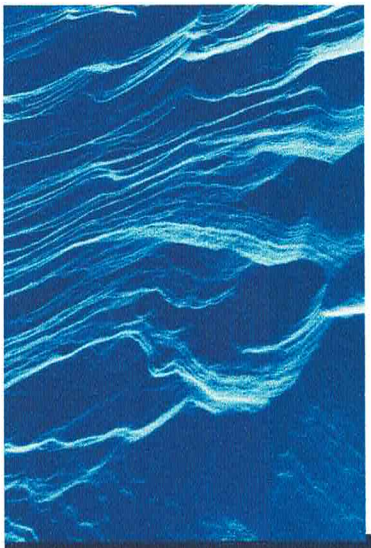

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Flood risk, water and environment

Flood Risk Assessment
AEG0625_HA4_Hillingdon_01

Viaduct Surveying Services

Site Address: 178 Whitby Road
Ruislip
Hillingdon
London
HA4 9DX

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

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Flood risk, water and environment

Document Issue Record

Project: Flood Risk Assessment

Prepared for: Viaduct Surveying Services

Reference: AEG0625_HA4_Hillingdon_01

Site Location: 178 Whitby Road, Ruislip, Hillingdon, London, HA4 9DX

Consultant		Date
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Please Note:

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Summary

Development Description	Existing	Proposed
Development Type	A Residential Dwelling	Rear extension to the existing property to provide greater habitable space.
EA Vulnerability Classification	More Vulnerable	More Vulnerable
Ground Floor Level	Elevation on site ranges from 37.52m AOD to 38.53m AOD based on 1.0m resolution LiDAR.	No Change. Finished Floor Levels (FFLs) to be set no lower than existing in line with EA Standing Advice for Minor Developments.
Level of Sleeping Accommodation	Ground Floor	Ground Floor
Surface Water Drainage	N/A[1]	Runoff from proposal could be discharged via existing systems given that proposal is a Minor Development. Betterment could be provided through small-scale SuDS such as rainwater planters and water butts.
Site Size	235m^2	No Change to overall site size. Increase to residential dwelling on site with a minor development of less than 250m^2.

Risk to Development	Summary	Comment
EA Flood Zone	Flood Zone 2	
Flood Source	Fluvial and Pluvial.	Fluvial flood zone associated with the EA Main River the Yeading Brook. Site is impacted within the modelled 0.1% AEP Pluvial Flood Event.
SFRA Available	West London SFRA (2018)	

Management Measures	Summary	Comment
Ground floor level above extreme flood levels	N/A[2]	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]	Sign up to the EA Flood Warning and Alert Service. (Yeading Brook West at Ruislip Manor). Access/Egress arrangements would not differ from existing as proposal is a 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 (2007).
Site Drainage Plan	N/A[1]	Runoff from proposal could be discharged via existing system given that proposal is a Minor Development. Betterment could be provided through small-scale SuDS such as rainwater planters and water butts.
Flood Warning & Evacuation Plan	N/A[1]	Sign up to the EA flood alert and warning service (Yeading Brook West at Ruislip Manor).
Offsite Impacts	**Summary**	**Comment**
Displacement of floodwater	Negligible	Proposal is a Minor Development which may not result in significant impact of floodplain storage in isolation in accordance with the PPG. Also, proposed extension outside modelled 1:100 year +CC (25%) fluvial extent as per West London SFRA; and modelled 1:100 year pluvial extent.
Increase in surface run-off generation	N/A[1]	Runoff from proposal could be discharged via existing system given that proposal is a Minor Development. Betterment could be provided through small-scale SuDS such as rainwater planters and water butts.
Impact on hydraulic performance of channels	No	Extension is located 20m from the nearest EA Main River.

[1] not required for this assessment [2] data not available.

1. Introduction

1.1. Aegaea were commissioned by Viaduct Surveying Services to undertake a Flood Risk Assessment (FRA) to facilitate a full 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 178 Whitby Road, Ruislip, Hillingdon, London, HA4 9DX (Figure 1).

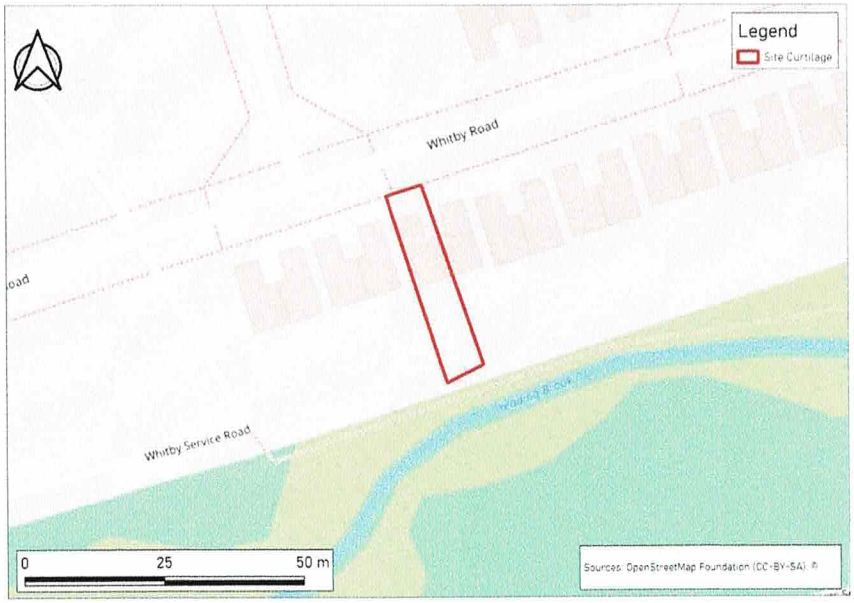

Figure 1: Site Location

1.4. The proposed development is for the construction of an extension to the rear of 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. Elevation on site ranges from 37.52m AOD to 38.53m AOD (Figure 2).

