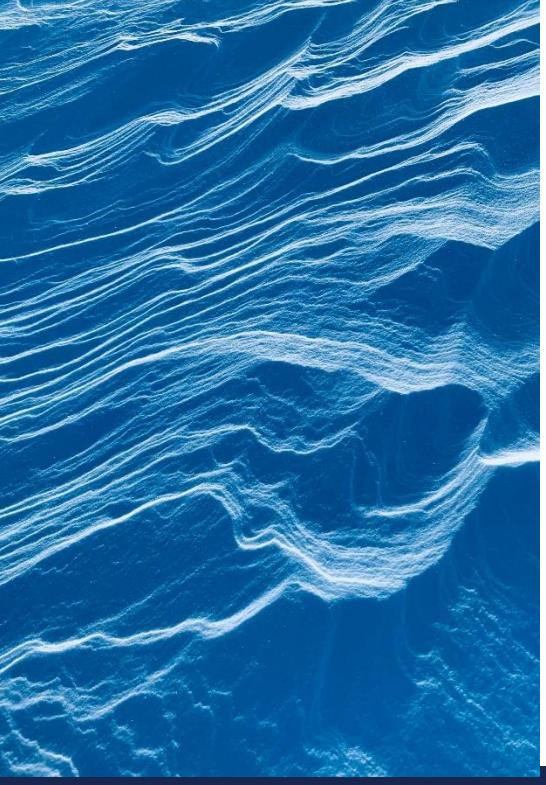


Flood Risk Assessment

AEG0639_M19_Manchester_01

Site Address: 26 Hembury Avenue
Manchester
M19 1FH

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

Document Issue Record

Project: Flood Risk Assessment

Prepared for: Muhammad Ayub

Reference: AEG0639_M19_Manchester_01

Site Location: 26 Hembury Avenue, Manchester, M19 1FH

Consultant		Date
Author	Miriam Warren	08/09/2022
Document Check	Lauren Towle	14/09/2022
Authorisation	Chris Cameron-Hann	15/09/2022

Please Note:

This report has been prepared for the exclusive use of the commissioning party and may not be reproduced without prior written permission from Aegaea Limited. All work has been carried out within the terms of the brief using all reasonable skill, care, and diligence. No liability is accepted by Aegaea Limited for the accuracy of data or opinions provided by others in the preparation of this report, or for any use of this report other than for the purpose for which it was produced. Where reference has been made to probability events, or risk probability, it does not ensure that there is no risk or that there is no residual risk from an extreme, unlikely, or unforeseen flood event over the lifetime of the development.

aegaea

Flood risk, water and environment

Table of Contents

Summary 1

1. Introduction 3

Site Overview 3

Planning Policy and Guidance 5

2. Planning Policy 6

National Planning Policy Framework 6

Local Plan 8

Sequential and Exception Tests 8

Summary 9

3. Consultation and Review 10

Sources of Information 10

4. Sources of Flood Risk 12

Fluvial Flood Risk 12

Tidal Flooding 15

Canals 15

Pluvial Flood Risk 16

Reservoirs 17

Groundwater 17

Sewer Flooding 18

5. Flood Risk Mitigation 19

Fluvial 19

Tidal, Canals, Pluvial, Reservoirs, Groundwater and Sewers 19

Increase to Flood Risk Elsewhere 19

6. Conclusions 21

Appendix A – Product 4 Data 23

aegaea

Flood risk, water and environment

Summary

Development Description	Existing	Proposed
Development Type	A residential dwelling.	A single storey side 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 45.12m AOD to 45.71m 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	214m^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 and within the extents of the 0.1% AEP and 1% AEP pluvial flood events.
SFRA Available	Manchester SFRA (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.
Flood Warning & Evacuation Plan	N/A[1]	Access/ egress arrangements would not differ from existing as proposal is Minor Development.
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 Flood Risk and Coastal Change PPG
Increase in surface run-off generation	N/A	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 and development is occurring 17m from the ordinary watercourse.

[1] not required for this assessment

[2] data not available.

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

1. Introduction

1.1. Aegaea were commissioned by Muhammad Ayub 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 26 Hembury Avenue, Manchester, M19 1FH (Figure 1).

