

AMBIENTAL

ENVIRONMENTAL ASSESSMENT

Flood Risk Assessment

43 Beverly Road,
Manchester,
M14 6TH

Document Issue Record

Project: Phase 1 Flood Risk Assessment

Prepared for: Ash4Homes

Reference: 5623

Site Location: 43 Beverly Road, Manchester, M14 6TH

Proposed Development: It is understood that the proposed development is for the construction of an extension to the existing residential dwelling to provide greater habitable space.

Consultant		Date	Signature
Author	Sophie Isaacs	04/08/2020	
Document Check	Lydia Sayers	04/08/2020	
Authorisation	Oliver Harvey	10/08/2020	

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 Ambiental Environmental Assessment. All work has been carried out within the terms of the brief using all reasonable skill, care and diligence. No liability is accepted by AMBIENTAL 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.

Contact Us:

Ambiental Environmental Assessment
Sussex Innovation Centre,
Science Park Square,
Brighton, BN1 9SB

www.ambiental.co.uk

UK Office: +44 (0) 203 857 8540 or +44 (0) 203 857 8530

Contents

1.	Summary.....	1
2.	Development Description and Site Area	3
	<i>Proposed Development and Location</i>	<i>3</i>
	<i>Vulnerability Classification</i>	<i>4</i>
	<i>Geology.....</i>	<i>6</i>
3.	Sequential Test/Exception Test	8
4.	Site Flood Hazards	9
	<i>Sources of Flooding.....</i>	<i>9</i>
	<i>Fluvial</i>	<i>9</i>
	<i>Surface Water (Pluvial)</i>	<i>10</i>
	<i>Groundwater</i>	<i>11</i>
	<i>Sewer</i>	<i>12</i>
	<i>Surface Water Drainage Strategy.....</i>	<i>12</i>
	<i>Records of Historical Flooding</i>	<i>13</i>
5.	Probability of Flooding.....	14
	<i>Flood Zones.....</i>	<i>14</i>
	<i>Climate Change on Site.....</i>	<i>14</i>
6.	Residual Risks.....	17
	<i>Identification of Residual Risks</i>	<i>17</i>
	<i>Defence Breach.....</i>	<i>17</i>
	<i>Reservoir Failure</i>	<i>17</i>
	<i>Drainage Exceedance</i>	<i>17</i>
7.	Flood Risk Management Measures	18
	<i>Flood Risks</i>	<i>18</i>
	<i>Flood Warning Service and Evacuation Plan</i>	<i>18</i>
8.	Off Site Impacts	20
	<i>Flood Water Displacement</i>	<i>20</i>
	<i>Generation of Runoff</i>	<i>20</i>
9.	Conclusion.....	21
Appendix I - Site Plans		

1. Summary

- 1.1 Ambiental Environmental Assessment has been appointed to undertake a National Planning Policy Framework (NPPF) compliant Flood Risk Assessment (FRA) for the proposed development at 43 Beverly Road, Manchester, M14 6TH.
- 1.2 The existing site comprises of a residential dwelling. It is understood that the proposed development is for the construction of an extension to the existing residential dwelling, to provide greater habitable space. It is considered a 'Minor Development' under the National Planning Policy Framework (NPPF).
- 1.3 With reference to the Environment Agency (EA) Flood Map for Planning, the proposed extension is located in Flood Zone 1. The site boundary is in Flood Zones 1 and 2.
- 1.4 The proposed extension is considered 'More Vulnerable' under the principles of the National Planning Policy Framework (NPPF) and Table 2 of the Flood Risk and Coastal Change Planning Policy Guidance (PPG).
- 1.5 Cringle Brook, an EA Main River, is located approximately 28m north of the existing dwelling. Given that the proposed extension will be attached to the existing dwelling, it is also considered to be approximately 28m from the river.
- 1.6 The footprint of the proposed extension will total less than 250m², will have Finished Floor Levels no lower than the existing dwelling and will not create a separate unit or commercial entity. As such, the proposal could be considered a 'Minor Development' under the National Planning Policy Framework (NPPF).
- 1.7 In accordance with the EA Standing Advice for minor developments, it is recommended that Finished Floor Levels of the proposed extension are set no lower than those of the existing residential dwelling.
- 1.8 In summary:
 - The proposed development is for the construction of an extension to the existing residential dwelling, to provide greater habitable space;
 - The proposed development is in Flood Zone 1 according to the EA Flood Map for Planning; the site is partially affected by Flood Zone 2;
 - It is recommended that Finished Floor Levels of the proposed extension are set no lower than those of the existing residential dwelling;

Following the guidelines contained within the NPPF, the proposed development is considered to be suitable assuming appropriate mitigation (including adequate warning procedures) can be maintained for the lifetime of the development.

Development Description	Existing	Proposed
Development Type:	Existing residential property	Proposed development is for the construction of an extension to provide greater habitable space to the existing dwelling. Proposed development is considered a 'Minor Development' under the NPPF.
Number of Bedrooms:	N/A	N/A
EA Vulnerability Classification:	More Vulnerable	More Vulnerable
Ground Floor Level:	Topographic levels within the redline application boundary vary between approximately 40.26mAOD and 41.26mAOD (EA 2m DTM LiDAR).	Proposed extension is to be constructed no lower than ground levels of existing dwelling, in accordance with the EA Standing Advice for Minor Developments.
Level of Sleeping Accommodation:	N/A	N/A
Impermeable Surface Area:	N/A	Proposed extension will be less than 250m ² and considered a Minor Development under the NPPF. The increase in built footprint and impermeable surface areas on site could be considered negligible as a result of the proposed development.
Surface Water Drainage:	N/A	Recommended that surface water runoff from proposed extension is discharged via existing surface water drainage system of dwelling.
Site Size:	Approximate redline application boundary is 364.4m ²	Same as existing
Risk to Development	Summary	Comment
EA Flood Zone:	Flood Zones 1 and 2	
Flood Source:	Fluvial	
1:100 Year Flood Level	N/A	Given that proposal is for a 'Minor Development', Ambiental have taken a qualitative approach and recommended that the proposed development abide by the EA Standing Advice for Minor Developments.
1:100 Year Flood Level & Climate Change	N/A	
1:1000 Year Flood Level	N/A	
Recorded Flood Events in Area:	No	According to EA Historic Flood Outlines.
Recorded Flood Events at Site:	No	
SFRA Available:	Yes	Manchester, Salford and Trafford Level 1 SFRA (2010) and Level 2 SFRA (2011).
Management Measures	Summary	Comment
Ground floor level above extreme flood levels:	N/A	No modelled flood levels for proposed site. Proposed extension to be constructed no lower than ground levels of existing dwelling, in accordance with the EA Standing Advice for Minor Developments.
Safe Access/Egress Route:	Yes	See Section 7
Flood Resilient Design:	Yes	See Section 7
Site Drainage Plan:	Discharge via existing	Recommended that surface water runoff from proposed extension is discharged via existing surface water drainage system of dwelling.
Flood Warning & Evacuation Plan:	Yes	EA Flood Alert and Warning Service.
Offsite Impacts	Summary	Comment
Displacement of floodwater:	No	Proposal is for minor development (<250m ²) and existing dwelling is in Flood Zone 1/2, so development should not displace floodwaters.
Increase in surface run-off generation:	Negligible	Any increase in surface water runoff from proposed minor development will be managed on site. Recommended that surface water runoff from proposed extension is discharged via existing surface water drainage system of dwelling.
Impact on hydraulic performance of channels:	None	Proposed development should not affect nearby watercourses.

Table 1 Summary of flood risks, impacts and proposed flood mitigation measures.

N/A¹ not required for this assessment; N/A² data not available.

2. Development Description and Site Area

Proposed Development and Location

- 2.1 The proposed development is located at 43 Beverly Road, Manchester, M14 6TH (Figures 1 and 2).
- 2.2 The existing site comprises of a residential dwelling. It is understood that the proposed development is for the construction of an extension to provide greater habitable space to the existing dwelling.
- 2.3 The footprint of the proposed extension and outbuilding will total less than 250m² and will not create a new residential unit. Finished Floor Levels of the proposed extension will be no lower than those of the existing residential dwelling. As such, the proposal could be considered a 'Minor Development' under the NPPF.
- 2.4 According to the EA's 2m DTM LiDAR dataset, topographic levels with the redline application boundary vary between approximately 40.26mAOD and 41.26mAOD. The site topography fluctuates slightly and slopes downwards at the northern part of the site, as shown in Figure 3. The existing dwelling is located to the south of the site and is topographically higher than the rest of the site.