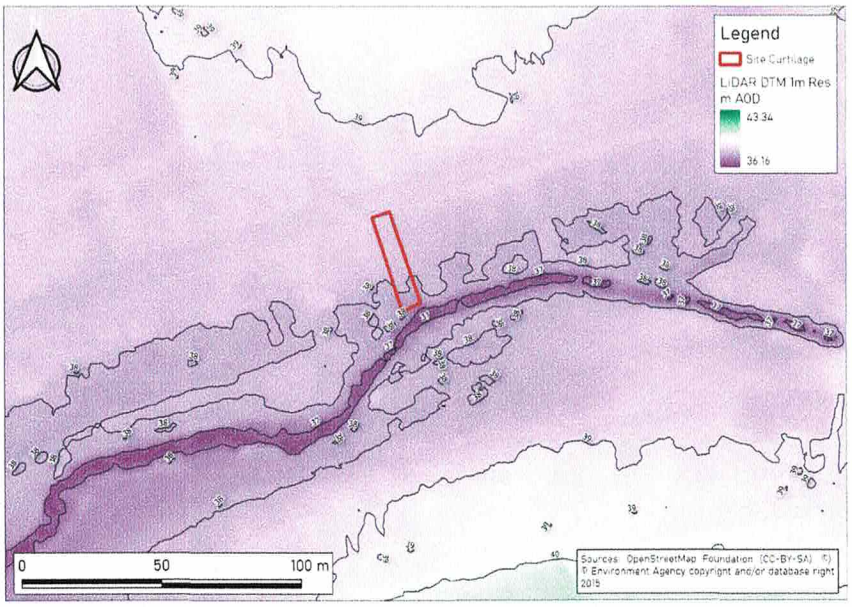

Figure 2: Site Topography

1.6. Hillingdon 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 Hertfordshire and North London region.

Planning Policy and Guidance

1.7. UK government planning guidance states[1] 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

[1] **https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications#when-you-need-an-assessment**

2. 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[2] (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. "*

2.3. Paragraph 046 of the Flood Risk and Coastal Change Planning Practice Guidance (PPG) states:

> *Minor development means:*

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

- *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,* ***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.*

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:

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.

Hillingdon Council Local Plan

2.8. The Local Plan prepared by the Local Planning Authority, Hillingdon Council, sets out the policies for development in the local area.

2.9. Policy EM6 Flood Risk Management outlines the requirements for new development within the area. It states:

> *The Council will require new development to be directed away from Flood Zones 2 and 3 in accordance with the principles of the National Planning Policy Framework (NPPF).*
>
> *The subsequent Hillingdon Local Plan: Part 2 -Site Specific Allocations LDD will be subjected to the Sequential Test in accordance with the NPPF.*
>
> *Sites will only be allocated within Flood Zones 2 or 3 where there are overriding issues that outweigh flood risk. In these instances, policy criteria will be set requiring future applicants of these sites to demonstrate that flood risk can be suitably mitigated.*
>
> *The Council will require all development across the borough to use sustainable urban drainage systems (SUDS) unless demonstrated that it is not viable.*
>
> *The Council will encourage SUDS to be linked to water efficiency methods. The Council may require developer contributions to guarantee the long term maintenance and performance of SUDS is to an appropriate standard.*

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.

Sequential Test and Exception Test

2.11. Under the NPPF all new planning applications should undergo a Sequential Test unless a **minor household development** or a change of use application in accordance with paragraph 168 and footnotes 55 and 56. 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 2021 NPPF states that:

> *'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. Therefore, in accordance with Paragraph 168 and footnotes 55 and 56 of the NPPF, the proposed development is classified as a Minor Development and should not be subject to the sequential or exception tests but should still meet the requirement for the site-specific flood risk assessments.

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

Documents

3.1. 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.

3.2. The following sources of information have been reviewed for this assessment:

- The Interactive Flood Risk Mapping available on the Environment Agency (EA) website[3].
- The National Planning Policy Framework (NPPF) technical guide (Communities and Local Government, 2019).
- British Geological Survey – Geoindex Onshore (British Geological Survey, 2022).
- Local Plan: Part 1 - Strategic Policies, Hillingdon Council [4](2012)
- Preliminary Flood Risk Assessment, Hillingdon Council[5] (2011)
- West London Strategic Flood Risk Assessment, Hillingdon Council[6] (2018)

Preliminary Flood Risk Assessment (PFRA)

3.3. The PFRA, published in 2011, is a high-level appraisal of flood risk across Lead Local Flood Authority Hillingdon Council. The flood risk from all sources, including fluvial, surface water, groundwater and surcharged sewers is evaluated.

3.4. The PFRA summarises historical flood incidents in Hillingdon Council. The site is not recorded as having been affected by any flood event.

Strategic Flood Risk Assessment (SFRA)

3.5. The West London SFRA, published in 2018, provides the evidence base for the Local Planning Authority Hillingdon Council Local Plan and guidance for consideration when determining planning applications.

