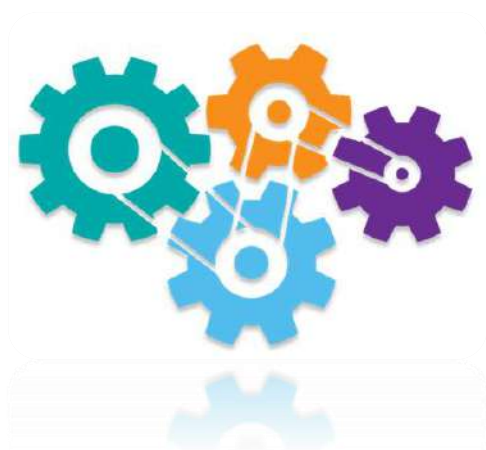




231A Joel
Street,
Pinner,
HA5 2PJ

Flood Risk Assessment

March 2021



Ref:21-7841

QUALITY STANDARDS CONTROL

The signatories below verify that this document has been prepared in accordance with our quality control requirements. These procedures do not affect the content and views expressed by the originator.

This document must only be treated as a draft unless it has been signed by the originators and approved by a director.

Revision	-
Date	17/03/2021
Prepared by	K. Thapa
Checked by	M. Buck
Authorised by	A. Norris

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The conclusions and recommendations contained in this report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by SC has not been independently verified by SC, unless otherwise stated in the report.

The methodology adopted and the sources of information used by SC in providing its services are outlined in this report. The work described in this report was undertaken in March 2021 and is based on the conditions encountered and the information available during the said period of time. The scope of this report and the services are accordingly factually limited by these circumstances.

Where assessments of works or costs identified in this report are made, such assessments are based upon the information available at the time and where appropriate are subject to further investigations or information which may become available.

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No allowance has been made for changes in prices or exchange rates or changes in any other conditions which may result in price fluctuations in the future. Where assessments of works or costs necessary to achieve compliance have been made, these are based upon measures which, in SC's experience, could normally be negotiated with the relevant authorities under present legislation and enforcement practice, assuming a proactive and reasonable approach by site management.

Forecast cost estimates do not include such costs associated with any negotiations, appeals or other non-technical actions associated with the agreement on measures to meet the requirements of the authorities, nor are potential business loss and interruption costs considered that may be incurred as part of any technical measures.

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Appendices

APPENDIX A - Site Location and Proposed Layout

APPENDIX B – Flood Mapping

APPENDIX C- SFRA Extracts

1. Introduction

Syntegra have been appointed by their client to undertake a Flood Risk Assessment (FRA) for the proposed conversion of the existing garage and rear extension at 231A Joel Street, HA5 2PJ. The FRA provides information on the nature of flood risk at the site and follows Government guidance with regards to development and flood risk. A site location plan is shown in Appendix A.

The report is based on currently available information, EA flood data, the London Borough of Hillingdon Surface Water Management Plan (SWMP) and the Strategic Flood Risk Assessment (SFRA) for London Borough of Hillingdon Council.

Proposals contained or forming part of this report represent the design intent and may be subject to alteration or adjustment in completing the detailed design for this project. Where such adjustments are undertaken as part of the detailed design and are deemed a material derivation from the intent contained in this document, prior approval shall be obtained from the relevant authority in advance of commencing such works.

Where the proposed works to which this report refers are undertaken more than twelve months following the issue of this report, Syntegra shall reserve the right to re-validate the findings and conclusions by undertaking appropriate further investigations at no cost to Syntegra.

This Document should be read in conjunction with

- Sewers for Adoption 7th – August 2012
- London Borough of Hillingdon Surface Water Management Plan (SWMP)
- Environment Agency Mapping
- London Borough of Hillingdon Strategic Flood Risk Assessment (SFRA)

This report has been prepared in accordance with the instructions of our client, for their sole and specific use.

2. Scope of Flood Risk Assessment

The assessment has been undertaken in accordance with the standing advice and requirements of the Environment Agency for Flood Risk Assessments as outlined in the Communities and Local Governments Technical Guidance to the National Planning Policy Framework (NPPF).

The assessment has:

- Considered the procedures of the National Planning Policy Guidance and Local Authority Guidance;
- Considered the London Plan and the London Borough of Hillingdon SWMP and SFRA
- Considered the site constraints
- Investigated all potential risks of current or future flooding to the site
- Considered the impact the development may have elsewhere with regards to flood risk
- Considered design proposals to mitigate any potential risk of flooding determined to be present

3. Proposed Development

The proposed development comprises of a conversion of the existing garage and a first-floor side extension as well as a floor plan redesign.

4. Existing Site

The site resides in a residential area surrounded by other residential properties and their gardens. The site faces Joel Street to the west and is also directly accessed through this street.

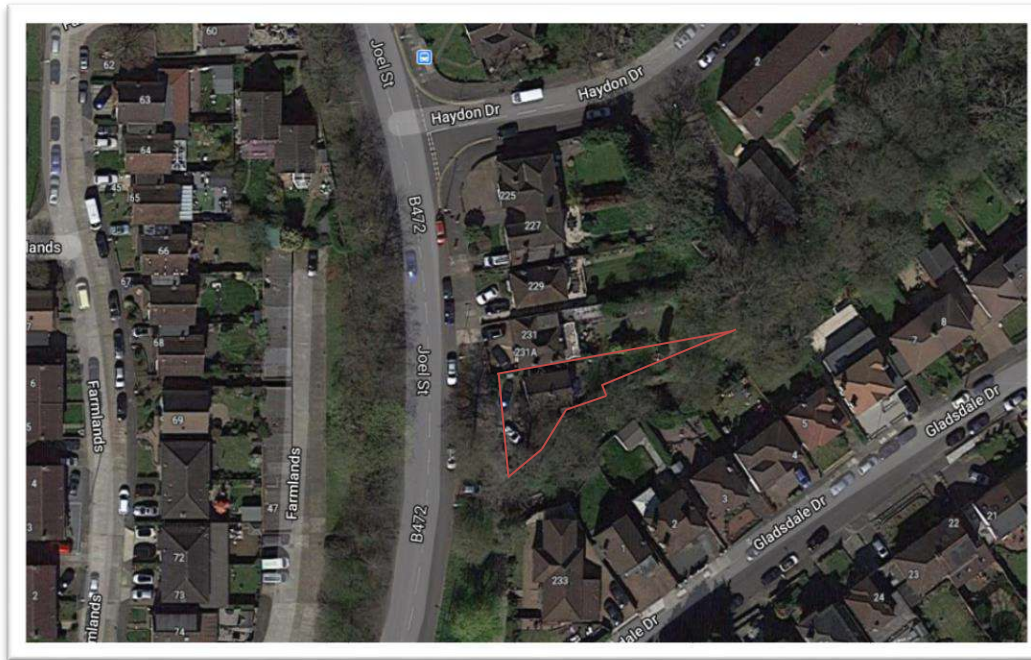


Figure 1: Site Location Plan

The location of the site can be seen in Appendix A.

