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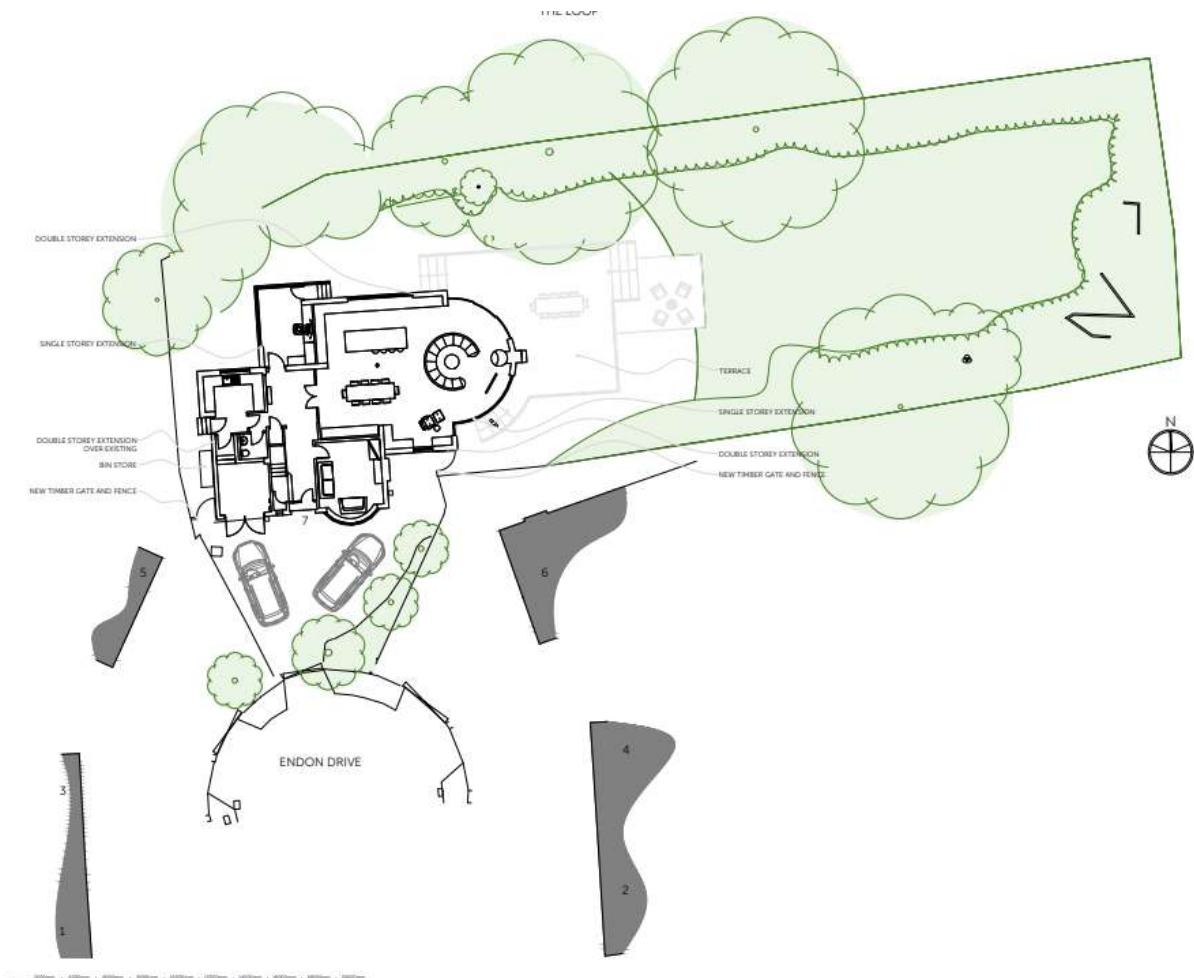
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LAND AT 7 ENDON DRIVE, CHORLTON

Flood Risk Assessment



Report Prepared For:

Mr S Buckley

Report Ref: BEK-24023-1

February 2024

Project Quality Assurance Information Sheet

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Report Title	Flood Risk Assessment
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Date	February 2024
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LAND AT 7 ENDON DRIVE, CHORLTON

Flood Risk Assessment

PROJECT NO: 24023

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Where any data supplied by the client or from other sources have been used, it has been assumed that the information is correct. No responsibility can be accepted by BEK for inaccuracies in the data supplied by any other party. The conclusions and recommendations in this report are based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.

No part of this report may be copied or duplicated without the express permission of BEK and the party for whom it was prepared. Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

Unless explicitly agreed otherwise, in writing, this report has been prepared under BEK's limited standard Terms and Conditions as included within our proposal to the Client.

The report needs to be considered in the light of the BEK proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

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1. INTRODUCTION

1.1 Appointment

- 1.1.1 BEK Enviro Limited (BEK) has been commissioned by Mr S Buckley to prepare a Flood Risk Assessment for the extension and modification of 7 Endon Drive, Chorlton, Manchester (hereafter referred to as 'the site') to assess potential risks associated with flood risk to the development for residential use.

1.2 Background

- 1.2.1 A site specific flood risk assessment provides and appraisal of flood risk both within the application site and any potential impact that the development will have on flood risk elsewhere and provide recommendations for mitigation measures which may be included within the design of the development to reduce the overall risk of flooding.
- 1.2.2 An initial assessment indicates that the primary source of flood risk to the development is from fluvial flooding from Platt Brook/Chorlton Platt Gore to the north of the site.

1.3 Objective and Scope of Work

- 1.3.1 The objective of this report is to evaluate the issues in regard to flood risk at the application site i.e. extension and modification of an existing detached residential dwelling at 7 Endon Drive, Chorlton, Manchester.
- 1.3.2 To achieve the objective BEK will undertake the following:
- Suitability of the proposed development in accordance with current planning policy
 - Identify the risk to both the development and people from all forms of flooding
 - Review the relevant background information for the site, including:
 - National Planning Policy Framework
 - Planning Practice Guidance
 - Building Regulations Approved Document H
 - Environment Agency Flood Mapping
 - Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA Level 1 SFRA (March 2010)
 - Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA Level 2 SFRA (March 2011)
 - BGS – Historic Borehole Logs
 - Cranfield University Soilsclapes Viewer
 - Recommendation of appropriate measures to mitigate against flooding both within the proposed development, and neighbouring land and property.

1.4 National Planning Policy Framework

- 1.4.1 The requirements for undertaking site specific flood risk assessments are generally as set out in the Planning Practice Guide – Flood Risk & Coastal Change.
- 1.4.2 Site specific flood risk assessment should always be proportionate to the degree of flood risk and make use of information already available. A flood risk assessment should also be appropriate to the scale, nature and location of the development.

1.5 Sequential & Exception Test

- 1.5.1 The objective of the Sequential Test is to steer new development to areas of the lowest probability of flooding, this takes into account the flood zones and the flood risk vulnerability classification of developments.
- 1.5.2 The Environment Agency flood map indicates that the proposed development site is within Flood Zone 1 and 2. Flood Zone 1 is defined as land assessed as having a less than 1 in 1000 annual probability of river flooding in any one year and Flood Zone 2 are areas between 1 in 100 and 1 in 1000 annual probability of flooding.
- 1.5.3 Proposals for the application site involves the extension and modification of an existing detached residential dwelling.
- 1.5.4 As such the proposed residential dwelling is shown to be located within Flood Zones 1 and 2. In accordance with Table 2 ‘Flood Risk Vulnerability Classification’ of the Technical Guidance to the National Planning Policy Framework, residential sites are defined as ‘more vulnerable’ development.

Flood Risk Vulnerability Classification		Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test Required	✓	✓
	Zone 3a	Exception Test Required	✓	x	Exception Test Required	✓
	Zone 3b	Exception Test Required	✓	x	x	x

Table 1: Flood Risk Vulnerability and Flood Zone Compatibility

- 1.5.5 'More Vulnerable' developments within flood zones 1 and 2 are considered appropriate development and the proposed development is an extension to the existing residential dwelling. Extensions to existing dwellings are considered minor development and as such the undertaking of a Sequential/Exception Test will not be required.

1.6 Climate Change

- 1.6.1 The National Planning Policy (NPPF) sets out how the planning system should help minimise vulnerability and provide resilience to the impacts of climate change.

Upper Mersey Management Catchment	2050's	2080's
Upper End	51%	85%
Higher	31%	53%
Central	22%	41%

Table 2: Peak River Flow Allowances

- 1.6.2 Due to the location of the site within the Upper Mersey catchment area, within flood zone 2 and classified as 'more vulnerable' development to flooding, central allowances (41%) should be applied to peak river flow.

1.7 Sustainable Drainage Systems (SUDS)

- 1.7.1 The key planning objectives in the NPPF are to appraise, manage and where possible, reduce flood risk.
- 1.7.2 The Lead Local Flood Authority i.e. Manchester City Council, is the statutory consultee for surface water flood risk in relation to planning applications. They are now the appropriate body to assess applicants/developers surface water drainage proposals and the Local Planning Authority should consult the Lead Local Flood Authority as necessary during determination of applications.
- 1.7.3 Sustainable Urban Drainage Systems (SUDS) are designed to reduce the potential impact of new and existing developments with respect to surface water drainage discharges, thereby providing a suitable way of achieving some of these objectives.
- 1.7.4 Furthermore, the NPPF and Building Regulations Approved Document H encourages developers to use SUDS wherever possible. The Flood and Water Management Act 2010 also reinforces the requirements for SUDS to be implemented where practicable.
- 1.7.5 The proposals are for the extension of an existing residential dwelling which is not classified as 'major development'. As such the inclusion of SUDS is not considered mandatory however it is recommended that SUDS are considered as part of any drainage proposals at the site.

1.7.6 Part H of the Building Regulations requires that surface water should be discharged from new development in accordance with the following hierarchy in order of preference:

- Infiltration to the ground via soakaway
- To a watercourse
- To a public surface water sewer
- To a public combined sewer

1.8 Limitations

1.8.1 The conclusions and recommendations presented in this report are the result of our professional interpretation of the information currently available. BEK reserves the right to amend the conclusions and recommendations if further information becomes available.

1.8.2 However, it should be noted that much of the information has been derived from reports written by others and BEK takes no responsibility for the accuracy of that information. Notwithstanding the above, the reports reviewed have all been written by professional environmental consultants with a duty of care to provide relevant and accurate information.

1.9 Local Planning Policy

1.9.1 The following policy relating to flood risk have been taken from the 'Manchester's Local Development Framework – Core Strategy Development Plan Document – Adopted 11th July 2012'. It is understood that the Core Strategy is valid from 2012-2027.

Policy EN 14 – Flood Risk

- In line with the risk-based sequential approach contained within PPS25, development should be directed away from sites at the greatest risk of flooding, and towards sites with little or no risk of flooding; this should take account of all sources of flooding identified in the Manchester-Salford-Trafford Strategic Flood Risk Assessment (SFRA)
- In addition to the requirements for site specific Flood Risk assessments (FRAs) set out in PPS25, an appropriate FRA will also be required for all development proposals, including changes of use, on sites greater than 0.5ha within Critical Drainage Areas (CDAs) and Canal Hazard Zones identified in the SFRA.
- All new development should minimise surface water run-off, including through Sustainable Drainage Systems (SUDS) and the appropriate use of Green Infrastructure. Developers should have regard to the surface water runoff rates in the SFRA User Guide. In CDAs, evidence to justify the surface water runoff approach/rates will be required.

- The City of Manchester contains many sections of rivers which are culverted or 'hidden'; where these are indicated in the SFRA beneath the proposed development site, further investigation will be required and the development should seek to open up culverted/hidden rivers to reduce the associated flood risk and danger of collapse, taking advantage of opportunities to enhance biodiversity and Green Infrastructure.

2. SITE LOCATION & DESCRIPTION

2.1 Site Location

2.1.1 The site is located at the north of a residential cul-de-sac known as Endon Drive in the Chorlton area of Manchester. The site is approximately 4km south of the centre of Manchester and 7 km north-west of Stockport. Access to the site is from Endon Drive from the south which leads to the existing residential dwelling of 7 Endon Drive.

2.1.2 The National Grid Reference for the centre of the site is 383574, 393773. The site location is shown on BEK Drawing No 24023-1, a copy of which is presented in Appendix D.

2.2 Existing Site Layout

2.2.1 The site occupies an irregular shaped plot of land of approximately 1,200 m². The site is occupied by an existing detached dwelling known as 7 Endon Drive, Chorlton and the associated driveway and garden areas. The general layout of the site is presented on BEK Drawing No 24023-2 (see Appendix D).

2.3 Surrounding Land Use

2.3.1 The site is located in a predominantly residential area. A leisure/sports centre and associated football pitches are located some 50 m north of the site with Platt Brook/Chorlton Platt Gore located approximately 25 m north of the site.

2.4 Proposed Site Layout

2.4.1 The proposed development plans are for the refurbishment and extension of the existing detached dwelling at 7 Endon Drive, Chorlton.

2.4.2 A copy of the proposed development plan (Fasciato Architects – Proposed Site Plan, Drawing No: 1909.PL01, dated February 2024) is included within Appendix A of this report.

3. HISTORIC FLOODING

3.1 MST Level 1 Strategic Flood Risk Assessment (March 2010)

- 3.1.1 Section 2.8 of the Manchester City, Salford City and Trafford Councils Strategic Flood Risk Assessment Level 1 (March 2010) provides a table of historical flood events in the Manchester area from 1799 – 2008. A review of the table indicates that there is no reference to Platt Brook/Chorlton within Section 2.8 of the MST Strategic Flood Risk Assessment.

3.2 Environment Agency Historic Flood Information

- 3.2.1 The Environment Agency have confirmed via their consultation response that they do not hold any records of flooding at the site.

4. SOURCES OF FLOOD RISK

4.1 Environment Agency Flood Map

- 4.1.1 The Environment Agency Flood Map shown within the Figure below confirms that the proposed development site is located within Flood Zone 1 and 2.



Figure 2: Environment Agency Flood Map

Key



- 4.1.2 Flood Zone 1 is the low flood risk area and is assessed as having a less than 1 in 1000 annual probability of river or sea flooding. Flood Zone 2 is the medium flood risk area with land assessed as having between a 1 in 100 and 1 in 1000 annual probability of

river flooding. As such the risk of fluvial flooding will be assessed in more detail in Section 5 of this report.