Figure 1 Site Location Map, identifying the location of the site as a Redline Application Boundary (Source: OS)



Figure 2 Aerial Imagery, indicating the site of the existing dwelling (Source: GoogleMaps)

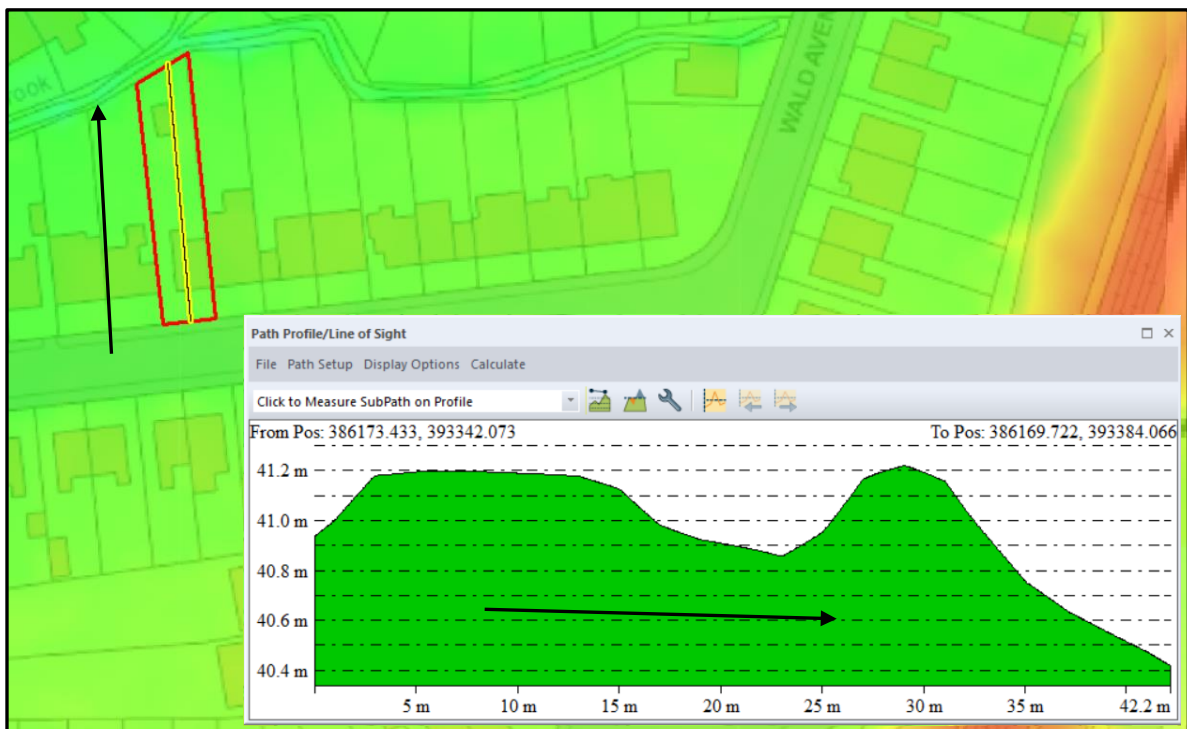


Figure 3 Cross-section of site topography from south to north using EA 2m DTM LiDAR. Site shown by redline boundary. (Source: EA)

Vulnerability Classification

- 2.5 The EA Flood Map for Planning (Figure 4) demonstrates that the redline application boundary lies within Flood Zones 1 and 2. This is demonstrated further in Figure 5 in a close-up view of the EA flood zone extents and the proposed site boundary. Land in Flood Zone 1 has a low probability of less than 1 in 1,000 (0.1%) of river flooding in any year; land in Flood Zone 2 has a medium probability of between 1 in 100 and 1 in 1,000 (0.1% to 1%) of river flooding in any year.

- 2.6 Under the principles of the National Planning Policy Framework (NPPF) and Table 2 of the Flood Risk and Coastal Change Planning Policy Guidance (PPG), the existing development could be considered 'More Vulnerable', due to its residential usage. The proposed development is for an extension to the existing dwelling. As such, the proposed development could also be considered as 'More Vulnerable', and there will be no change in the NPPF flood risk vulnerability on site post-development.
- 2.7 The footprint of the proposed extension will total less than 250m² and will not create a new residential unit. As such, the proposal could be considered a 'Minor Development' under the NPPF.

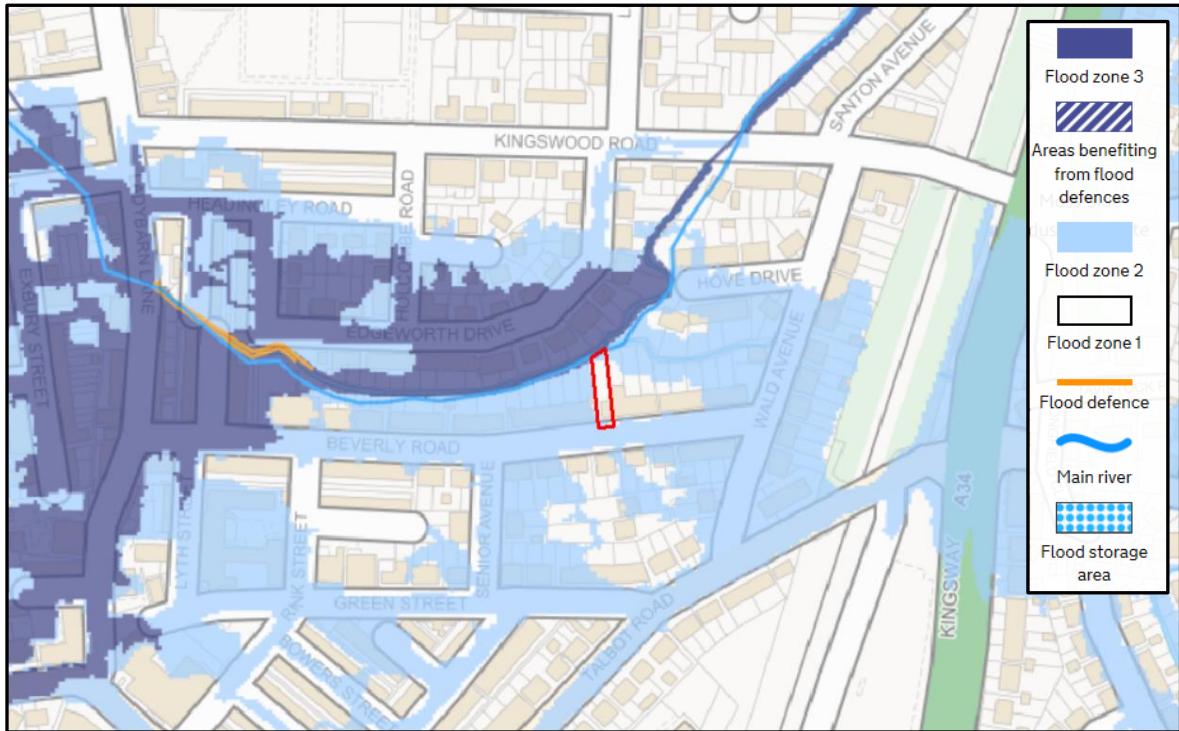


Figure 4 EA Flood Map for Planning, indicating location of proposed site (Source: EA)

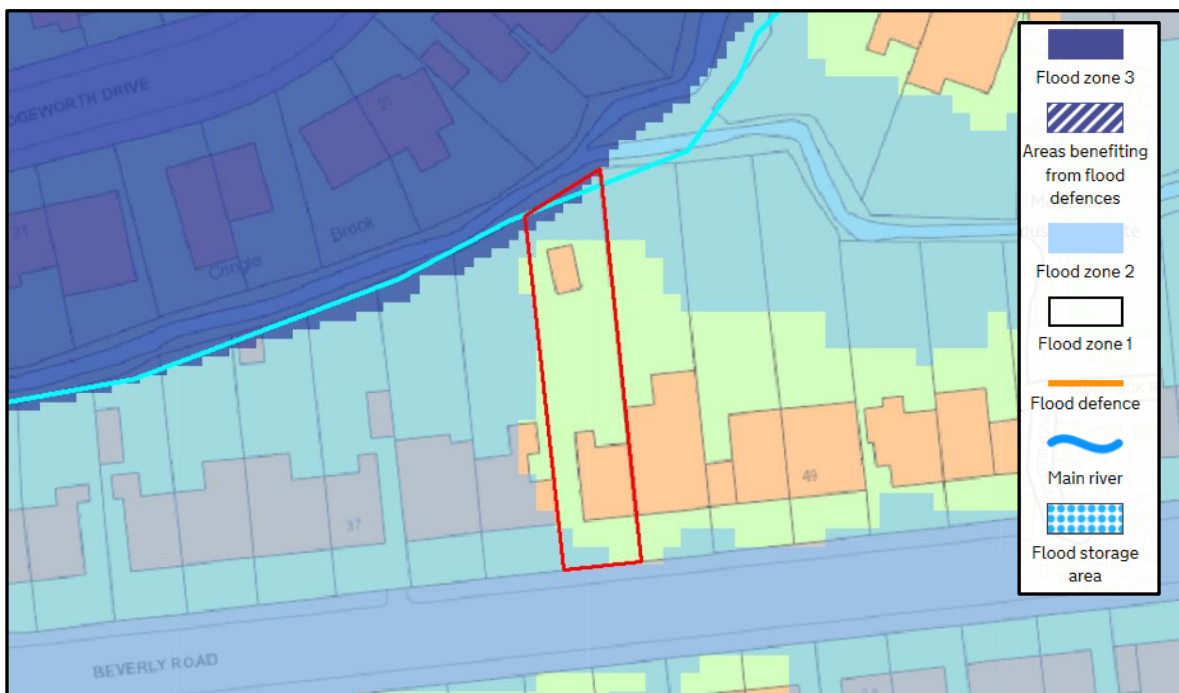


Figure 5 Close-up of EA Flood Zones, indicating site as redline boundary (Source: EA)

Geology

- 2.8 The British Geological Survey (BGS) Geology of Britain Viewer indicates that the bedrock underlying the site is a member of the Chester Formation, comprising of sandstone. (Source: BGS). This formation is considered to be a Principal aquifer (Source: EA; Magic Map online resource. See Figure 6). A Principal aquifer is highly permeable, supporting water supply and/or river base flow on a strategic scale.