5. Existing Drainage and Site Investigations

The site is currently developed and as such there are existing drainage runs serving the property.

The nearest watercourse to the site is the Joel Street Farm Ditch which is located along the southern boundary of the site. A major watercourse is also located circa 525m south of the site, known as River Pinn. The nearest flood zone is the floodplain associated with this watercourse.

6. Site Justification

The site is currently developed and utilised as a residential space. The proposals will see some modifications to the existing building and to add a side extension. The change of use will remain the same hence the classification of 'More Vulnerable', according to the NPPF. The proposals are considered minor in line with the NPPF.

7. National Planning Policy Framework

The National Planning Policy Framework document (NPPF) provides guidance on how flood risk should be assessed during the planning and development process. This document was recently revised in 2019. The main Framework is supplemented by a technical guidance document (“Planning Practice Guidance” - PPG) which advises specifically with respect to flooding. The most critical aspects are extracted below.

7.1 Flood Zones (Table 1)

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)

7.2 Flood Risk Vulnerability Classification (Table 2)

Essential Infrastructure

- Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk.
- Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood.
- Wind turbines.

Highly Vulnerable

- Police stations, ambulance stations and fire stations and command centres and telecommunications installations required to be operational during flooding.
- Emergency dispersal points.
- Basement dwellings.
- Caravans, mobile homes and park homes intended for permanent residential use.
- Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as “essential infrastructure”).

More Vulnerable

- Hospitals.
- Residential institutions such as residential care homes, children’s homes, social services homes, prisons and hostels.
- Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.
- Non-residential uses for health services, nurseries and educational establishments.
- Landfill* and sites used for waste management facilities for hazardous waste.
- Sites used for holiday or short-let caravans and camping, *subject to a specific warning and evacuation plan*.

Less Vulnerable

- Police, ambulance and fire stations which are not required to be operational during flooding.
- Buildings used for shops, financial, professional and other services, restaurants and cafes, hot food takeaways, offices, general industry, storage and distribution, non-residential institutions not included in “more vulnerable”, and assembly and leisure.
- Land and buildings used for agriculture and forestry.

- Waste treatment (except landfill and hazardous waste facilities).
- Minerals working and processing (except for sand and gravel working).
- Water treatment works which do not need to remain operational during times of flood.
- Sewage treatment works (if adequate measures to control pollution and manage sewage during flooding events are in place).

Water Compatible

- Flood control infrastructure.
- Water transmission infrastructure and pumping stations.
- Sewage transmission infrastructure and pumping stations.
- Sand and gravel working.
- Docks, marinas and wharves.
- Navigation facilities.
- Ministry of Defence defence installations.
- Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location.
- Water-based recreation (excluding sleeping accommodation).
- Lifeguard and coastguard stations.
- Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.
- Essential ancillary sleeping or residential accommodation for staff required by uses in this category, *subject to a specific warning and evacuation plan.*

7.3 Flood Zone and Flood Risk Vulnerability Compatibility (Table 3)

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.

Notes to table 3:

- This table does not show the application of the Sequential Test which should be applied first to guide development to Flood Zone 1, then Zone 2, and then Zone 3; nor does it reflect the need to avoid flood risk from sources other than rivers and the sea;
- The Sequential and Exception Tests do not need to be applied to minor developments and changes of use, except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site;
- Some developments may contain different elements of vulnerability and the highest vulnerability category should be used, unless the development is considered in its component parts.

† In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

* In Flood Zone 3b (functional floodplain) essential infrastructure that has to be there and has passed the Exception Test, and water-compatible uses, should be designed and constructed to:

- Remain operational and safe for users in times of flood;
- Result in no net loss of floodplain storage;
- Not impede water flows and not increase flood risk elsewhere.

8. Development and Flood Risk

8.1 London Borough of Hillingdon SFRA

Investigation of flood risk information relative to the site location has identified that a Strategic Flood Risk Assessment (SFRA) is in place for London Borough of Hillingdon. The report has been reviewed to assess if the information contained within an SFRA conflicts or refines the information already assessed from the Environment Agency. Mapping within the SFRA is large scale but allows for relatively accurate observations to be made of the flood zones (Extract contained in Appendix D). It can therefore be confirmed from this observation the information and mapping contained within the SFRA concurs with that of the Environment Agency's Data.

8.2 Flood Risk from Rivers and Seas

The Environmental Agency Data shows that a small part of the site along the south eastern boundary is located in flood zone 2, with the remainder including the property itself within flood zone 1 with a negligible chance of flood risk from Rivers and Seas (< 0.1%).

Flood risk to the site is from the Joel Street Farm Ditch that runs along the south eastern boundary of the site at a lower level.

The residential use is within the 'More Vulnerable' NPPF classification, therefore risk from flooding via this source is considerable. However, the building is existing, and the extension considered appropriate for the flood zone.



Figure 2: EA Map Rivers and Sea

Excepting the Joel Street Farm Ditch adjacent to the southern boundary of the site, no other watercourses within proximity to the site known to present a risk of fluvial flooding.

The EA have provided modelled flood level data for the Joel Street Farm Ditch bordering the southern boundary for the site. Floodplain model data was provided for the site with level information provided at various points across the site for varying rainfall events including climate change.

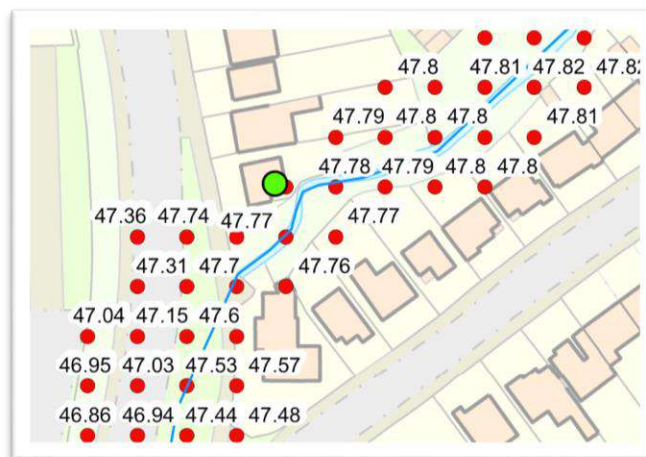


Figure 3: EA Product 4 data 1 in 100 +70% fluvial flood map

It is noted that during the 1 in 100 year event with 70% climate change uplift the property remains flood free.

The EA records also indicate that there have been no historic flooding incidents within 300m of this site.

8.3 Flooding from Groundwater

Groundwater flooding is caused by the natural emergence of water at surface level originating from underlying permeable sediments or rocks (aquifers). The groundwater may emerge as one or more-point discharges (springs) over an extended area. Groundwater flooding tends to be more persistent than other sources of flooding, typically lasting for weeks or months rather than hours or days. Groundwater flooding does not generally pose a significant risk to life due to the slow rate at which the water level rises, however it can cause considerable damage to property, especially in urban areas.

