

**JOHN DAVIES ASSOCIATES**  
Consulting Engineers

**76 RALEIGH AVENUE  
HAYES  
LONDON  
UB4 0EF**

**Flood Risk Assessment**  
(Rev A)

**7<sup>th</sup> November 2023**

**Issue Sheet.**

<b>Prepared</b>	<b>Date</b>		<b>Checked</b>	<b>Date</b>
MJM	07-11.23		MJM	07-11-23

<b>Revisions</b>	<b>Comment</b>	<b>Date</b>
A	Initial Issue	07-11-23

The report is based on the information that has been acquired and / or made available to John Davies Associates Limited via the various searches and consultations undertaken as part of the Flood Risk Assessment. In some cases, anecdotal information has been relied upon, where documented evidence has been lacking.

The conclusions drawn in the following report are considered correct although any subsequent additional information may allow refinement of the conclusions.

All work carried out in preparing this report has utilised and is based upon John Davies Associates current professional knowledge and understanding of current UK standards and codes, technology and legislation. Changes in this legislation and guidance may occur at any time in the future and cause any conclusions to become inappropriate or incorrect.

This report has been prepared using information contained in maps and documents prepared by others. John Davies Associates can accept no responsibility for the accuracy of such information.

## EXECUTIVE SUMMARY

### Site Description

Site Area	-
Existing Use	Existing semi-detached property
Proposed Use	Rear extension to existing property

### Flood Risk

Flood Zone	2 (one)
Surface Water	Low Risk
Reservoirs	At risk when river floods
Sewers	None known.
Ground Water	Low Risk

### Drainage Strategy

Existing Impermeable Area	-
Proposed Impermeable Area	-
Proposed Discharge Rate	N/A
Proposed Outfall	Existing drainage network
1 in 100 Year + CC Storage	-

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## **1 Introduction**

- 1.1 John Davies Associates has been commissioned by Design Endeavours Ltd, to undertake a Flood Risk Assessment (FRA) in connection with the proposed extension to the property at 76 Raleigh Road, Hayes, London. The proposal consists of a rear extension to the existing residential dwelling (see Appendix A for layout).
- 1.2 This FRA has been produced to demonstrate how risk from all sources of flooding to the site itself and risk to others will be managed, in order to satisfy the requirements, set out in the NPPF – National Planning Policy Framework.

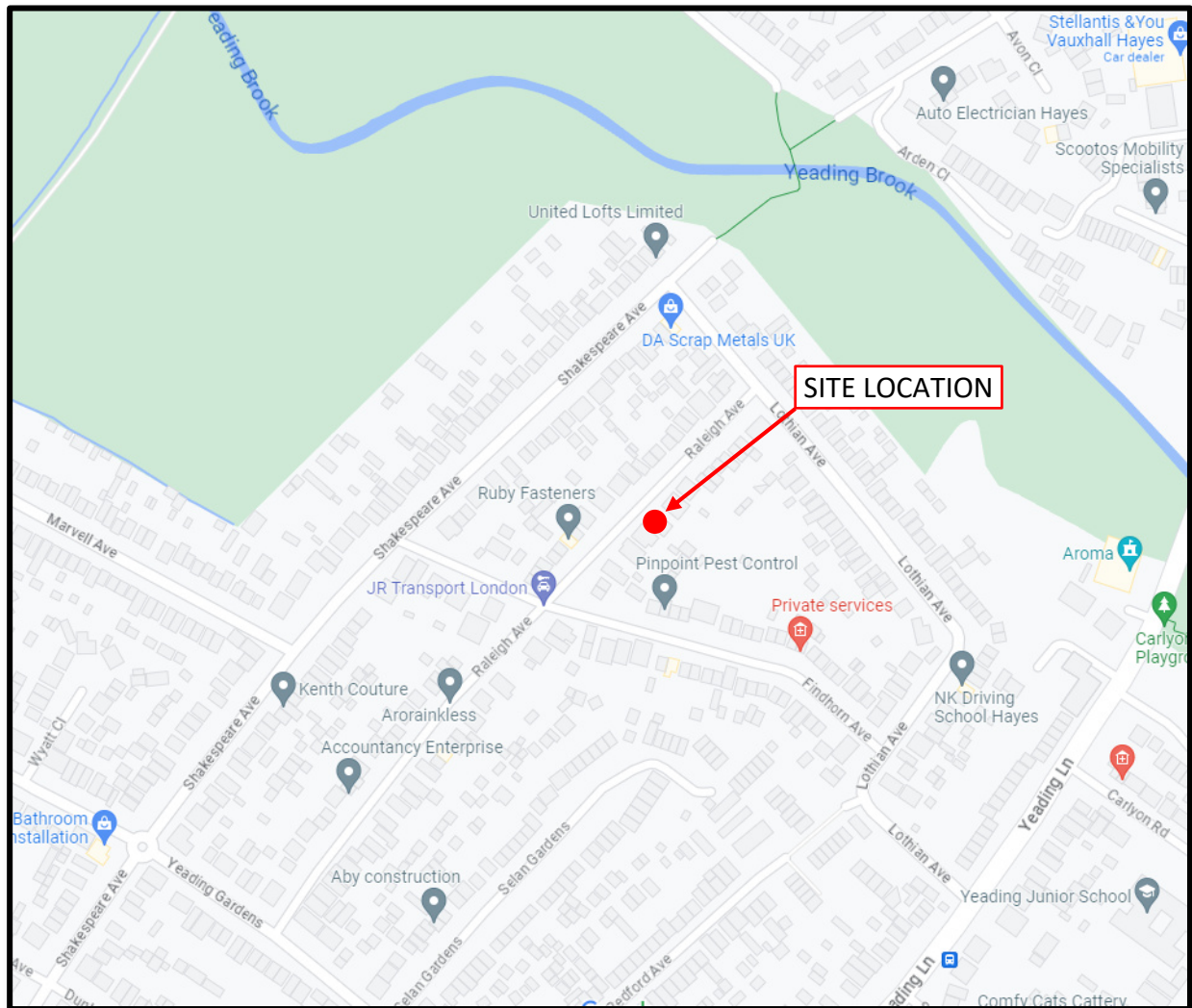
## **2 Site Description**

- 2.1 The site is located mid-way along Raleigh Avenue and has similar type housing to both sides and is accessed off Raleigh Avenue and can be found at co-ordinates 510831E, 181820N and the nearest postcode is UB4 0EF.
- 2.2 The site is located within a residential area and has residential properties on all sides with access from Raleigh Avenue.

## **3 Site Levels**

- 3.1 No topographical data was available at the time of writing, but the area of extension is quite small so level changes in the garden are not expected to be of a concern, nor are there any existing retaining elements in the area of the proposed extension.

## 4 Site Location





## 5 Aerial Photograph



## 6 Existing Flood Risk.

6.1 National Planning Policy Framework (NPPF) Paragraphs 155-165 refers to the risk based Sequential Test aiming to steer new development to areas at the lowest probability of flooding (Zone 1).

6.2 Paragraph's 158 & 159 of the NPPF states that

*"158. The aim of the sequential test is to steer new development to areas with the lowest risk of flooding. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The strategic flood risk assessment will provide the basis for applying this test. The sequential approach should be used in areas known to be at risk now or in the future from any form of flooding."*

*"159. If it is not possible for development to be located in zones with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in national planning guidance."*

## 7 Existing Geology / Hydrogeology

7.1 No site investigation was made available at the time of writing we have therefore referred to the British Geological Survey website ([www.bgs.ac.uk](http://www.bgs.ac.uk)) which states the ground to be:

***"1:50000 SCALE BEDROCK GEOLOGY DESCRIPTION:*** London Clay Formation - Clay and silt. Sedimentary bedrock formed between 56 and 47.8 million years ago during the Palaeogene period.