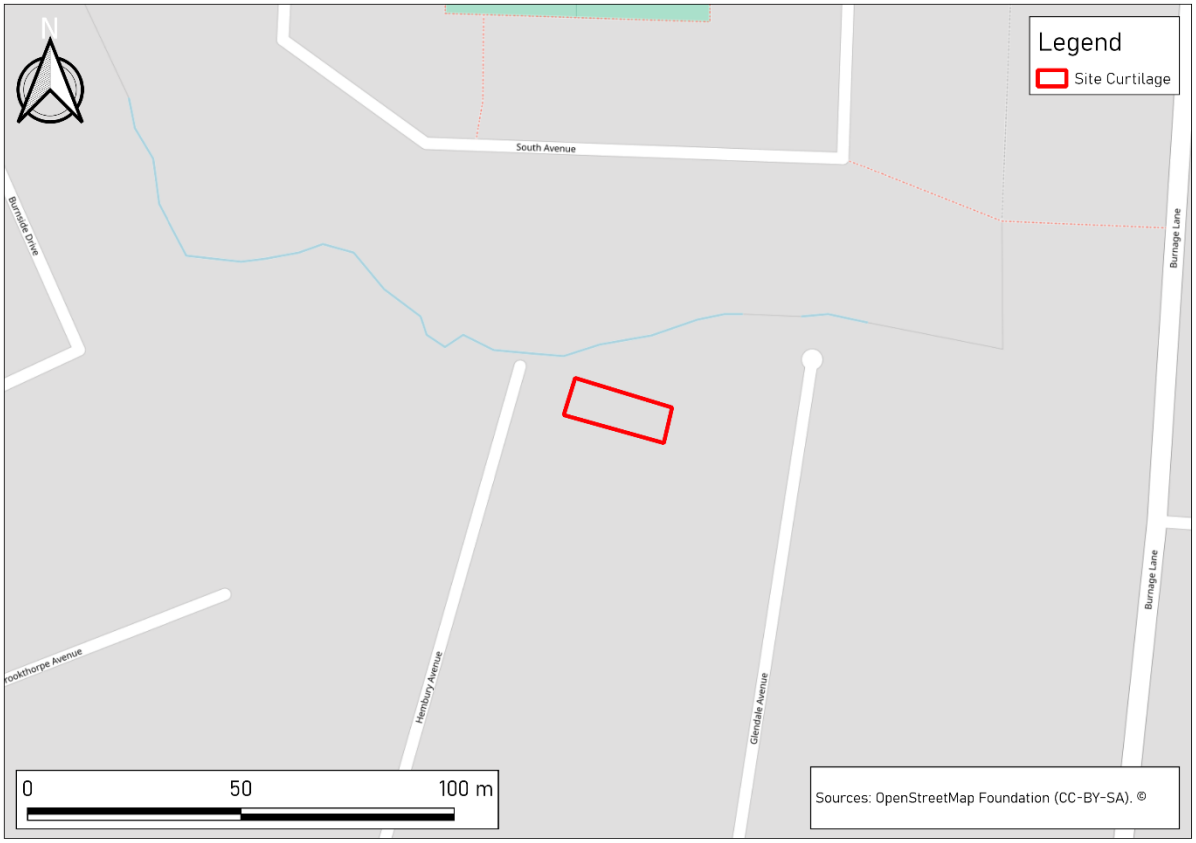


Figure 1: Site Location

1.4. The proposed development is for the construction of a single storey side extension to the existing dwelling on site.

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). Elevation on site is shown to range from 45.12m AOD to 45.71m AOD.

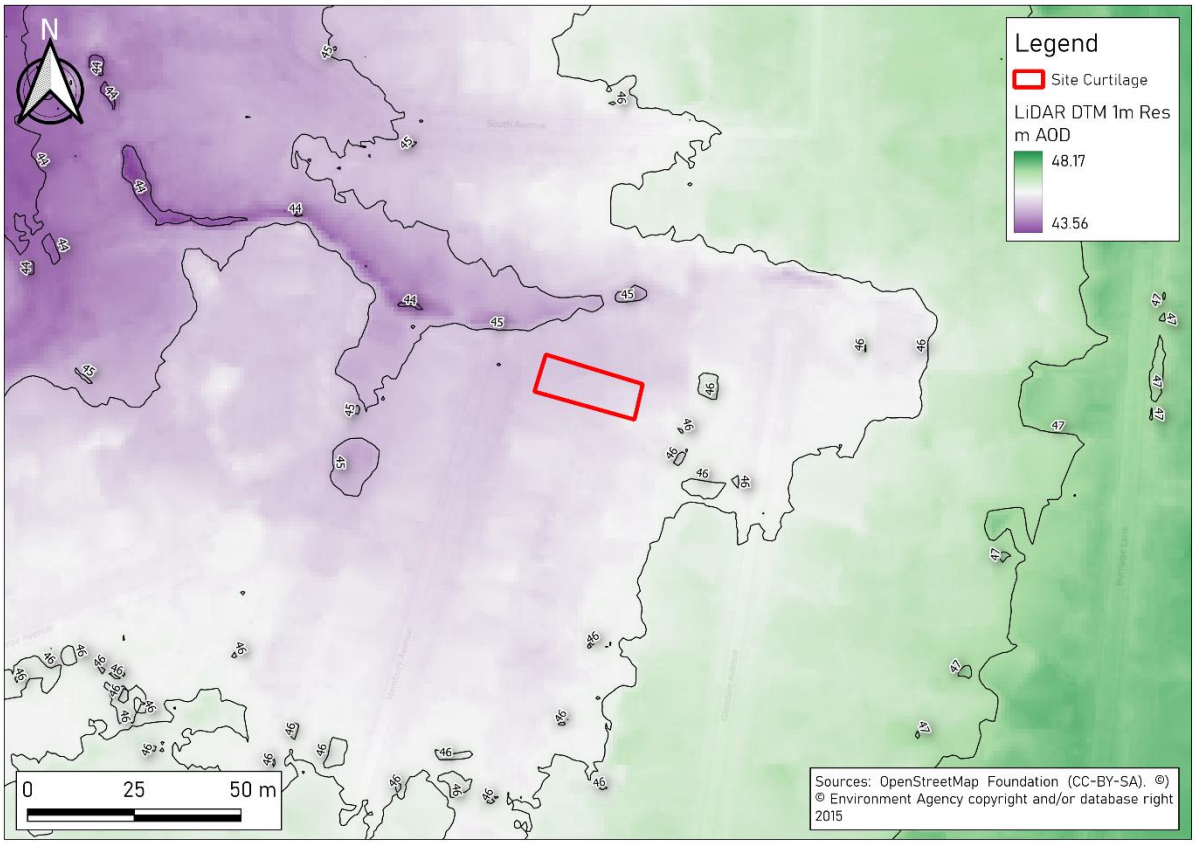


Figure 2: Site Topography

1.6. Manchester City Council is the Local Planning Authority (LPA) for the site and 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 states[2] that an FRA is required for sites which are:

- *In Flood Zone 2 or 3 including minor development 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 in Flood Zone 2 therefore the NPPF states that an FRA is required.

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 Framework[3] (NPPF) (DCLG, 2021) includes Government policy on development and flood risk stating that:

> *"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. "*

[3] https://www.gov.uk/guidance/national-planning-policy-framework, **last updated July 2021**

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

Minor development means:

- *minor non-residential extensions: industrial/commercial/leisure etc extensions with a footprint less than 250 square metres.*
- *alterations: development that does not increase the size of buildings eg alterations to external appearance.*
- *householder development: For example; sheds, garages, games rooms etc within the curtilage of the existing dwelling, i**n 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 e.g. 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 has to flow or be stored in times of flood. 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.