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

4 https://www.hillingdon.gov.uk/local-plan

5 https://modgov.hillingdon.gov.uk/documents/s8734/Appendix%20-%20Flood%20Appraisal.pdf

6 https://westlondonsfra.london/

3.6. 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.

3.7. The online mapping provided in the West London SFRA has been used throughout production of this report as a source of information, particularly pertaining to historic flood incidents.

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 and is therefore considered to be at medium risk of fluvial flooding (Figure 3). Flood Zone 2 is defined as 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.

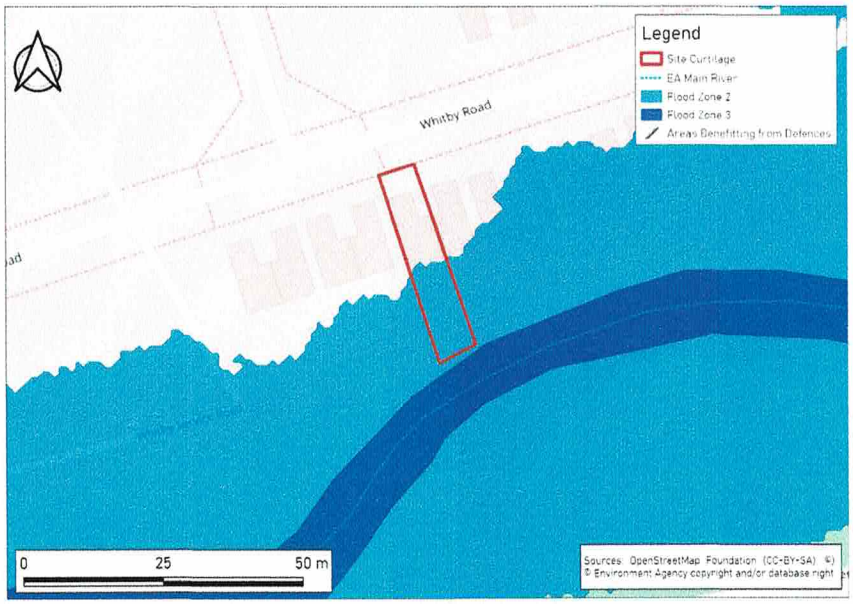

Figure 3: EA Flood Map for Planning

Main Rivers

4.3. The overall site boundary borders to the south an EA Main River, the Yeading Brook. This is located 24m from the residential property onsite, with the proposed rear extension located approximately 20m from the EA Main River. As such, no Flood Risk Activity Permit (FRAP) should be required.

Ordinary Watercourses

4.4. The site is located 170m from an ordinary watercourse within the Bessingby Playing Fields. This ordinary watercourse runs as a normal watercourse before becoming culverted across the playing fields.

Climate Change

4.5. The site is located within the London Management Catchment for peak river flow allowances which has climate change flow allowances as presented in Table 1. As the development is a residential extension, the 2080s central allowance of 17% is required for analysis.

Table 1: London Management Catchment Peak River Flow Allowances

	Central	Higher	Upper
2020s	10%	14%	26%
2050s	7%	14%	30%
2080s	17%	27%	54%

SFRA Mapping

4.6. The West London SFRA includes mapping for the 100 year + climate change events for a 25% increase, 35% increase and a 75% increase. The 25% increase is the nearest to the updated 17% required flow increase and as such this has been utilised in analysis, adopting a conservative approach.

4.7. Within the modelled 100 year + 25% climate change event, the rear of the site is shown to be impacted, however, the residential dwelling and as such the proposed extension is shown to remain unaffected (Figure 4). In line with the West London SFRA, the development will not need to provide compensatory flood storage for the 100 year + CC fluvial flood event as the proposed development is outside the modelled flood extent.

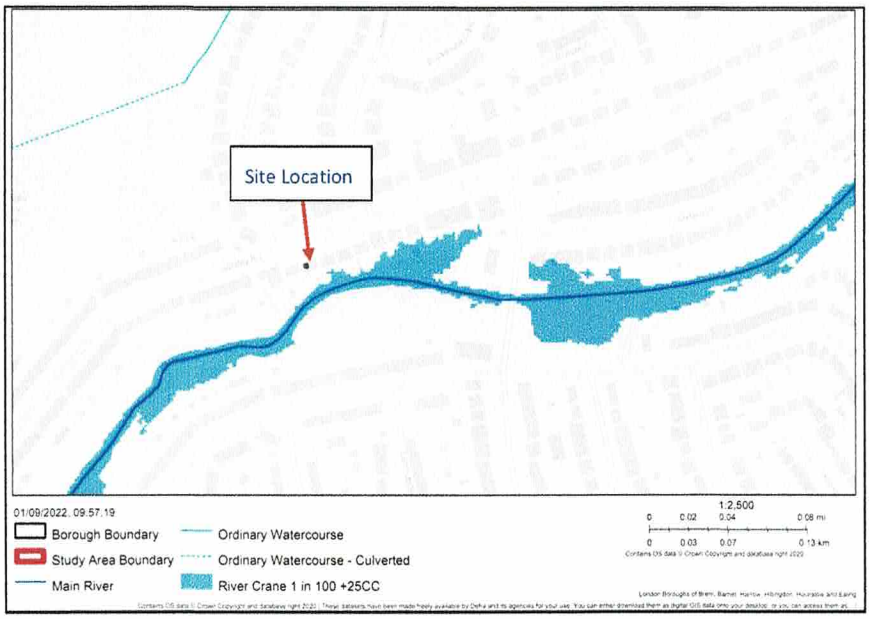

Figure 4: 100 Year + 25% Climate Change Flood Extent from the West London SFRA

Historical Flooding

4.8. On review of the SFRA, the site is located 2km from the nearest recorded flood incident, which occurred to the north of the site. This event occurred in 1977 and was due to the channel capacity exceeding (Figure 5).

