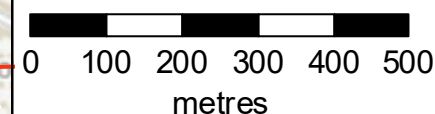
Defended modelled fluvial node locations

Location (easting/northing)
384324/394389

Scale Created
1:10,000 29 Nov 2022

Model name
Cringle Brook

-  Selected location
-  Modelled location
-  Main river



Modelled node locations data

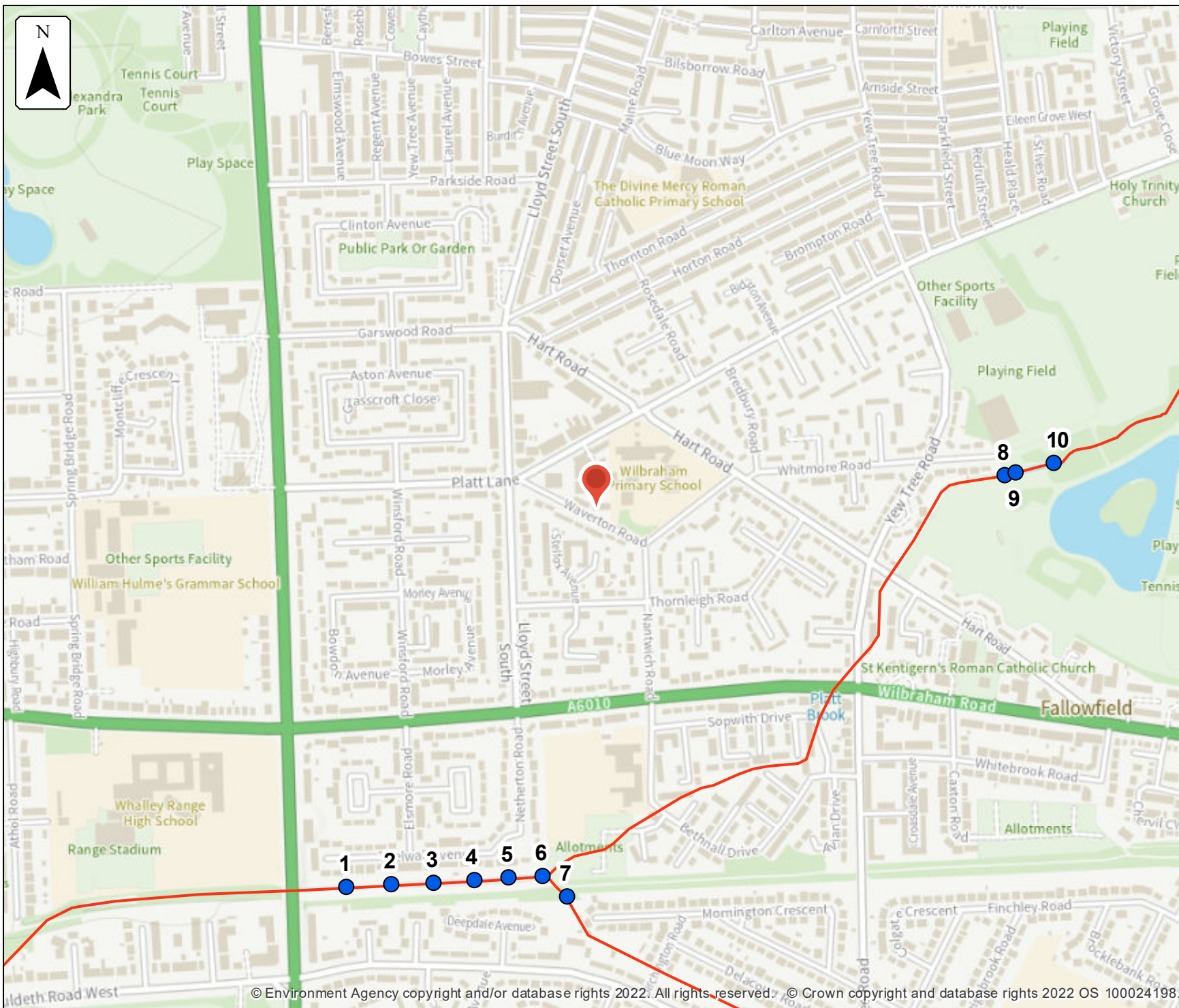
Defended

Label	Modelled location ID	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
				Level	Flow	Level	Flow	Level	Flow	Level	Flow	Level	Flow	Level	Flow
1	945183	384245	393853	31.85	3.96	31.85	3.96	31.85	3.96	31.85	3.96	31.85	3.96	31.85	4.24
2	945187	384251	393849	31.85	3.96	31.85	3.96	31.85	3.96	31.85	3.96	31.85	3.97	31.85	4.24
3	945244	384264	393838	31.85	3.96	31.85	3.96	31.85	3.96	31.85	3.96	31.85	3.96	31.89	4.24
4	945243	384280	393818	31.85	3.96	31.85	3.96	31.85	3.96	31.85	3.96	31.85	3.96	31.89	3.98

Data in this table comes from the Cringle Brook 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.



Defended modelled fluvial node locations

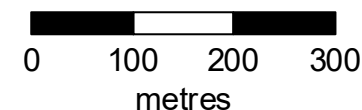
Location (easting/northing)
384324/394389