Local Plan

2.8. 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'[4] (2012).

2.9. 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 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.*

Sequential and Exception Tests

2.10. 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.

2.11. 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.

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

This test should be implemented by local planning authorities with a view to location particularly vulnerable new developments outside of the flood plain.

2.12. Paragraph 168 of the NPPF states:

> *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.*

2.13. As such, a site-specific Sequential Test and Exception Test for the proposed developments is not considered necessary in line with the NPPF given that the proposal is for a Minor Development.

Summary

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

3. Consultation and Review

Sources of Information

Consultation

3.1. The site is within the remit of Manchester City Council as Lead Local Flood Authority (LLFA). A Product 4 data request has been submitted and is utilised throughout the fluvial section of this report.

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) website[5].
- 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 [6] (2012).
- Manchester Preliminary Flood Risk Assessment[7] (PFRA), (2011).
- Manchester Strategic Flood Risk Assessment Level 1[8] (SFRA) (2010).
- Manchester Strategic Flood Risk Assessment Level 2[9] (SFRA) (2011).
- Greater Manchester Surface Water Management Plan[10] (SWMP) (2012).

---

5 Environment Agency, Flood Map for Planning, https://flood-map-for-planning.service.gov.uk/, 2017
6 Manchester Local Plan, https://www.manchester.gov.uk/info/200074/planning/6573/core_strategy_2012-2027, 2012
7 Manchester Borough Council, Preliminary Flood Risk Assessment, https://www.manchester.gov.uk/egov_downloads/MCC_PFRA.pdf, 2011
8 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
9 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
10 Greater Manchester Surface Water Management Plan, http://www.bury.gov.uk/CHttpHandler.ashx?id=11439, 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, 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.

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.

4.2. The site is located within Flood Zone 2, as shown in Figure 3. 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 probability.

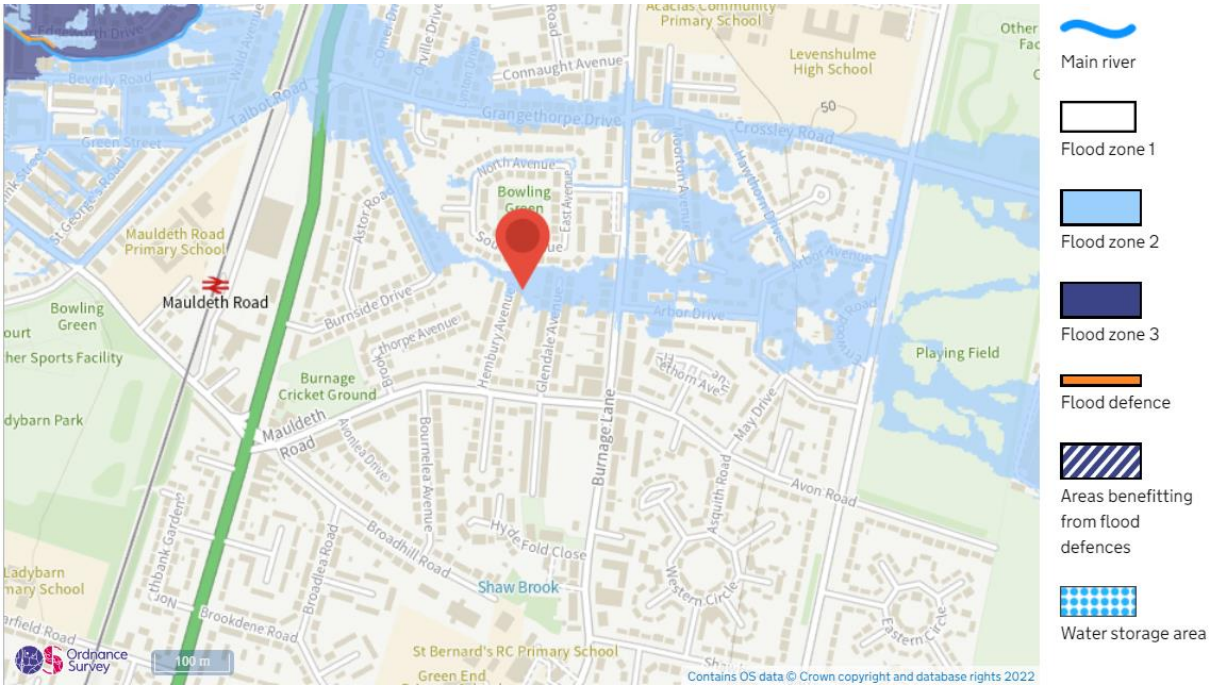


Figure 3: EA Flood Map for Planning

Main Rivers

4.3. The nearest Main River is the Cringle Brook, located approximately 580m to the north west of the site at its nearest point. The Flood Zones are understood to be associated with this watercourse.

Ordinary Watercourses

4.4. There is an ordinary watercourse 6m to the north of the site boundary, the location of which can be seen in Figure 1. This watercourse appears to culvert towards the Cringle Brook. It is designated within the SFRA as a 'lost watercourse'.

4.5. It is thought that this watercourse is not represented within the Flood Map for Planning. The SFRA notes that the EA surface water flood risk mapping can provide an indication of the anticipated floodplain associated with lost watercourses, which includes this feature. This is discussed further in the 'Pluvial Flood Risk' section of this report.

4.6. The development itself is located within the southern side of the property, approximately 17m from the ordinary watercourse.

Climate Change

4.7. The site is located within the Upper Mersey Management Catchment which has the following climate change flow peak flow allowances:

Table 1: Climate Change Flow Allowances

	Central	Higher	Upper
2020s	13%	17%	27%
2050s	22%	31%	51%
2080s	41%	53%	85%

4.8. As the proposed development is a residential development, the 2080s central allowance of 41% is required for analysis.

