LANMOR Consulting

Civil Engineers & Transport Planners

# 62 Broadwood Avenue

# Flood Risk Assessment and Drainage Strategy

December 2024

241822/FRA/LB/KBL/01

*Rev B*


LANMOR Consulting

Civil Engineers & Transport Planners

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Title: Flood Risk Assessment and Drainage Strategy

Client:

Reference: 241822/FRA/LB/KBL/01

| | | | |
|---|---|---|---|
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# 1 INTRODUCTION

## 1.1 Scope

1.1.1 Lanmor Consulting has been appointed to prepare a Flood Risk Assessment and Drainage Strategy for the proposed development at 6, Broadwood Avenue, Ruislip, HA4 7XR.

1.1.2 This report describes the existing site conditions, development proposals and implications of flooding on the site as described in the governments guidance document; National Planning Policy Framework (NPPF) and its technical guidance. This report will consider the following:

- Development Proposals
- Sources of flooding and flood defences
- Flooding extents, depth and climate change predictions
- Impact of flooding on the development
- Dangers presented by flooding

1.1.3 This report has been prepared in accordance with the requirements of the governments National Planning Policy Framework (NPPF) and its planning practice guidance and will demonstrate that the proposed development will be safe and will not increase the risk of flooding in the surrounding area.

# 2 SITE CONDITIONS

## 2.1 Site Location

2.1.1 The site is located in the north of Ruislip, in the London Borough of Hillingdon. The site is located within a predominantly residential area. To the north of the site is Park Wood SSSI. The site is surrounded to the south, east and west with residential houses. The nearest source of fluvial flooding is the River Pinn, which at its closest point lies 0.28km south of the site.