## 8 Environment Agency Consultation

8.1 No correspondence has been received from the Environment Agency at the time of writing, but it is expected that they will have no objections subject to normal flood mitigation measures for such a development.

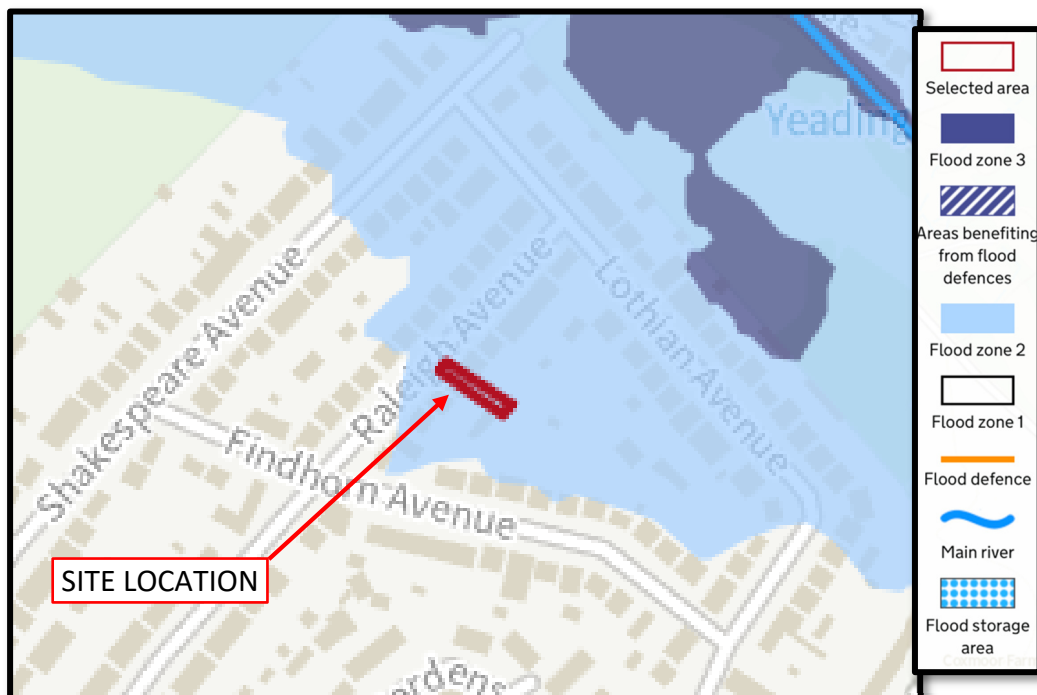
## 9 Sewerage Undertaker Consultation.

9.1 Thames Water is the sewerage undertaker in this location, it is expected that the existing property connects to the public sewer located in the highway.



## 10 Flood Risk Assessment

- 10.1 The National Planning Policy Framework (NPPF) aims to avoid inappropriate development in areas at risk of flooding, directing development away from high-risk areas and avoiding increasing or reducing the risk of flooding elsewhere.
- 10.2 The flood risk assessment will use a sequential approach to assess the site to avoid development in flood risk areas and to manage the residual risks and take into account the effect of climate change. The 'Sequential Test' will start with consideration of the Flood Zones in the vicinity of the site. Where development is proposed within a flood zone an 'Exception Test' may also be necessary in accordance with the National Planning Policy Framework guidance.
- 10.3 As per the Environment Agency (EA) flood map below, the existing site is located in **Flood Zone 2**.



- 10.4 These flood zones refer to the probability of river and sea flooding, ignoring the presence of defences. They are shown on the Environment Agency's Flood map for planning (River and Seas) available on the Environment Agency's website.

## 11 Sequential Test

- 11.1 This risk-based test has the aim of steering new development to area at the lowest probability of flooding, it is broken down into 3 tables, the first of which identifies the risk based on Flood zone as per below, of which this site is within **FLOOD ZONE 2**.

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – 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. (Land shown in light blue on the Flood Map)
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. (Land shown in dark blue on the Flood Map)
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)

11.2 The second table then identifies the vulnerability class of the site dependant on the sites proposed used, and within this table this site falls into the **MORE VULNERABLE** classification as shown below:

More vulnerable
<ul style="list-style-type: none"> <li>• Hospitals</li> <li>• Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels.</li> <li>• Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.</li> <li>• Non-residential uses for health services, nurseries and educational establishments.</li> <li>• Landfill* and sites used for waste management facilities for hazardous waste.</li> <li>• Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.</li> </ul>

11.3 Finally, Table 3 determines the need for the Exception test based upon the results from tables 1 and 2 previously identified, in this instance the development is **appropriate** and therefore the exception test is not required.

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	✗	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	✗	✗	✗	✓*

Key:

✓ Development is appropriate

✗ Development should not be permitted.