4.2 Reservoir Flooding

4.2.1 The Environment Agency flooding from Reservoirs map identifies that the proposed development is within the extent of flooding following a breach of a reservoir as shown within the figure below:

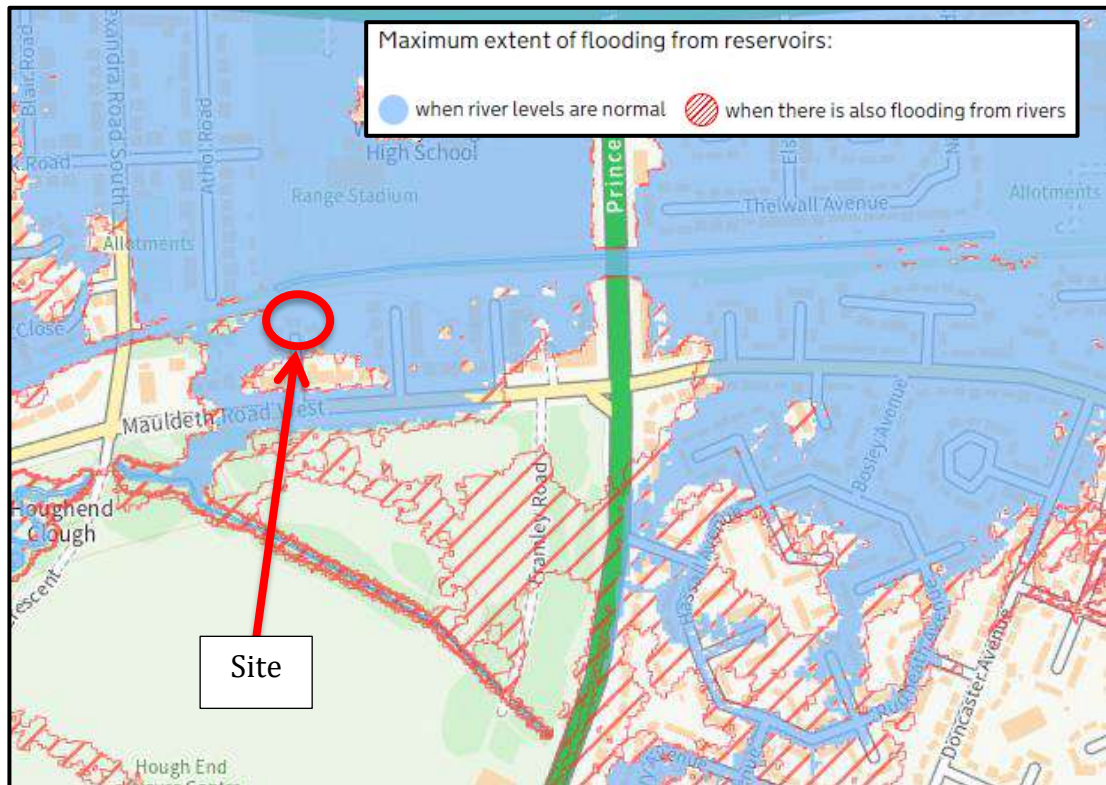


Figure 3: Environment Agency Reservoir Flood Map

4.2.2 However it is noted that reservoir flooding is extremely unlikely to happen. There has been no loss of life in the UK from reservoir flooding since 1925. As such the risk of flooding from this source to the site is considered to be low.

4.3 Pluvial: Surface Water Flooding

4.3.1 The Environment Agency Surface Water Flood Map indicates that the site is at low risk of surface water flooding with areas of low risk in the south adjacent to the existing dwelling and in the north-eastern garden areas of the site.

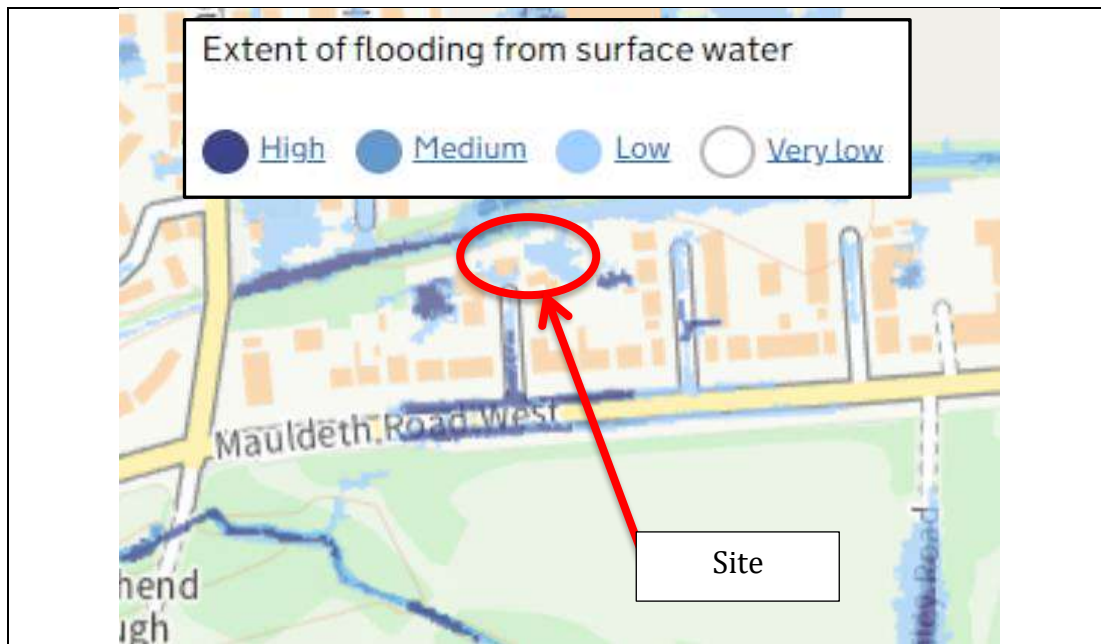


Figure 3: Environment Agency Flood Risk from Surface Water Map

- 4.3.3 Flooding from surface water is difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding. A low risk of surface water flooding means that this area has a chance of flooding of between 0.1% and 1% each year.
- 4.3.4 Environment Agency surface water flood data for the site has been acquired which shows that the site would not be anticipated to flood during the 1 in 30 year surface water flood event and the 1 in 100 year surface water flood event. As such flooding only occurs during the extreme 1 in 1000 year flood event as shown within the figure below:

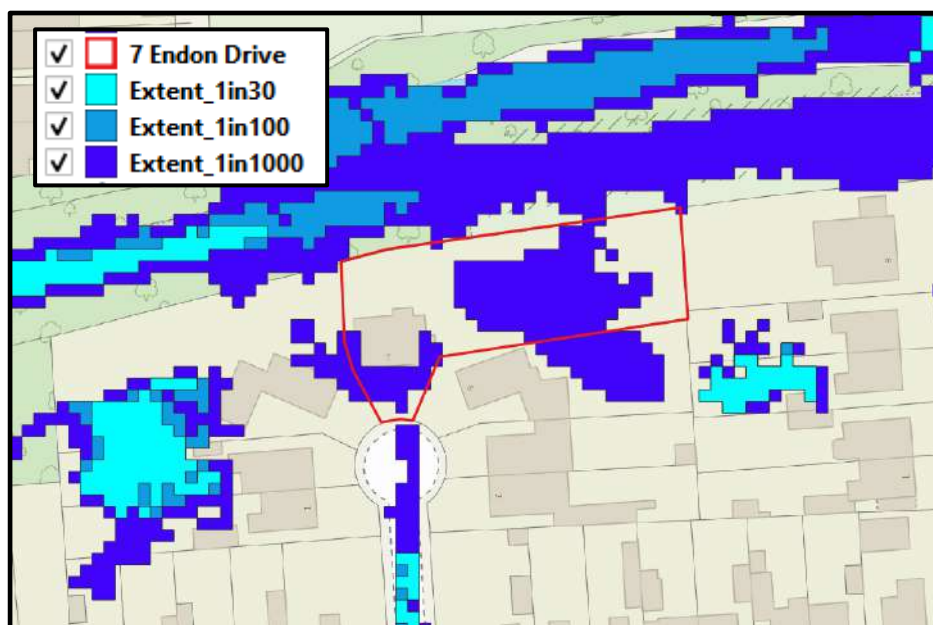


Figure 4: Environment Agency Flood Risk from Surface Water Map

- 4.3.5 Furthermore, a review of the proposed development plans overlying the Environment Agency Surface Water Flood Map is shown below with the proposed extension to the dwelling shown to not experience flooding during the design 1 in 100 year flood event as shown within the figure below:

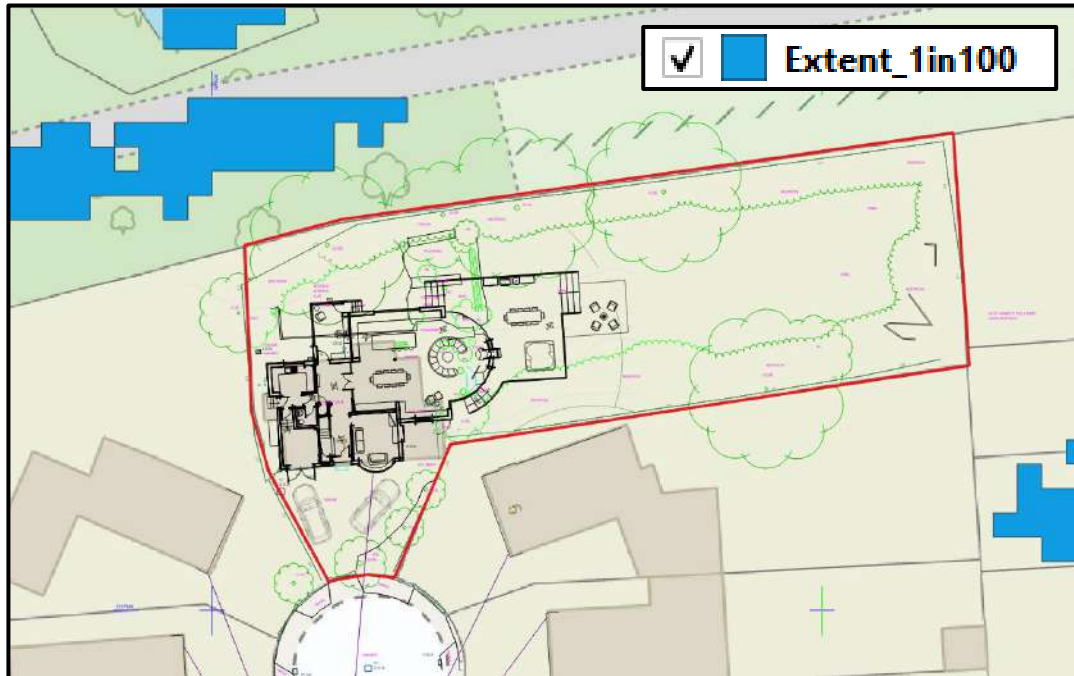


Figure 5: *Environment Agency Flood Risk from Surface Water Map (1 in 100 year)*

- 4.3.6 The proposed extension to the dwelling will comprise an extension to the east of the existing dwelling and a raised terraced area. The extension to the dwelling is located outside of the extents of the 1 in 100 year surface water flood extents with the proposed raised terraced area shown to be located within the extents of flooding during the extreme 1 in 1000 year surface water flood event.
- 4.3.7 Furthermore it is understood from correspondence with the architect that the finished floor level of the extension will be approximately 31.37 mAOD which is elevated approximately 0.80 m above the general level of the garden (30.57 mAOD) as such the risk of flooding to the proposed extension during the extreme 1 in 1000 year surface water flood event is considered to be low.

4.4 Groundwater

- 4.4.1 Groundwater flooding is caused by the emergence of water originating from beneath the ground. The water may emerge from either point or diffuse locations. The occurrence of groundwater is usually very local.
- 4.4.2 The Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA – Level 1 SFRA dated March 2010 indicates that according to Greater Manchester sub-regional

SFRA there are no known reports of groundwater flooding in the Manchester, Trafford and Salford authorities.

4.4.3 The underlying ground conditions of the site are according to Soilscales mapping 'slowly permeable seasonally wet acid loamy and clayey soils with impeded drainage' which generally has a low permeability and are generally not conducive to areas of groundwater flooding. Furthermore, it is understood that the proposed development does not include any basements/cellars.

4.4.4 As such the risk from groundwater flooding to the site is considered to be very low and is not considered in more detail.

5. QUANTITATIVE FLOOD RISK ASSESSMENT

5.1 Fluvial Flooding – Chorlton Platt Gore 2012

5.1.1 The site is shown to be at risk of flooding from Platt Brook/Chorlton Platt Gore, with the site shown to be located within Flood Zone 1 and 2 therefore modelled flood data for the site has been obtained from the Environment Agency. A copy of the relevant Environment Agency Flood data is included as an Appendix.

5.2 Flood Defences

5.2.1 A review of the Environment Agency modelled data indicates that the proposed development site is protected from fluvial flooding from Platt Brook/Chorlton Platt Gore by flood defences as shown in the below figure:



Figure 5: Environment Agency Flood Defences

5.2.2 The standard of protection offered by the flood defences shown above are 100 years with an upstream actual crest level of 31.38 mAOD for Asset 1 (120082) and downstream crest level of 30.25 mAOD. The upstream and downstream crest levels of Asset 2 (32515) is 31.52 mAOD and 30.29 mAOD respectively. The assets are both described as embankments in fair condition. A review of the Environment Agency map indicates that Asset 2 (32515) forms the southern bank flood defence.

5.2.3 The proposed development site is close to the downstream crest level of the flood defences therefore the crest level is assumed to be approximately 30.29 mAOD.

5.3 EA Modelled Flood Levels

5.3.1 The nearest modelled node upstream of the development site is known as 'ea13_0171_CHOP01_4020u' with the Environment Agency modelled flood data for Node ea13_0171_CHOP01_4020u Defended shown below:

	Return Period				
	1 in 100 year (1% AEP)	1 in 100 year + CC (1% + 30% CC AEP)	1 in 100 year + CC (1% + 35% CC AEP)	1 in 100 year + CC (1% + 70% CC AEP)	1 in 1000 year (0.1% AEP)
River Level (mAOD)	29.15	30.53	30.63	31.01	31.03

Table 4: Flood Level Data for Chorlton Platt Gore (ea13_0171_CHOP01_4020u)

5.3.1 The flood defences adjacent to the watercourse have a crest level of approximately 30.29 mAOD therefore it can be seen from the above table that the defences are not anticipated to be overtopped during the 1 in 100 year flood event however they are anticipated to be overtopped during the 1 in 100 year plus 30% climate change event, 1 in 100 year plus 35% climate change event, 1 in 100 year plus 70% climate change and the extreme 1 in 1000 year flood event.