Figure 6 Aquifer Designation Map for Bedrock Geology, indicating the site location (Source: MagicMap)

- 2.9 The British Geological Survey (BGS) Geology of Britain Viewer indicates that the superficial deposits underlying the site are part of the Till, Devensian group, which comprises of diamicton. This formation is a Secondary (undifferentiated) aquifer (Source: EA; Magic Map online resource. See Figure 7). A Secondary (undifferentiated) aquifer is permeable, supporting water supplies at a local scale and may contribute to base flow of rivers and/or low permeability but with limited groundwater available in fissures or thin geological horizons.

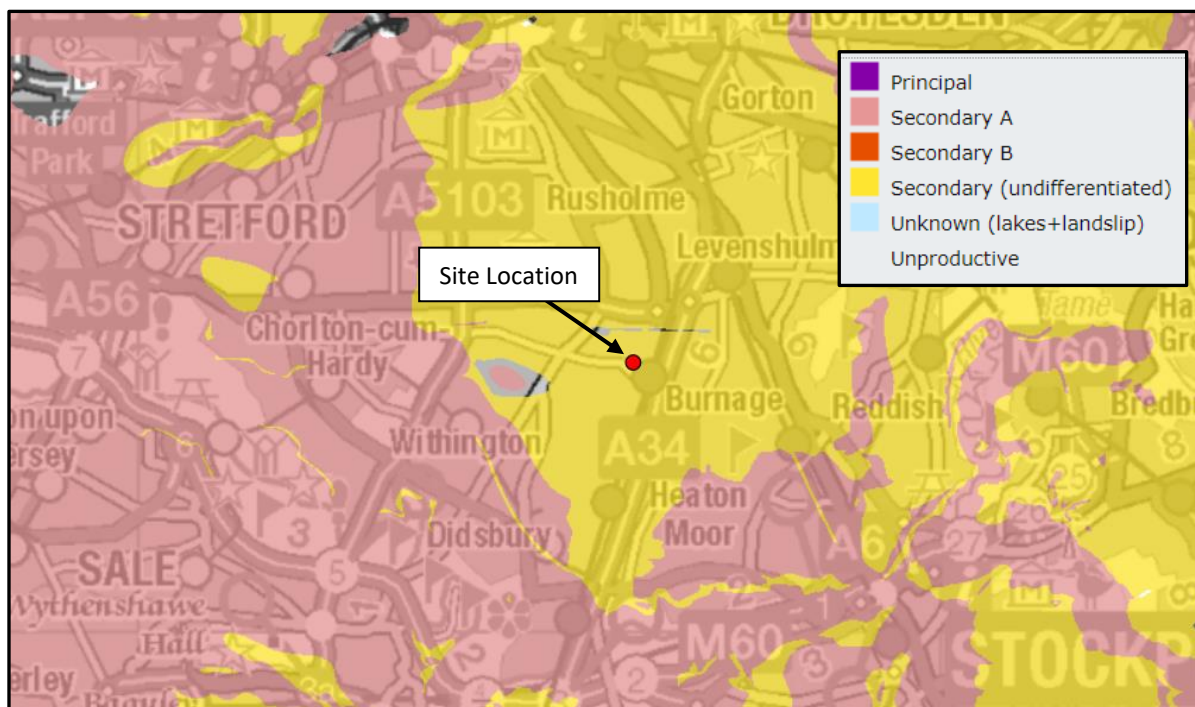


Figure 7 Aquifer Designation Map for Superficial Deposits, indicating the site location (Source: MagicMap)

2.10 The site is not within an EA groundwater Source Protection Zone, as indicated in Figure 8.

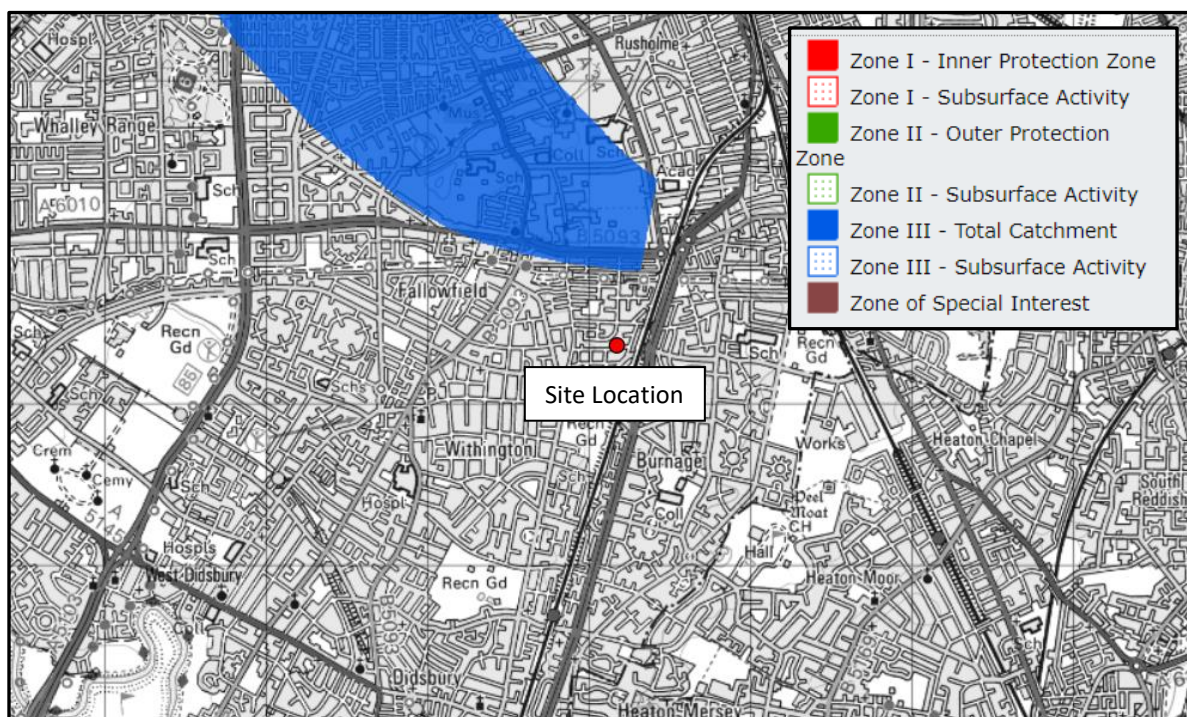


Figure 8 Groundwater Source Protection Zones, indicating location of site (Source: MagicMap)

3. Sequential Test/Exception Test

- 3.1 Under the NPPF, all new planning applications should undergo a *Sequential Test*. This test should be implemented by local planning authorities with a view to locating particularly vulnerable new developments (e.g. residential, hospitals, mobile homes etc.) outside of the floodplain.
- 3.2 The NPPF *Sequential Test: Flood Risk Vulnerability and Flood Zone 'Compatibility' Table* is reproduced below;

Flood Risk Vulnerability Classification	Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	✓	Exception Test Required	✓	✓
Zone 3a	Exception Test Required	✓	✗	Exception Test Required	✓
Zone 3b <i>Functional Floodplain</i>	Exception Test Required	✓	✗	✗	✗

Table 2 The Sequential Test: Flood Risk Vulnerability and Flood Zone 'Compatibility' Table as specified by NPPF.
 Please note: ✓ means development is appropriate; ✗ means the development should not be permitted.

- 3.3 Using the principles of the Sequential Test outlined above, the proposed development is 'More Vulnerable'. The site is located within Flood Zones 1 and 2 (as defined by the EA). As such, under the NPPF, the proposed development does not require the application of the Exception Test.
- 3.4 The existing site comprises of a residential dwelling. It is understood that the proposed development is for the construction of an extension to provide greater habitable space to the existing dwelling.
- 3.5 The proposed extension will total less than 250m² in size, will not create a new residential unit and Finished Floor Levels will be set no lower than those of the existing residential dwelling. As such, the proposal could be considered a 'Minor Development' under the NPPF.
- 3.6 The revised NPPF (2019) states that:

*"Applications for some **minor developments** and changes of use **should not be subject to the sequential or exception tests** but should still meet the requirements for the site-specific flood risk assessments."*

(Source: NPPF)

- 3.7 Therefore, the proposed development should not be subject to the Sequential Test or the Exception Test. As the site of the proposed extension is partially in Flood Zone 2, the planning application submitted by the client is required to be accompanied by an FRA which shows the development can be achieved in a sustainable manner, with an overall reduction of flood risk to the site and the surrounding area.

4. Site Flood Hazards

Sources of Flooding

- 4.1 The proposed development is located within Flood Zone 1 (low risk of flooding) and is considered to be 'More Vulnerable' according to NPPF guidelines. Table 3 summarises the potential sources of flooding to the site:

Source	Description
Fluvial	Flood Zone 1 (low risk)
Surface	Very Low risk at proposed extension; partially High risk at proposed outbuilding
Groundwater	<i>'Potential for groundwater flooding at the surface'</i>
Sewer	Unaffected in local area

Table 3 Summary of flood sources.

Fluvial

- 4.2 With reference to the EA Flood Map for Planning (Figures 4 and 5), the redline application boundary is in Flood Zones 1 and 2. The existing dwelling is in Flood Zone 1. It should also be noted that the proposed extension is also located in Flood Zone 1 (low risk of flooding).
- 4.3 Cringle Brook, an EA Main River, is located directly north of the redline application boundary. It is approximately 28m north of the existing dwelling, at its closest proximity. This is indicated in Figure 9 below.
- 4.4 Given that the proposed development is for a minor extension to the existing residential dwelling, a qualitative approach has been taken within this report. As such, it is recommended that Finished Floor Levels of the proposed extension are set no lower than those of the existing dwelling.
- 4.5 EA historic flood records indicate that the site of the proposed development and the surrounding area have not been affected by flooding in the past.
- 4.6 The risk of flooding can be considered to be relatively low from this source.