The London Borough of Hillingdon Surface Water Management Plan and Strategic Flood Risk Assessment indicates no instances of Groundwater Flooding in the vicinity of the site.

The site area is indicated as being in an area with a very low susceptibility to groundwater flooding. There have been no cases of groundwater flooding within close proximity to the site.

As the above passages imply, the risk to the site from groundwater flooding can be considered to be negligible.

8.4 Risk of Surface Water Flooding to the Site

Surface water sewers are at risk of surcharging during extreme rainfall events with flooding occurring principally from manholes and gullies. Surcharging sewers can result in overland flow which, if originating at a higher elevation than a development the sewers could potentially pose a flood risk.

EA mapping indicates a low risk of surface water flooding at the site, this would appear to be partially related to the adjacent watercourse to which the EA mapping indicates would not impact the property.

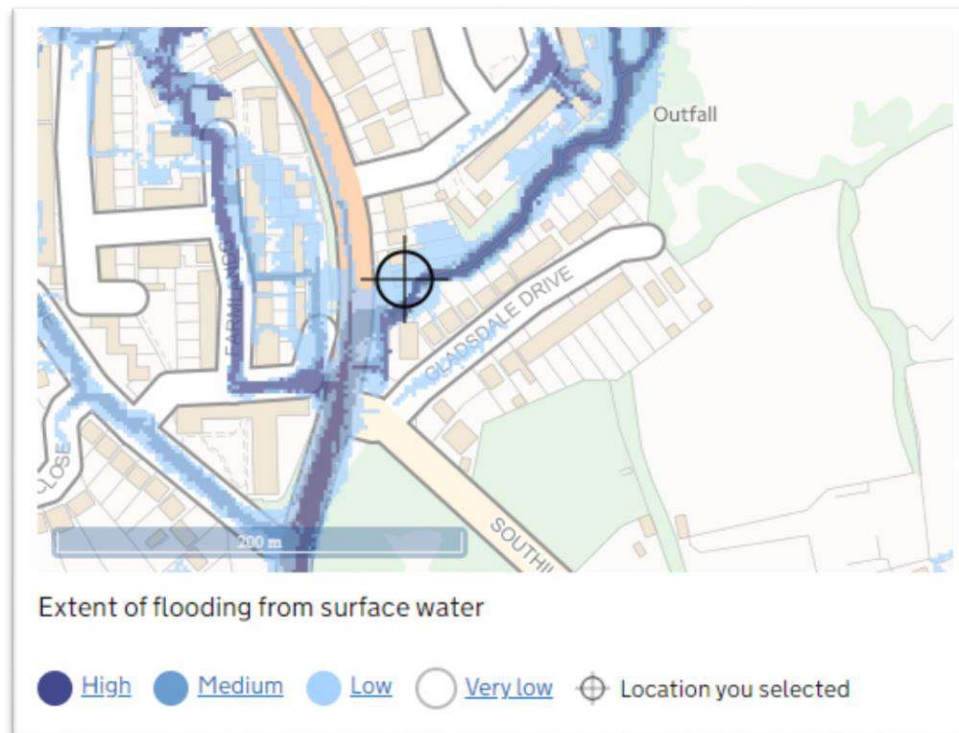


Figure 3: EA Map Surface Water Flooding

8.5 Risk of Surface Water Flooding from the Site

The existing site is currently developed the proposals will not increase the impermeable area of the site.

The risk of surface water flooding from the site as a result of the development is therefore considered low.

8.6 Flooding from Reservoirs, Canals and Artificial Sources

The requirement for regular inspections by a Supervising Panel Engineer means that the likelihood of structural failure of reservoirs is considered to be minimal. The risk of failure remains, however, and the Environment Agency has mapped the potential extent of flooding resulting from the failure.

Both the Environmental Agency & SFRA mapping for Hillingdon Council shows the area to be at a risk of flooding due to reservoirs.

8.7 Flooding from Climate Change

For rainfall climate change figures, the Environment Agency released new guidance in April 2016 based on varied percentiles dependant on the type of development and the epochs spanned by the design life of the development. The percentiles sensitivity applied to Flood Zone 3 developments is noted as follows:

In Flood Zone 3

- essential infrastructure – use the higher central and upper end to assess a range of allowances
- highly vulnerable – use the higher central and upper end to assess a range of allowances
- more vulnerable – use the central and higher central to assess a range of allowances
- less vulnerable – use the central allowance
- water compatible – use none of the allowances

Therefore, for development classified as more vulnerable the central and higher range of allowance should be applied.

From the Environment Agency guidance Table 2 describes the application of climate change rainfall allowance for small and urban developments and is replicated below:

Applies across all of England	Total potential change anticipated for the '2020s' (2015 to 2039)	Total potential change anticipated for the '2050s' (2040 to 2069)	Total potential change anticipated for the '2080s' (2070 to 2115)
Upper end	10%	20%	40%
Central	5%	10%	20%

Table 2 peak rainfall intensity allowance in small and urban catchments (use 1961 to 1990 baseline)

The design life for the development will likely fall within the 2080s epoch, the lifetime of a residential development should be considered to be 100 years, unless there is a specific justification for a shorter amount of time.

To remain conservative with the design the upper end percentile will be used for this redevelopment and therefore an allowance for climate change on the total rainfall should be 40% for the 1 in 100 year event. Any new drainage on site shall therefore be designed to cater for the 1 in 100 +40% event.

8.8 Proposed Development Vulnerability Classification

The proposed development is situated within Flood Zone 1 based on site proposals the sequential and Exception Test are not required and proposals are considered appropriate.

9 Mitigation

9.1 Fluvial/Tidal and Reservoir Flood Mitigation

The proposed property lies within flood zone 1 with some areas of the surrounding site within flood zone 2.

The redevelopment will not result in a change in footprint with ground levels remaining unchanged resulting in no change on or off site of floodplain waters.

Based upon the EA flood data the property is unlikely to suffer any flooding even when considering climate change uplift.

The site is located within an area of potential reservoir flooding should the reservoirs in the area fail resulting in below 300mm of flooding potential.

Reservoir flooding is extremely unlikely to happen. There has been no loss of life in the UK from reservoir flooding since 1925. All large reservoirs must be inspected and supervised by reservoir panel engineers. As the enforcement authority for the Reservoirs Act 1975 in England, the Environment Agency ensure that reservoirs are inspected regularly, and essential safety work is carried out.

The site is covered by the Environment Agency's early flood warning services and as such the development can receive flood warnings through registration with the Environment Agency.

9.2 Groundwater Flooding Mitigation

Groundwater flooding tends to be more persistent than other sources of flooding and typically lasts for weeks or months rather than hours or days. Generally, groundwater flooding does not pose a significant risk to life due to the slow rate at which the water level rises; however, it can cause significant damage to property.