2.1.2 Figure 2.1 below shows the location of the application site.

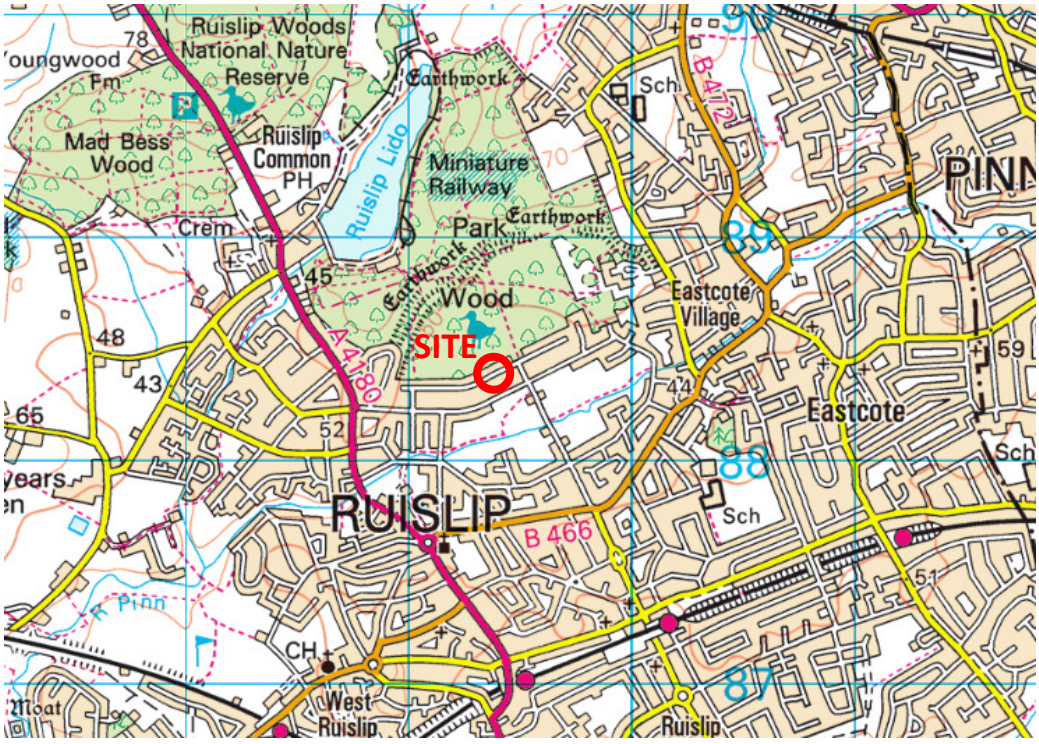



**Figure 2.1 – Site Location**

2.1.3 The site is currently occupied by a single dwelling. Planning permission was granted in September 2024 for 2 no. rear single storey extensions. Subsequent permission was granted for an outbuilding to the rear of the property, and recently consent was granted to replace the existing property with a new dwelling.

## 2.2 Site Proposal

2.2.1 The application seeks approval for a single storey rear extension to the consent property at 62 Broadwood Avenue. The site layout has been included as drawing 250220-08 in Appendix A and floor plans as drawing 250220-02.

## 2.3 Site Geology

2.3.1 The British Geological Survey (BGS), mapping indicates the underlying bedrock at the application site to be Lambeth Group – Clay, silt and sand. This is a sedimentary bedrock formed between 59.2 and 47.8 million years ago during the Palaeogene period.

2.3.2 There is no information available for the superficial geology of the site.

# 3 SOURCES OF FLOODING

## 3.1 Fluvial/Tidal Flooding

3.1.1 Flood mapping has been provided by the Environment Agency (EA) for the site and surrounding area. The mapping indicates the site to be within Flood Zone 3 meaning it has a high probability of flooding from rivers and/or the sea.

3.1.2 The NPPF and PPG define the Flood Zones as follows:

- Zone 1: 'Low Probability' – This zone comprises land assessed as having a less than a 1 in 1000 annual probability of river or sea flooding (<0.1%) in any year.

- Zone 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.

- Zone 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%).

- Zone 3b: 'The Functional Floodplain' – This zone comprises land where water must flow or be stored in times of flood. SFRAs 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 Environment Agency, including water conveyance routes.)

3.1.3 The EA mapping shows the site to be mainly within Flood Zone 3. For Zone 3, there is a probability of >1% from river flooding. Figure 3.1 below shows the site's position in relation to the fluvial flood zones.


**Figure 3.1 – Flood Zone Mapping**

3.1.4 The dark blue shaded area on the above map shows land in Flood Zone 3 that might be subject to flooding with a probability of 1.0% or greater, the light blue areas show the probability of flooding between 1.0% and 0.1%. The unshaded areas indicate a flood probability of less than 0.1%.

3.1.5 As the site is within Flood Zone 3, the site could be subject to fluvial flooding with a probability of 1.0% or greater.

## 3.2 Surface Water Flooding

3.2.1 The surface water flood mapping provided by the EA is considered to be the best available source of national information of surface water flooding. It is a starting point for understanding patterns and probability of surface water flooding. The EA accept that mapping has limitations and state that *"these maps cannot definitely show that an area of land or property is, or is not, at risk of flooding, and the maps are not suitable for use at an individual property level."*

3.2.2 The surface water flood risk map on the government website shows the estimated extents and depths of flooding for different return periods. Figure 3.2 below shows the extent and depths of surface water flooding from an event with a probability of 1.0%.