EA Flood Data

4.9. A Product 4 data set was obtained from the EA providing detailed modelled flood levels for the area. Flood levels were supplied from in-channel nodes for the EA Main River the Cringle Brook and 2D level taken from onsite. The location of these are displayed in Figure 4.

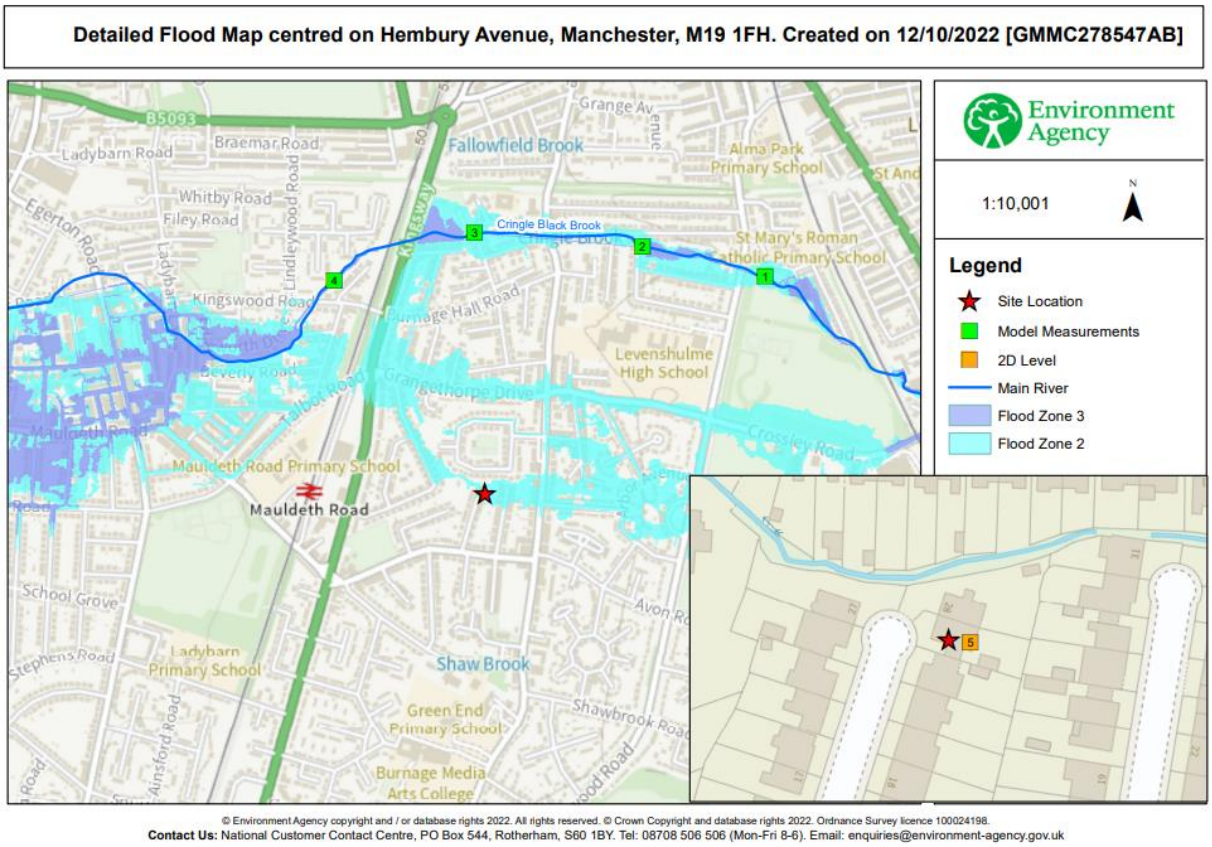


Figure 4: Product 4 Data Nodes

4.10. The 2D nodes on site show that the site is only impacted within the 1% AEP + 70% CC, 0.1% AEP, and the 0.1% AEP + 30% CC for both the defended and undefended scenarios. The site is calculated to experience flood depths on site within the 0.1% AEP event of 0.22m calculated from the minimum on site elevation of 45.12m AOD.

4.11. The data did not include flood data for the 1% AEP and the design flood event of the 1% AEP + 30% AEP CC and so further consultation with the EA was undertook. It was confirmed through this consultation that the site remained unaffected within the 1% AEP and the 1% AEP + 30% CC event.

4.12. Although the required climate change allowance for analysis if 41%, the 30% AEP event has been used as a representation, although it needs to be noted that this is a 11% underestimation. When reviewing the 1% AEP + 70% AEP event, the site is shown to experience flood depths of 0.09m, which is an overestimation of 30%.

Table 2: Modelled Flood Levels

	Undefended Modelled Flood Levels (m AOD)					Defended Modelled Flood Levels (m AOD)				
	1% AEP	1% AEP + 30% CC	1% AEP + 70% CC	0.1% AEP	0.1% AEP + 30% CC	1% AEP	1% AEP + 30% CC	1% AEP + 70% CC	0.1% AEP	0.1% AEP + 30% CC
Onsite Node	N/A*	N/A*	45.20	45.34	45.36	N/A*	N/A*	45.21	45.34	45.36

*Further Consultation with the EA Confirmed Site Remains Unaffected Within These Events.

Historical Flooding

4.13. The site is located approximately 3km from the nearest recorded flooding incident, found to the south of the site. This flooding incident occurred within Didsbury in 1964 and has not been linked with a cause.

Summary

4.14. The site is considered to be at medium risk from fluvial sources due to its Flood Zone 2 designation.

Tidal Flooding

4.15. The site is not at risk of tidal flooding.

Canals

4.16. 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.

4.17. Water in a canal is typically maintained at predetermined levels by control weirs. When rainfall or other water enters the canal, the water level rises and flows out over the weir. If the level continues rising it will reach the level of the storm weirs. The control weirs and storm weirs are normally designed to take the water that legally enters the canal under normal conditions. However, it is possible for unexpected water to enter the canal or for the weirs to become obstructed. In such instances the increased water levels could result in water overtopping the towpath and flowing onto the surrounding land.