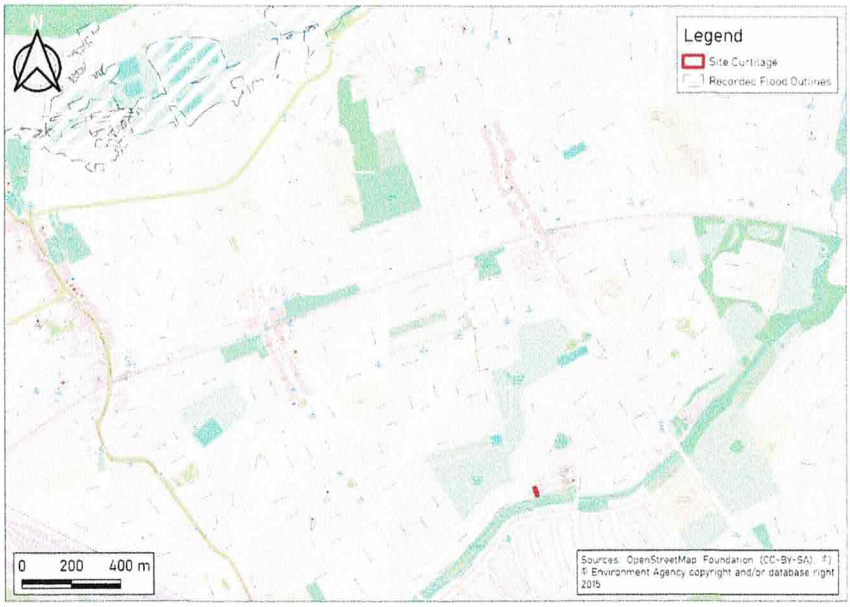

Figure 5: EA Historic Flood Mapping

Summary

4.9. As such, the risk of flooding from fluvial sources is considered medium due to its location in Flood Zone 2.

Tidal Flooding

4.10. The site is at very low risk of tidal flooding.

Canals

4.11. 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.

4.12. 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.

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

4.14. The site is not within the vicinity of any canals and as such the risk from this source of flooding can be considered low.

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 surface water flood risk mapping for the modelled 3.3% (high risk), 1% (medium risk) and 0.1% (low risk) Annual Exceedance Probability (AEP) flood events shows the site is at risk of flooding in the low surface water flood event (Figure 6).

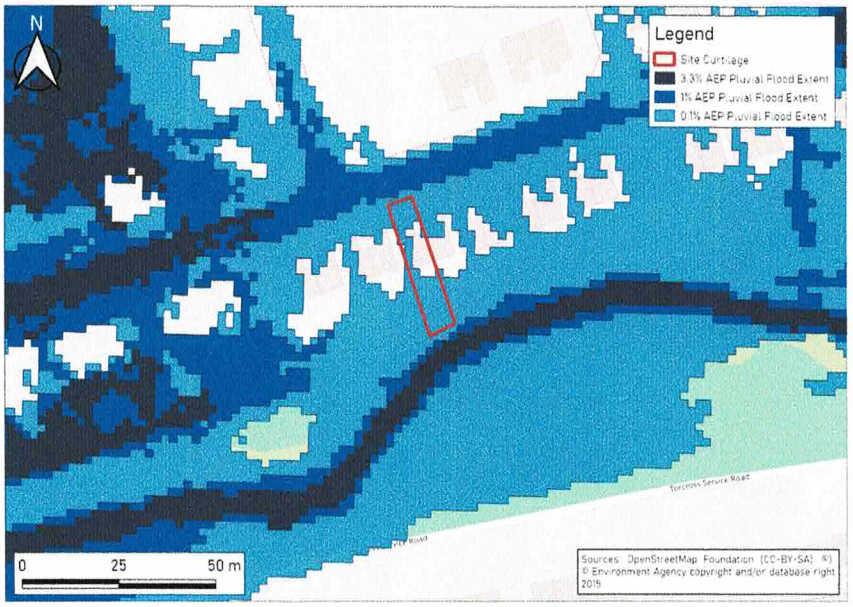

Figure 6: EA Risk of Flooding from Surface Water Flood Risk Mapping

4.17. The rear of the property is adjacent to an area at risk in the modelled high, medium and low risk pluvial flood events. This is the area associated with the EA Main River and does not appear to affect the site curtilage.

4.18. The site curtilage is impacted solely within the modelled 0.1% AEP event. The site is impacted by modelled flood depths of less than 600mm (Figure 7). The 600mm depths are located within the rear of the garden and should not impact the dwelling itself. The residential dwelling should be impacted by flood depths of less than 300mm.