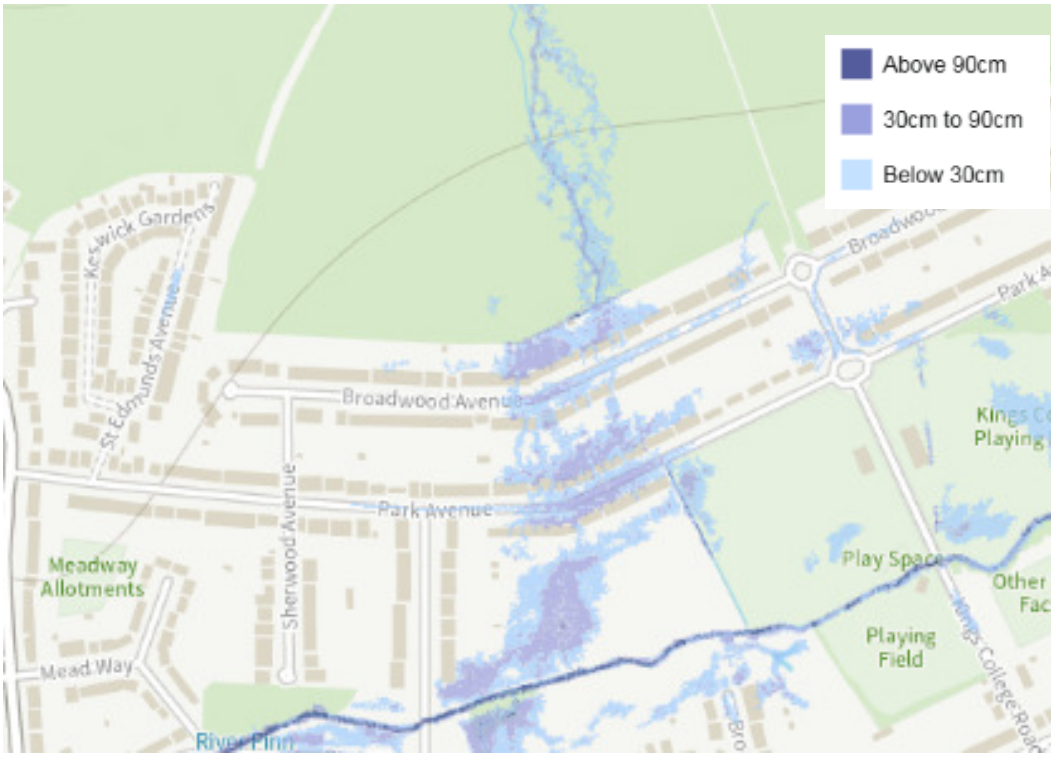



**Figure 3.2 – Surface Water Flooding Map**

3.2.3 The mapping shows the site could be subject to surface water flooding with a probability of 1.0%. However, the flood outlines seem to follow the fluvial flood outlines, which are likely to be more serve than the surface water flood risk.

## 3.3 Groundwater Flooding

3.3.1 The joint SFRA prepared for Hillingdon shows the potential risks of groundwater flooding on the interactive mapping. The level of detail is course but gives an indication of risk for the areas across the borough. It shows the site is located in an area that could be subject to groundwater flooding with a probability of 25-50%, but is surrounded by areas of low or no flood risk so the risk to the development is considered low.

### 3.4 Sewer Flooding

3.4.1 The SFRA mapping also shows the risk of flooding from sewers. The mapping shows there is no risk to the site from sewer flooding.

### 3.5 Reservoir Flooding

3.5.1 The flood maps prepared by the EA for reservoir flooding indicates that only if there a fluvial flooding event on the River Pinn would the site be at potential risk of flooding from a reservoir failure. Given the very safe record of reservoir in the UK the risk is considered to be low.

# 4 MODELLED FLOOD EVENTS AND CLIMATE CHANGE

## 4.1 Flood Probability

4.1.1 The principal source of flooding to the site comes from the River Pinn located to the south of the site and its tributaries. Detailed flood modelling was requested from the EA, and they have provided information by way of Products 5, 6 and 7. Flood level data for the scenarios was extracted from the model data and compared to the ground levels across the site.

4.1.2 Figure 4.1 shows the location of the site and flood node points 1 and 2 extracted from the EA flood model. The flood extents for an event with a probability of 1.0% (1 in 100) and 0.1% (1 in 1000) are shown in Figures 4.2 & 4.3 below.