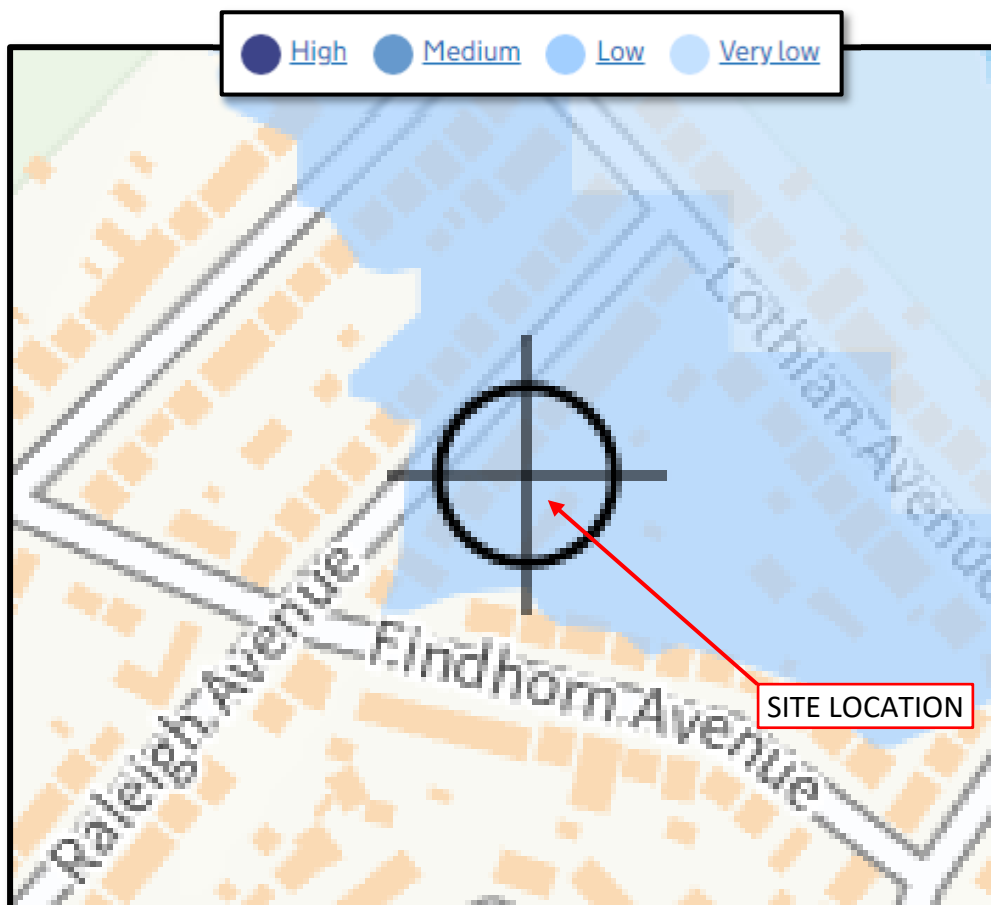
## 12 Exception Test

12.1 As the sequential test has been passed then there is no need for the exception test.

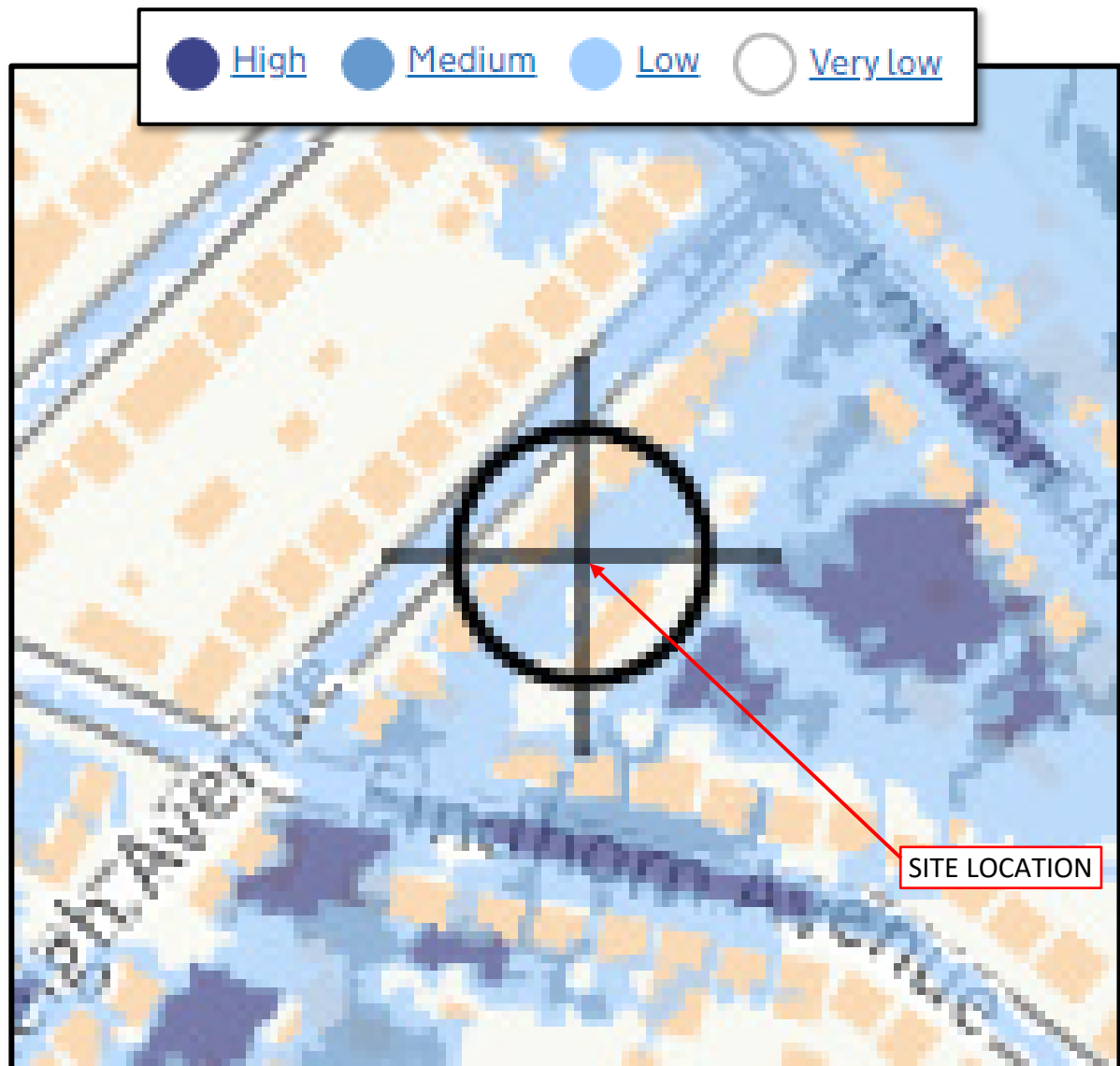
### 13 Sources of Potential Flooding

SOURCE OF FLOODING	POTENTIAL RISK				DESCRIPTION
	HIGH	MEDIUM	LOW	NONE	
Fluvial		X		X	See paragraph 14.1
Pluvial			X		See paragraph 14.2
Reservoirs			X		See paragraph 14.3
Sewers				X	No known problems.
Groundwater			X		No known existing problems.
Proposed Development			X		See paragraph 14.4

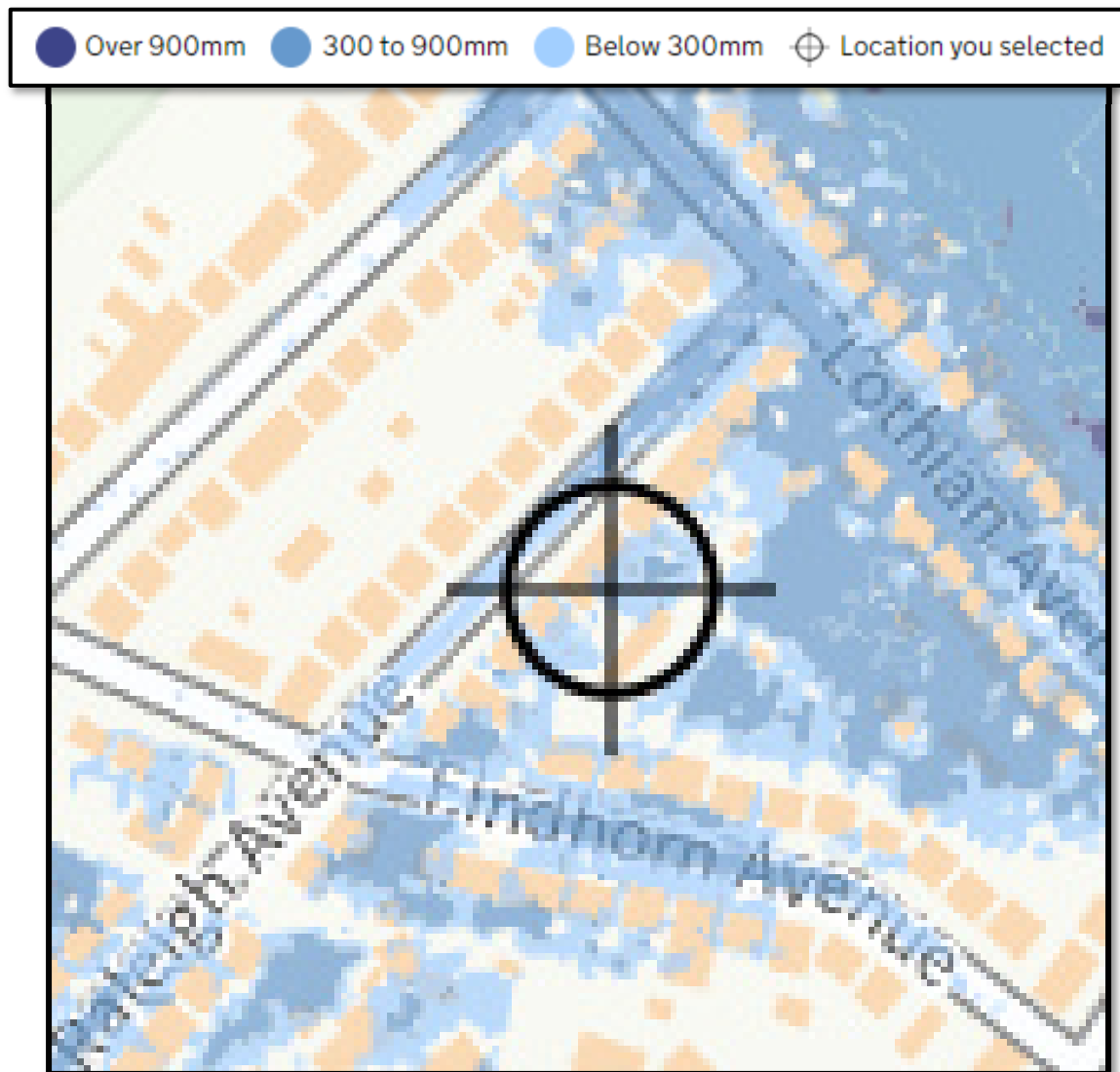
13.1 The (EA) flood mapping service on their website identifies that part of the site has a **Low** risk of fluvial flooding as identified on the map below.