As per the Strategic Flood Risk Assessment mapping, the area is classed as having low chance of susceptibility to Groundwater flooding, no record of groundwater flooding in this area and as such no mitigation measures are deemed necessary.

9.3 Mitigation of Surface Water Flooding to the Site

The building is within an area susceptible to surface water flooding; however, the building is existing and the side extension on first floor is safe from surface water flooding. It is not suggested .

9.4 Mitigation of Surface Water Flooding from the Site

It is necessary as part of the flood risk assessment to consider the impact of the proposed development on surface water drainage elsewhere within the local catchment areas, both upstream and downstream to ensure that the risk of flooding is not increased.

All drainage is designed in accordance with best practise, assuming any new drainage is correctly installed for the development and the existing sewers are fully maintained, it can be assumed risk of flooding from blockage or overloading is minimal. The flood risk from the development site to the surrounding areas from this source can be considered low.

10 Conclusion

This Flood Risk Assessment has been conducted for the proposed extension and conversion at 231A Joel Street, Pinner, HA5 2PJ. The FRA has been conducted in accordance to the NPPF and the London Borough of Hillingdon Council SFRA.

The assessment has:

- Investigated all reasonably foreseeable potential risks of flooding to the site,
- Considered the impact the development may have elsewhere with regards to flooding
- Considered outline design proposals to mitigate any potential risk of flooding determined to be present.

The Environment Agency flood map and SFRA for Peterborough show the property to be within flood zone 1 and flood free for all events including the 1 in 100 +70% climate change event. The development is existing and whilst it is acknowledged that some small areas of the garden will be within flood zone 2 no reduction in floodplain is proposed and no increase in impermeable area is proposed subsequently there will be no increase in flood risk.

Due to the risk of reservoir flooding and potential surface water flood risk to the property a flood warning and evacuation plan shall be prepared.

APPENDIX A – Site Location and Proposed Layout

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All dimensions to be cross-checked on site prior to completing a Building Regulations package, structural engineering, the party wall process and construction.

Print to scale (as actual size)

NOTES

Revision

Rev	Notes	Date
-	Planning Issue	09/11/2020

KEY	
	Proposed walls
	Existing walls
	Existing removed
	Proposed rooflight
	Boundary lines
	Proposed beam
	Proposed drainage
	1.8m head height
	1.5m head height

JOB TITLE

Proposed first floor side extension, garage conversion, ground floor internal alterations, floor plan redesign and all associated works at 231A Joel Street

STATUS
Planning

DRAWING TITLE
Existing Floor Plan

CLIENT
Sujay Mansingh

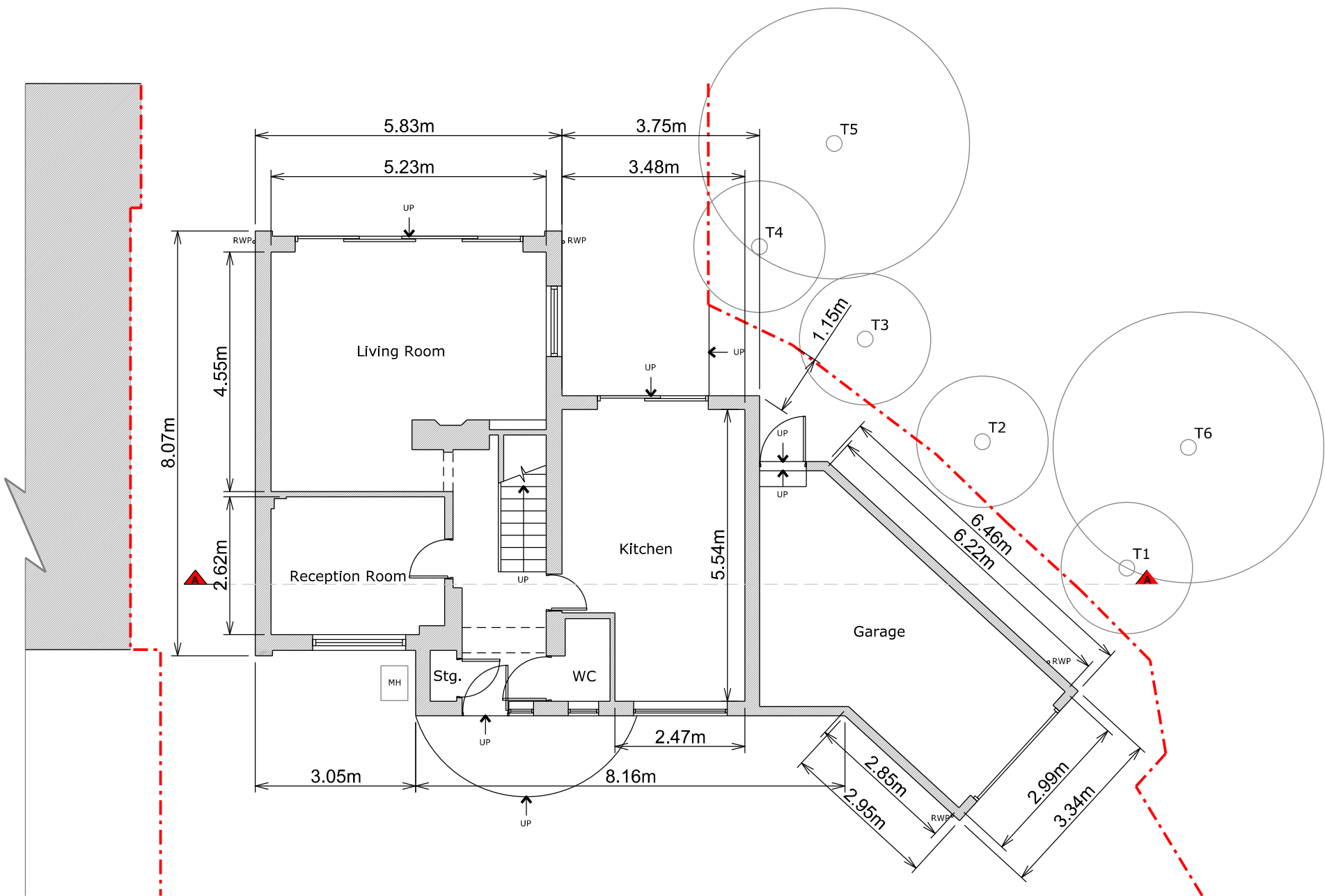
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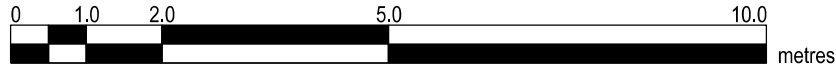
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DRAWING NO. 54156 - 101



Ground Floor Plan



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-	Planning Issue	09/11/2020

KEY

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	Proposed rooflight		1.8m head height
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JOB TITLE