Scale
1:7,500

Created
29 Nov 2022

Model name
CHOP 2012 D

-  Selected location
-  Modelled location
-  Main river



Modelled node locations data

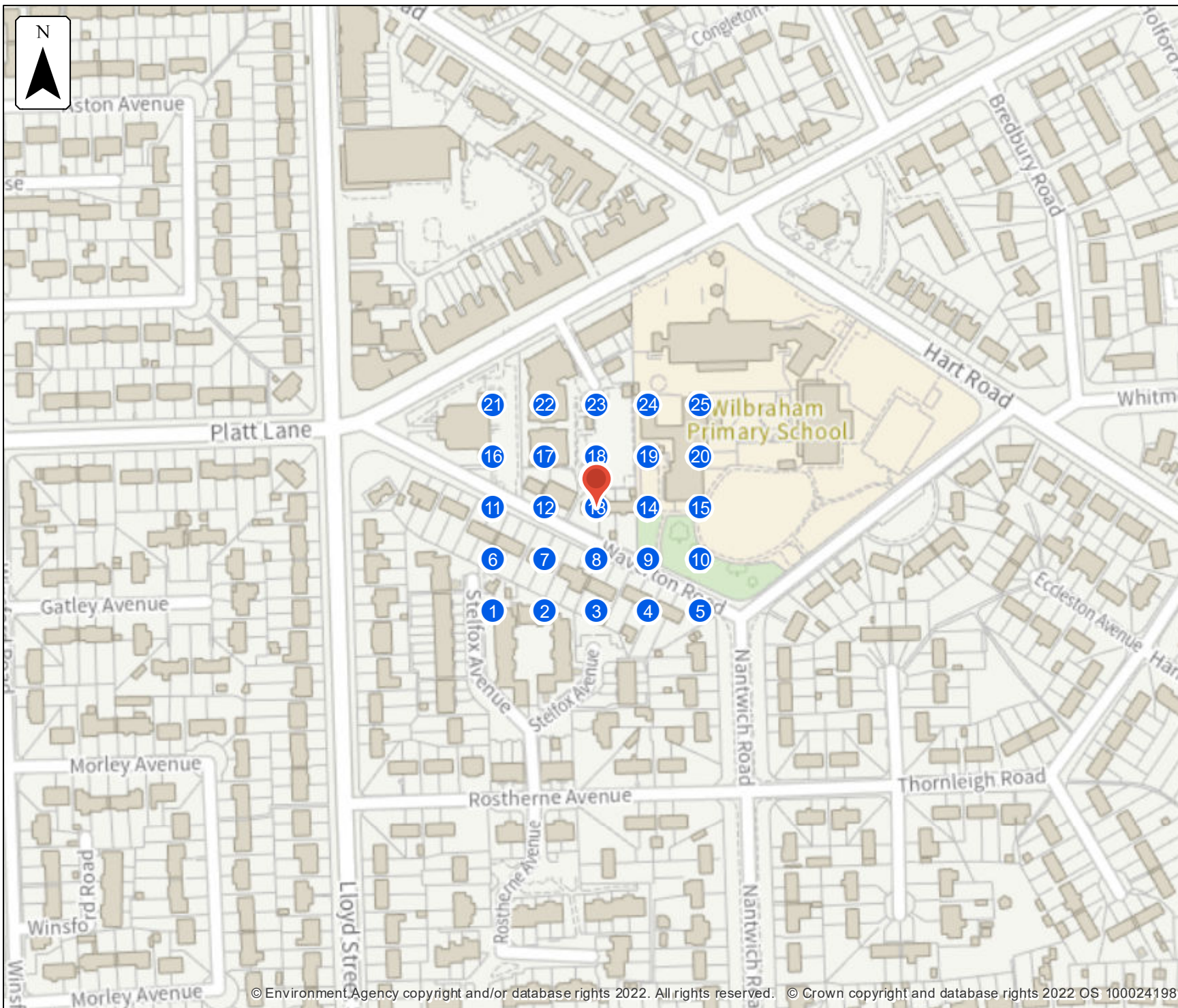
Defended

Label	Modelled location ID	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
				Level	Flow	Level	Flow	Level	Flow	Level	Flow	Level	Flow	Level	Flow
1	223725	383960	393835					31.37	17.03	31.41	17.76			31.83	24.60
2	188285	384027	393839					31.49	17.03	31.53	17.76			31.92	24.61
3	253114	384088	393842					31.57	17.03	31.61	17.77			32.0	24.56
4	276506	384146	393846					31.68	17.03	31.72	17.77			32.09	24.57
5	297622	384197	393849					31.75	17.04	31.79	17.77			32.16	24.57
6	69311	384246	393852					31.81	16.87	31.85	17.63			32.20	24.19
7	67249	384281	393822					31.84	3.73	31.88	3.73			32.20	3.70
8	63554	384920	394436					33.37	10.69	33.42	11.23			35.95	16.42
9	251671	384935	394440					33.68	10.69	33.73	11.23			36.06	16.43
10	321302	384990	394452					33.85	10.69	33.90	11.23			36.11	16.57

Data in this table comes from the CHOP 2012 D 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