13.2 The (EA) flood mapping service on their website identifies the areas at risk from surface water flooding, it can be seen from the below map that part of the site is at a **Low** risk of surface water flooding which is generated by rainfall.

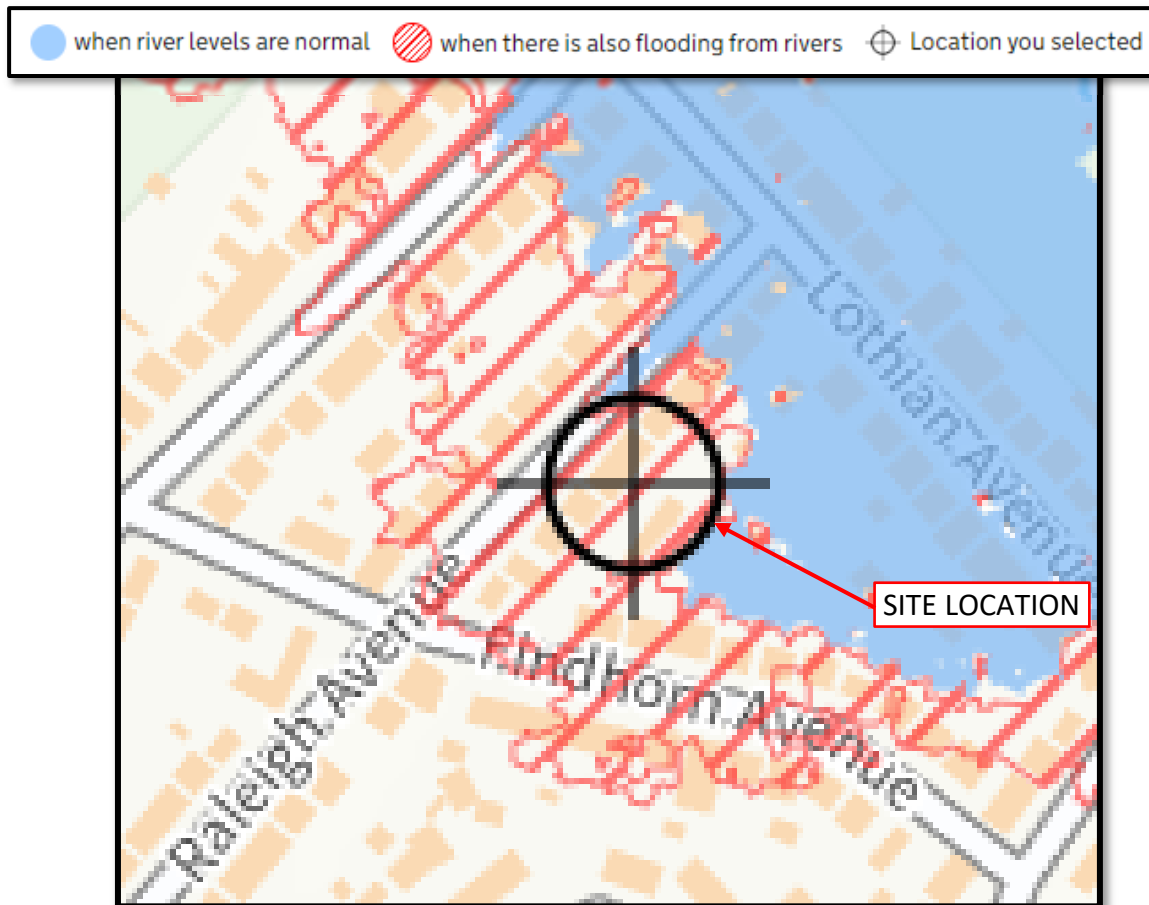


13.3 The (EA) flood mapping service on their website identified the site area to be in a **Low** risk from surface water flooding, referring to the map below we can identify the potential depth of surface water flood risk, to the rear of the property the light blue area can be seen which puts the rear garden at a surface water flood risk of **up to 300mm**.





13.4 The (EA) flood mapping service on their website identifies the areas at risk from reservoirs flooding through failure to the reservoir or over topping but only in conjunction with river flooding, as per the map below then the site is at risk of flooding should the reservoir fail, but where the property is located this is only in conjunction with the River flooding, which would be the predominant risk to consider.



13.5 The proposed development needs to be considered when looking at the risks of flooding both on site and the surrounding areas and downstream of the proposed outfall to ensure that the development does not create flooding elsewhere. On this site the area of the extension is very small and therefore the increase in surface water runoff will be insignificant.

## 14 Flood Mitigation

14.1 From the EA data then there is a surface water flood risk depth of up to 300mm, it would be sensible to raise the FFL by 300mm where possible but as this is an extension to the existing house then this is not possible, however it would be possible to include a wall sealant up to 300mm on the extension, ensure all air bricks are above 300mm and specify a flood resistant door if possible.

## 15 Drainage Strategy

### Surface Water

- 15.1 In accordance with the SUDS hierarchy then infiltration should be considered in the first instance, at the time of writing this report no site investigation work had been undertaken, it is however expected that soakaways will not work due to the ground conditions.
- 15.2 The next step in the SUDS hierarchy would be to discharge the surface water to a watercourse but as there are none in the immediate vicinity then this is not feasible.
- 15.3 It would therefore be recommended to connect the extension to the existing drainage network around the building, normally their flows would be reduced and attenuated but as these are expected to be so low then this is probably not going to be possible.
- 15.4 Where possible we should be including new SUDS elements in the proposed extension, as it is not expected that infiltration will work then any SUDS features that rely on this have been discounted, we do consider that the use of rain water butts on the rainwater pipes should be included.