4.19. Access/egress to the property from the north is impacted within the modelled 0.1% AEP and the 1% AEP events with flood depths of less than 600mm and less than 300mm respectively (Figure 7, Figure 9). The modelled hazard rating within the 0.1% AEP event is significant and as such safe access/egress is not deemed possible within this event (Figure 8). Within the 1% AEP event the modelled hazard rating is shown as moderate to the west and low to the east (Figure 10). As such, safe access/egress is possible within this event if the residents travel east along Whitby Road.

4.20. The site remains unaffected within the modelled 1% AEP pluvial flood event and as such it will not require compensatory flood storage in line with the West London SFRA.

4.21. The overall risk to the proposed development from pluvial flooding is considered low.

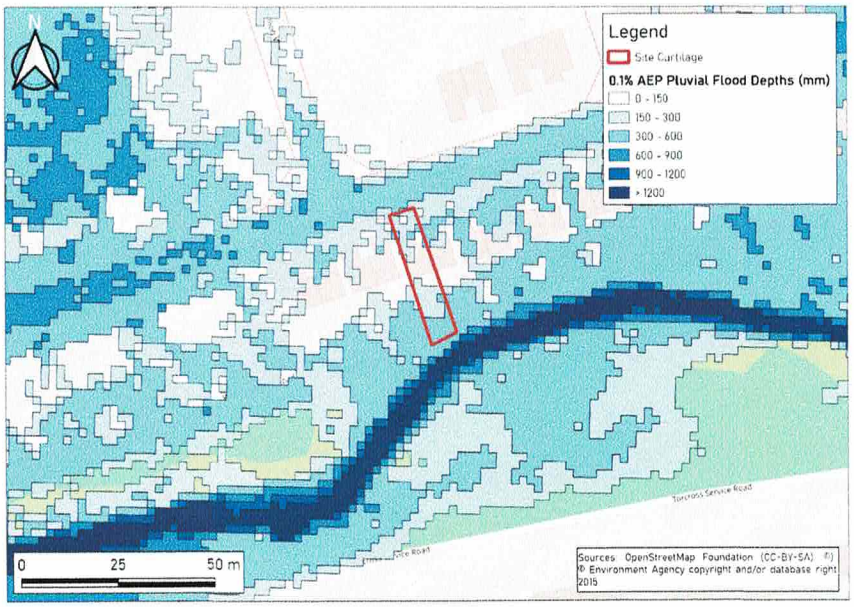

Figure 7: 0.1% AEP Pluvial Flood Depths

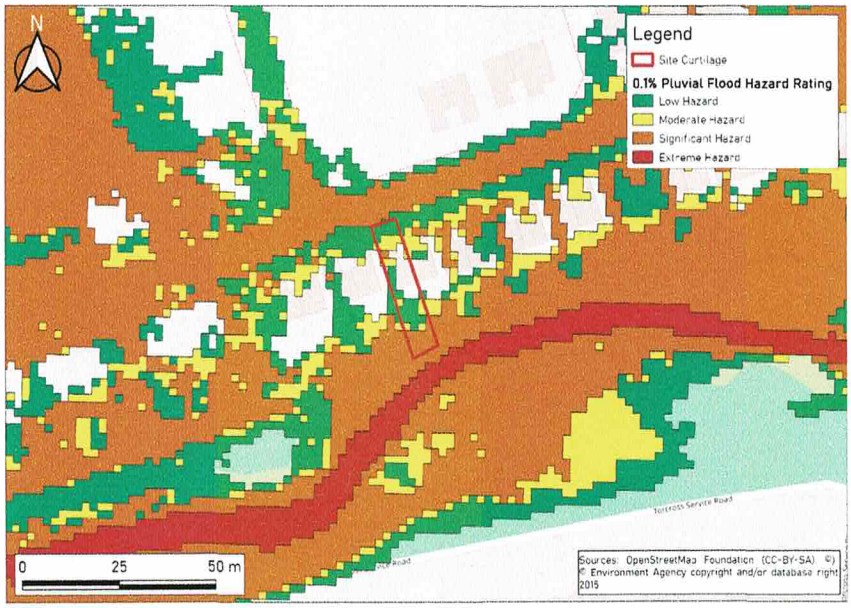

Figure 8: 0.1% AEP Pluvial Flood Hazard Ratings

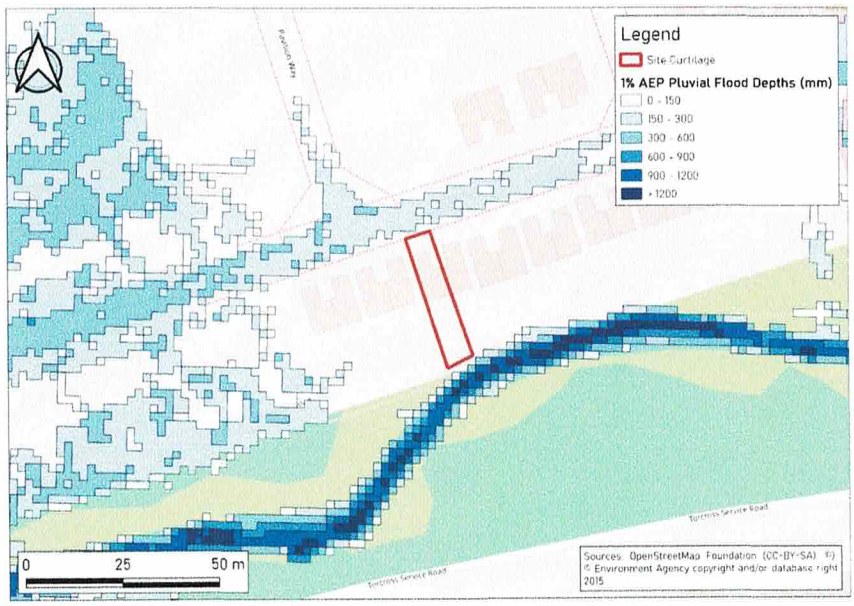

Figure 9: 1% AEP Pluvial Flood Depths

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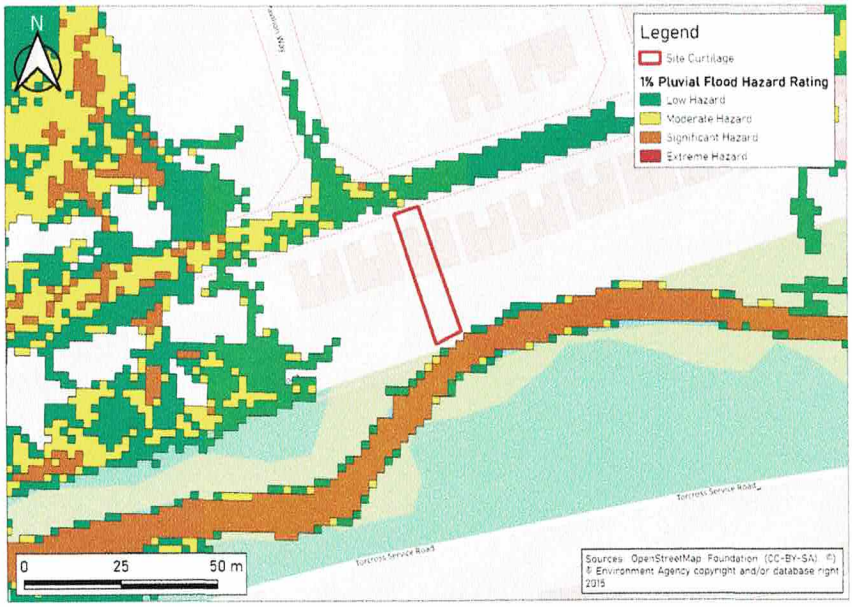


Figure 10: 1% AEP Pluvial Flood Hazards

Reservoirs

4.22. 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.

4.23. According to EA flood risk from reservoirs mapping the site is outside flood extents in the event of reservoir flooding.

Groundwater

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