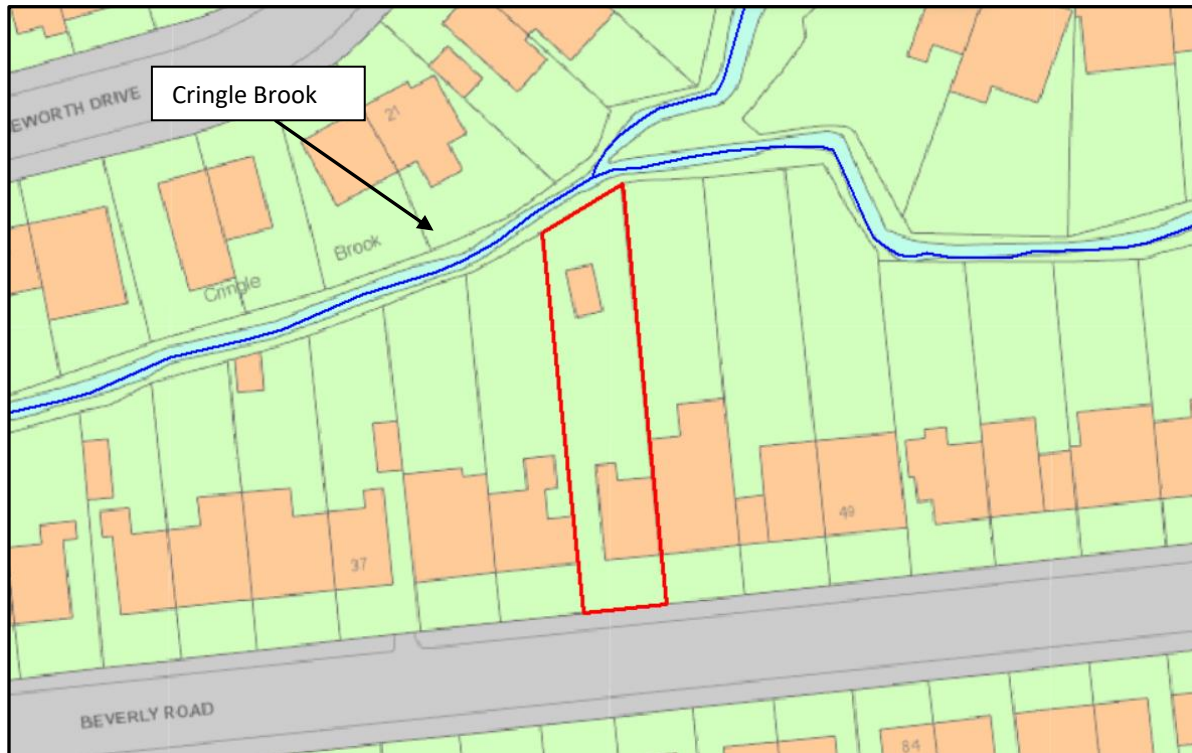


Figure 9 Map showing location of watercourse in relation to proposed site (Source: EA)

Surface Water (Pluvial)

- 4.7 The Environment Agency Flood Risk from Surface Water map (Figure 10) demonstrates that the redline application boundary is within an area of 'Very Low' risk of surface water flooding. Areas at 'Very Low' risk of pluvial flooding have a less than 0.1% chance of flooding in any year.
- 4.8 Beverly Road, the main access road to the site, is shown in Figure 10 to be at 'Medium' risk of flooding from surface water. This could affect access/egress to the site in the event of an extreme rainfall event. Also, Figure 10 demonstrates that the area north of the site, close to the Cringle Brook watercourse, is at 'Medium' risk of flooding from surface water. The existing residential dwelling and proposed extension are located at the southern part of the site and at 'Very Low' risk of pluvial flooding.
- 4.9 Using plans provided by the client and the EA Risk of Flooding from Surface Water (RoFSW) mapping, Figure 11 demonstrates that the proposed extension should remain unaffected by the modelled 1 in 1,000-year pluvial flood event. Beverly Road could experience flood depths of up to 0.30m, and between 0.30m and 0.60m in some places.
- 4.10 As such, the risk of surface water flooding to the proposed extension could be considered very low; however, the risk of pluvial flooding to the main access road, Beverly Road, is medium. As such, in the event of an extreme rainfall event occurring, it is recommended that site users remain on site.



Figure 10 EA Surface Water Flood Risk Map, indicating the site as the redline boundary (Source: EA)

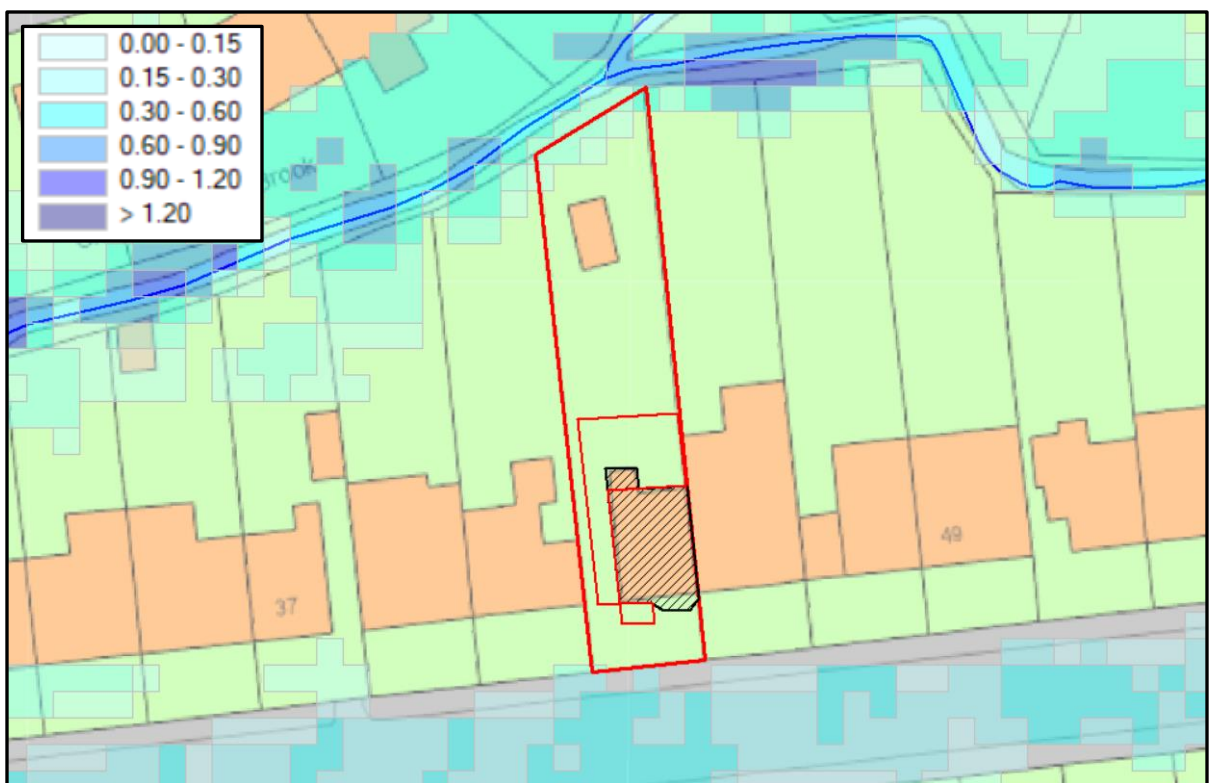


Figure 11 EA Modelled 1 in 1,000 year flood depths, showing proposed extension as redline boundary, existing dwelling as black hashed area and site as redline application boundary (Source: EA)

Groundwater

4.11 The BGS Susceptibility to Groundwater Flooding (Figure 12) mapping demonstrates the redline application boundary lies wholly within an area with '*Limited potential for groundwater flooding to occur*'. As such, the risk of flooding from groundwater emergence at the proposed extension could be considered low.