### Foul Sewer

- 15.5 There are no additional foul connections proposed from the extension.

## **16 Conclusion**

- 16.1 John Davies Associates Limited were commissioned by Design Endeavours Ltd to undertake a Flood Risk Assessment (FRA) for the proposed extension at the residential property at 76 Raleigh Avenue, Hayes, London. This report will be provided as supporting documentation as part of a planning application.
- 16.2 The proposed development site falls into Flood Zone 2 and is at a Low risk of flooding from rivers and watercourses.
- 16.3 The proposed development is at a low risk of flooding from Surface water and not at risk from groundwater or reservoirs.
- 16.4 The sequential test was undertaken, and it was deemed that the site was appropriate, and the exception test was not required.
- 16.5 The site is an existing residential dwelling with hard paved driveways and rear gardens.
- 16.6 The surface water is proposed to discharge to the existing drainage network on site with the use Rainwater butts.
- 16.7 There is not additional foul discharge from the site.
- 16.8 Water sealants should be used around the new extension up to 300mm above the FFL, the air bricks should be raised to above 300mm, and the specification of a watertight rear door should be included where possible.
- 16.9 This Flood Risk Assessment has confirmed that subject to the findings in the report being employed then the proposal for the site is deemed acceptable in the terms as set out in NPPF.

**Appendix A**  
**Proposed Layout Plans**





01 - FRONT VIEW



02 - REAR VIEW



03 - REAR VIEW



04 - REAR VIEW

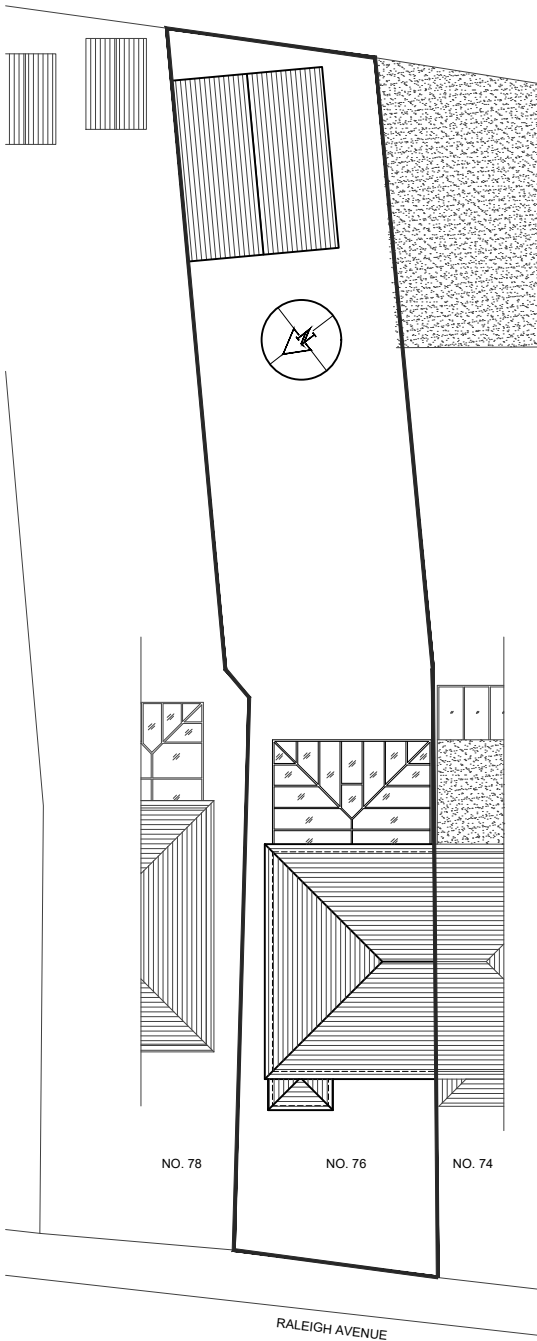


05 - REAR VIEW

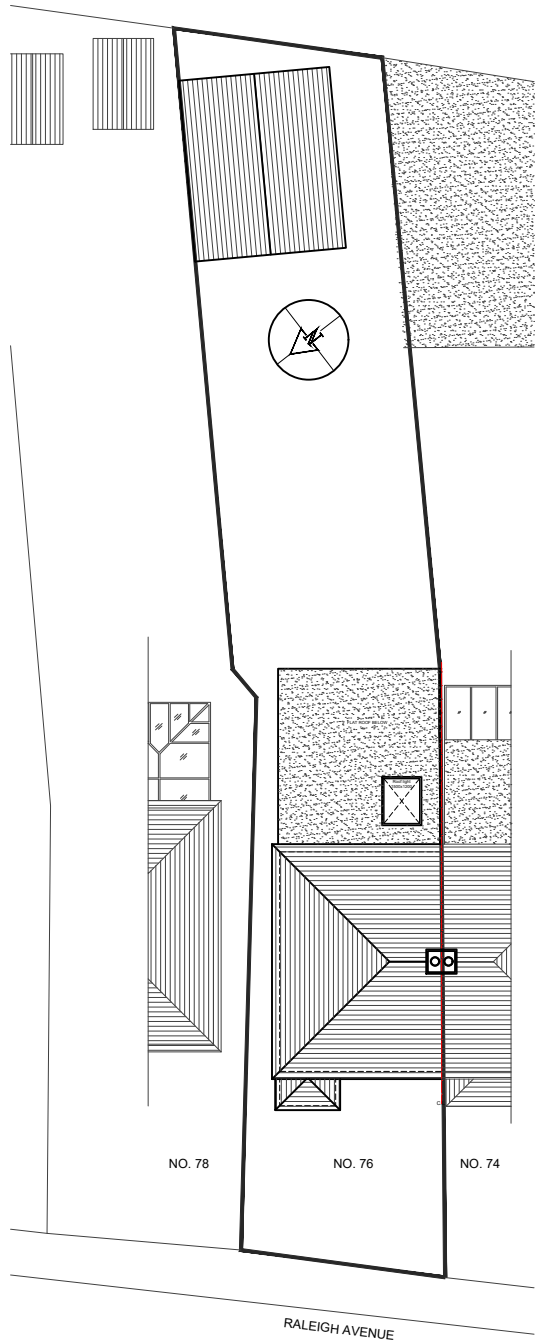
- NOTES
- Dimensions are not to be scaled from this drawing by contractors. The contractor is requested to check all dimensions before the work started.
  - Report any discrepancies to the client or architect before undertaking the work described in the drawings.
  - Dimensions are approximate site dimensions and are to be verified by the contractor on site before any fabrication/site works i.e foundations etc occur
  - Contractor is responsible for all temporary propping to existing structure



06 - OS MAP SCALE 1:1250



07 - EXISTING BLOCK PLAN SCALE 1:250



08 - PROPOSED BLOCK PLAN SCALE 1:250

LEGEND

- EXISTING
- PROPOSED
- DEMOLISHED

REVISIONS			
NO.	DESCRIPTION	DATE	BY

PRIOR NOTICE APPLICATION

DESIGN ENDEAVOURS LTD  
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Project	76 RALEIGH AVENUE HAYES LONDON, UB4 0EF		
Title	OS MAP & BLOCK PLANS		
Scale	As shown@A3	Drawn	NK
Job No.	DAC-193/23	Approved	SEP 23
		Rev.	-