4.1.3 Figure 4.4 shows the extent of a flooding from an event with as probability of 1.0% plus allowance for climate change. The Environment Agency have published climate change allowances to be used in the preparation of Flood Risk Assessments. The allowance to be implemented for fluvial flooding it is based on the management catchment area, flood zone and site vulnerability. The site is located within the Wey and tributaries Management Catchment, as identified on the Department for Environment Food & Rural Affairs (DEFRA) climate change allowances website.

4.1.4 The site lies within Flood Zone 3, under Annex 3 of the NPPF the proposed development would be classed as: “Buildings used for residential uses” to be a “More Vulnerable” use.

4.1.5 The Flood Risk Assessments: Climate Change Allowances guidance, recommends that the Central Allowance for More Vulnerable uses in Floods Zones 2 and 3 should be used. The DEFRA website provides the Central Allowance to be applied to peak river flows for developments with a 100-year lifetime. The site is located in the Colne Management Area so the allowance to be incorporated should be 21%. The flood modelling provided by the EA didn’t include this scenario but a 25% increase in river flows was modelled. This has therefore been used to assess the climate change risk, which is considered to give a robust case for assessment.


Figure 4.1 – Flood Nodes

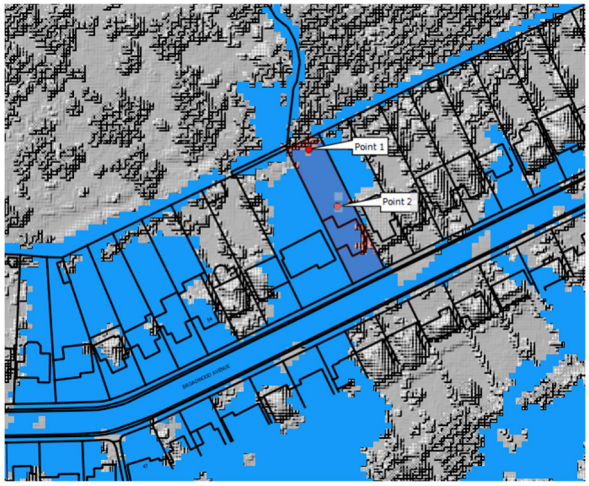



Figure 4.2 – 1 in 100 year Flood Extent

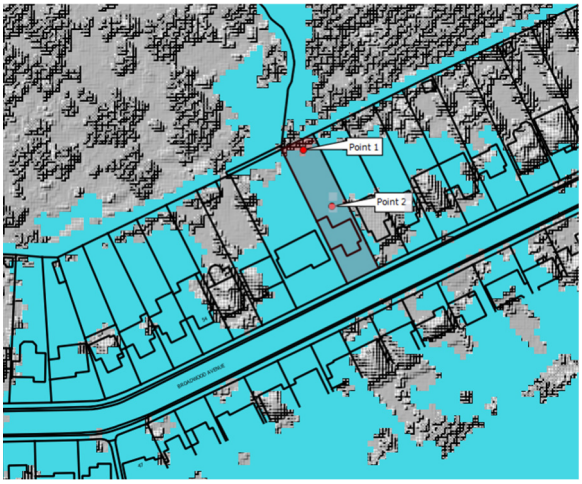



Figure 4.3 – 1 in 1000 year Flood Extent

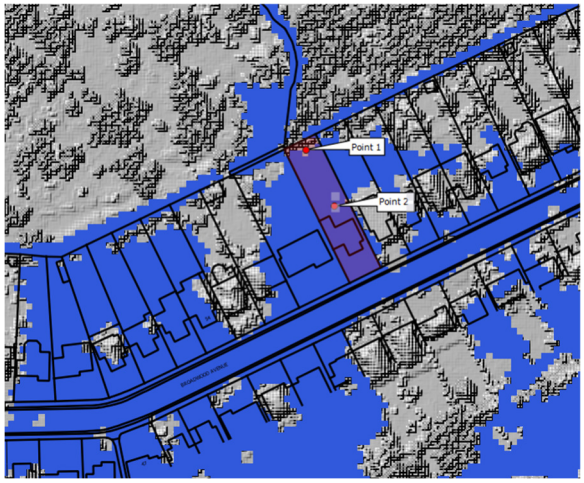



Figure 4.4 – 1 in 100 year +CC Flood Extent

4.1.6 Flood level data for the scenarios was extracted from the model data and are tabulated below in Table 4.1. There are no flood defences along the watercourses in the area.