4.18. Flooding can also occur where a canal is impounded above surrounding ground levels and the retaining structure fails.

4.19. There are no canals within the vicinity of the site and as such the risk from this source of flooding can be considered low.

Pluvial Flood Risk

4.20. 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.

4.21. Examination of EA surface water flood risk mapping (Figure 5) for the 3.3% (high risk), 1% (medium risk) and 0.1% (low risk) AEP flood events shows the site, and its immediate vicinity, is at risk of flooding in 'Low' surface water flood events. This is thought to be predominately associated with the ordinary watercourse located to the north of the site.

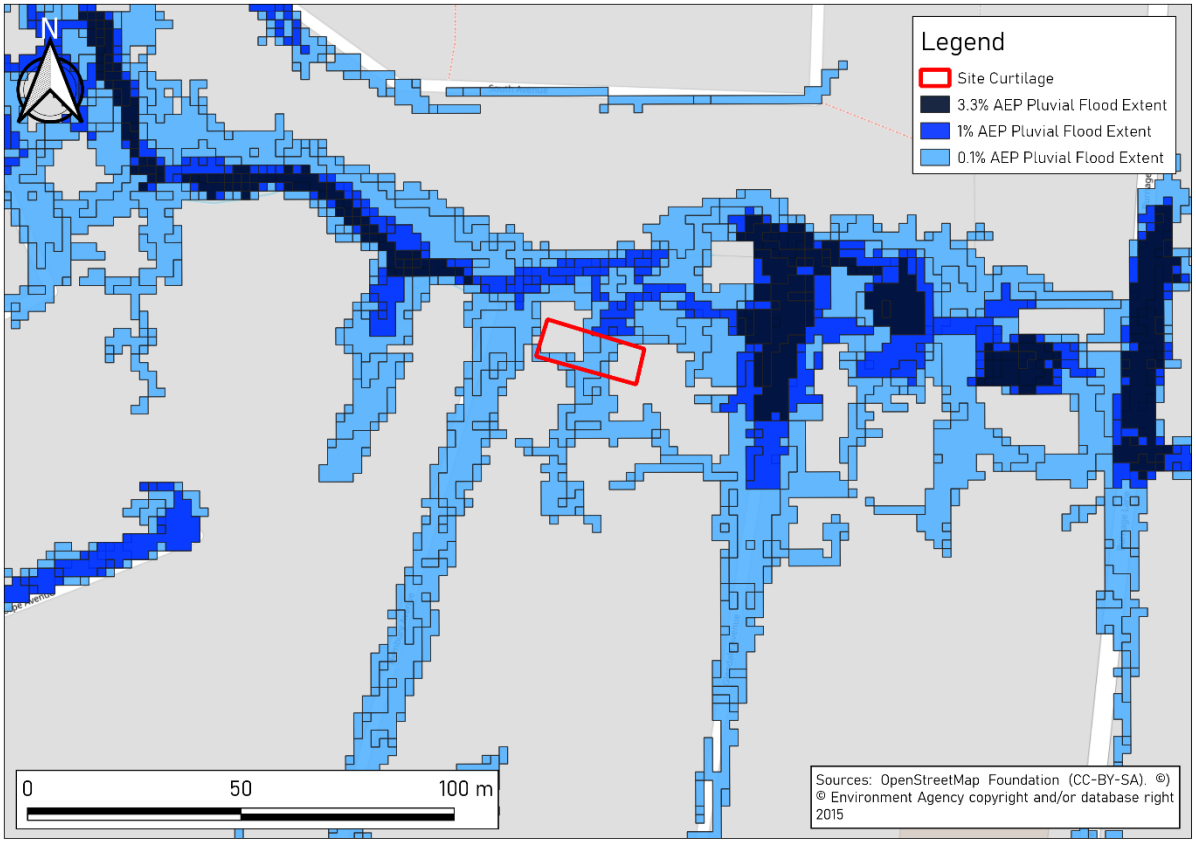


Figure 5: EA Surface Water Flood Risk Mapping

4.22. The site is shown to be impacted by flood depths ranging from 0mm to 600mm within the 0.1% AEP pluvial flood event (Figure 6). The area to the south of the site curtilage is shown to be impacted by flood depths of less than 600mm and as such this is likely to be the depth affecting the proposed development.

4.23. The site is located within the Levenshulme and Fallowfield Critical Drainage Area (CDA). The SFRA notes that surface water hotspots have been identified in Levenshulme along the alignment of the lost watercourses that run through this area.

4.24. The risk from pluvial flooding to the development can be considered low, as informed by the EA's surface water risk mapping given it is only affected by the 0.1% AEP event. Further property flood resilience measures could reduce this risk if installed.