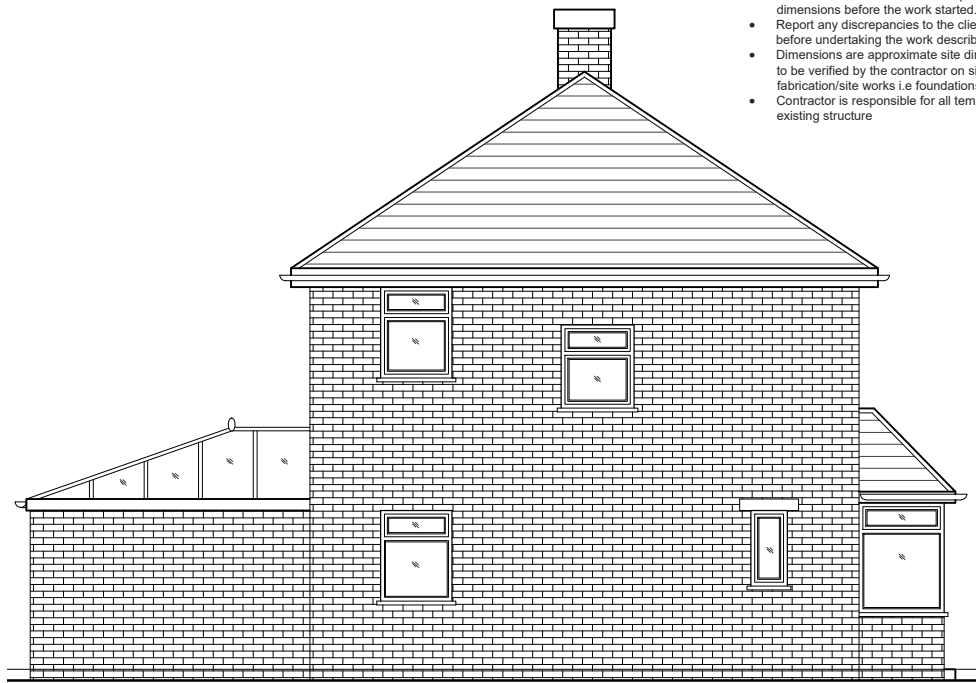




01 - FRONT ELEVATION

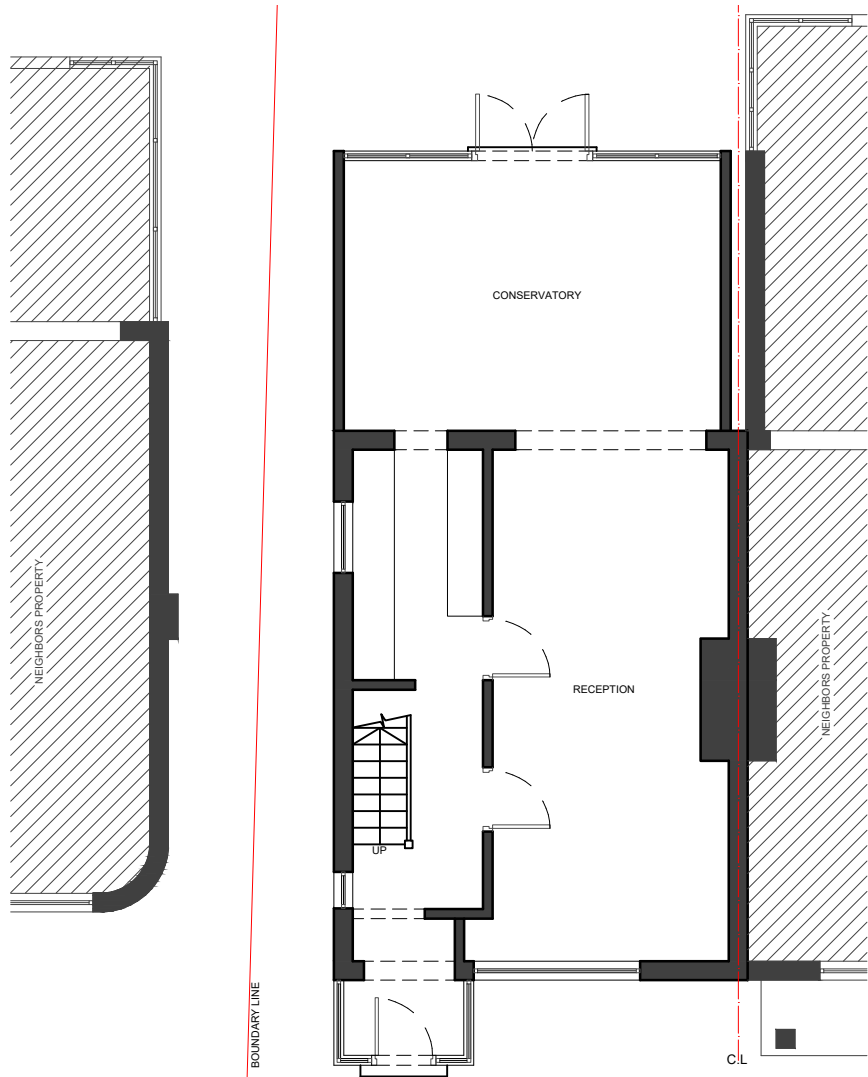


02 - REAR ELEVATION

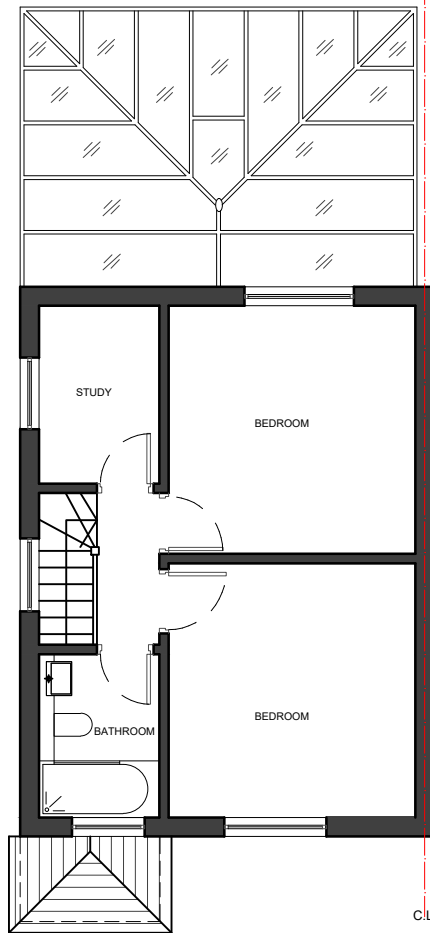


03 - SIDE ELEVATION

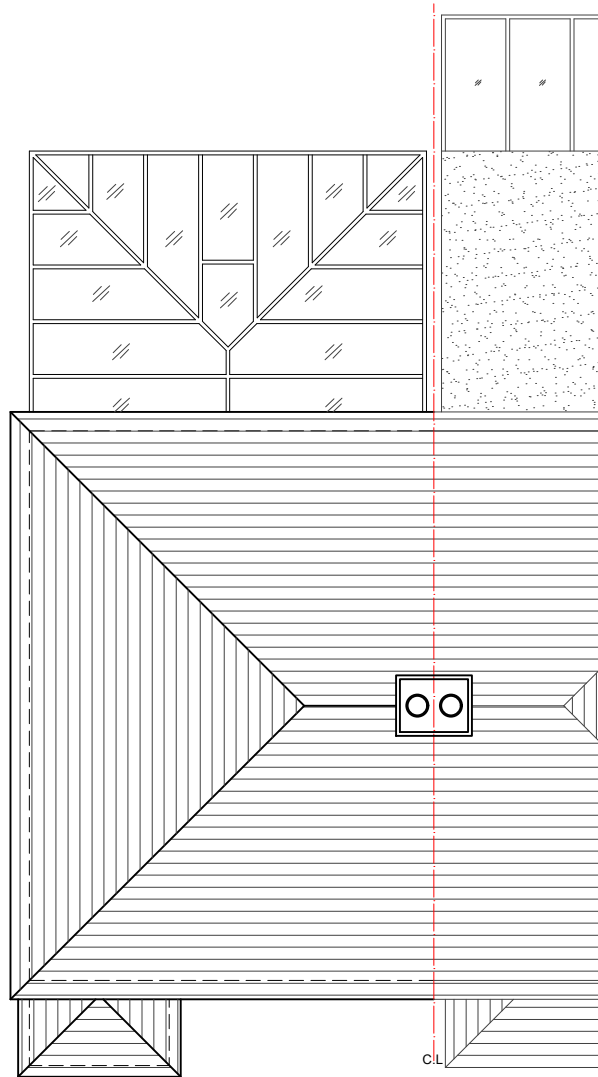
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04 - GROUND FLOOR PLAN



05 - FIRST FLOOR PLAN



06 - ROOF PLAN

0 1 2m 3 4 5m  