modelled fluvial
extent and height**

Location (easting/northing)
384324/394389

Scale Created
1:2,500 29 Nov 2022

Model name
Corn Brook 2017

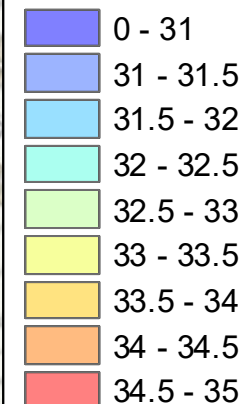


Selected location

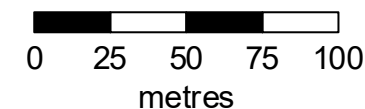
— Main river

Modelled 2D grid

Water level in mAOD



This map shows the
0.1% AEP height data



Sample point data

No defences exist

Label	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
1	384274	394339											NoData	NoData
2	384299	394339											NoData	NoData
3	384324	394339											NoData	NoData
4	384349	394339											NoData	NoData
5	384374	394339											NoData	NoData
6	384274	394364											NoData	NoData
7	384299	394364											NoData	NoData
8	384324	394364											NoData	NoData
9	384349	394364											NoData	NoData
10	384374	394364											NoData	NoData
11	384274	394389											NoData	NoData
12	384299	394389											NoData	NoData
13	384324	394389											NoData	NoData
14	384349	394389											NoData	NoData
15	384374	394389											NoData	NoData
16	384274	394414											NoData	NoData