Proposed first floor side extension, garage conversion, ground floor internal alterations, floor plan redesign and all associated works at 231A Joel Street

STATUS

Planning

DRAWING TITLE

Existing Floor Plan

CLIENT

Sujay Mansingh

SCALE

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DRAWN

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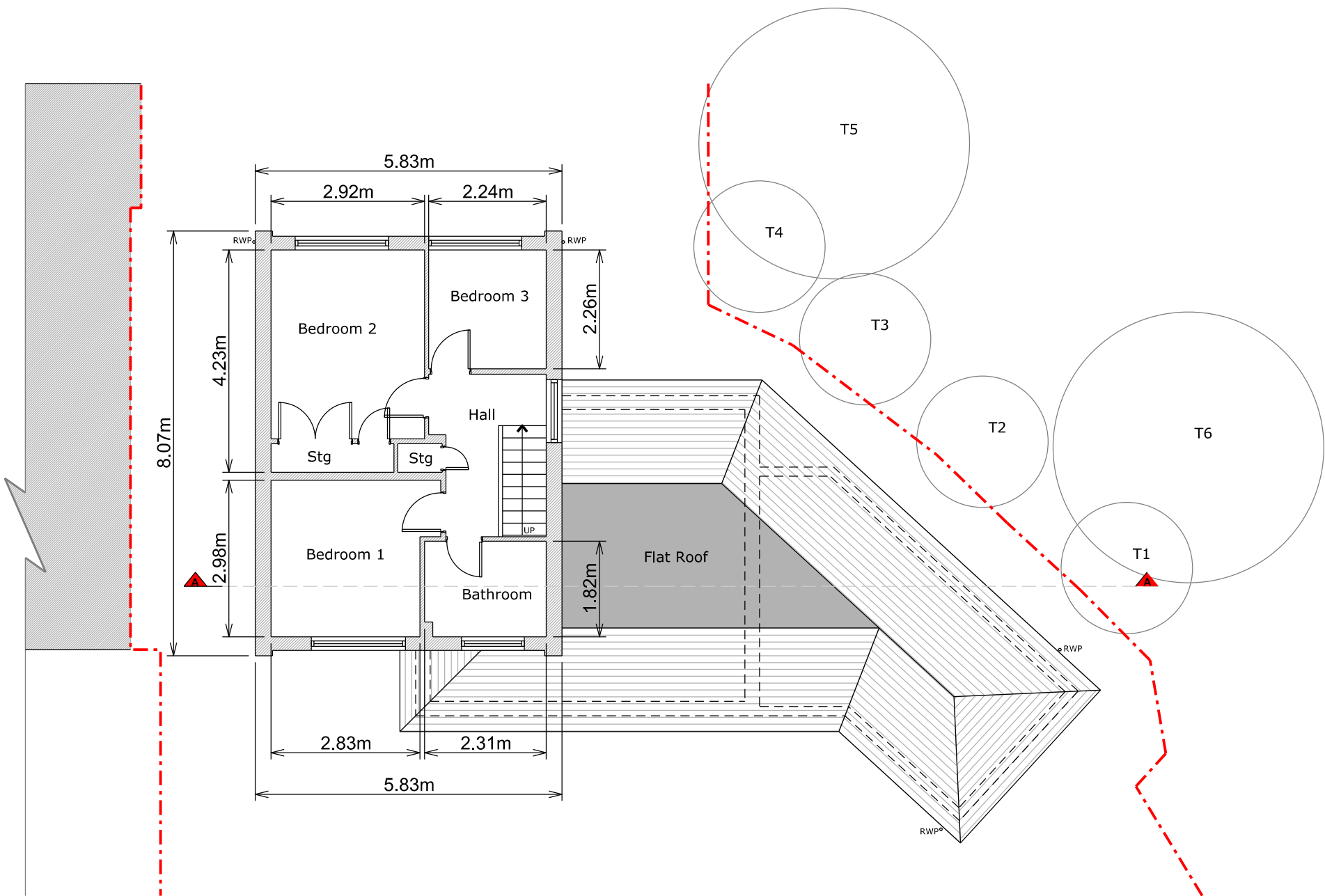
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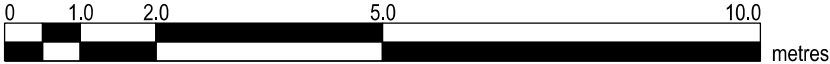
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DRAWING NO. 54156 - 102



First Floor Plan



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NOTES

Revision

Rev	Notes	Date
-	Planning Issue	09/11/2020

KEY

	Boundary lines
	Proposed beam
	Proposed drainage
	1.8m head height
	1.5m head height
	Proposed walls
	Existing walls
	Existing removed
	Proposed rooflight

JOB TITLE

Proposed first floor side extension, garage conversion, ground floor internal alterations, floor plan redesign and all associated works at 231A Joel Street