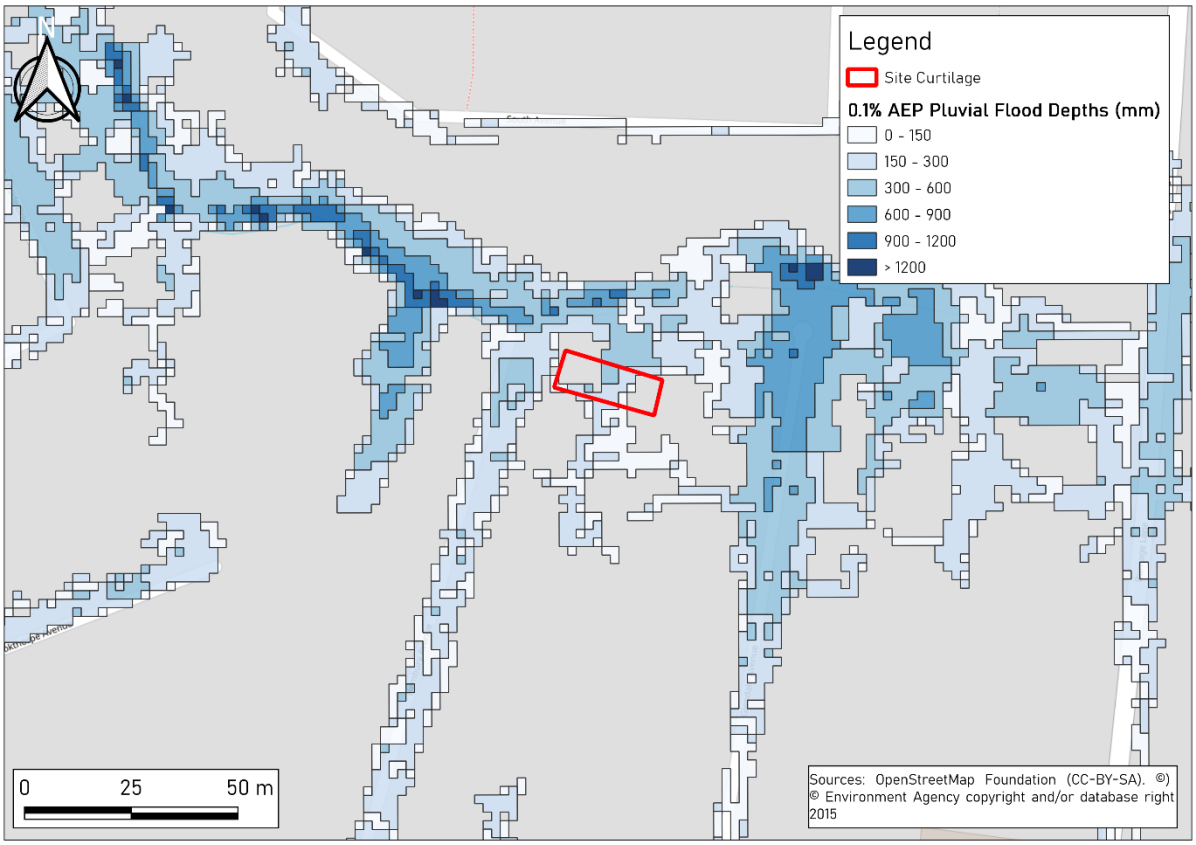


Figure 6: 0.1% AEP Pluvial Flood Depths

Reservoirs

4.25. 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.

4.26. According to EA flood risk from reservoirs mapping the site is at risk of flooding in the event of a breach at the Audenshaw No.1, Audenshaw No.2, and Audenshaw No.3 reservoirs. The worst reservoir failure model is a 'wet day' scenario meaning that a flood event would have to occur for there to be enough water to reach the site.

4.27. As reservoirs are highly managed the maximum flood extent provided in the EA Risk of Flooding from Reservoir mapping is considered a “worst case” scenario. Therefore, given these criteria the site is deemed at a low risk of flooding from this source. Although to be precautionary flood resilient design and building practices could be implemented to further reduce risk.

Groundwater

4.28. Groundwater flooding occurs in areas where underlying geology is permeable, and water can rise within the strata sufficiently to breach the surface.

4.29. The British Geological Survey's (BGS) mapping shows Till, Devensian - Diamicton superficial deposits underlying the site with bed rock of Manchester Marls Formation - Mudstone.

4.30. Historical BGS boreholes within 200m of the site suggest a water level of 8.5m below ground level.

4.31. 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.

4.32. As such, the risk from groundwater flooding can be considered low.

Sewer Flooding

4.33. 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.

4.34. Detailed DG5 records to Manchester were not available at the time of writing of the SFRA and as such there was no available records of past sewer flooding incidents.

4.35. The SFRA does state that other SFRAs 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.

4.36. The development is therefore considered to be at low risk of flooding from sewers.

5. Flood Risk Mitigation

Fluvial

5.1. The site is considered to be at medium risk of fluvial flooding due to its location in Flood Zone 2. Mitigation measures are recommended to reduce the residual risk 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 measures such as the below:

- Solid floors with waterproof screed.
- Raised wiring and power outlets at ground level.
- 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 tidal, canals, pluvial, reservoirs, groundwater and sewer sources to the proposed development are considered low as all and as such no specific mitigation is required.

Increase to Flood Risk Elsewhere

5.5. The proposed development is for the construction of an extension to the existing dwelling on site. As such, the proposal constitutes a Minor Development under the NPPF.

5.6. 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.

5.7. 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.

5.8. As such, the proposed development in isolation should have a negligible impact on flood risk elsewhere.

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 26 Hembury Avenue, Manchester, M19 1FH. 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 considered to be at medium risk from fluvial flooding. Mitigation is recommended in line with the CLG Report Improving the Flood Performance of New Buildings - Flood Resilient Construction (2007).
Pluvial	The site is shown to be at low risk of pluvial flooding with the site expected to have flood depths of less than 600mm. Mitigation recommended within the fluvial section should be sufficient against this source of flooding. The site is located within the Levenshulme and Fallowfield CDA. 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.
Tidal Fluvial Reservoirs Groundwater Sewers	The site is considered to be at low risk from other sources.