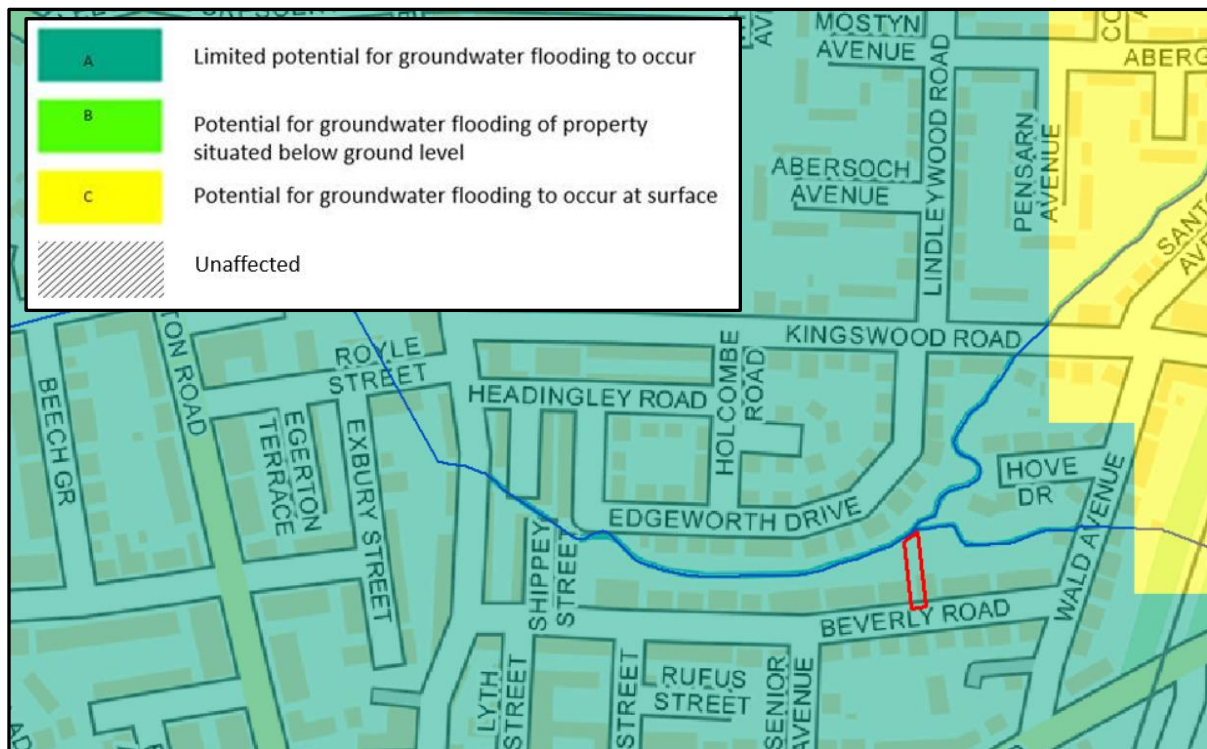


Figure 12 BGS Susceptibility to Groundwater Flooding, indicating redline application boundary (Source: BGS)

Sewer

- 4.12 As indicated in the Manchester, Salford, Trafford Level 2 SFRA (2011), United Utilities sewer flood records and modelled data were not made available in the timescales for this project. In the absence of data, it is indicated in the SFRA report that the risk of sewer flooding has been assessed alongside surface water flood models, and that the same method should be used when assessing risk of sewer flooding in site-specific flood risk assessments. Given that the proposed extension is located in an area of very low risk of pluvial flooding according to the EA Surface Water Flood Risk Map shown in Figure 10, the risk of sewer flooding to the extension could be considered low.
- 4.13 Any new sewer connection created as part of the development proposals should be first agreed with the local sewer provider and fitted with non-return valves to mitigate the risk of sewer flooding.

Surface Water Drainage Strategy

- 4.14 In order to mitigate flood risk posed by the proposed development, adequate control measures are required to be considered. This will ensure that surface water runoff is dealt with at its source and the flood risk on/off site is not increased over the lifetime of the development.
- 4.15 Under the NPPF, following development, surface water runoff rates should be equivalent to (or below) the existing site run-off rate for all events up to the 1 in 100-year storm event, with an allowance for climate change.
- 4.16 It is understood that the proposed development is for the construction of an extension to provide greater habitable space to the existing dwelling. According to plans provided by the client, the proposed site area amended as part of the proposed works would be approximately 61m². This is associated with a greenfield runoff rate (Q_{BAR}) of 0.1l/s.

- 4.17 The footprint of the proposed extension will total less than 250m² and will not create a new residential unit. Finished Floor Levels of the proposed extension will be set no lower than ground levels of the existing dwelling. As such, the proposal could be considered a 'Minor Development' under the NPPF.
- 4.18 From a review of the online Soilscales website, the site is shown to be in an area with impeded drainage, meaning that infiltration is not a viable option. As such, given that greenfield runoff rates are so low and the total built footprint of the proposed extension is low, it is recommended that the developer continues to discharge the proposed residential extension via the existing surface water drainage system.
- 4.19 It is recommended that small scale SuDS are implemented, where possible. For example, any new hardstanding around the site should be constructed using permeable surfaces and a water butt should be installed to provide some betterment over existing.

Records of Historical Flooding

- 4.20 The proposed development site and the surrounding area is not located within or near an EA historic flood extent.

5. Probability of Flooding

Flood Zones

- 5.1 According to the EA Flood Map for Planning, the site is located within Flood Zone 1 and 2 (Low/Medium risk of flooding).
- 5.2 The EA Flood Map for Planning has been produced in part using a relatively coarse, national scale flood modelling strategy, and in part by detailed modelling. It is important to note that only the potential floodplain is modelled; **the mitigating effects of any flood defences currently in place are not considered.** For reference, the definition of the NPPF flood risk zones is included below.

Zone	Description
1	Low Probability. This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%).
2	Medium Probability. This zone comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% – 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% – 0.1%) in any year.
3a	High Probability. This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.
3b	The Functional Floodplain. This zone comprises land where water has to flow or be stored in times of flood. SFRA's should identify this Flood Zone (land which would flood with an annual probability of 1 in 20 (5%) or greater in any year or is designed to flood in an extreme (0.1%) flood, or at another probability to be agreed between the LPA and the EA, including water conveyance routes).

Table 4 Definition of the NPPF Flood Zones. (Source: EA)

Climate Change on Site

- 5.3 Climate change is likely to increase the flow in rivers, raise sea levels and increase storm intensity. The range of allowances in Table 5 is based on percentiles. A percentile is a measure used in statistics to describe the proportion of possible scenarios that fall below an allowance level. The 50th percentile is the point at which half of the possible scenarios for peak flows fall below it and half fall above it.
- 5.4 The:
- central allowance is based on the 50th percentile
 - higher central is based on the 70th percentile
 - upper end is based on the 90th percentile
- 5.5 So, if the central allowance is 30%, scientific evidence suggests that it is just as likely that the increase in peak river flow will be more than 30%, as less than 30%.
- 5.6 At the higher central allowance, 70% of the possible scenarios fall below this value. So, if the higher allowance is 40%, then current scientific evidence suggests that there is a 70% chance that peak flows will increase by less than this value, but there remains a 30% chance that peak flows will increase by more (Source: EA).

- 5.7 The risk of flooding to the site would therefore be expected to increase following the effects of climate change. The likely increases in peak rainfall intensity would also lead to an increased risk of surface water flooding. The increase in river flows for the North West basin has been provided below in Table 6.

Flood Zone	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
2	Upper End	Higher Central and Upper End	Higher Central and Upper End	Central and Higher Central	Central
3a	Upper End	Development should not be permitted	Higher Central and Upper End	Central and Higher Central	Central
3b	Upper End	Development should not be permitted	Development should not be permitted	Development should not be permitted	Central

Table 5: Allowance and Flood Zone Table (Source EA)

Allowance category	Total potential change anticipated for the 2020's (2015 to 2039)	Total potential change anticipated for the 2050's (2040 to 2069)	Total potential change anticipated for the 2080's (2070 to 2115)
Upper end	20%	35%	70%
Higher central	20%	30%	35%
Central	15%	25%	30%

Table 6: Peak river flow allowances for the North West River Basin district (Source EA)

- 5.8 The proposed development is classified as 'More Vulnerable' (residential extension) and is located within Flood Zone 1. The redline application boundary is partially in Flood Zone 2.
- 5.9 The Flood Risk Assessment is to demonstrate that the proposed development will be deemed safe for its lifetime without increasing flood risk elsewhere.
- 5.10 Under the Flood Risk and Coastal Change Planning Practice Guidance (PPG), a 'Minor Development' is defined as a:
- '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 e.g. subdivision of houses into flats.'*
- 5.11 The proposed development is for a physical extension to the existing dwelling. The footprint of the proposed extension will total less than 250m² and will not create a new residential unit within the curtilage of the existing site. As such, the proposal could be considered a 'Minor Development' under the National Planning Policy Framework (NPPF) and Flood Risk and Coastal Change PPG.
- 5.12 As such, in accordance with the Environment Agency's Standing Advice for minor developments, it is recommended that proposed floor levels in the extension are set no lower than existing ground floor levels.

- 5.13 The Flood Risk and Coastal Change PPG states that the proposed minor development would be “unlikely to raise significant flood risk issues unless:
- *They have an adverse impact upon a watercourse, floodplain or flood defences*
 - *They impede access to flood defence and management facilities*
 - *The cumulation impact of such a development has a significant impact on flood storage capacity or flood flows”*
- 5.14 In comparison to the existing situation, provided that the developer sets floor levels of the extension to no lower than existing ground floor levels, there will be no increase in risk to the dwelling and the site, post-development.

6. Residual Risks

Identification of Residual Risks

6.1 Residual risks are those remaining after applying the sequential approach to the location of development and taking mitigating actions. Examples of residual flood risk include:

- the failure of flood management infrastructure such as a breach of a raised flood defence, blockage of a surface water conveyance system, overtopping of an upstream storage area, or failure of a pumped drainage system;
- failure of a reservoir; or,
- a severe flood event that exceeds a flood management design standard, such as a flood that overtops a raised flood defence, or an intense rainfall event which the drainage system cannot cope with.

Defence Breach

6.2 With reference to the EA Flood Map for Planning, the proposed site is not located within an area benefitting from defences. As such, there is no residual risk of flooding from breach or overtopping of defences.

Reservoir Failure

6.3 The EA Risk from Reservoir Flooding Map demonstrates that the site is outside flood extents in the event of reservoir flooding.

Drainage Exceedance

6.4 In the event of drainage failure/exceedance, overland flows would be dictated by site topography.

6.5 According to the EA's 2m DTM LiDAR dataset, topographic levels within the redline application boundary vary between approximately 40.26mAOD and 41.26mAOD. A review of the LiDAR indicates that the site topography fluctuates slightly and slopes downwards at the northern part of the site. The existing dwelling and the proposed extension are located to the south of the site and are topographically higher than the rest of the site. As such, it is considered that any overland flows would be directed away from the proposed extension and towards the watercourse at the northern end of the site.