| **Model** | **Ruislip – Park Wood and Pinn Meadows FAS (Jacobs, 2021)** | | | |
|---|---|---|---|---|
| **Node** | Ground Level | 1 in 100 | 1 in 100 +CC | 1 in 1000 |
| **1** | 42.539 | 42.580 | 42.594 | 42.634 |
| **2** | 42.447 | 42.573 | 42.585 | 42.619 |

**Table 4.1 – Flood Level Data**

## 4.2 Impact on Flow of Flood Waters

4.2.1 The proposals are for a small rear extension. The dwelling will remain largely as consent and the outbuilding to the rear will be unaffected.

4.2.2 Therefore, the proposals will have minimal impact on flood storage volumes across the site for an event with a probability of 1.0% +CC allowance, and would not restrict the free flow of flood waters when compared to the proposed dwelling as there will be no increase in the width of the property.

## 4.3 Flood Impact on Development

4.3.1 The estimated flood level at the property boundary is 42.585m AOD. The current floor level is 42.597m AOD, 150mm above the existing ground level. The proposed floor will be set 300mm above the flood level of 42.585m at 42.885m AOD as approved for the replacement dwelling.

4.3.2 The 300mm freeboard will ensure the property will be free from flooding and protected from any wave action caused by passing traffic.

4.3.3 The proposed measures will ensure the property is safe from flooding with a probability of 1.0% plus a 25% allowance for climate change.

## 4.4 Safe Access & Egress

4.4.1 The proposals will not result in an increase in persons at the property, so the access and egress to the site will be the same as per the current scenario. The proposals will not increase the population at risk of flooding on the site so the access will provide the same level of security as the current situation.

# 5 DRAINAGE STRATEGY

5.1.1 A separate drainage design report reference 241822/DC/AG/KBL/01 has been prepared for the site and accompanies this report. The conclusion of the drainage report shows that the site can be adequately drained without increase the risk of flooding in the area.

## 6 SUMMARY AND CONCLUSION

6.1.1 The site is located at 62 Broadwood Avenue. The surrounding area contains open fields to the north and residential properties to the south.