6.3. The following conclusions can be drawn from this level 1 FRA:

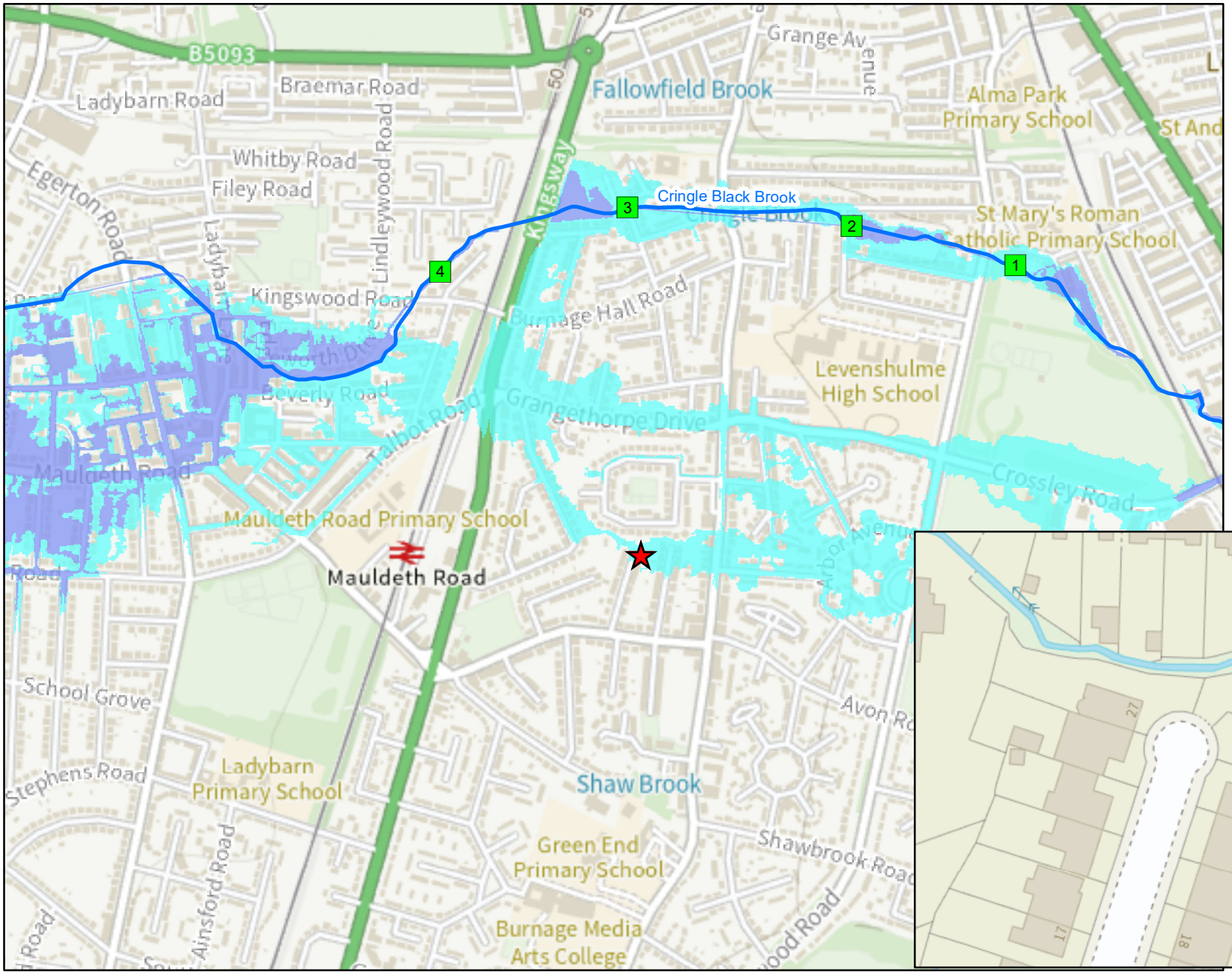
- This FRA has identified no prohibitive constraints in developing the proposed site for the proposed usage.
- The Site is in Flood Zone 2 and therefore at medium risk of flooding from fluvial sources. Mitigation is recommended in line with the CLG Report Improving the Flood Performance of New Buildings - Flood Resilient Construction (2007).
- The site is at low risk of pluvial flooding with depths of 600mm expected on site.
- The site is at low risk from all other sources.
- The proposed development is a minor development and as such should not lead to an increase in flood risk elsewhere.

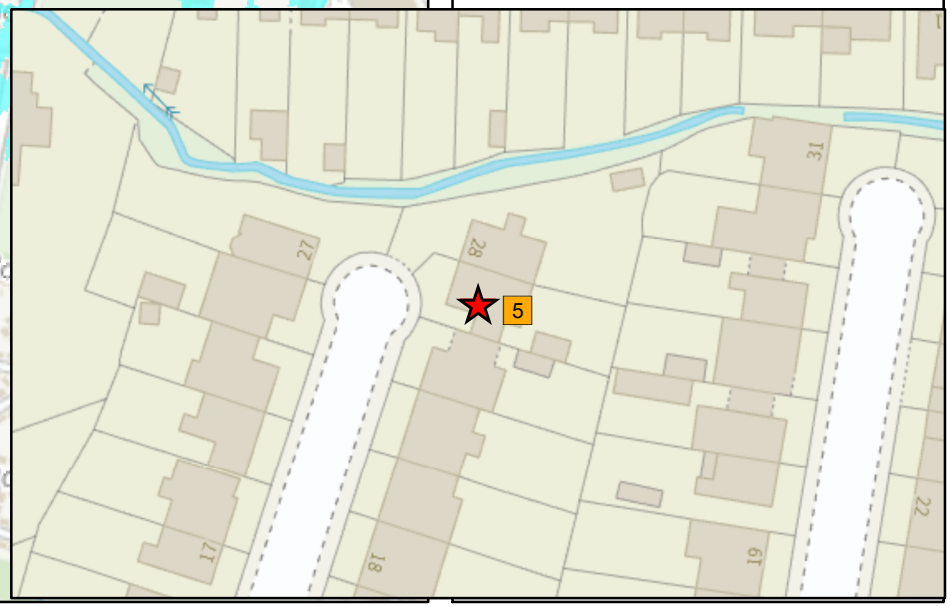
- Runoff from extension could be discharged via existing system given that proposal is Minor Development. Betterment could be provided through small-scale SuDS such as rainwater planters and water butts.