7. Flood Risk Management Measures

Flood Risks

- 7.1 The proposed extension is located in Flood Zone 1, according to the EA Flood Map for Planning. The redline application boundary is partially in Flood Zone 2.
- 7.2 The existing site comprises of a residential dwelling. It is understood that the proposed development is for the construction of an extension to provide greater habitable space to the existing dwelling.
- 7.3 The proposed development is for an extension to the existing dwelling, so is a 'Minor Development' under the National Planning Policy Framework (NPPF) and Flood Risk and Coastal Change PPG.
- 7.4 In accordance with the EA Standing Advice for minor developments, it is recommended that Finished Floor Levels of the proposed extension are set no lower than those of the existing residential dwelling.
- 7.5 Analysis within the report indicates that the proposed extension is in an area of very low risk of flooding from surface water sources, so remains wholly unaffected by the EA modelled 1 in 1,000 year pluvial event.
- 7.6 The redline application boundary is in an area with '*Limited potential for groundwater flooding to occur*' according to BGS Susceptibility to Groundwater mapping. The site is not located within or close to the EA historic flood extents, and there are no sewer records available within the Manchester, Salford, Trafford SFRA (2011) to indicate any history of sewer flooding in the local area.
- 7.7 The following mitigation measures are recommended:
 - Finished Floor Levels of the proposed extension should be set no lower than those of the existing dwelling, in accordance with the EA Standing Advice for minor developments.
 - Any new sewer connection at the site should be agreed with the local sewer provider to ensure there is capacity in the network (to ensure no increased risk); and fitted with non-return valves to mitigate the risk of internal sewer flooding.

Flood Warning Service and Evacuation Plan

- 7.8 The EA operates a 24-hour telephone service on 0345 988 1188 that provides frequently updated flood warnings and associated floodplain information. Further information can be found on www.environment-agency.gov.uk/floodline. Floodline Warnings Direct is a free service operated by the EA that provides flood warnings direct to occupants by telephone, mobile phone, fax or pager.
- 7.9 The proposed development site is not located within an EA Flood Warning Service Area (Figure 13).
- 7.10 The proposed extension is shown to be outside of the modelled 1 in 1,000 year pluvial event. However, Beverly Road, the main access/egress road to the site, could experience flood depths of up to 0.30m in this event, and between 0.30m and 0.60m in some places. As such, in the event of an extreme rainfall event occurring, it is recommended that site users remain on site.

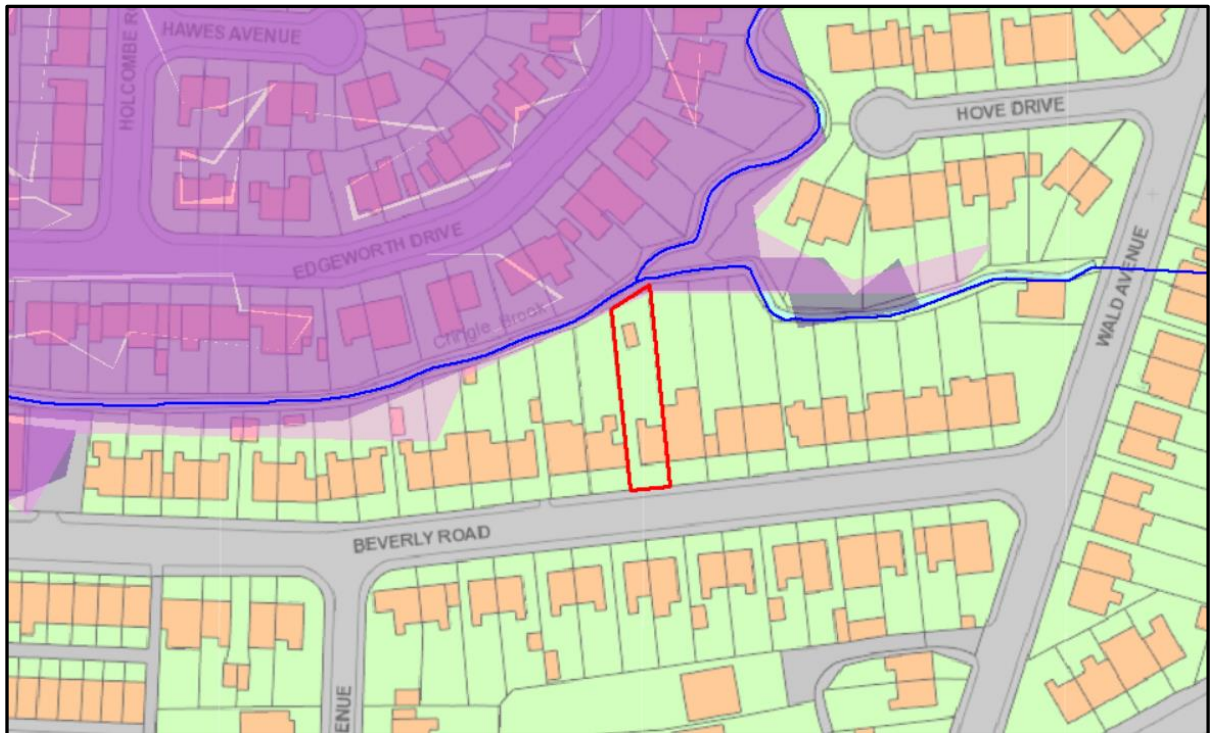


Figure 13 EA Flood Warning Service Area shown by purple shaded area and Alert Area shown in pink. Site shown as redline boundary (Source: EA)

8. Off Site Impacts

Flood Water Displacement

- 8.1 The existing site comprises of a residential dwelling. It is understood that the proposed development is for the construction of an extension to provide greater habitable space to the existing dwelling. The proposed development is considered a 'Minor Development'.
- 8.2 According to the NPPG, 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.*
- 8.3 Given that the proposed extension will be less than 250m² and is in Flood Zone 1, there should be no displacement of floodwaters as a result of the development.

Generation of Runoff

- 8.4 In order to mitigate flood risk posed by the proposed development, adequate control measures are required to be considered. This will ensure that surface water runoff is dealt with at its source and the flood risk on/off site is not increased over the lifetime of the development.
- 8.5 Under the NPPF, following development, surface water runoff rates should be equivalent to (or below) the existing site run-off rate for all events up to the 1 in 100-year storm event, with an allowance for climate change.
- 8.6 It is understood that the proposed development is for the construction of an extension to provide greater habitable space to the existing dwelling. According to plans provided by the client, the proposed site area amended as part of the proposed works would be approximately 61m². This is associated with a greenfield runoff rate (Q_{BAR}) of 0.1l/s.
- 8.7 The footprint of the proposed extension will total less than 250m² and will not create a new residential unit. Finished Floor Levels of the proposed extension will be set no lower than ground levels of the existing dwelling. As such, the proposal could be considered a 'Minor Development' under the NPPF.
- 8.8 From a review of the online Soilscales website, the site is shown to be in an area with impeded drainage, meaning that infiltration is not a viable option. As such, given that greenfield runoff rates are so low and the total built footprint of the proposed extension is low, it is recommended that the developer continues to discharge the proposed residential extension via the existing surface water drainage system.
- 8.9 It is recommended that small scale SuDS are implemented, where possible. For example, any new hardstanding around the site should be constructed using permeable surfaces and a water butt should be installed to provide some betterment over existing.