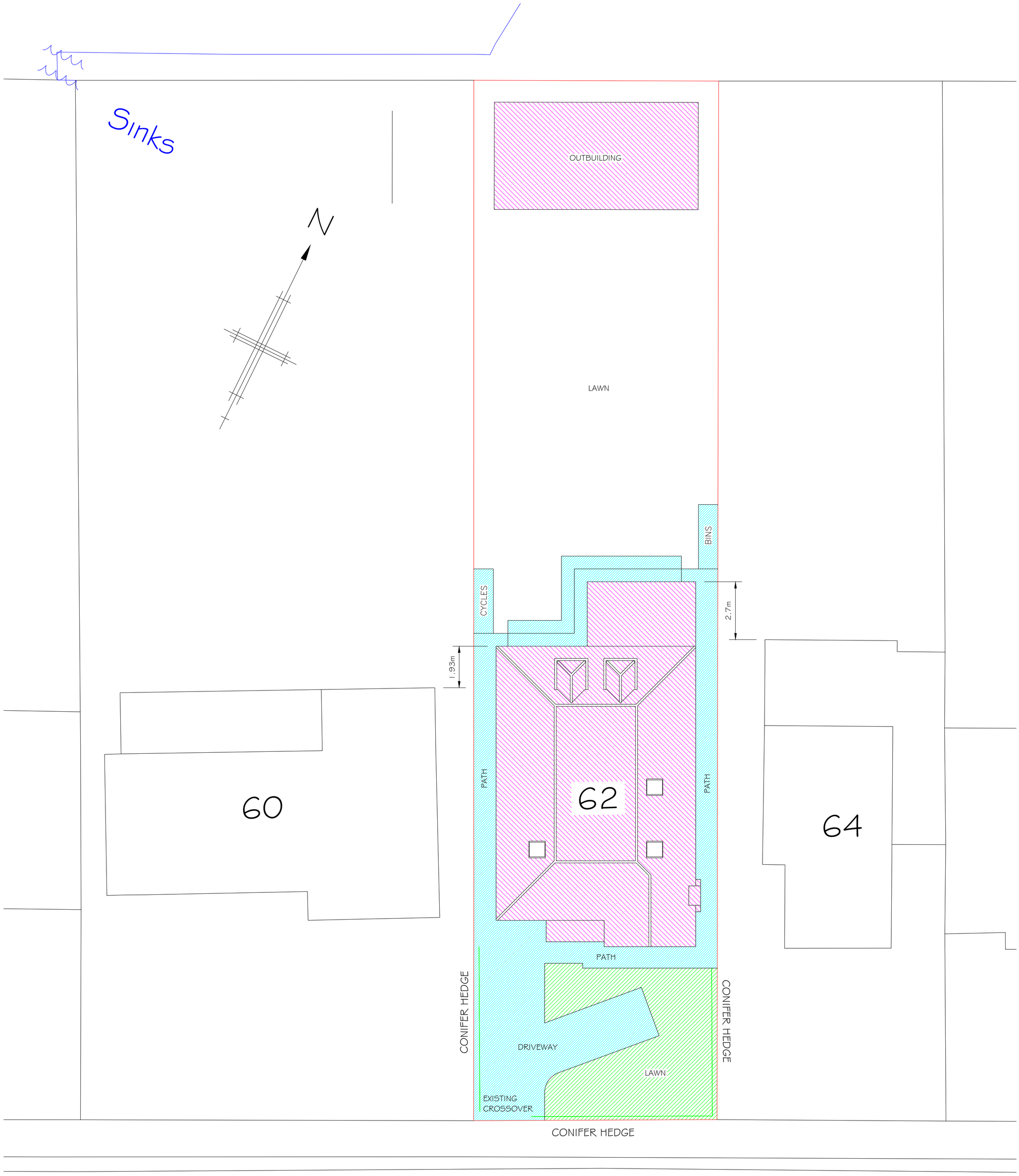
6.1.2 The proposals involve a single storey rear extension. The site is located in Flood Zone 3 and it is considered the small extension will have minimal impact on flooding. The extension floor level will be set at the same level as the dwelling, 300m above the estimate flood level for a 1.0% probability event with allowance for climate change.

6.1.3 A suitable drainage strategy can be provided without increasing the risk of flooding in the area. SuDS will be provided for the collection and disposal of runoff from the roof and hard standing.

6.1.4 This FRA has demonstrated that the proposals will not have any impact on the current flooding in the area and that a suitable drainage strategy can be provided without increasing the risk of flooding, and we therefore see no reason why these proposals should be refused on the grounds of flooding or drainage.