5.4 Climate Change Allowances

5.4.1 In February 2016 the Environment Agency provided new guidelines for projected climate change allowances for use in flood risk assessments which were subsequently updated in July 2021.

5.4.2 For 'more vulnerable' developments such as the development site within Flood Zone 2 and within the Upper Mersey Management Catchment, the central allowances should be applied to peak river flows. Therefore 41% should be applied to the 1 in 100 year flows to assess the potential impacts of climate change.

5.4.3 The Environment Agency data provided include climate change allowances for the 1 in 100 year plus 30% CC, 1 in 100 year plus 35% CC and 1 in 100 year plus 70% climate change allowances with the 1 in 100 year plus 70% climate change allowances used to provide a conservative design flood level for the site.

5.4.4 As such the 1 in 100 year plus 41% climate change in channel flood level for the node closest to the application site is 31.01 mAOD.

5.5 Fluvial Flooding: Conclusions

5.5.1 The 1 in 100 year plus 70% climate change in channel flood level for the node closest to the development site has been used as a conservative approach to represent the 1 in 100 year plus 41% climate change in channel flood level.

- 5.5.2 As such the flood level is assumed to be 31.01 mAOD with the crest level of the defences adjacent to the watercourse and site shown to be approximately 30.29 mAOD. As such the defences considered to be at risk of overtopping during the design 1 in 100 year plus 41% climate change allowances and extreme 1 in 1000 year flood events.
- 5.5.3 The Environment Agency has not provided 2D modelled flood levels for the development site during the 1 in 100 year and 1 in 100 year plus climate change events however they have provided 2D modelled flood levels for the site for the 1 in 1000 year flood event which indicates that the site would remain flood free during the 1 in 100 year and 1 in 100 year plus climate change flood events.
- 5.5.4 The defended 1 in 1000 year 2D flood level for the site is shown on the Environment Agency data to be 31.01 mAOD. It is understood that the finished floor level of the proposed extension to the building is 31.37 mAOD (0.36 m above the 1 in 100 year plus 70% climate change flood level and extreme 2D modelled 1 in 1000 year flood level on site) therefore no flood mitigation measures are proposed.

6. SURFACE WATER DRAINAGE

- 6.0.1 A drainage design is beyond the remit of this Flood Risk Assessment however as the proposed development is for the extension of an existing dwelling it is proposed that the new extension will utilise the existing surface water drainage infrastructure serving the site.

7. MITIGATION MEASURES

7.1 Finished Development Levels

7.1.1 The proposed development is for the extension of an existing residential property, as such the development is classified as 'minor extension' which is a household or non-domestic extension with a floor space of no more than 250 m².

7.1.2 It is understood that the finished floor level of the extension will be approximately 31.37 mAOD which is 0.36 m above the 1 in 100 year plus 70% climate change in channel flood level and extreme 1 in 1000 year flood level on site therefore no additional flood mitigation measures are proposed.

7.2 Access and Egress

7.2.1 In accordance with the requirements set out within the National Planning Policy Framework, it is essential to ensure that the route into and out of the application site will not present a danger to people during a flood event.

7.2.2 The Environment Agency flood data shows that site would remain dry during the 1 in 100 year plus 41% climate change flood event therefore safe access and egress would be available during the design flood event.

7.3 Compensatory Flood Storage

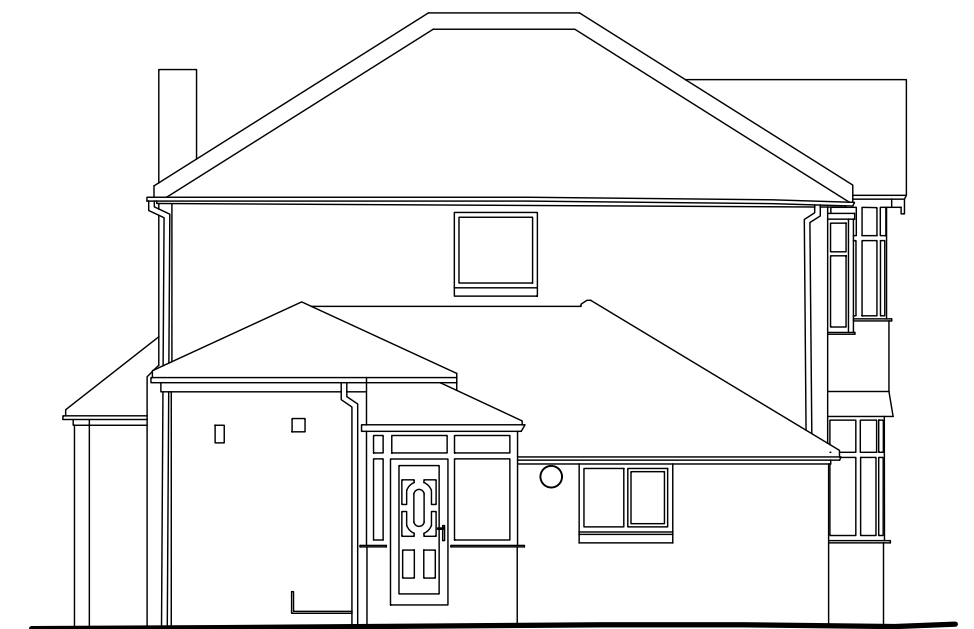
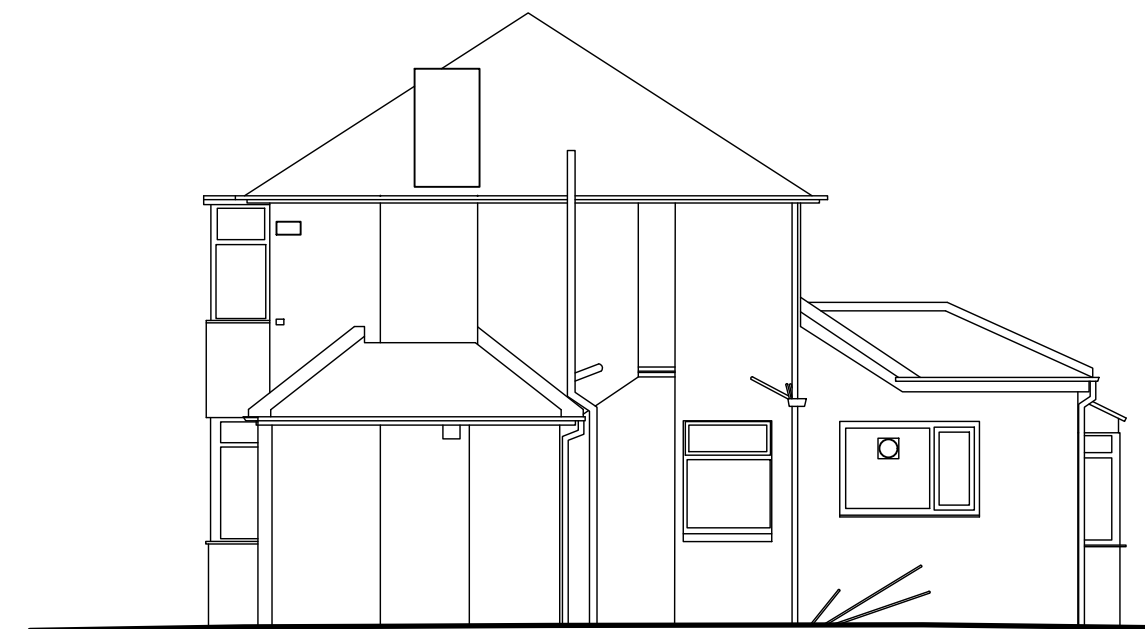
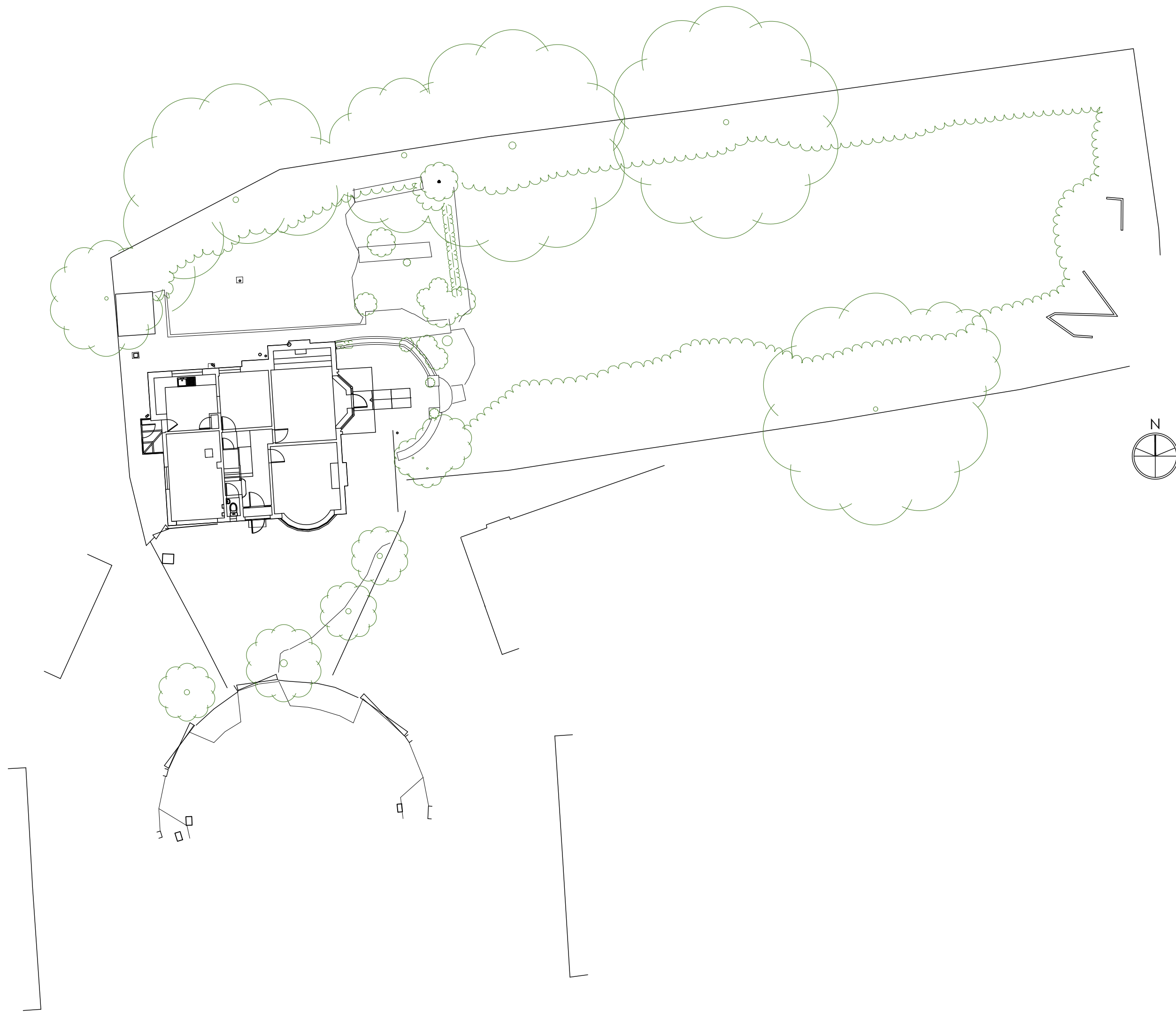
7.3.1 The Environment Agency modelled flood data indicates that the site would remain flood free during the 1 in 100 year flood event and therefore compensatory flood storage is not required.

8. CONCLUSIONS & RECOMMENDATIONS

- 8.1 The proposed development at 7 Endon Drive, Chorlton comprises the extension and modification of an existing detached residential dwelling.
- 8.2 The site is shown to be located within Flood Zone 1 and 2 of the Environment Agency Flood map. The primary sources of flood risk to the site is identified to be from Platt Brook/Chorlton Platt Gore.
- 8.3 It is understood that the finished floor levels of the proposed extension to the residential dwelling will be set at a level of 31.37 mAOD which is 0.36 m above the modelled in channel 1 in 100 year plus 70% climate change and Environment Agency modelled 2D 1 in 1000 year flood level at the location of the extension.
- 8.4 Secondary sources such as artificial water sources, groundwater flooding and pluvial flooding have been investigated and are deemed to present a very low/low risk of flooding to the site.
- 8.5 The existing surface water drainage infrastructure is to be re-used at the site.
- 8.6 Following the proposed mitigation measures at the site (i.e. setting finished floor levels of the extension at 31.37 mAOD), it is considered that the proposed development is at low risk from all sources of flooding and that surface water as a result of development will be managed in accordance with current practices and guidance so as not to increase the risk of flooding at the site or downstream of the site.