STATUS

Planning

DRAWING TITLE

Existing Roof Plan

CLIENT

Sujay Mansingh

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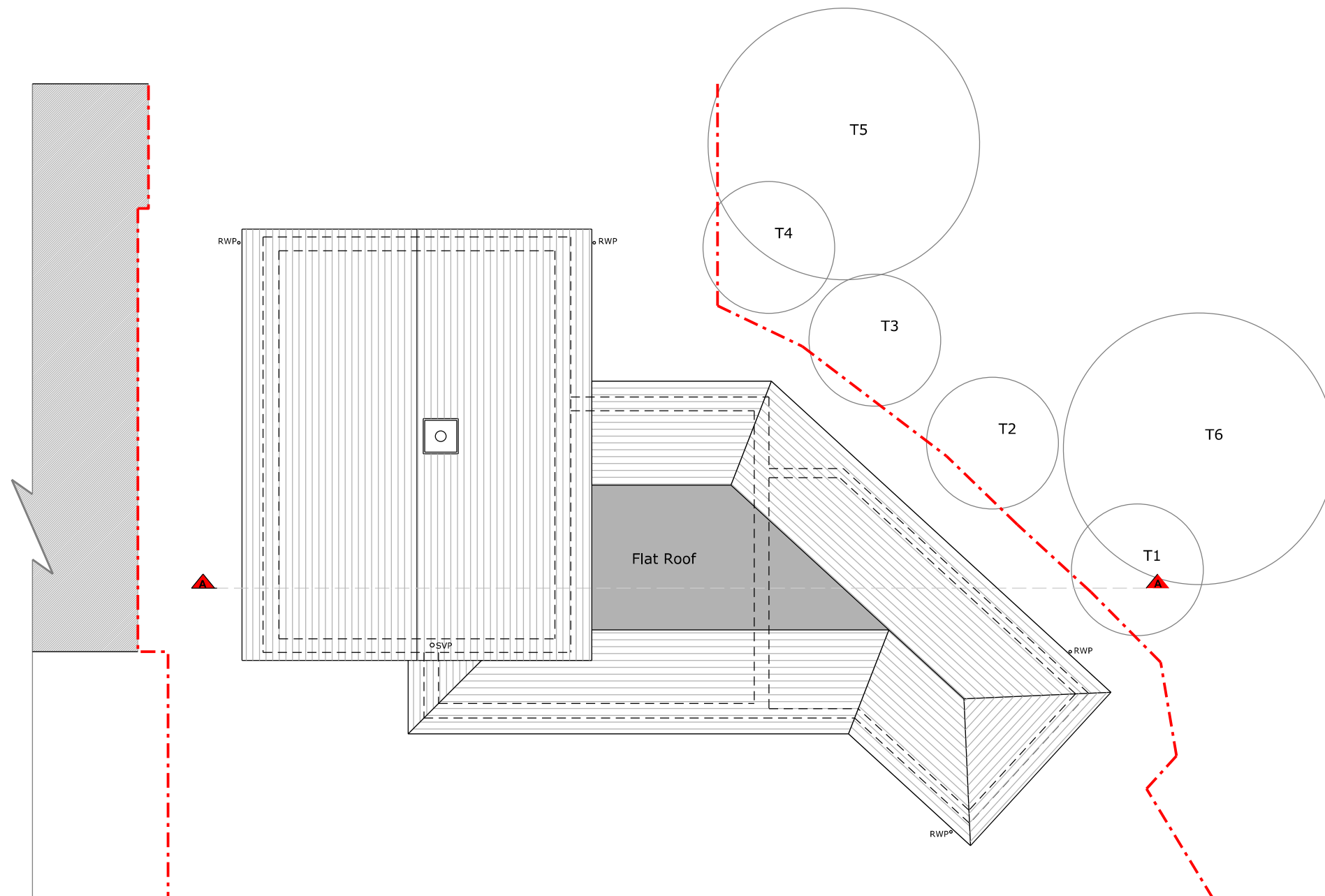
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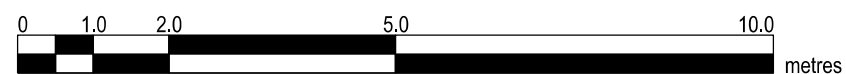
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DRAWING NO. 54156 - 103



Roof Plan



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NOTES

Revision

Rev	Notes	Date
-	Planning Issue	09/11/2020
A	Revised extension to half the width of original house	09/02/2021

KEY

	Proposed walls		Boundary lines
	Existing walls		Proposed beam
	Existing removed		Proposed drainage
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			1.5m head height

JOB TITLE

Proposed first floor side extension, garage conversion, ground floor internal alterations, floor plan redesign and all associated works at 231A Joel Street

STATUS

Planning

DRAWING TITLE

Proposed Floor Plan

CLIENT

Sujay Mansingh

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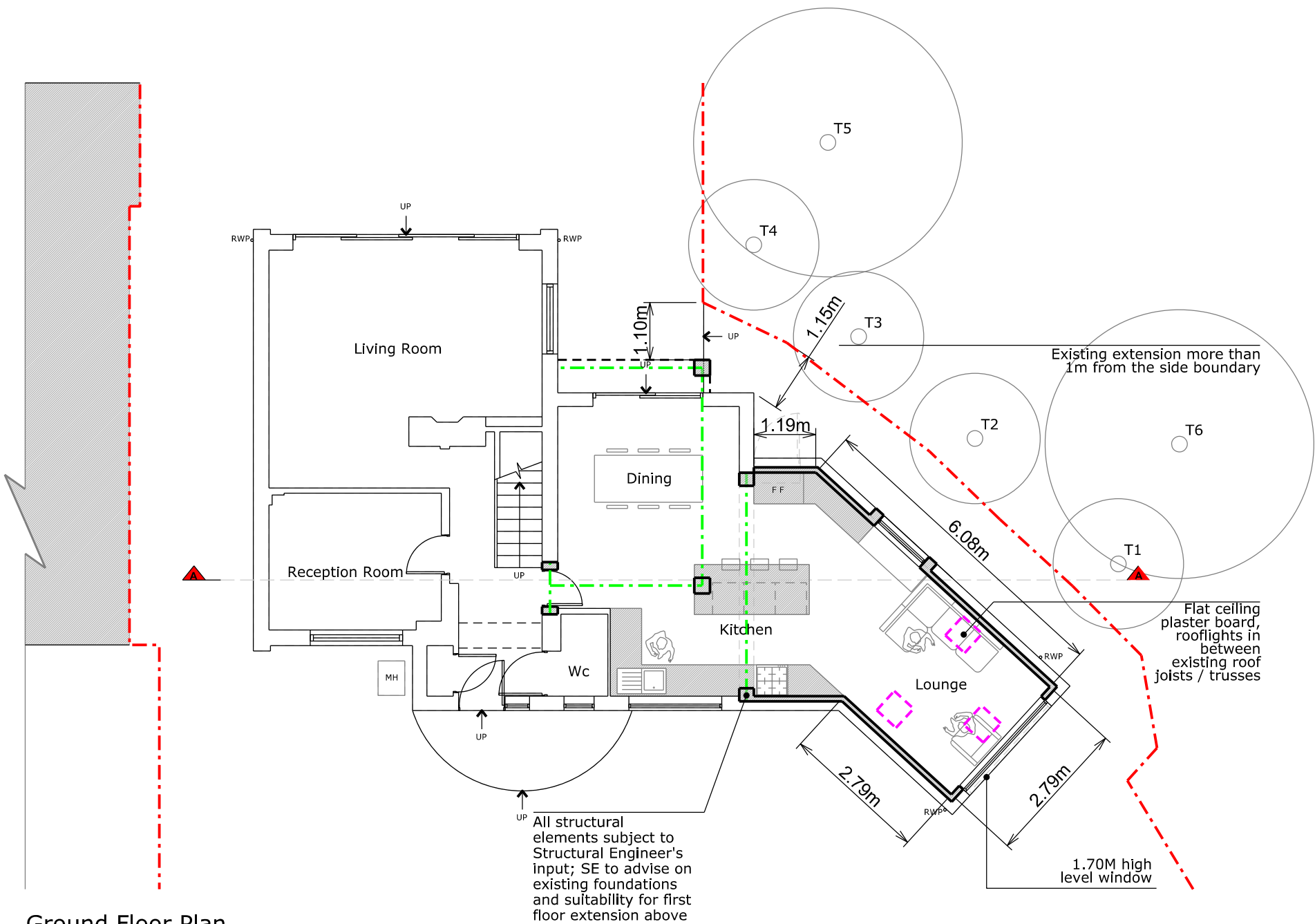
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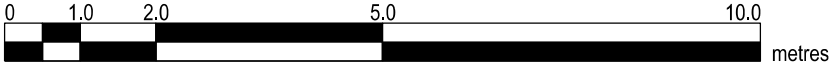
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DRAWING NO. 54156 - 104 A