# APPENDIX A

Drawing 240816-08 – Proposed Site Layout




HOUSE FOOTPRINT - 142 SQ.M  OUTBUILDING FOOTPRINT - 47.5 SQ.M

HOUSE FOOTPRINT, OUTBUILDING & HARD STANDING COMBINED - 292.5 SQ.M

HARD STANDING - 103 SQ.M

SOFT LANDSCAPING - 45 SQ.M.  SOFT LANDSCAPING IMPACTED 22 SQ.M

EXISTING HEDGE - 3 LINEAR METRES REDUCTION

0 2 4 6 8 10m

SCALE BAR ~ 1:100

MINOLI DESIGN
E: declan@minoli.design
W: www.minoli.design
77 HOWARDS THICKET  GERRARDS CROSS  BUCKS  SL9 7NU
O: 01753 882010  M: 07973 548828

| REVISIONS | DATE |
|---|---|
| B - OUTBUILDING SHOWN. | 22/05/2025 |
| A - 3.0m DEEP REAR EXTENSION SHOWN. | 29/04/2025 |

TITLE
Proposed Garden Plan

ADDRESS
62 Broadwood Avenue
Ruislip  HA4 7XR

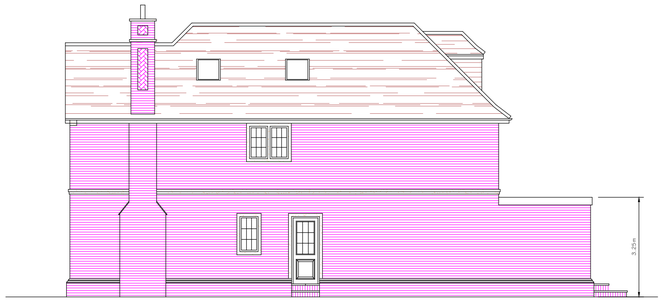
CLIENT

| SCALE | DATE |
|---|---|
| @ A1 1:100 | March 2025 |

| DRAWING No. | REV. |
|---|---|
| 250220-08 | B |

Drawing 250220-02 – Proposed Floor Plans


FRONT ELEVATION (SOUTH EAST)




SIDE ELEVATION (SOUTH WEST)

HANDMADE BROWN CLAY PLAIN TILES
BONNET TILES TO HIPS

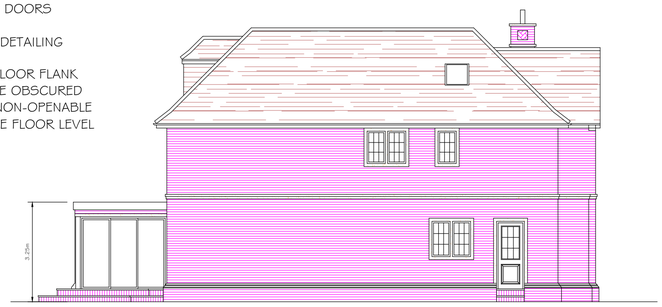
HANDMADE RED STOCK BRICKS

WHITE WINDOWS & DOORS

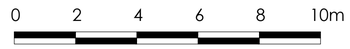
PORTLAND STONE DETAILING

FIRST & SECOND FLOOR FLANK WINDOWS TO HAVE OBSCURED GLAZING & TO BE NON-OPENABLE UP TO 1.7m ABOVE FLOOR LEVEL

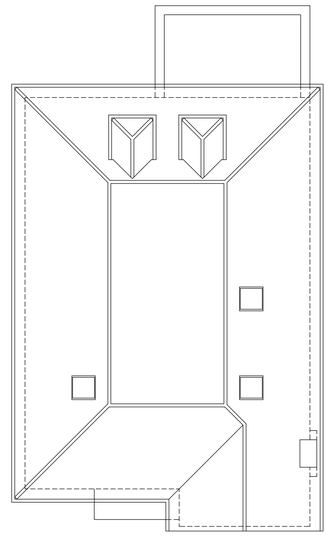

REAR ELEVATION (NORTH WEST)



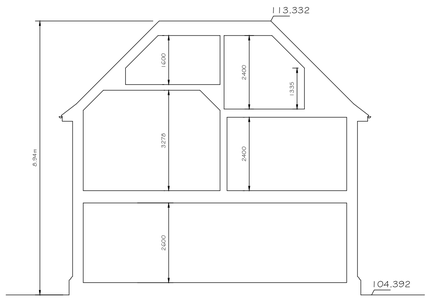

SIDE ELEVATION (NORTH EAST)