APPENDIX A

Proposed Development Plans



SITE PLAN 1:200

SCALE 1:200 5m 10m 15m 20m 25m 30m 35m

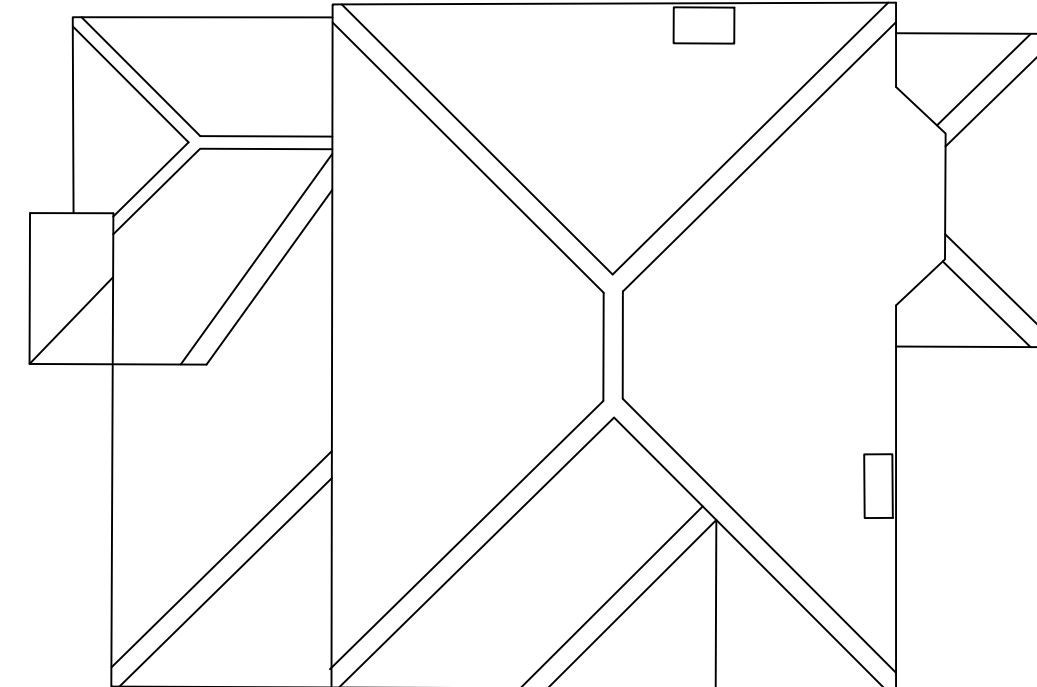
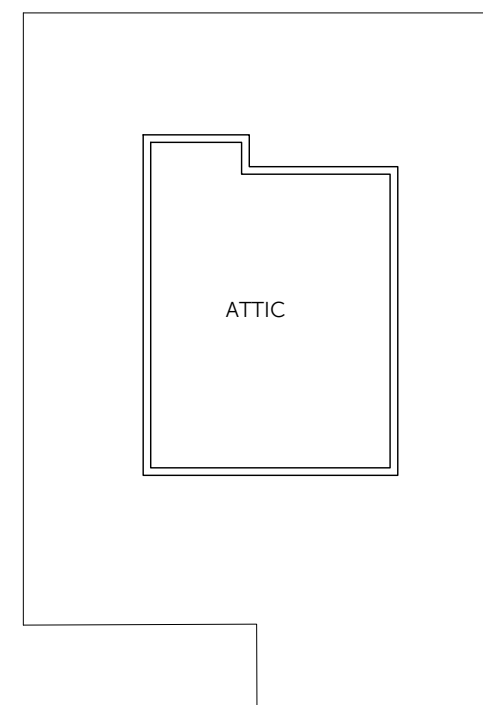
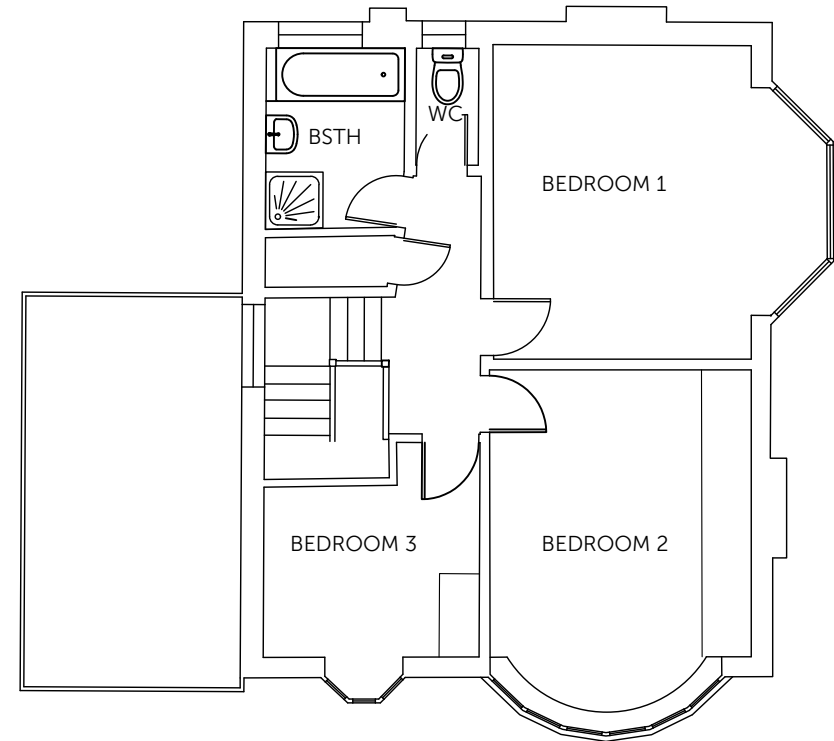
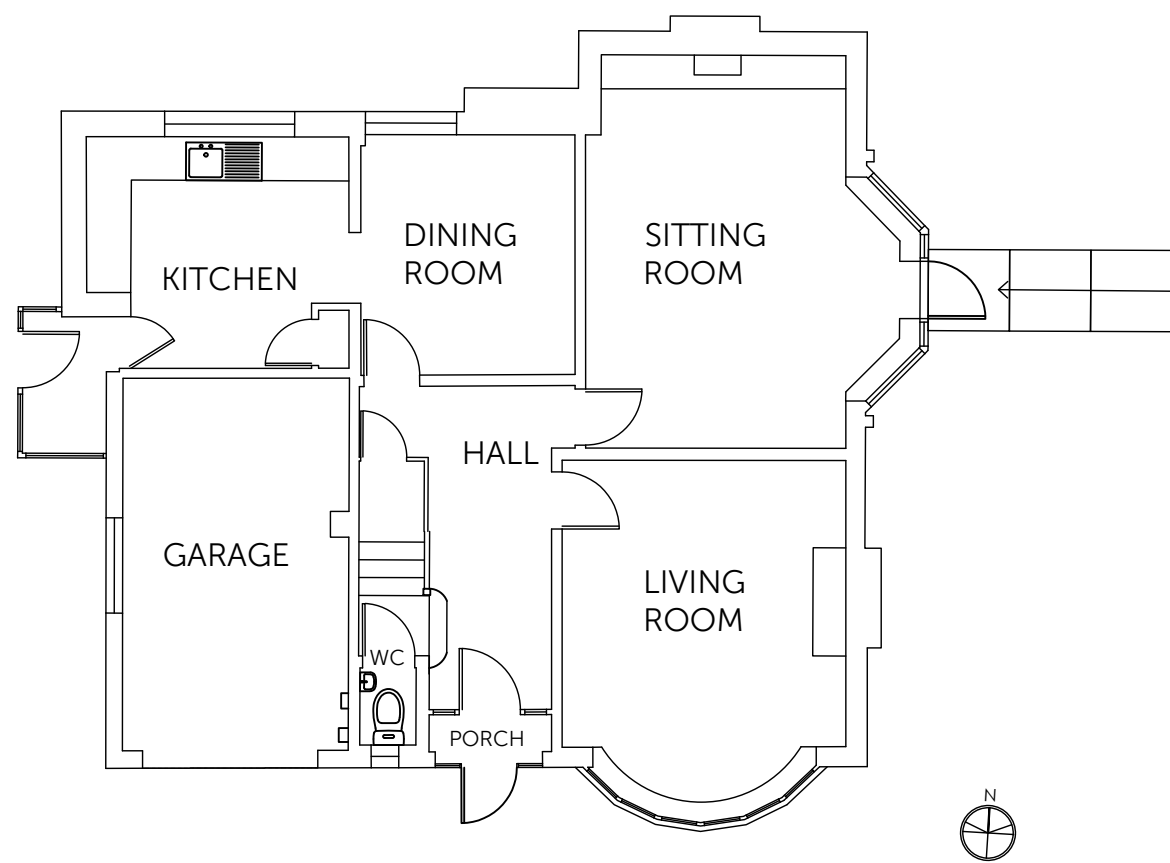
FRONT

SIDE (EAST)

REAR

SIDE (WEST)

ELEVATIONS 1:100



GROUND FLOOR

FIRST FLOOR

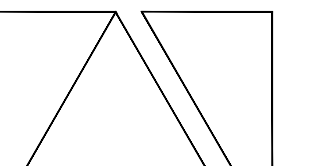
SECOND FLOOR

ROOF PLAN

PLANS 1:100

SCALE 1:100 2000mm 4000mm 6000mm 8000mm 10000mm 12000mm 14000mm 16000mm 18000mm 20000mm

A 28.02.24 Revised
Amendments:



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SCALE AS INDICATED AT A1
Scale of Drawing: Date:
1:200/1:100 10.2023
Project:

7 ENDON DRIVE, CHORLTON

Drawing Title:

EXISTING PLANS & ELEVATIONS

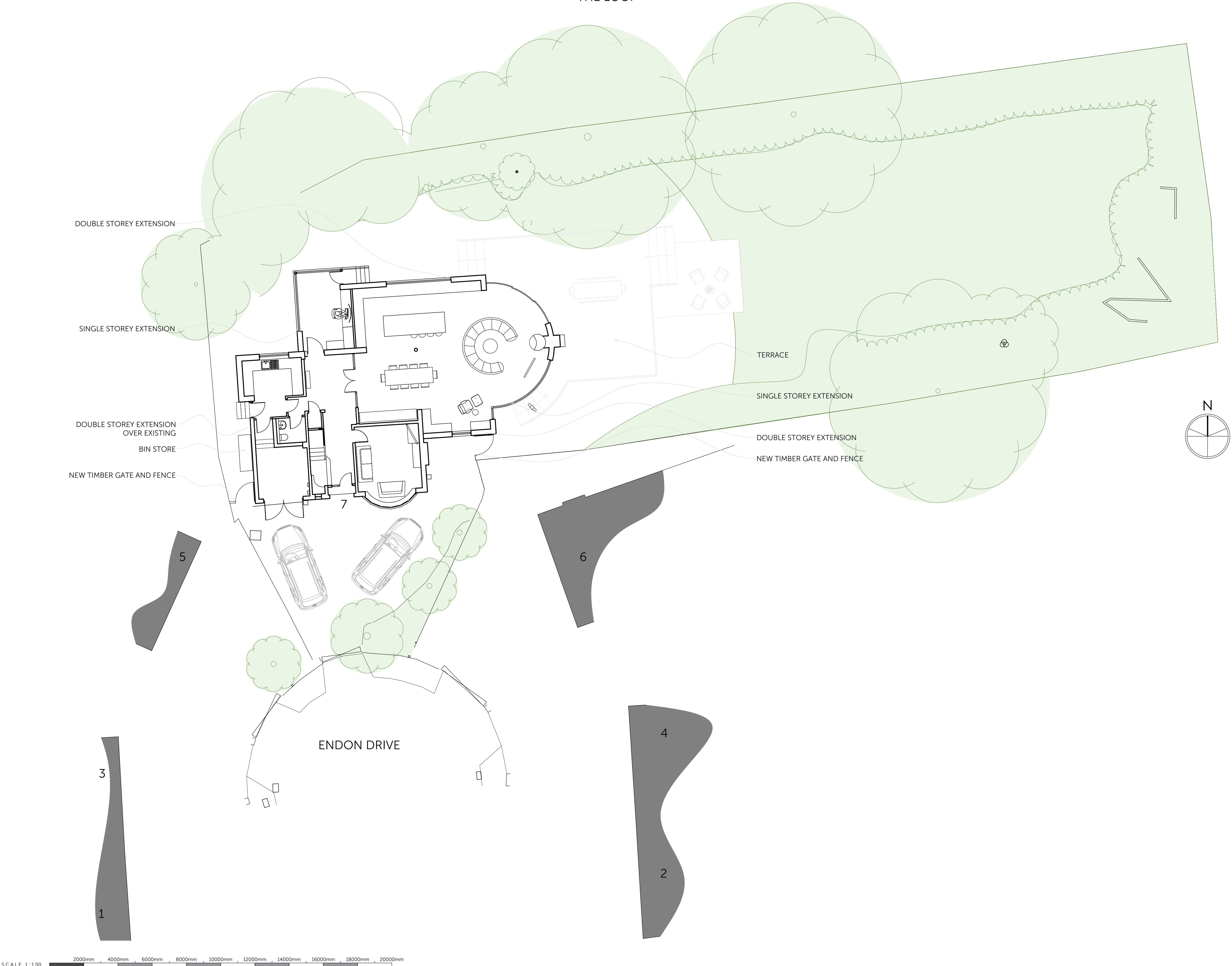
Drawing Number:

1909.EX01A

NOTE:

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All dimensions to be verified / checked before
commencement of construction/fabrication

THE LOOP



Amendments:



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architects@fasciato.co.uk fasciato.co.uk

SCALE AS INDICATED AT A1

Scale of Drawing: Date:
1:100 02.2024

Project: 7 ENDON DRIVE, CHORLTON

Drawing Title:

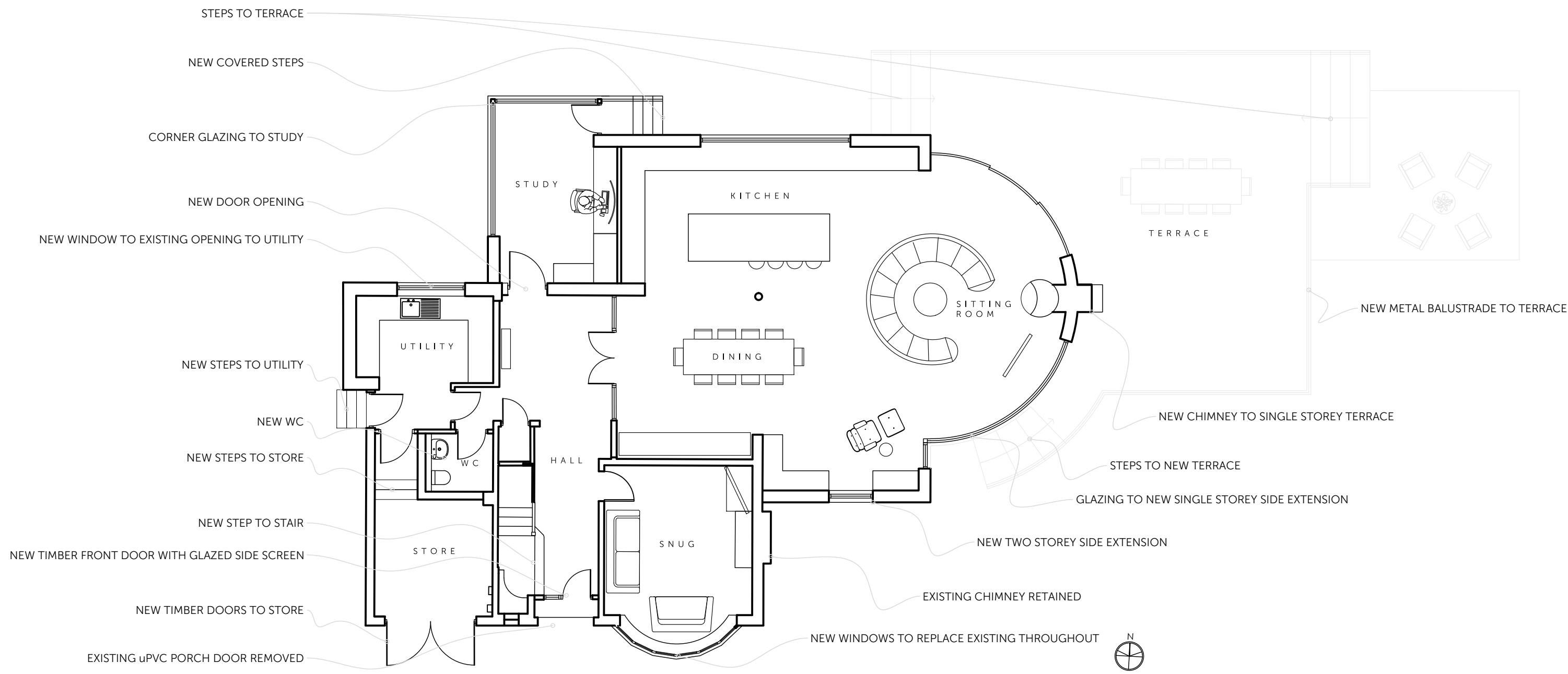
PROPOSED SITE PLAN

Drawing Number:

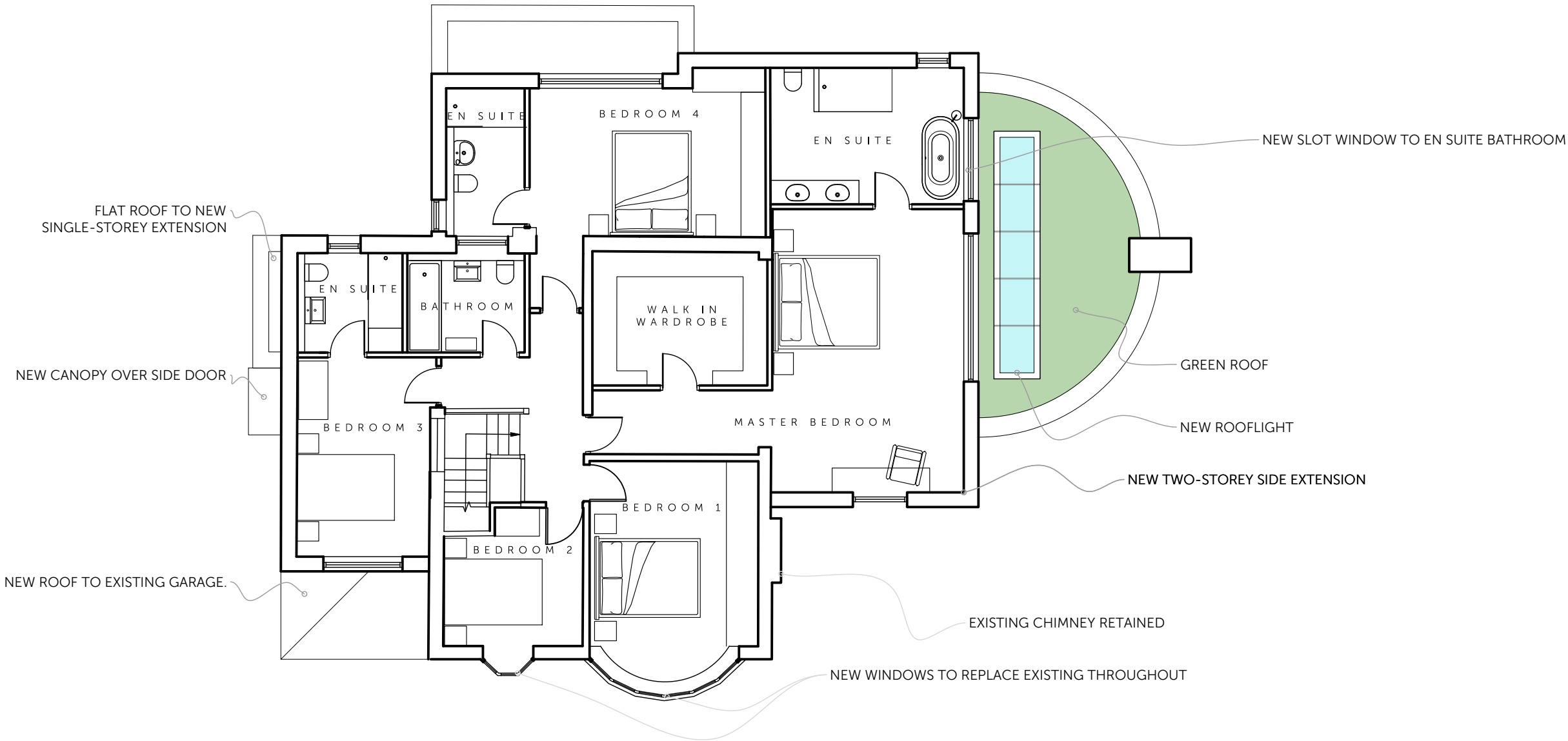
1909.PL01

NOTE:

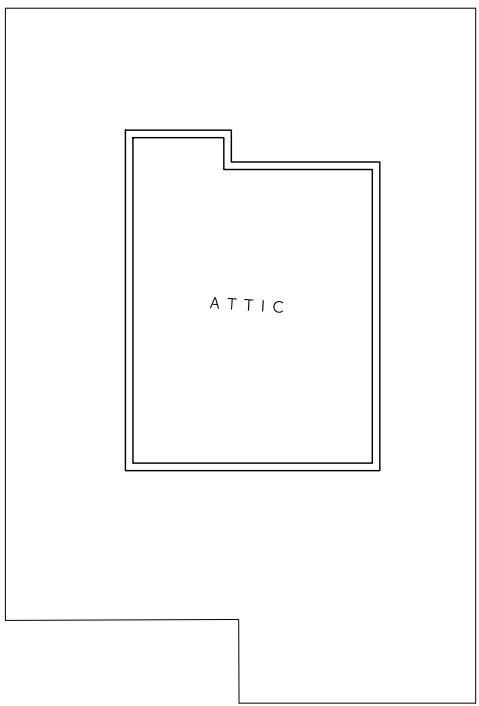
© Fasciato Architects. Do not scale off this drawing.
All dimensions to be verified / checked before
commencement of construction/fabrication



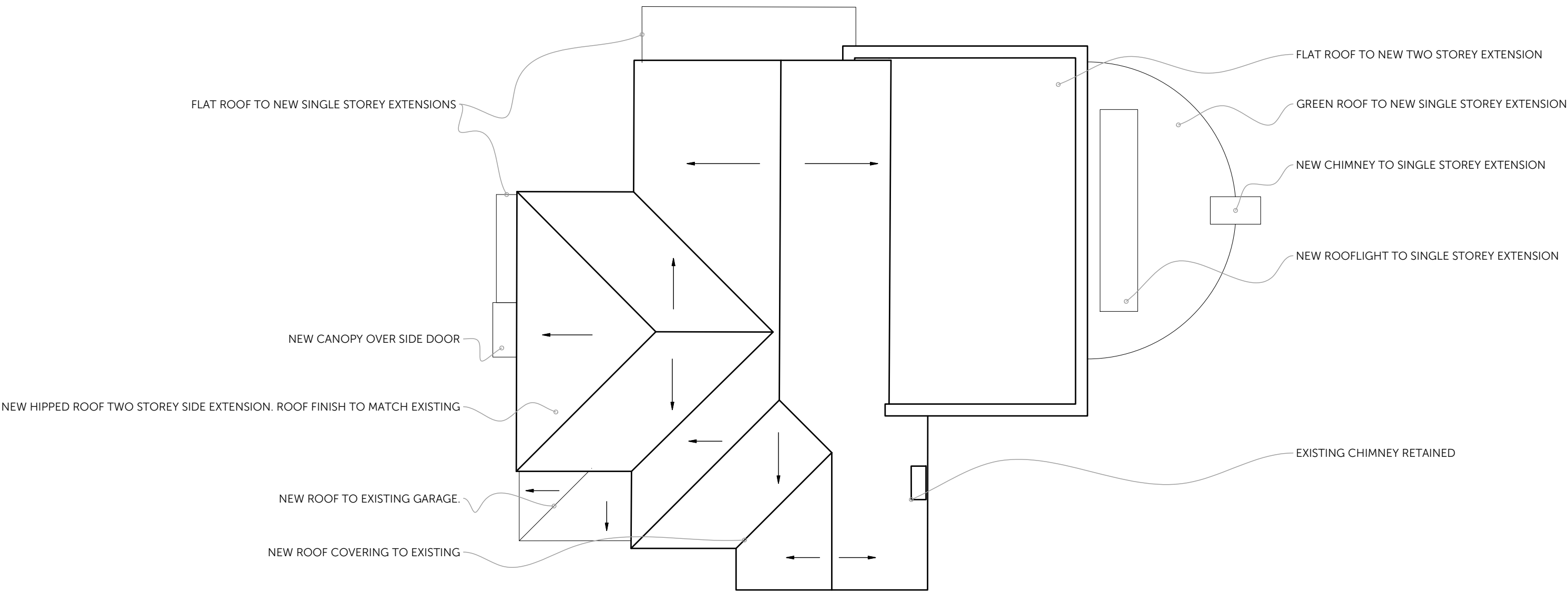
GROUND FLOOR PLAN



FIRST FLOOR PLAN



ATTIC PLAN



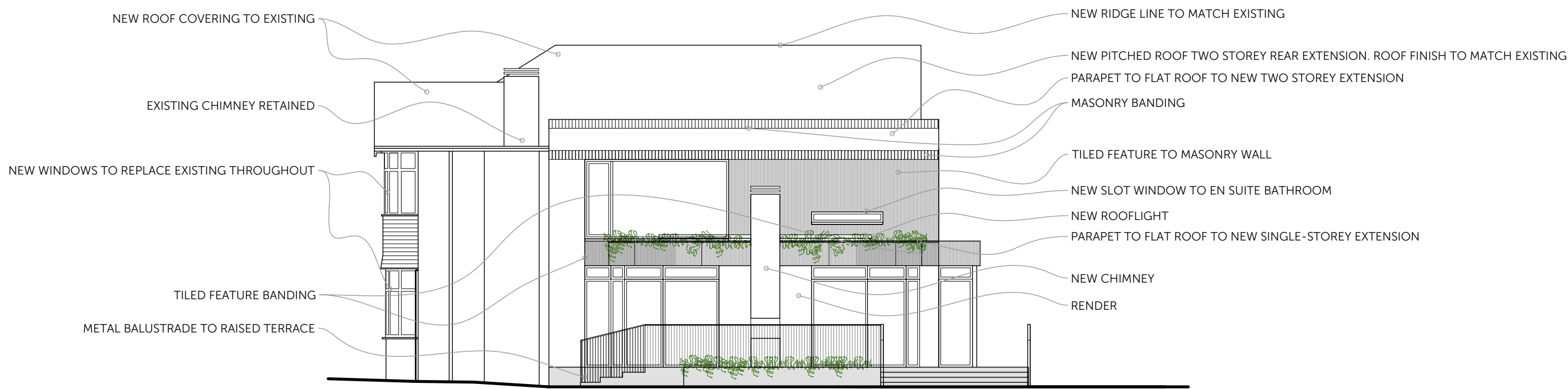
ROOF PLAN



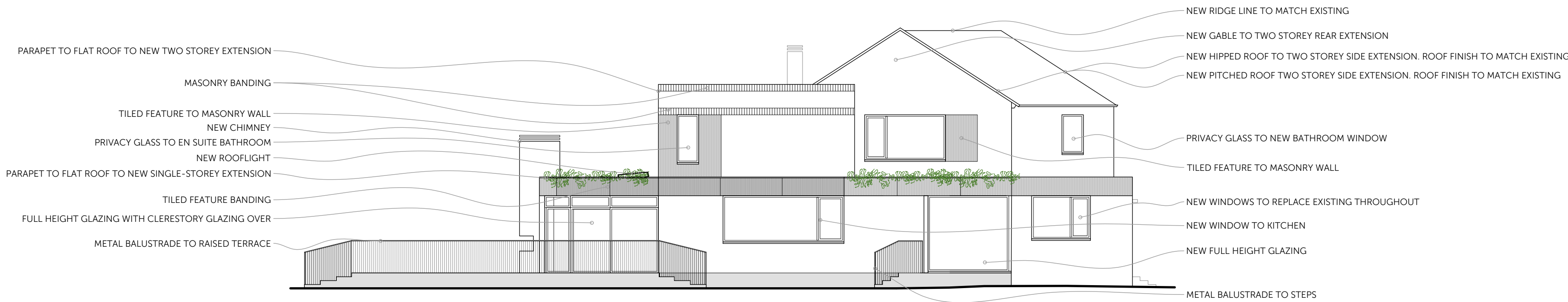
FRONT ELEVATION (SOUTH FACING)



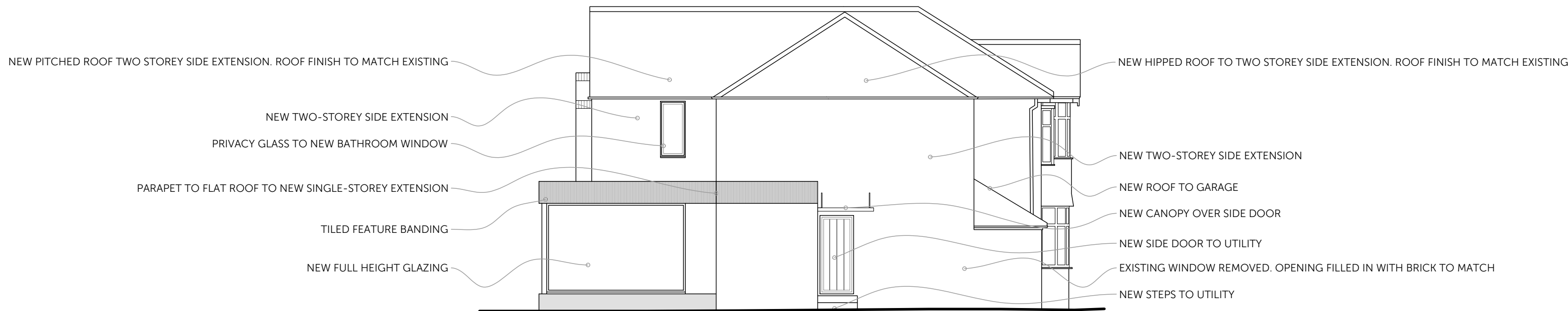
SIDE ELEVATION (EAST FACING)