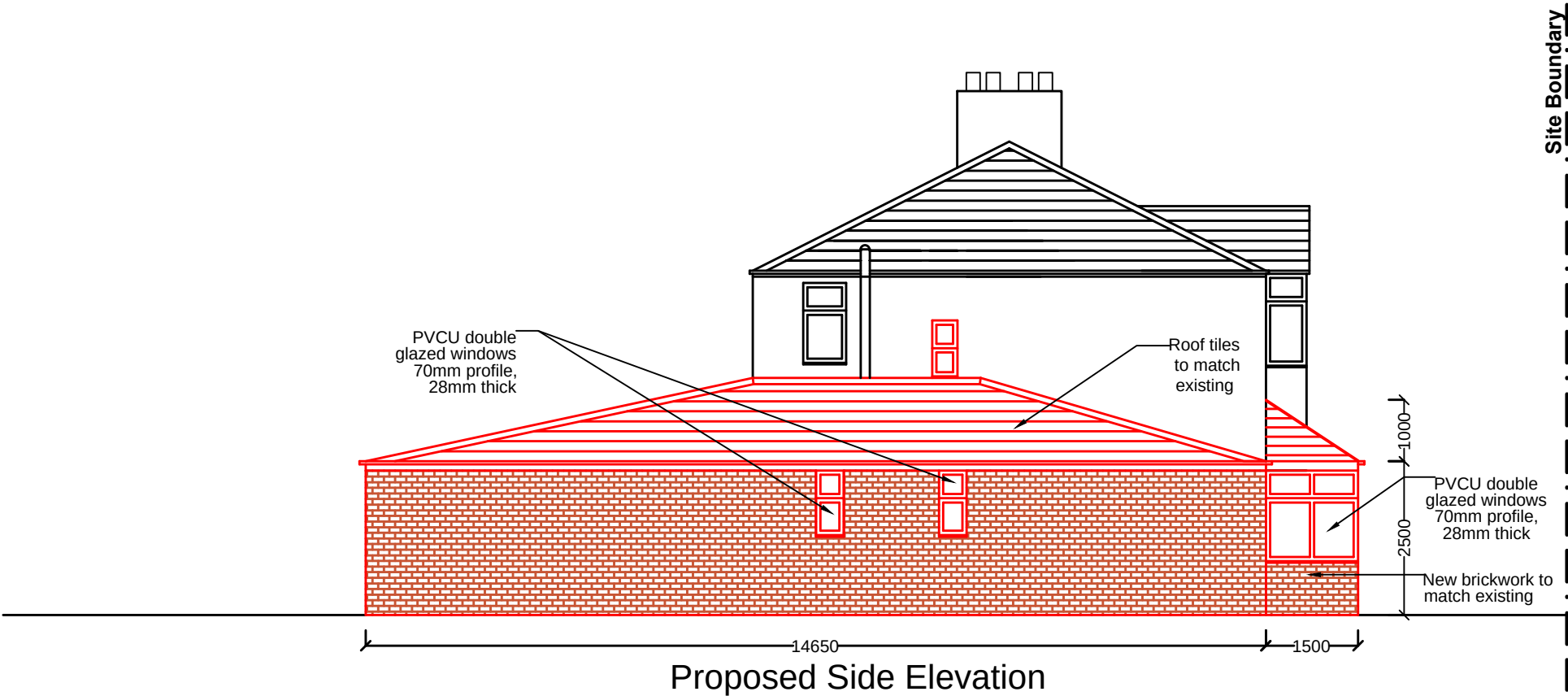
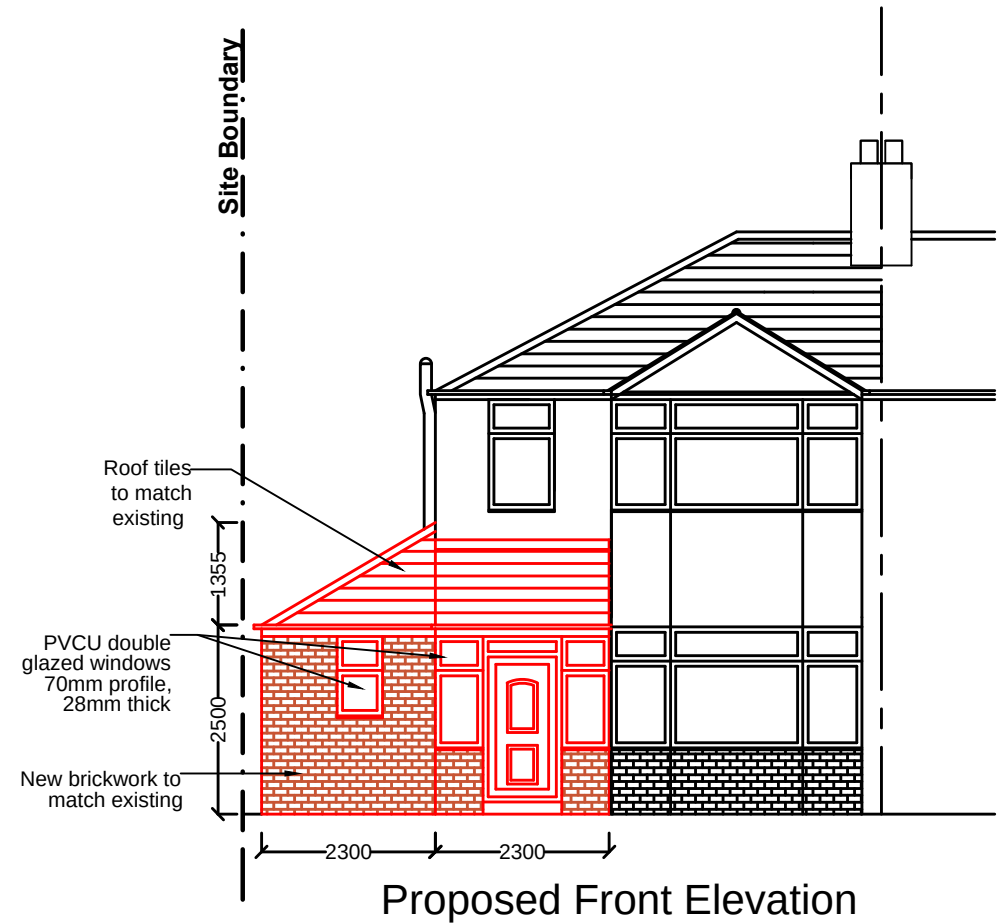
9. Conclusion

- 9.1 Ambiental Environmental Assessment has been appointed by Mr Ghazanfar Hussain to undertake a National Planning Policy Framework (NPPF) compliant Flood Risk Assessment (FRA) for the proposed development at 43 Beverly Road, Manchester, M14 6TH.
- 9.2 The existing site comprises of a residential dwelling. It is understood that the proposed development is for the construction of an extension to the existing residential dwelling, to provide greater habitable space. It is considered a 'Minor Development' under the National Planning Policy Framework (NPPF).
- 9.3 With reference to the Environment Agency (EA) Flood Map for Planning, the proposed extension is located in Flood Zone 1. The site boundary is in Flood Zones 1 and 2.
- 9.4 The proposed extension is considered 'More Vulnerable' under the principles of the National Planning Policy Framework (NPPF) and Table 2 of the Flood Risk and Coastal Change Planning Policy Guidance (PPG).
- 9.5 Cringle Brook, an EA Main River, is located approximately 28m north of the existing dwelling. Given that the proposed extension will be attached to the existing dwelling, it is also considered to be approximately 28m from the river.
- 9.6 The footprint of the proposed extension will total less than 250m², will have Finished Floor Levels no lower than the existing dwelling and will not create a separate unit or commercial entity. As such, the proposal could be considered a 'Minor Development' under the National Planning Policy Framework (NPPF).
- 9.7 In accordance with the EA Standing Advice for minor developments, it is recommended that Finished Floor Levels of the proposed extension are set no lower than those of the existing residential dwelling.
- 9.8 In summary:
- The proposed development is for the construction of an extension to the existing residential dwelling, to provide greater habitable space;
 - The proposed development is in Flood Zone 1 according to the EA Flood Map for Planning; the site is partially affected by Flood Zone 2;
 - It is recommended that Finished Floor Levels of the proposed extension are set no lower than those of the existing residential dwelling;

Following the guidelines contained within the NPPF, the proposed development is considered to be suitable assuming appropriate mitigation (including adequate warning procedures) can be maintained for the lifetime of the development.

Appendix I - Site Plans

This drawing may only be reproduced under express licence.



Mohammed Khan
BSc (Hons), MCIQB, MNAEA
Chartered Construction Manager & Property Consultant
Ash 4 Homes, Pure Offices, Brooks Drive, Cheadle Royal Business Park, Cheadle,
SK8 3TD, Tel: 0161 428 8652 Mobile: 07890 269580