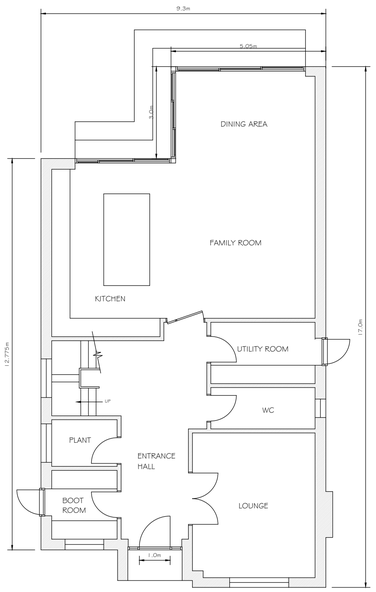

SCALE BAR ~ 1:100



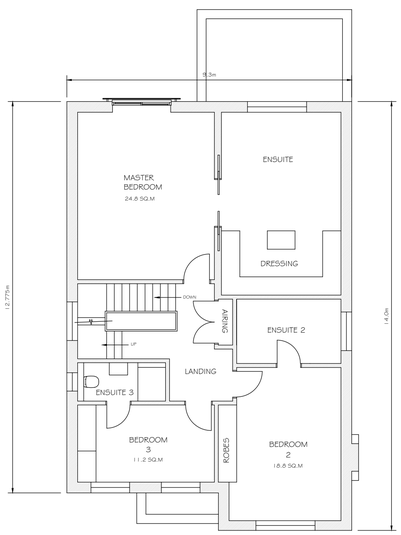
ROOF PLAN



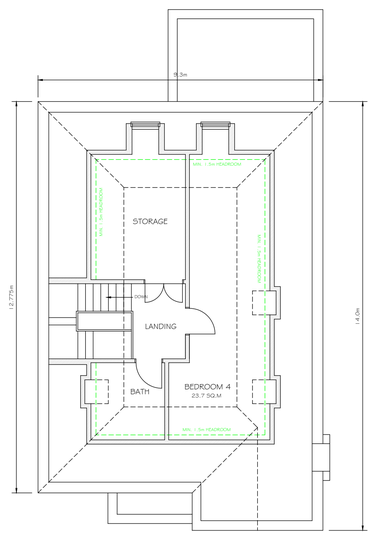

TYPICAL SIDE TO SIDE SECTION




GROUND FLOOR PLAN ~ 125 SQ.M / 1345 SQ.FT




FIRST FLOOR PLAN ~ 109 SQ.M / 1175 SQ.FT




SECOND FLOOR PLAN ~ 50 SQ.M / 533 SQ.FT

| REVISIONS | DATE |
|---|---|
| F - REAR SINGLE STOREY ELEMENT REDUCED IN HEIGHT. | 08/05/2025 |
| E - STAIRCASE BROUGHT FORWARD. | 06/05/2025 |
| D - MASTER BED VAULTED CEILING SHOWN. | 29/04/2025 |
| C - GROUND FLOOR INTERNAL FLOOR AREA REVISED. | 29/04/2025 |
| B - REAR EXTENSION REDUCED IN WIDTH. | 29/04/2025 |
| A - 3.0m SINGLE STOREY REAR EXTENSION SHOWN. | 07/04/2025 |

MINOLI DESIGN
E: declan@minoli.design
W: www.minoli.design
77 HOWARDS THICKET GERRARDS CROSS BUCKS SL9 7NU
O: 01753 882010 M: 07973 548828

TITLE

Proposed Plans

ADDRESS

62 Broadwood Avenue
Ruislip HA4 7XR

CLIENT

| SCALE | DATE |
|---|---|
| @ A1 1:100 | February 2025 |
| DRAWING No. 250220-02 | REV. F |