4.25. The British Geological Survey's (BGS) mapping shows bedrock deposits underlaying the site of Lambeth Group - Clay, Silt and Sand.

4.26. Historic BGS boreholes within the vicinity of the site confirm that the site is underlain by clay and indicates that groundwater was not reached within the borehole with a depth of 3m below ground level.

4.27. The SFRA presents the EA's Areas Susceptible to Groundwater Flooding and the GLA Increase Potential for Elevated Groundwater (Figure 11, Figure 12). The site is not located within an area that is determined

to be susceptible to groundwater flooding or is it in an area with an increased potential for elevated groundwater.

Figure 11: Susceptibility to Groundwater Flooding

Figure 12: GLA Increased Potential for Elevated Groundwater

4.28. As such, the risk from groundwater to the development is considered to be low.

Sewer Flooding

4.29. 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 SFRA provides mapping of historical sewer flood incident records. The site is located within an area that has experienced 1-20 past sewer flooding incidents (Figure 13).

4.31. As this is on the lower end of the incident list, the risk from sewers is therefore considered low.

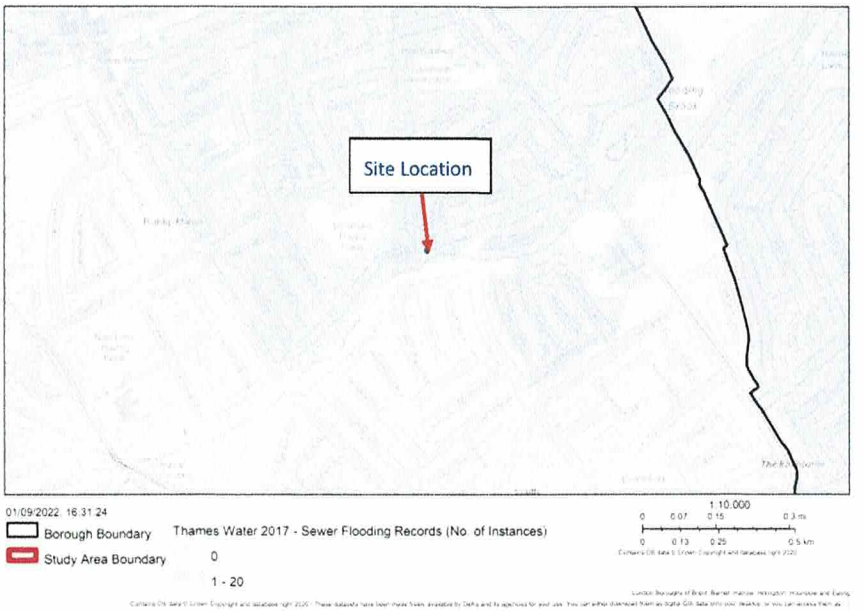


Figure 13: Thames Water Sewer Flood Number of Incidents

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. The development remains unaffected within the modelled 100 year + 25% allowance for climate change fluvial flood event and as such no compensatory flood storage calculations are required.