Ground Floor Plan



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NOTES

Revision

Rev	Notes	Date
-	Planning Issue	09/11/2020
A	Revised extension to half the width of original house	06/02/2021

KEY

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			1.5m head height

JOB TITLE

Proposed first floor side extension, garage conversion, ground floor internal alterations, floor plan redesign and all associated works at 231A Joel Street

STATUS

Planning

DRAWING TITLE

Proposed Floor Plan

CLIENT

Sujay Mansingh

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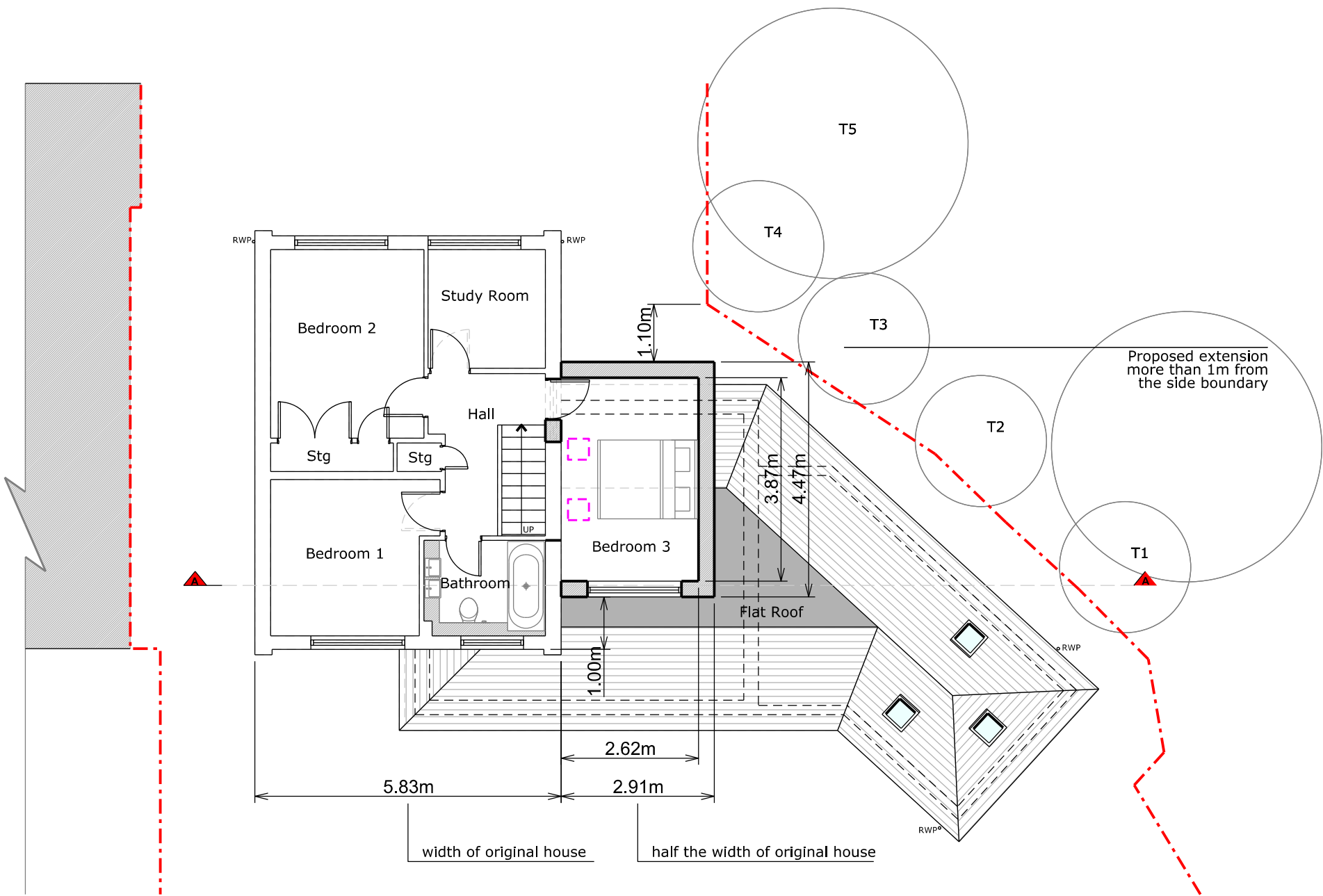
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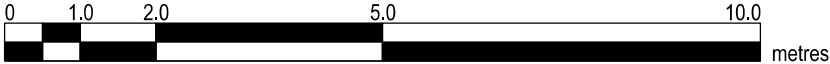
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DRAWING NO. 54156 - 105 A



First Floor Plan



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-		
A	Planning Issue Revised extension to half the width of original house	09/11/2020 06/02/2021

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	Existing removed		Proposed drainage
	Proposed rooflight		1.8m head height
			1.5m head height

JOB TITLE

Proposed first floor side extension, garage conversion, ground floor internal alterations, floor plan redesign and all associated works at 231A Joel Street