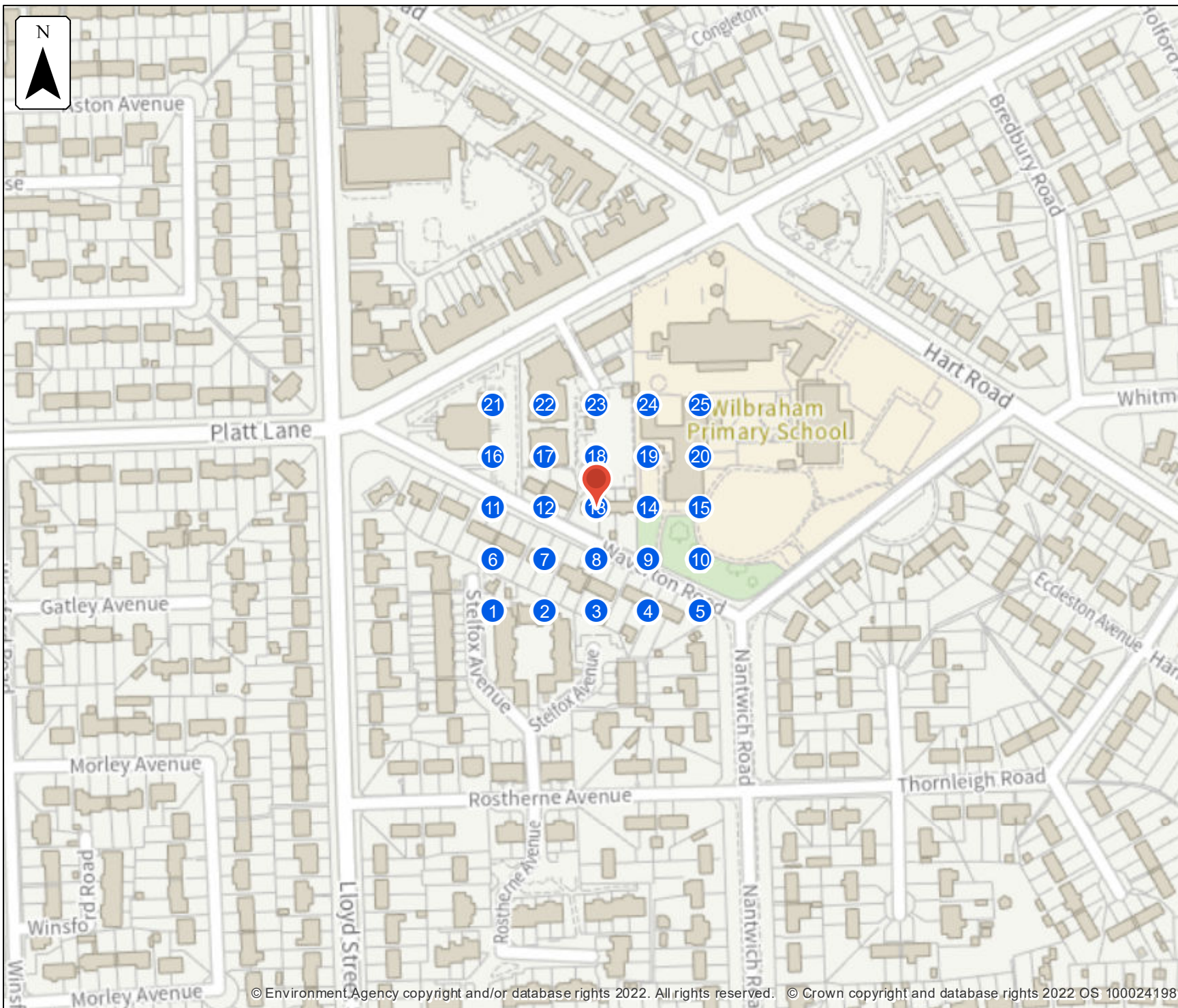
Label	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
17	384299	394414											NoData	NoData
18	384324	394414											NoData	NoData
19	384349	394414											NoData	NoData
20	384374	394414											NoData	NoData
21	384274	394439											NoData	NoData
22	384299	394439											NoData	NoData
23	384324	394439											NoData	NoData
24	384349	394439											NoData	NoData
25	384374	394439											NoData	NoData