5.2. Appropriate flood resilience measures should however be incorporated within the proposed extensions.

5.3. In accordance with the CLG Report, *Improving the Flood Performance of New Buildings - Flood Resilient Construction (2007)* including measures such as the below:

- *Raised wiring and power outlets at ground level.*
- *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.*
- *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.*
- *Finish shall be water resistant render with lime-based plaster finish, hydraulic lime coating or ceramic tiles. Plasterboard placed horizontally as a sacrificial material, not vertically.*
- *Insulation to be low adsorption board or semi rigid self-draining wool bats.*

5.4. The FFLs within the proposed extension are to be set no lower than those which already exist at the ground floor level in accordance with the EA Standing Advice for Minor Developments.

Pluvial

5.5. The site is considered to be at low risk of flooding from pluvial sources. Both the SFRA (2018) and EA RoFSW data indicate that the site is affected only by the modelled 0.1% AEP event with depths of less than 600mm within the garden and less than 300mm near the development.

5.6. Appropriate flood resilience measures should be incorporated within the proposed extension in line with the proposed measured laid out within the fluvial section.

Reservoirs, Canals, Tidal, Groundwater and Sewers

5.7. Flood risk from all other sources is considered to be low and therefore no specific mitigation is recommended.

Increase to Flood Risk Elsewhere

5.8. The proposed development is for an extension to provide greater habitable space. As such, the proposal constitutes a Minor Development under the NPPF.

5.9. 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.*

5.10. As such, the proposed development in isolation should have a no impact on flood risk elsewhere.

EA Flood Warning Service

5.11. As a further precaution and risk reduction, the owner of the site should sign up the EA flood warning service (available at: https://www.gov.uk/sign-up-for-flood-warnings). Yeading Brook West at Ruislip Manor warning service is available for this location.

5.12. 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.

5.13. 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).

5.14. Flood alerts and warnings provide site managers/residents with time to take necessary action, e.g. communication of the risk of flooding to occupants/employees etc, 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 178 Whitby Road, Ruislip, Hillingdon, London, HA4 9DX. It has been written to support a full 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 full 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 (and Canals)	The site is located within Flood Zone 2, but remains unaffected within the modelled 100 year + 25% climate change event. As such 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 from pluvial flood sources, only impacted within the modelled 0.1% AEP event with flood depths of 600mm within the rear of the garden and 300m within the property area.
Reservoirs Groundwater Sewers	The site is considered to be at low risk from other sources.

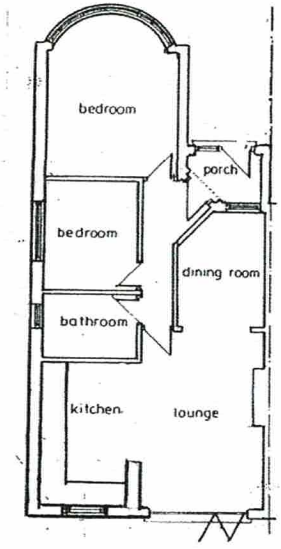
6.3. The following conclusions can be drawn from this level 1 FRA:

- 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 but remains unaffected within the modelled 100 year + 25% climate change event.
- The site is considered to be at low risk of pluvial flooding.
- The site is considered to be at low risk from all other sources.
- The proposed development is a minor development and in isolation should have no impact on flood risk elsewhere

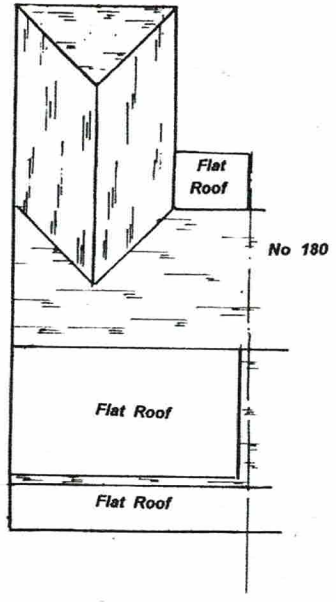
6.4. This Flood Risk Assessment should be submitted as part of the planning application to satisfy the requirements under NPPF.

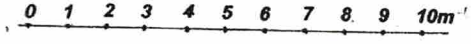
Appendix A - Development Proposals

GROUND FLOOR PLAN



ROOF PLAN





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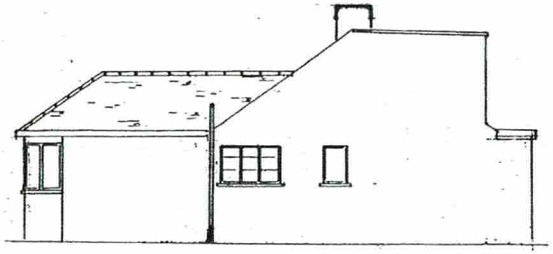
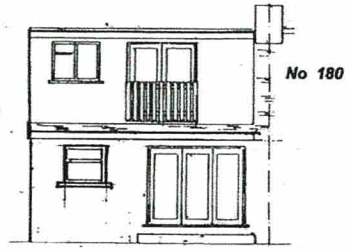
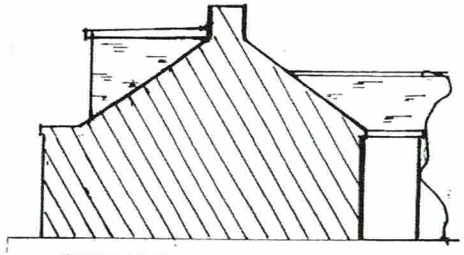