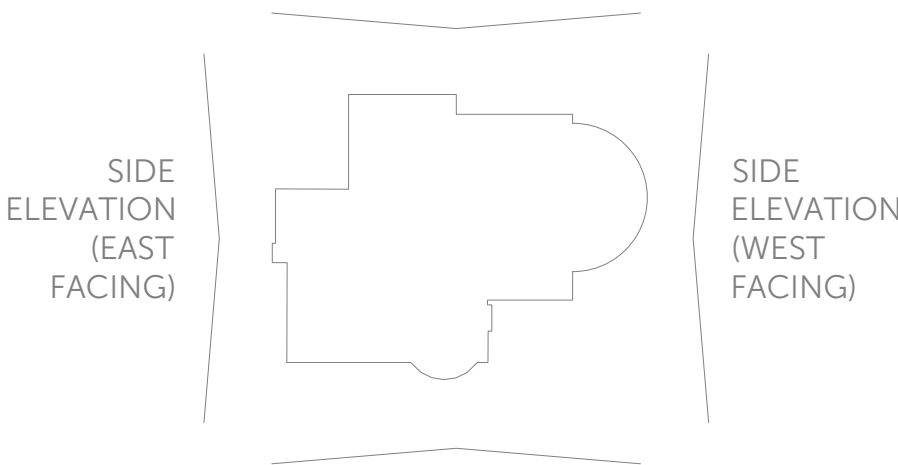
REAR ELEVATION (NORTH FACING)



SIDE ELEVATION (WEST FACING)



REAR ELEVATION (NORTH FACING)



FRONT ELEVATION (SOUTH FACING)

ELEVATION KEY





1 VIEW OUTSIDE DRIVEWAYS OF NUMBERS 5, 7 & 6 ENDON DRIVE



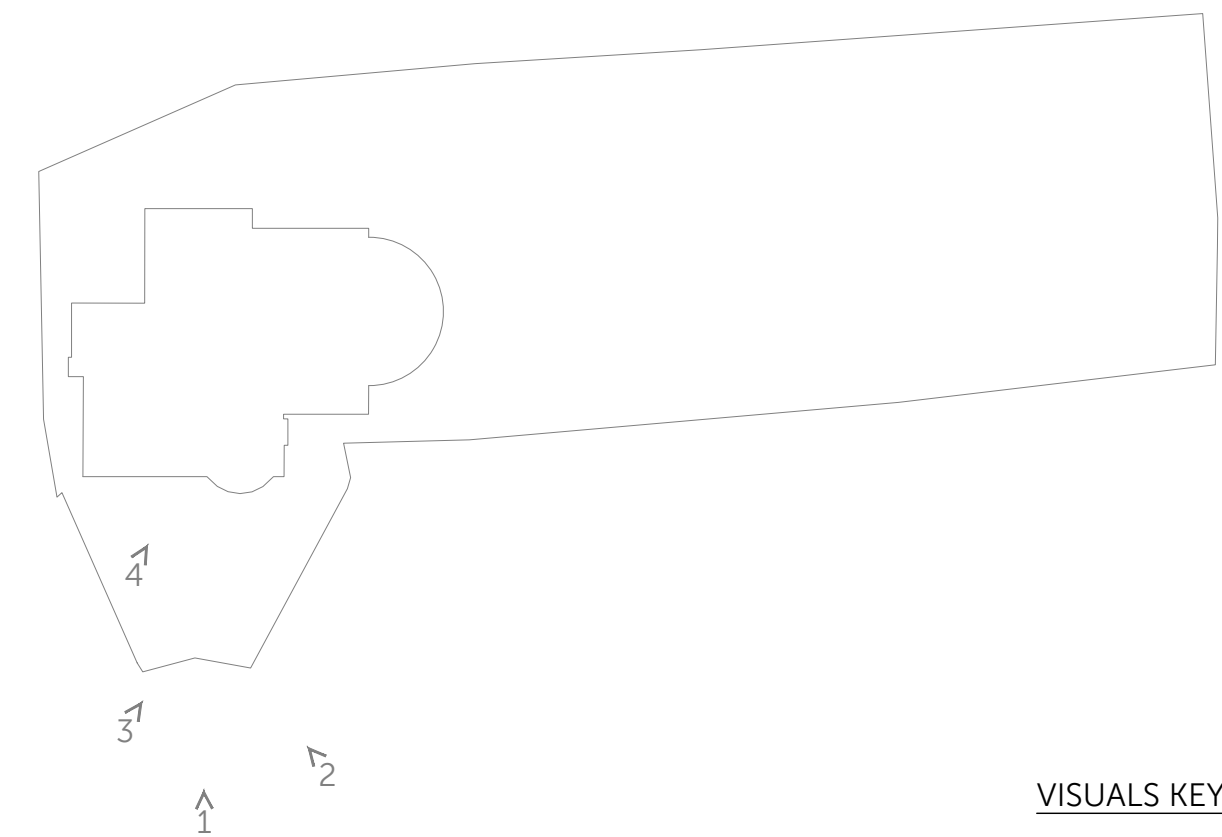
2 VIEW OUTSIDE DRIVEWAY OF NUMBER 6 ENDON DRIVE



3 VIEW OUTSIDE DRIVEWAY OF NUMBER 5 ENDON DRIVE
LOOKING TOWARDS FRONT DOOR OF NUMBER 7



4 VIEW OUTSIDE FRONT DOOR OF NUMBER 7 ENDON DRIVE



VISUALS KEY

Amendments:



**FASCIATO
ARCHITECTS**

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architects@fasciato.co.uk fasciato.co.uk

SCALE AS INDICATED AT A1

Scale of Drawing: Date:

NTS 02.2024

Project:

7 ENDON DRIVE, CHORLTON

Drawing Title:

PROPOSED 3D MASSING VISUALS

Drawing Number:

1909.PL04

NOTE:

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1 ARIEL VIEW



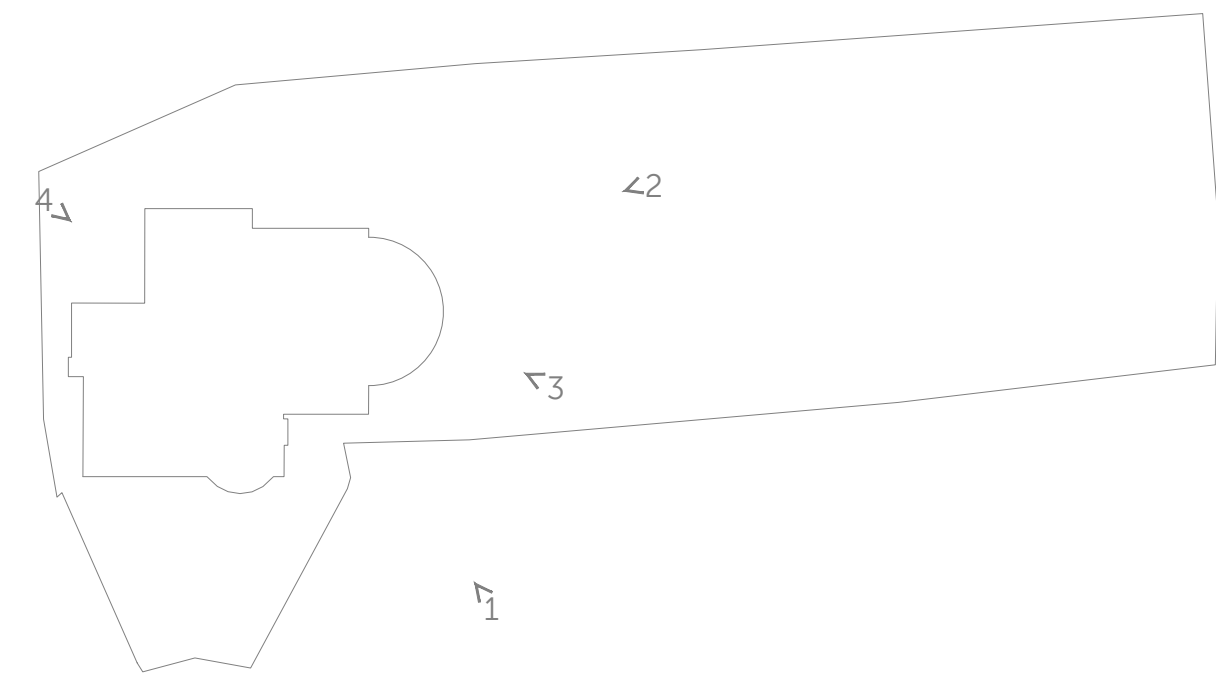
2 VIEW OUTSIDE SINGLE STOREY SIDE EXTENSION



3 VIEW OUTSIDE SINGLE STOREY EXTENSION



4 VIEW OUTSIDE DOUBLE-STOREY EXTENSION



VISUALS KEY

Amendments:



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SCALE AS INDICATED AT A1

Scale of Drawing: Date:

NTS 02.2024

Project:

7 ENDON DRIVE, CHORLTON

Drawing Title:

PROPOSED 3D MASSING VISUALS

Drawing Number:

1909.PL05

NOTE:

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All dimensions to be verified / checked before
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APPENDIX B

Topographical Survey

Surveyed I.Bryning		Drawn M.Lloyd-Strahan		Checked R.Critchley		
Scale 1:100	Date Oct 23	Drawing Ref. S24708-T		No. 01	Size A2	Rev --

APPENDIX C

Environment Agency Flood Data

Flood risk assessment data

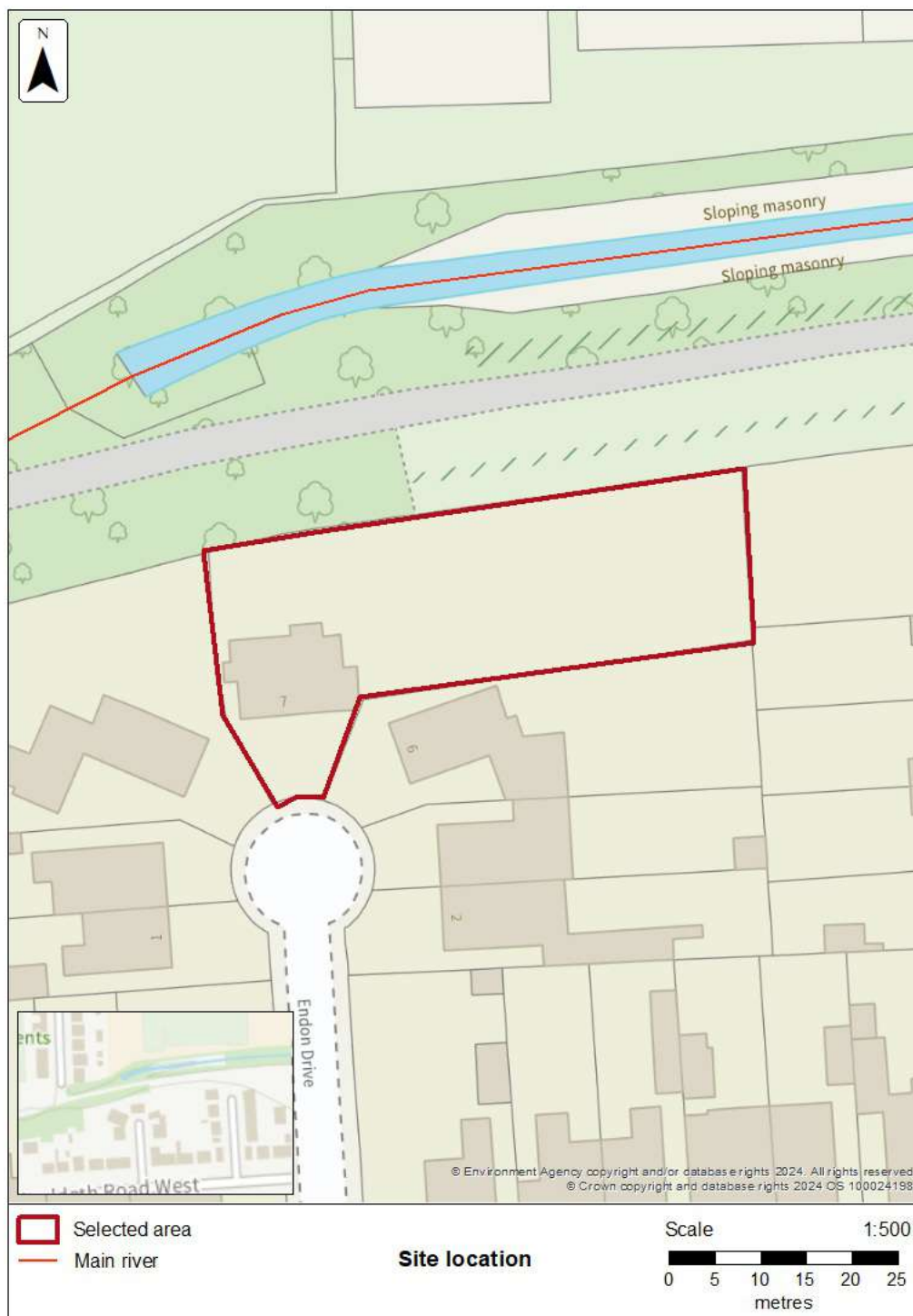
Location of site: 383580 / 393773 (shown as easting and northing coordinates)

Document created on: 31 January 2024

This information was previously known as a product 4.

Customer reference number: 4T6YFE1WF4TE

Map showing the location that flood risk assessment data has been requested for.



How to use this information

You can use this information as part of a flood risk assessment for a planning application. To do this, you should include it in the appendix of your flood risk assessment.

We recommend that you work with a flood risk consultant to get your flood risk assessment.

Included in this document

In this document you'll find:

- how to find information about surface water and other sources of flooding
- information on the models used
- definitions for the terminology used throughout
- flood map for planning (rivers and the sea)
- flood defences and attributes
- information to help you assess if there is a reduced flood risk from rivers and the sea because of defences
- modelled data
- climate change modelled data
- information about strategic flood risk assessments
- information about this data
- information about flood risk activity permits
- help and advice

Information that's unavailable

This document **does not** contain:

- historic flooding

We do not have historic flooding data for this location.

Please note that:

- flooding may have occurred that we do not have records for
- flooding can come from a range of different sources
- we can only supply flood risk data relating to flooding from rivers or the sea

You can contact your Lead Local Flood Authority or Internal Drainage Board to see if they have other relevant local flood information. Please note that some areas do not have an Internal Drainage Board.

Surface water and other sources of flooding

Use the [long term flood risk service](#) to find out about the risk of flooding from:

- surface water
- ordinary watercourses
- reservoirs

For information about sewer flooding, contact the relevant water company for the area.