Scale

REVISIONS			
NO.	DESCRIPTION	DATE	BY

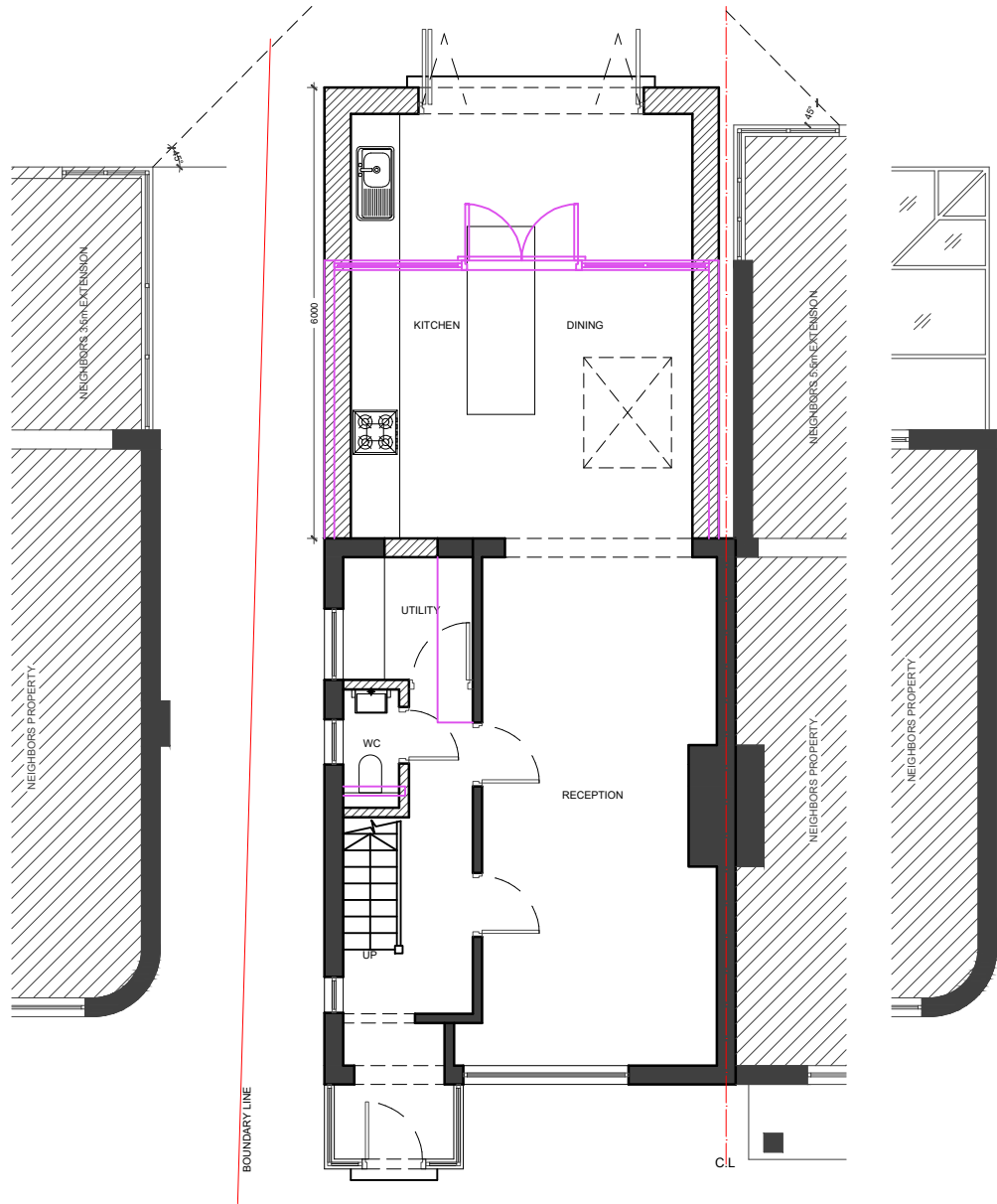
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**DESIGN ENDEAVOURS LTD**  
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E: design.endeavour@gmail.com

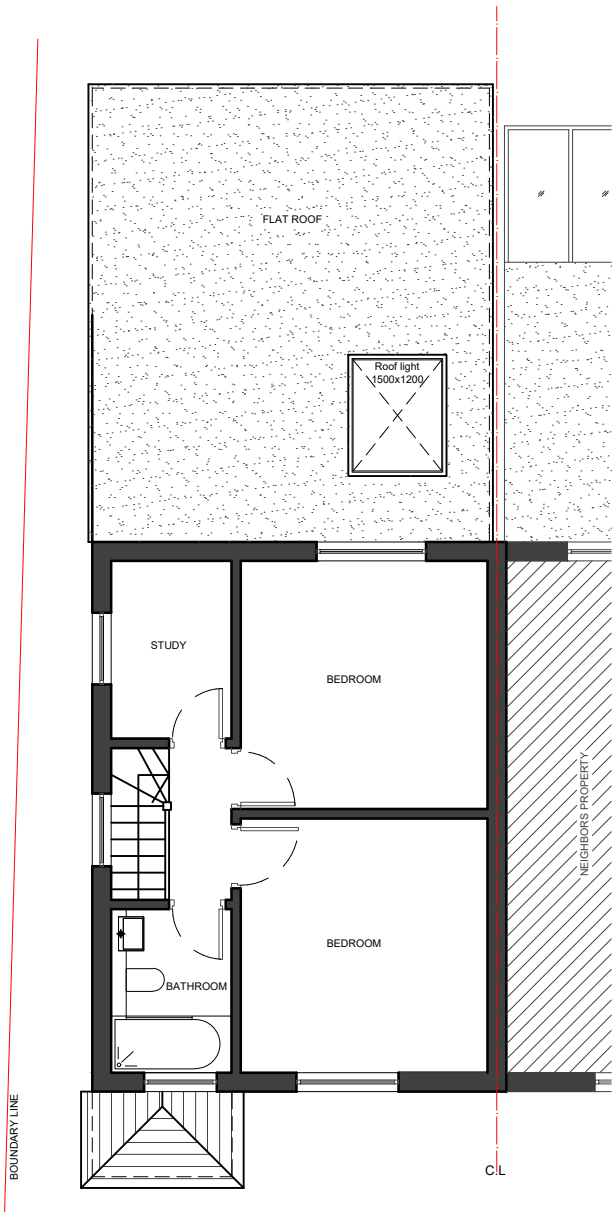
Project	76 RALEIGH AVENUE HAYES LONDON, UB4 0EF		
Title	EXISTING PLANS & ELEVATIONS		