Data in this table comes from the Corn Brook 2017 model.

Height values are shown in mAOD, and depth values are shown in metres.

Any blank cells show where a particular scenario has not been modelled for this location.

Cells which contain text 'NoData' for a scenario show that return period has been modelled but there is no flood risk for that return period for that location.



No defences exist climate change modelled fluvial extent and height

Location (easting/northing)
384324/394389

Scale Created
1:2,500 29 Nov 2022

Model name
Corn Brook 2017

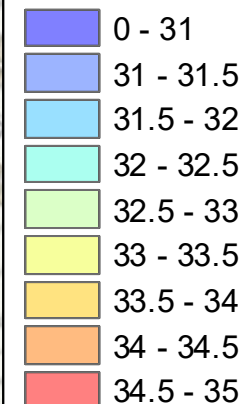


Selected location

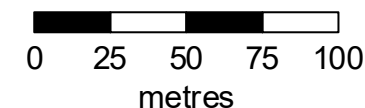
Main river

Modelled 2D grid

Water level in mAOD



This map shows the
0.1% AEP +30% height data



Sample point data

No defences exist climate change

Label	Easting	Northing	1% AEP (+70%)		0.1% AEP (+30%)	
			Depth	Height	Depth	Height
1	384274	394339	NoData	NoData	NoData	NoData
2	384299	394339	NoData	NoData	NoData	NoData
3	384324	394339	NoData	NoData	NoData	NoData
4	384349	394339	NoData	NoData	NoData	NoData
5	384374	394339	NoData	NoData	NoData	NoData
6	384274	394364	NoData	NoData	NoData	NoData
7	384299	394364	NoData	NoData	NoData	NoData
8	384324	394364	NoData	NoData	NoData	NoData
9	384349	394364	NoData	NoData	NoData	NoData
10	384374	394364	NoData	NoData	NoData	NoData
11	384274	394389	NoData	NoData	NoData	NoData
12	384299	394389	NoData	NoData	NoData	NoData
13	384324	394389	NoData	NoData	NoData	NoData
14	384349	394389	NoData	NoData	NoData	NoData
15	384374	394389	NoData	NoData	NoData	NoData
16	384274	394414	NoData	NoData	NoData	NoData

Label	Easting	Northing	1% AEP (+70%)		0.1% AEP (+30%)	
			Depth	Height	Depth	Height
17	384299	394414	NoData	NoData	NoData	NoData
18	384324	394414	NoData	NoData	NoData	NoData
19	384349	394414	NoData	NoData	NoData	NoData
20	384374	394414	NoData	NoData	NoData	NoData
21	384274	394439	NoData	NoData	NoData	NoData
22	384299	394439	NoData	NoData	NoData	NoData
23	384324	394439	NoData	NoData	NoData	NoData
24	384349	394439	NoData	NoData	NoData	NoData
25	384374	394439	NoData	NoData	NoData	NoData

Data in this table comes from the Corn Brook 2017 model.

Height values are shown in mAOD, and depth values are shown in metres.

Any blank cells show where a particular scenario has not been modelled for this location.

Cells which contain text 'NoData' for a scenario show that return period has been modelled but there is no flood risk for that return period for that 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

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