About the models used

Model name: Corn Brook 2017

Scenario(s): No defences exist fluvial, no defences exist climate change fluvial

Date: 31 December 2017

Model name: Cringle Black Brook_2017

Scenario(s): Defended fluvial, defences removed fluvial

Date: 1 April 2018

These models contain the most relevant data for your area of interest.

Terminology used

Annual exceedance probability (AEP)

This refers to the probability of a flood event occurring in any year. The probability is expressed as a percentage. For example, a large flood which is calculated to have a 1% chance of occurring in any one year, is described as 1% AEP.

Metres above ordnance datum (mAOD)

All flood levels are given in metres above ordnance datum which is defined as the mean sea level at Newlyn, Cornwall.

Flood map for planning (rivers and the sea)

Your selected location is in flood zone 2.

Flood zone 3 shows the area at risk of flooding for an undefended flood event with a:

- 0.5% or greater probability of occurring in any year for flooding from the sea
- 1% or greater probability of occurring in any year for fluvial (river) flooding

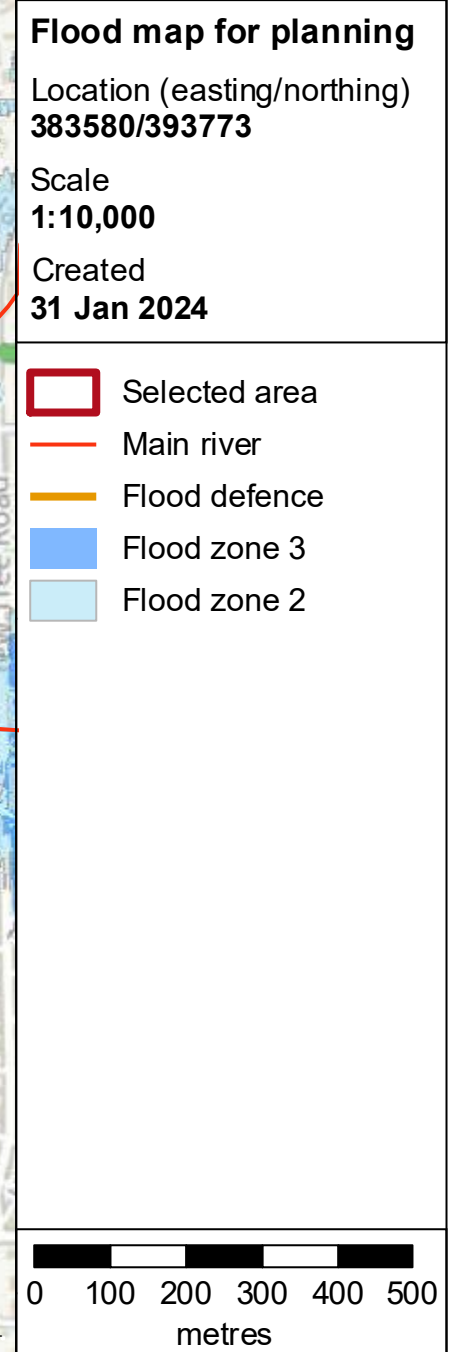
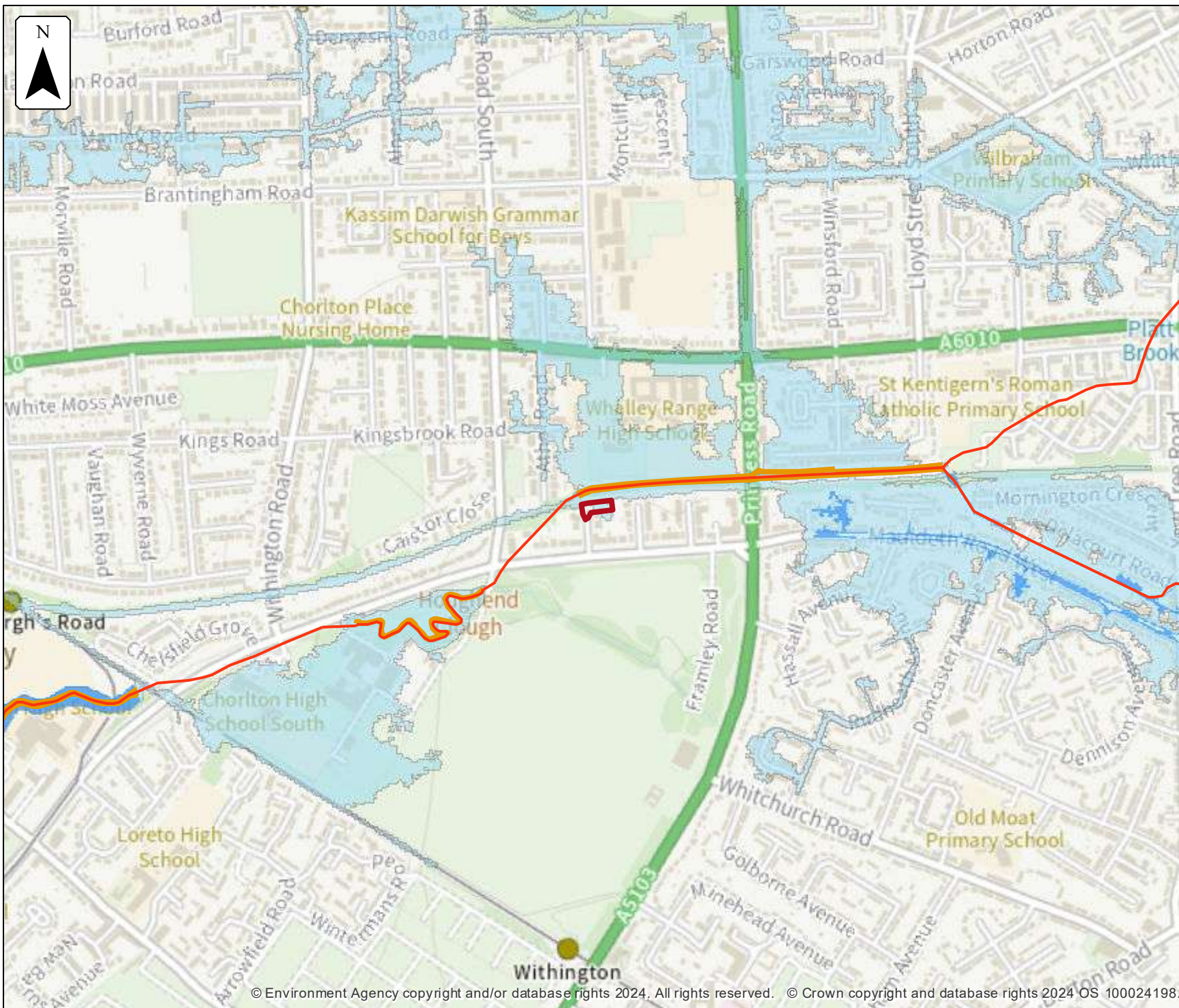
Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

- between a 0.1% and 0.5% probability of occurring in any year for flooding from the sea
- between a 0.1% and 1% probability of occurring in any year for fluvial (river) flooding

It's important to remember that the flood zones on this map:

- refer to the land at risk of flooding and do not refer to individual properties
- refer to the probability of river and sea flooding, ignoring the presence of defences
- do not take into account potential impacts of climate change

This data is updated on a quarterly basis as better data becomes available.



Flood defences and attributes

The flood defences map shows the location of the flood defences present.

The flood defences data table shows the type of defences, their condition and the standard of protection. It shows the height above sea level of the top of the flood defence (crest level). The height is in mAOD which is the metres above the mean sea level at Newlyn, Cornwall.

It's important to remember that flood defence data may not be updated on a regular basis. The information here is based on the best available data.

Use this information:

- to help you assess if there is a reduced flood risk for this location because of defences
- with any information in the modelled data section to find out the impact of defences on flood risk



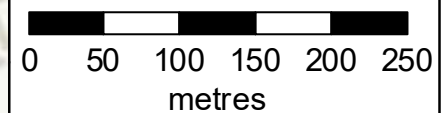
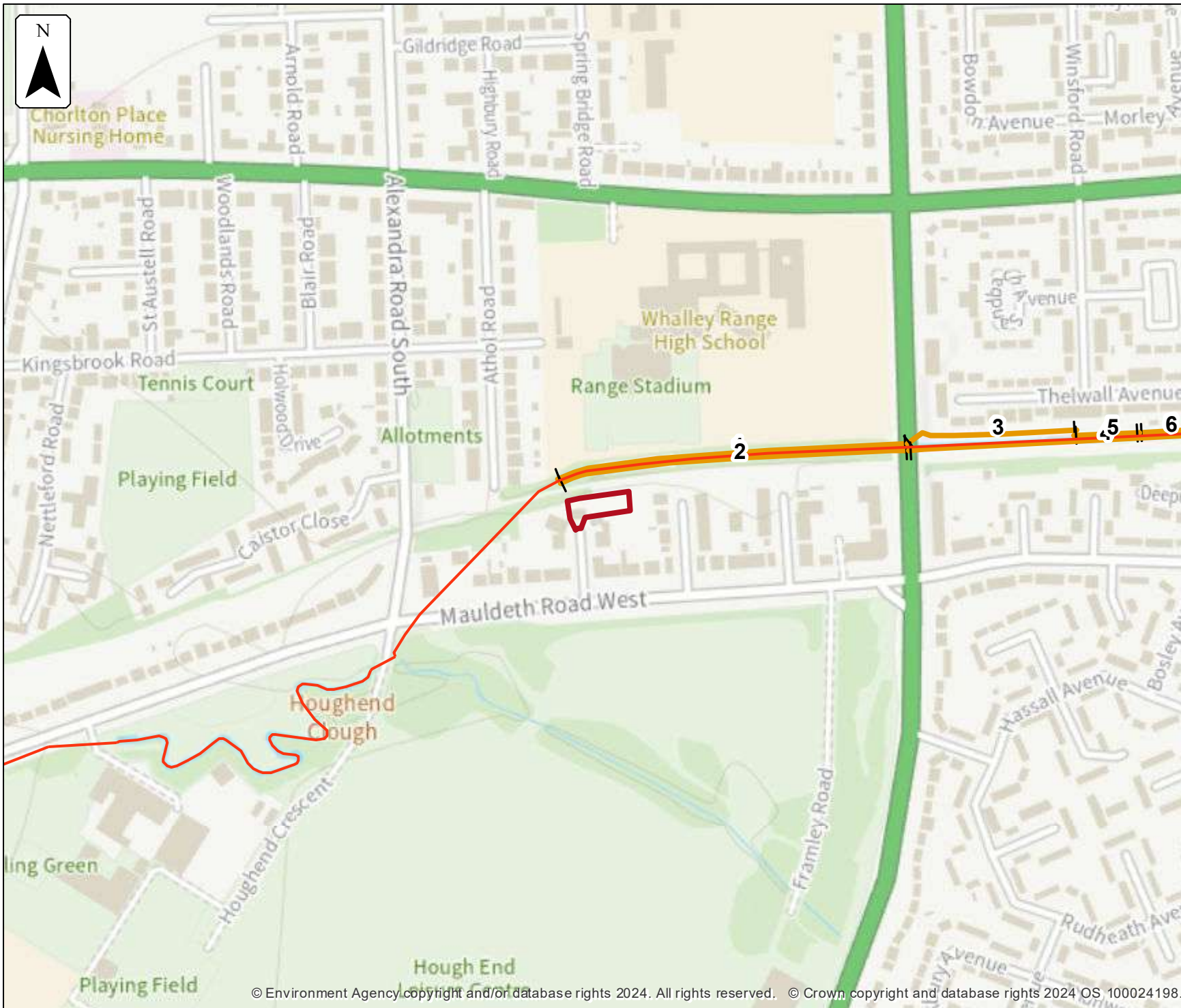
Flood defences

Location (easting/northing)
383580/393773

Scale
1:5,000

Created
31 Jan 2024

-  Selected area
-  Main river
-  Flood defence

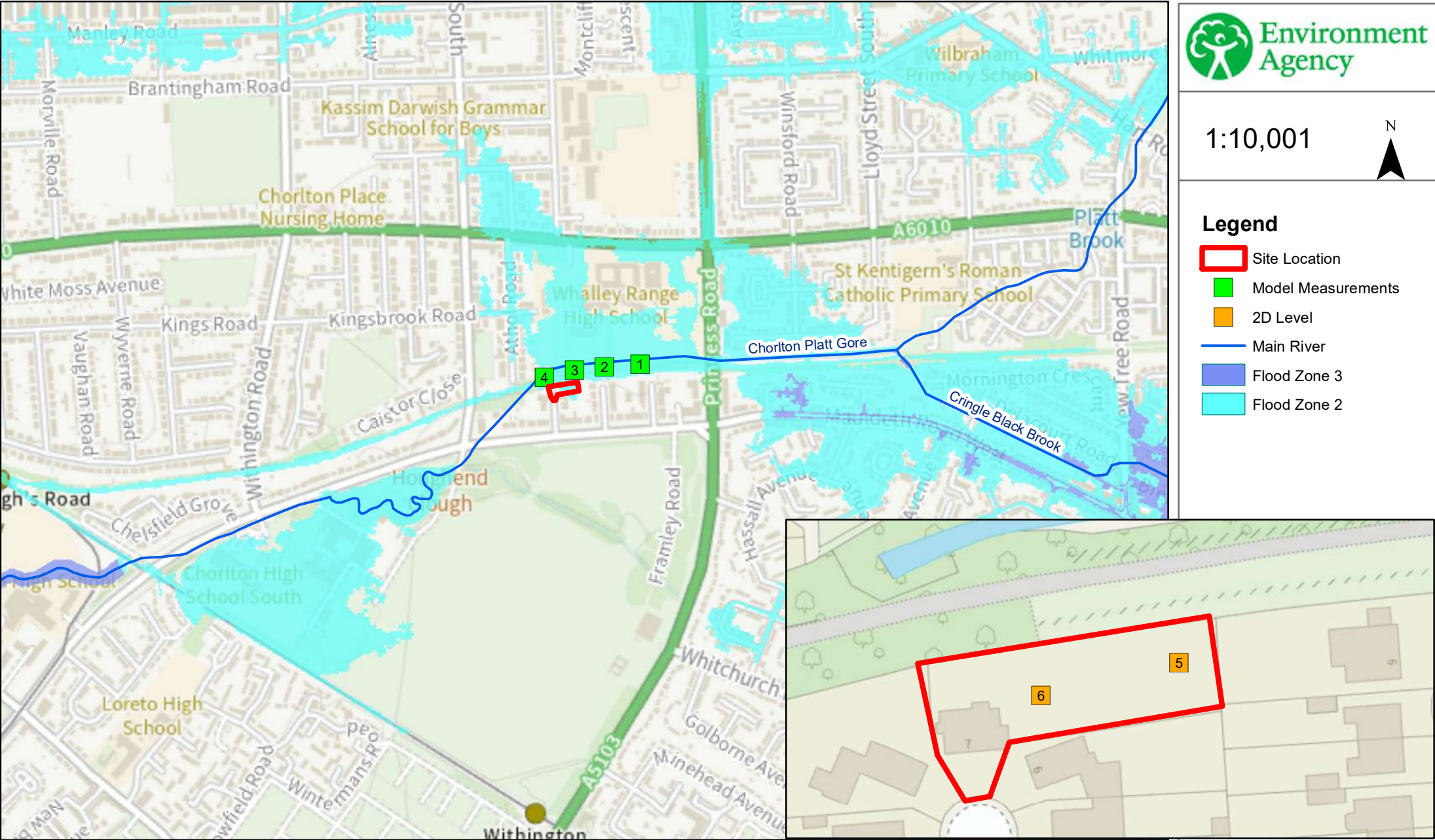


Flood defences data

Label	Asset ID	Asset Type	Standard of protection (years)	Current condition	Downstream actual crest level (mAOD)	Upstream actual crest level (mAOD)	Effective crest level (mAOD)
1	120082	Embankment	100	Fair	30.25	31.38	
2	32515	Embankment	100	Fair	30.29	31.52	
3	32518	Wall	100	Poor	31.48	31.84	
4	60038	Embankment	100	Fair	31.39	32.25	
5	59788	Embankment	100	Fair	31.81	32.82	
6	122064	Wall	100	Fair	31.84	31.90	

Any blank cells show where a particular value has not been recorded for an asset.