Project Name:
Proposed Single Storey Side & Rear Extension

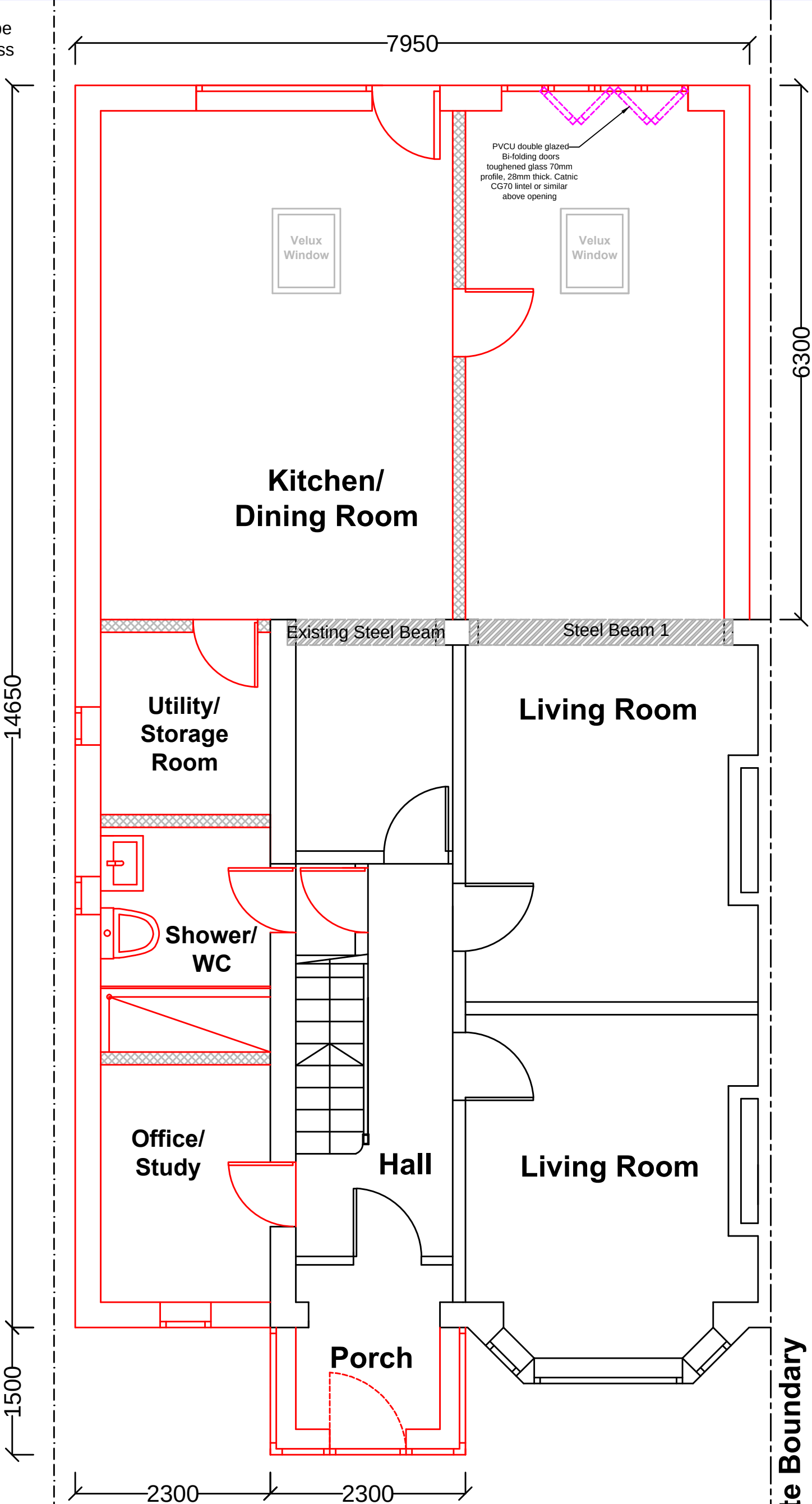
Drawing Name:
Proposed Elevations 01

Project Address:
43 Beverly Road,
Fallowfield,
Manchester, M14 6TH

Project Ref: MK/022002
Date: 07.08.20
Scale: 1:100
Paper Size: A3

Sheet:
04
Rev: 01

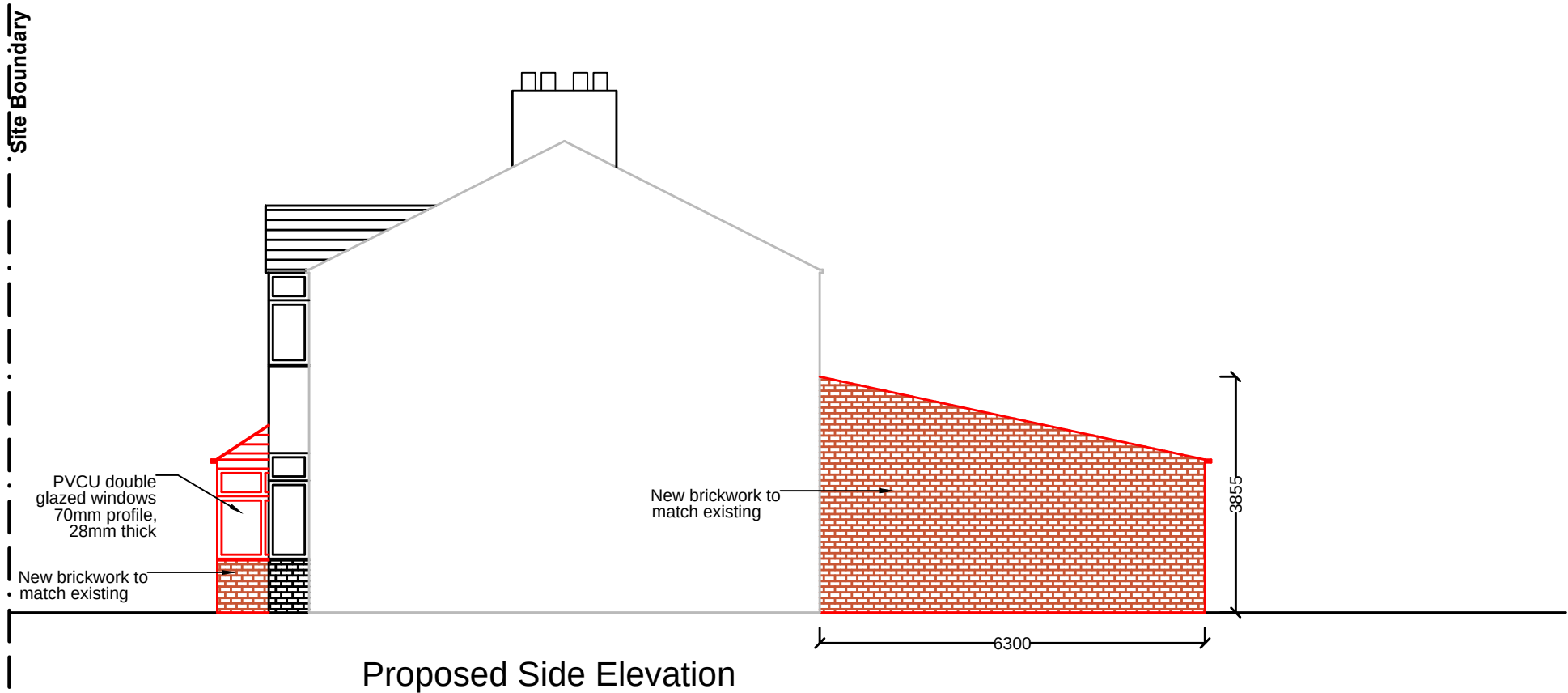
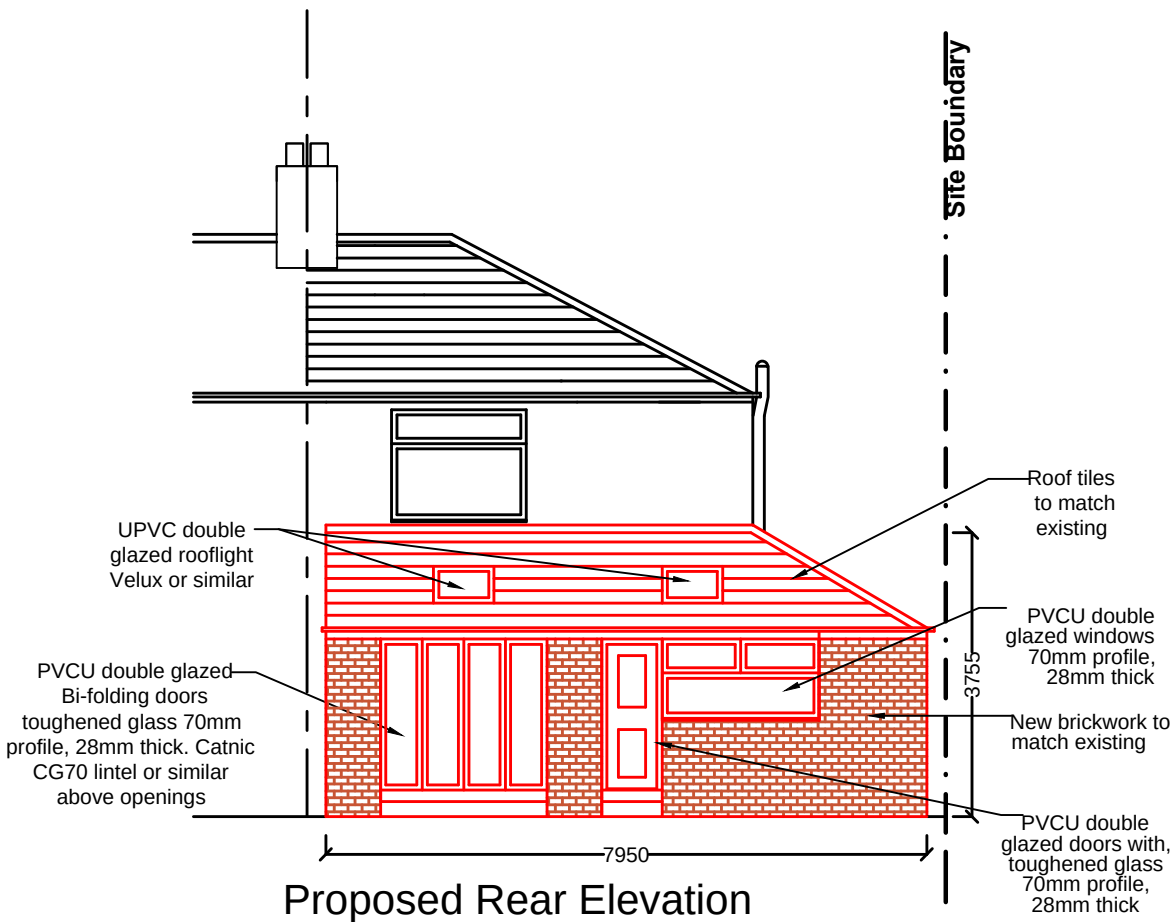
This drawing may only be reproduced under express licence.



Proposed Ground Floor Plan

Mohammed Khan, BSc (Hons), MCIQB, MNAEA Ash 4 Homes, Pure Offices, Brooks Drive, Cheadle Royal Business Park, Cheadle, SK8 3TD, Tel: 0161 428 8652 Mobile: 07890 269580	Project Address: 43 Beverly Road, Manchester, M14 6TH Project Name: Proposed Single Storey Side & Rear Extension Drawing Name: Proposed Ground Floor Plan	Project Ref: MK/022002	Sheet: 02 Rev: 01
		Date: 07:08:20	
		Scale: 1:50	
		Paper Size: A3	

This drawing may only be reproduced under express licence.



Mohammed Khan
BSc (Hons), MCIQB, MNAEA
Chartered Construction Manager & Property Consultant
Ash 4 Homes, Pure Offices, Brooks Drive, Cheadle Royal Business Park, Cheadle,
SK8 3TD, Tel: 0161 428 8652 Mobile: 07890 269580

Project Name:
Proposed Single Storey Side & Rear Extension

Drawing Name:
Proposed Elevations 02

Project Address:
43 Beverly Road,
Fallowfield,
Manchester, M14 6TH

Project Ref: MK/022002

Date: 07.08.20

Scale: 1:100

Paper Size: A3

Sheet:

05

Rev: 01

This drawing may only be reproduced under express licence.