SIDE ELEVATION



REAR ELEVATION



SIDE ELEVATION / PROFILE

IADUCT SURVEYING SERVICES
0 MANOR COURT ROAD
ANWELL
ONDON W7 3EL
ELEPHONE: 0208 579 3098 MOBILE: 07850 280262

Revisions:

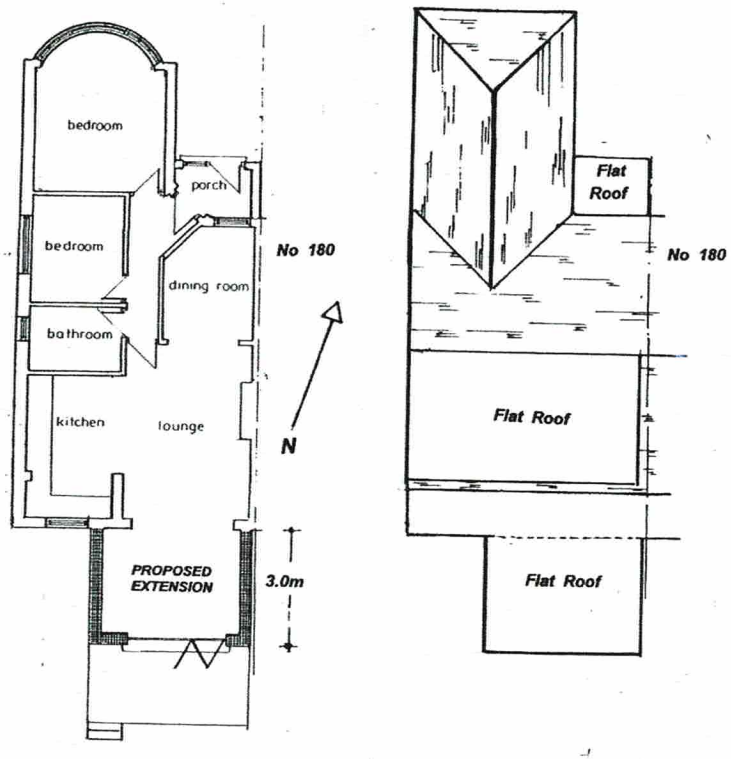
Job Title: 178 WHITBY ROAD RUISLIP HA4 9BY

Drawing Title: PLANS AND ELEVATIONS "AS EXISTING"

Scale: 1 : 100
Date: MAY 2022
Drawn: DRS

HLN 22052 / 1

GROUND FLOOR PLAN



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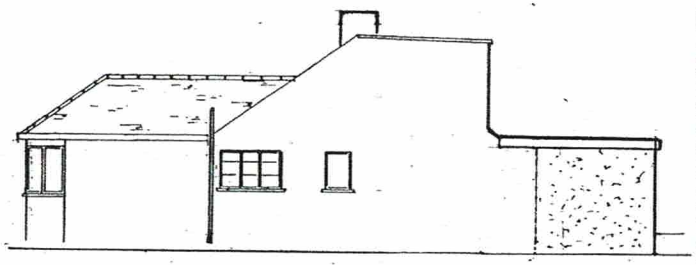
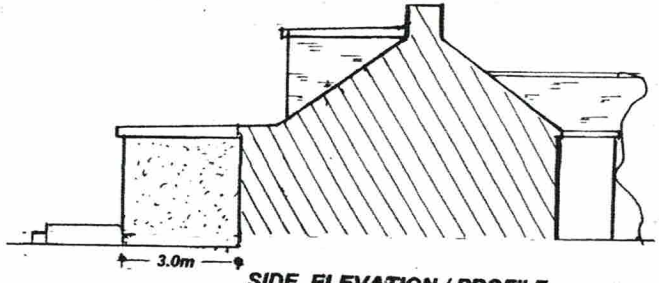


SIDE ELEVATION

REAR ELEVATION

All materials used in the construction of the external work shall be of a similar appearance to those used in the construction of the exterior of the existing dwelling house



SIDE ELEVATION / PROFILE

IADUCT SURVEYING SERVICES
0 MANOR COURT ROAD
ANWELL
ONDON W7 3EL
ELEPHONE: 0208 579 3098 MOBILE: 07850 280262

Revisions:

Job Title: 178 WHITBY ROAD RUISLIP HA4 9BY

Drawing Title: PLANS AND ELEVATIONS "AS PROPOSED"

Scale: 1 : 100
Date: MAY 2022
Drawn: DRS

HLN 22052 / 2

HLN 22052 / LP

Date of Production: February 18th, 2019

N

0 m 10 20 30 40 50 60 70 m

Ground Scale: 1:1250
Bottom Left: 511068 186492 Top Right: 511268 186692
Center: 511168 186592
Area: 200m x 200m

178 WHITBY ROAD
RUISLIP
HA4 9DY

Dash4it
THE MAP SUPERSTORE

HLN 22052 / SP

Date of Production: February 18th, 2019

N

0 m 5 10 15 20 25 30 m

Ground Scale: 1:500
Bottom Left: 511123 186547 Top Right: 511213 186637
Center: 511168 186592
Area: 90m x 90m

178 WHITBY ROAD
RUISLIP
HA4 9DY

Dash4it
THE MAP SUPERSTORE