**Detailed Flood Map Centred on Endon Drive, Manchester, M21 7TE.
Created 07/02/2024 [GMMC344875SW]**



					Undefended										Defended									
Map Reference	Model Node Reference	Easting	Northing	Data	10 % AEP (1 in 10 year)	4 % AEP (1 in 25 year)	1.33 % AEP (1 in 75 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year) + 30% increase in flow	1 % AEP (1 in 100 year) + 35% increase in flow	1 % AEP (1 in 100 year) + 70% increase in flow	0.1 % AEP (1 in 1000 year)	50 % AEP (1 in 2 year)	10 % AEP (1 in 10 year)	4 % AEP (1 in 25 year)	1.33 % AEP (1 in 75 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year) + 30% increase in flow	1 % AEP (1 in 100 year) + 35% increase in flow	1 % AEP (1 in 100 year) + 70% increase in flow	0.1 % AEP (1 in 1000 year)			
1	ea013_0171_CHOP01_4253	383734	393825	Modelled Water Level (m aodN)	30.21	30.40	30.55	30.58	30.76		30.84	31.10	31.14	29.81	30.21	30.40	30.56	30.59	30.84	30.90	31.19	31.20		
				Modelled Flow (cumecs)	10.25	13.64	17.00	17.71	20.22	20.42	23.42	23.92	10.25	13.67	17.03	17.76	21.06	21.49	24.52	24.78				
2	ea013_0171_CHOP01_4181u	383664	393820	Modelled Water Level (m aodN)	29.46	29.63	29.78	29.82	30.43	30.60	30.95	31.00	29.15	29.46	29.63	29.79	29.82	30.59	30.68	31.05	31.07			
				Modelled Flow (cumecs)	10.25	13.64	17.00	17.71	20.18	20.37	22.86	23.09	10.25	13.67	17.03	17.75	21.01	21.45	24.47	24.72				
3	ea013_0171_CHOP01_4120u	383603	393813	Modelled Water Level (m aodN)	28.47	28.68	28.97	29.15	30.37	30.55	30.91	30.97	28.14	28.47	28.68	28.97	29.15	30.53	30.63	31.01	31.03			
				Modelled Flow (cumecs)	10.25	13.64	16.99	17.70	20.10	20.30	22.77	22.93	10.25	13.66	17.02	17.74	20.93	21.42	24.44	24.66				
4	ea013_0171_CHOP01_4057u	383543	393797	Modelled Water Level (m aodN)	27.63	28.06	28.87	29.08	30.34	30.52	30.90	30.96	27.29	27.63	28.07	28.88	29.09	30.50	30.61	31.01	31.03			
				Modelled Flow (cumecs)	10.28	13.67	17.00	17.69	20.08	20.27	21.11	21.17	10.28	13.69	17.03	17.73	20.88	21.24	22.30	22.41				

Map Reference	Model Node Reference	Easting	Northing	Data	Undefended	Defended
					0.1 % AEP (1 in 1000 year)	0.1 % AEP (1 in 1000 year)
5	2D Level	383602	393779	Modelled Water Level (m aodN)	30.95	31.01
6		383574	393772	Modelled Water Level (m aodN)	30.95	31.01

Model data taken from Chorlton Platt Gore 2012

AEP - Annual Exceedence Probability

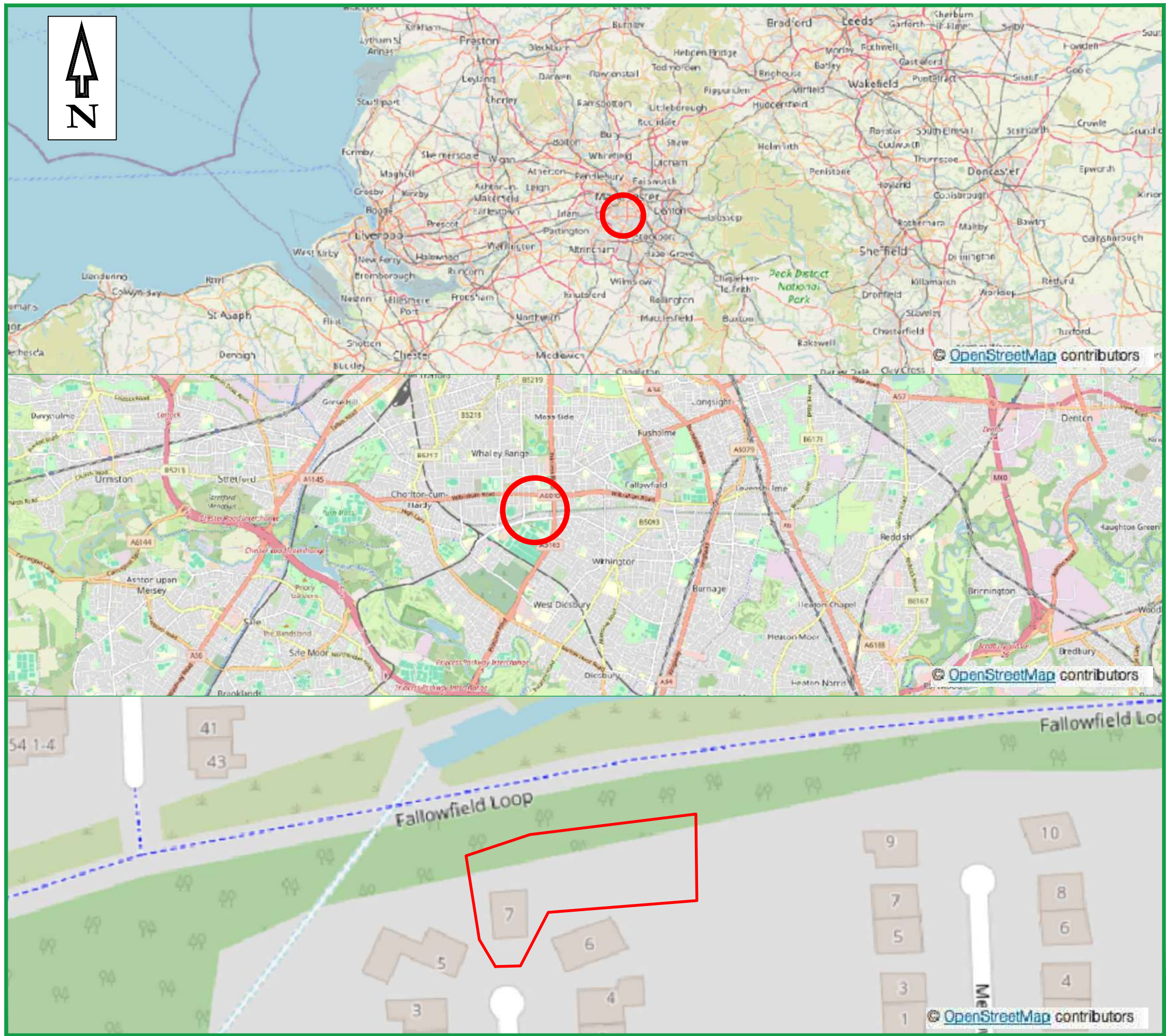
m aodN - metres above ordnance datum Newlyn

cumecs - cubic metres per second

Notes: *Climate Change Scenario - 30%, 35% and 70% increases in flow calculated for the 2080's (2070 - 2115). Please see <https://www.gov.uk/guidance/food-risk-assessments-climate-change-allowances> for more information regarding the new climate change guidance. The location of the site and the type (vulnerability) of development determine the climate change allowances to consider in any flood risk assessment.

APPENDIX D

Drawings



LEGEND

— SITE LOCATION

REV	DESCRIPTION	DATE	BY



No 2 Landwick Court, Metcalf Drive, Altham Business Park, Lancashire
Tel: 01254 377622 Mob: 07906753583
Email: mbuckley@bekenviro.co.uk
Web: www.bekenviro.co.uk

CLIENT.

MR S BUCKLEY

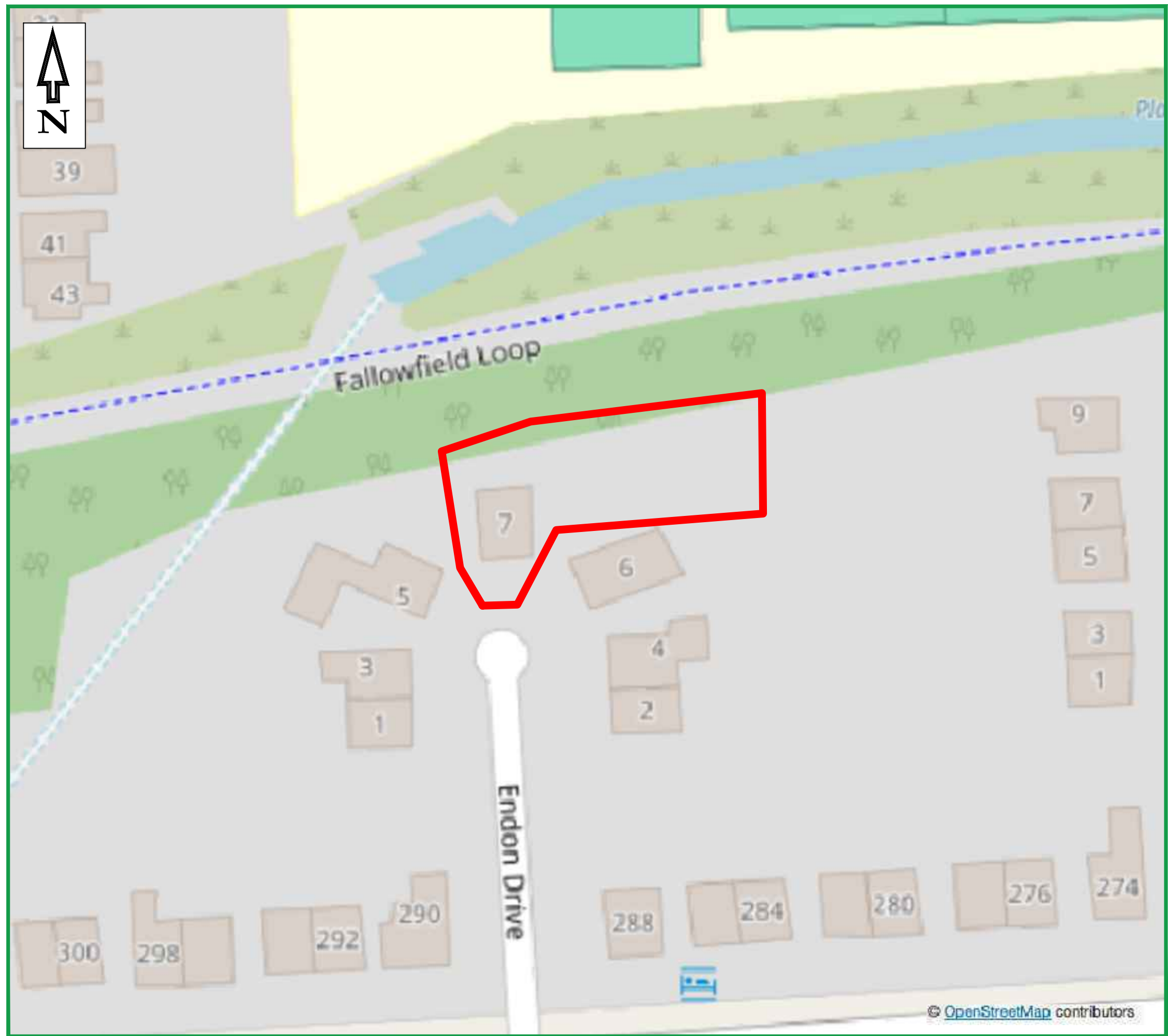
JOB TITLE.

7 ENDON DRIVE, CHORLTON

DRAWING TITLE.

SITE LOCATION PLAN

SCALE © A3. N.T.S	DRAWN BY. D.E.	APPROVED BY. M.B.	DATE. 14/02/24
DRAWING No. 24023-1			REV. -



LEGEND

— SITE FOOTPRINT

A	Amend site boundary	07/02/24	DE
REV	DESCRIPTION	DATE	BY



GEO-ENVIRONMENTAL CONSULTING
No 2 Landwick Court, Metcalf Drive, Altham Business
Park, Lancashire, BB5 5GY
Tel: 01254 377622 Mob: 07906753583
Email: mbuckley@bekenviro.co.uk
Web: www.bekenviro.co.uk

CLIENT.
MR S BUCKLEY

JOB TITLE.
7 ENDON DRIVE, CHORLTON

DRAWING TITLE.
SITE LAYOUT PLAN

SCALE © A3. NTS	DRAWN BY. D.E.	APPROVED BY. M.B.	DATE. 14/02/24
DRAWING No. 24023-2	REV. -		