Scale	Drawn	Approved	Date
1:100@A3	NK		SEP 23
Job No.	Drawing No.	Rev.	
DAC-193/23	PN-76RA-02	-	

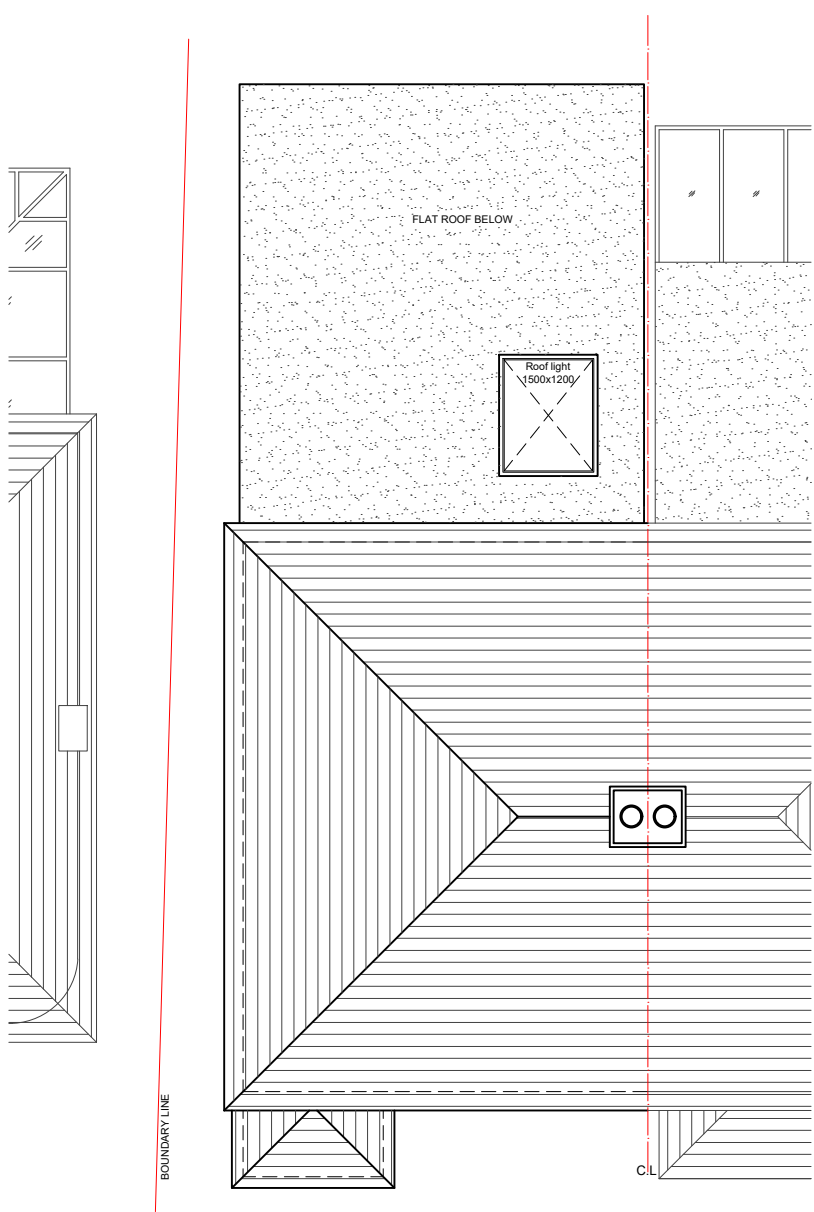




01 - GROUND FLOOR PLAN



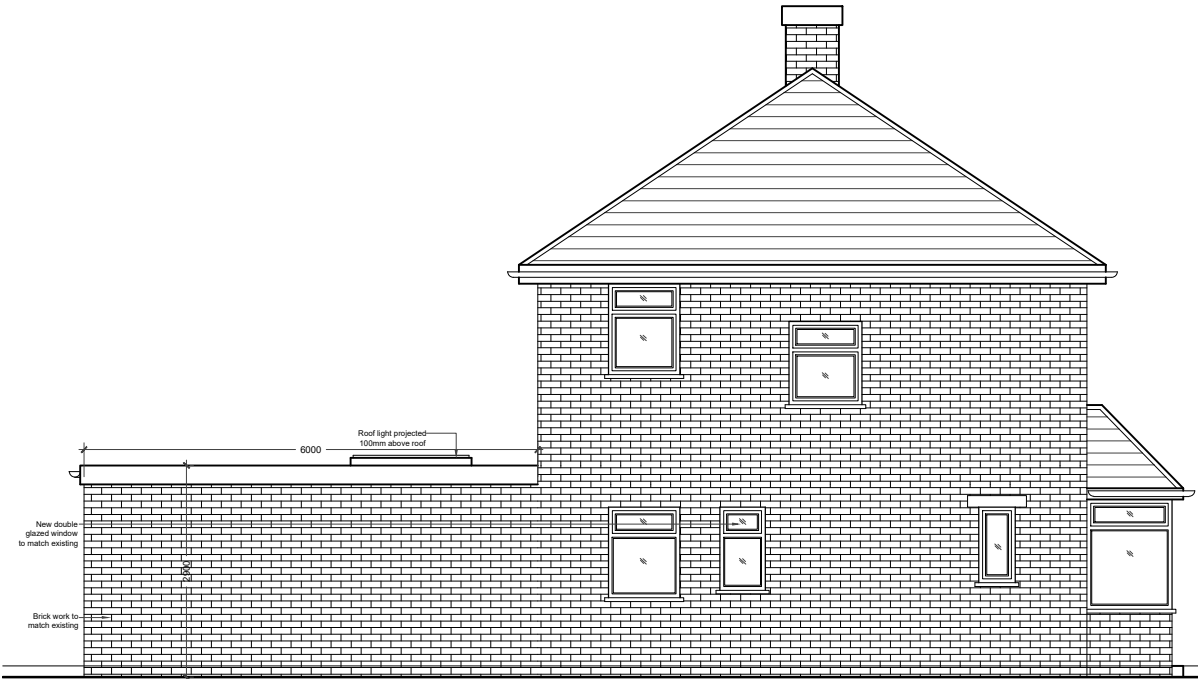
02 - FIRST FLOOR PLAN



03 - ROOF PLAN

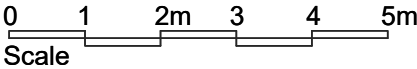


04 - REAR ELEVATION



05 - SIDE ELEVATION

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Project 76 RALEIGH AVENUE HAYES LONDON, UB4 0EF			
Title PROPOSED PLANS & ELEVATIONS			
Scale 1:100@A3	Drawn NK	Approved	Date SEP 23
Job No. DAC-193/23	Drawing No. PN-76RA-03	Rev. -	