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

Appendix A – Product 4 Data

Detailed Flood Map centred on Hembury Avenue, Manchester, M19 1FH. Created on 12/10/2022 [GMMC278547AB]





Environment Agency

1:10,001

N

Legend

- Site Location
- Model Measurements
- 2D Level
- Main River
- Flood Zone 3
- Flood Zone 2

© Environment Agency copyright and / or database rights 2022. All rights reserved. © Crown Copyright and database rights 2022. Ordnance Survey licence 100024198.

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 08708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

					Undefended																															
Map Reference	Model Node Reference	Easting	Northing	Data	50 % AEP (1 in 2 year)	20 % AEP (1 in 5 year)	10 % AEP (1 in 10 year)	5 % AEP (1 in 20 year)	4 % AEP (1 in 25 year)	2 % AEP (1 in 50 year)	1.33 % AEP (1 in 75 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year) + 30% Increase in Flow	1 % AEP (1 in 100 year) + 70% Increase in Flow	1 % AEP (1 in 100 year) + 70% Increase in Flow	0.5 % AEP (1 in 200 year)	0.1 % AEP (1 in 1000 year)	0.1 % AEP (1 in 1000 year) + 30% Increase in Flow
1	ea013_0230_DRN01_33871	387315	360558	**Modelled Water Level (m aoDN)**	49.49	49.64	49.79	49.89	49.92	50.06	50.12	50.17	50.40	50.49	50.91	50.30	51.06	51.13
				Modelled Flow (cumecs)	1.77	2.29	2.62	3.20	3.31	3.85	4.11	4.30	5.15	5.26	5.85	4.86	5.72	5.89
2	ea013_0230_DRN01_33744	387024	360630	**Modelled Water Level (m aoDN)**	47.10	47.29	47.50	47.64	47.67	47.85	47.98	48.06	48.30	48.32	48.41	48.23	48.51	48.69
				Modelled Flow (cumecs)	1.87	2.41	3.01	3.43	3.50	3.93	4.21	4.36	4.84	4.89	5.03	4.70	5.12	5.18
3	ea013_0230_DRN01_35723	388623	360661	**Modelled Water Level (m aoDN)**	43.05	43.17	43.44	43.64	43.69	43.94	44.09	44.18	44.55	44.65	44.87	44.42	45.00	45.13
				Modelled Flow (cumecs)	1.87	2.41	3.01	3.43	3.49	3.91	4.18	4.34	4.81	4.85	5.03	4.68	5.12	5.18
4	ea013_0230_DRN01_2295	388291	360549	**Modelled Water Level (m aoDN)**	40.87	40.97	41.07	41.12	41.13	41.18	41.19	41.20	41.24	41.25	41.29	41.22	41.37	41.42
				Modelled Flow (cumecs)	3.01	2.58	3.23	3.54	3.62	3.91	4.07	4.16	4.51	4.58	4.77	4.37	4.87	4.96

					Defended																															
Map Reference	Model Node Reference	Easting	Northing	Data	50 % AEP (1 in 2 year)	20 % AEP (1 in 5 year)	10 % AEP (1 in 10 year)	5 % AEP (1 in 20 year)	4 % AEP (1 in 25 year)	2 % AEP (1 in 50 year)	1.33 % AEP (1 in 75 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year) + 30% Increase in Flow	1 % AEP (1 in 100 year) + 70% Increase in Flow	1 % AEP (1 in 100 year) + 70% Increase in Flow	0.5 % AEP (1 in 200 year)	0.1 % AEP (1 in 1000 year)	0.1 % AEP (1 in 1000 year) + 30% Increase in Flow
1	ea013_0230_DRN01_33871	387315	360558	**Modelled Water Level (m aoDN)**	49.49	49.64	49.79	49.89	49.92	50.06	50.12	50.17	50.40	50.49	50.91	50.30	51.06	51.13
				Modelled Flow (cumecs)	1.77	2.29	2.62	3.20	3.31	3.85	4.11	4.30	5.15	5.26	5.85	4.86	5.72	5.89
2	ea013_0230_DRN01_33744	387024	360630	**Modelled Water Level (m aoDN)**	47.10	47.29	47.50	47.64	47.67	47.85	47.98	48.06	48.30	48.32	48.41	48.23	48.51	48.69
				Modelled Flow (cumecs)	1.87	2.41	3.01	3.43	3.50	3.93	4.21	4.36	4.84	4.89	5.03	4.70	5.12	5.18
3	ea013_0230_DRN01_35723	388623	360661	**Modelled Water Level (m aoDN)**	43.05	43.17	43.44	43.64	43.69	43.94	44.09	44.18	44.55	44.65	44.87	44.42	45.00	45.13
				Modelled Flow (cumecs)	1.87	2.41	3.01	3.43	3.49	3.91	4.18	4.34	4.81	4.85	5.03	4.68	5.12	5.18
4	ea013_0230_DRN01_2295	388291	360549	**Modelled Water Level (m aoDN)**	40.87	40.97	41.07	41.12	41.13	41.18	41.19	41.20	41.24	41.25	41.29	41.22	41.37	41.42
				Modelled Flow (cumecs)	3.01	2.58	3.23	3.54	3.62	3.91	4.07	4.16	4.51	4.58	4.77	4.37	4.87	4.96

					Undefended			Defended		
Map Reference	Model Node Reference	Easting	Northing	Data	1 % AEP (1 in 100 year) + 70% Increase in Flow	0.1 % AEP (1 in 1000 year)	0.1 % AEP (1 in 1000 year) + 30% Increase in Flow	1 % AEP (1 in 100 year) + 70% Increase in Flow	0.1 % AEP (1 in 1000 year)	0.1 % AEP (1 in 1000 year) + 30% Increase in Flow
5	2D Level	388653	360640	**Modelled Water Level (m aoDN)**	45.20	45.34	45.36	45.21	45.34	45.36

Model data taken from Cringle Brook 2017

AEP - Annual Exceedence Probability

m aoDN - metres above ordnance datum New lyn

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.