STATUS

Planning

DRAWING TITLE

Proposed Roof Plan

CLIENT

Sujay Mansingh

SCALE

1:100 at A3

DRAWN

PC

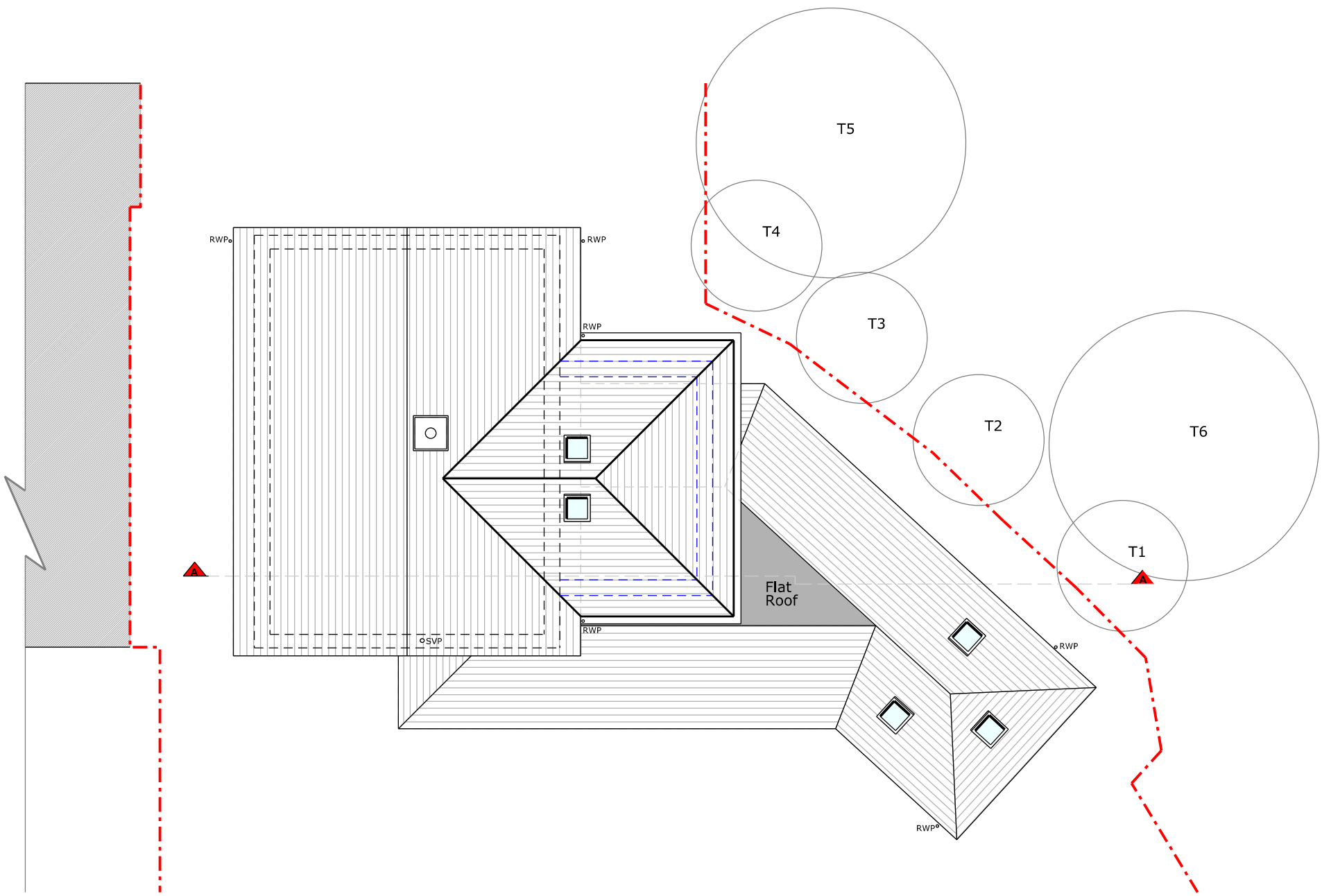
DATE

November 2020

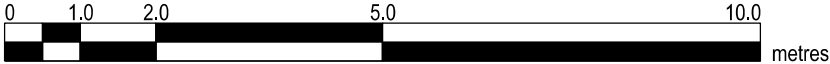
CHECKED

PC

DRAWING NO. 54156 - 106 A



Roof Plan



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All dimensions to be cross-checked on site prior to completing a Building Regulations package, structural engineering, the party wall process and construction.

Print to scale (as actual size)

NOTES

Existing Materials:

Brickwork / Walls - Red brick and white painted render

Pitched Roof - Concrete tiles

Flat Roof - Felt

Windows - White uPVC

Doors - White aluminium

RWP / Gutters / Fascia - Black uPVC downpipes, guttering and black and white painted timber fascias

Revision

Rev	Notes	Date
-	Planning Issue	09/11/2020

KEY

	Boundary lines
	Proposed beam
	Proposed drainage
	1.8m head height
	1.5m head height
	Proposed walls
	Existing walls
	Existing removed
	Proposed rooflight

JOB TITLE

Proposed first floor side extension, garage conversion, ground floor internal alterations, floor plan redesign and all associated works at 231A Joel Street

STATUS

Planning

DRAWING TITLE

Existing Elevations

CLIENT

Sujay Mansingh

SCALE

1:100 at A3

DRAWN

HD

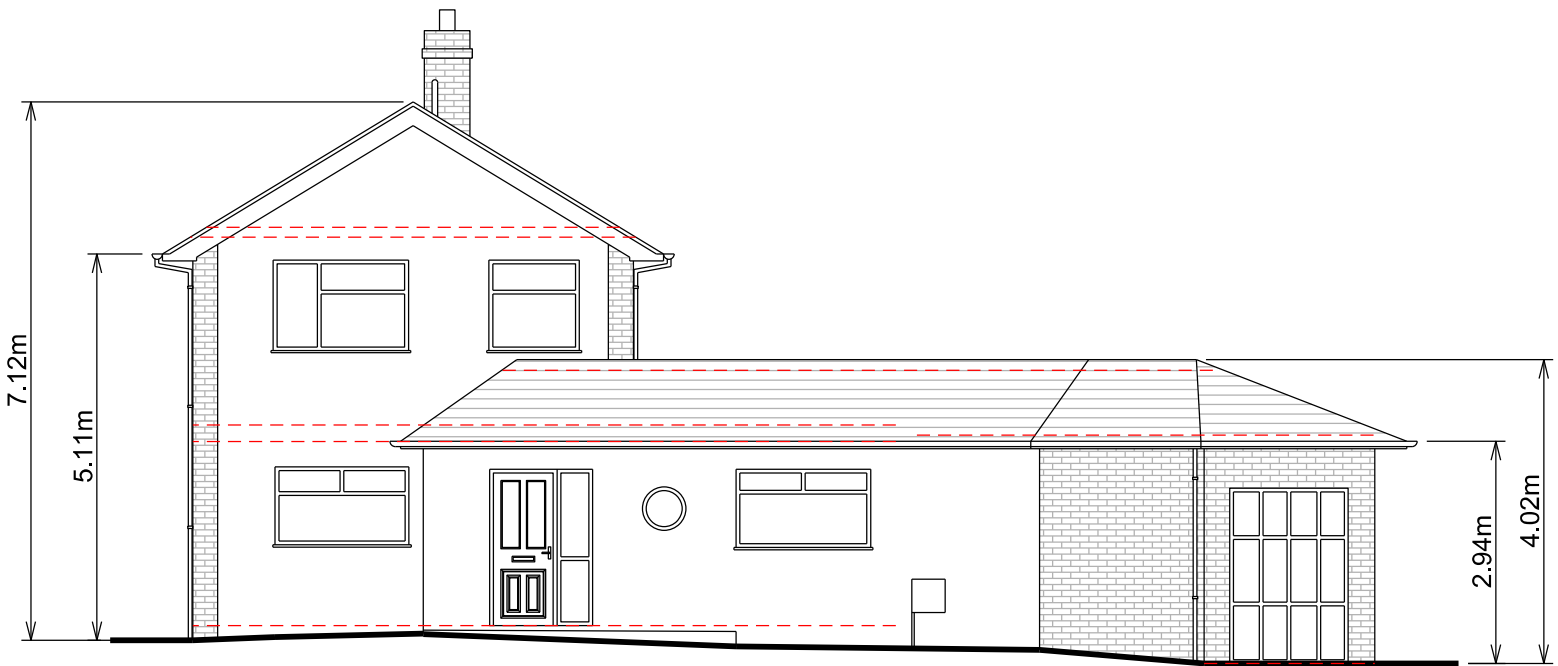
DATE

November 2020

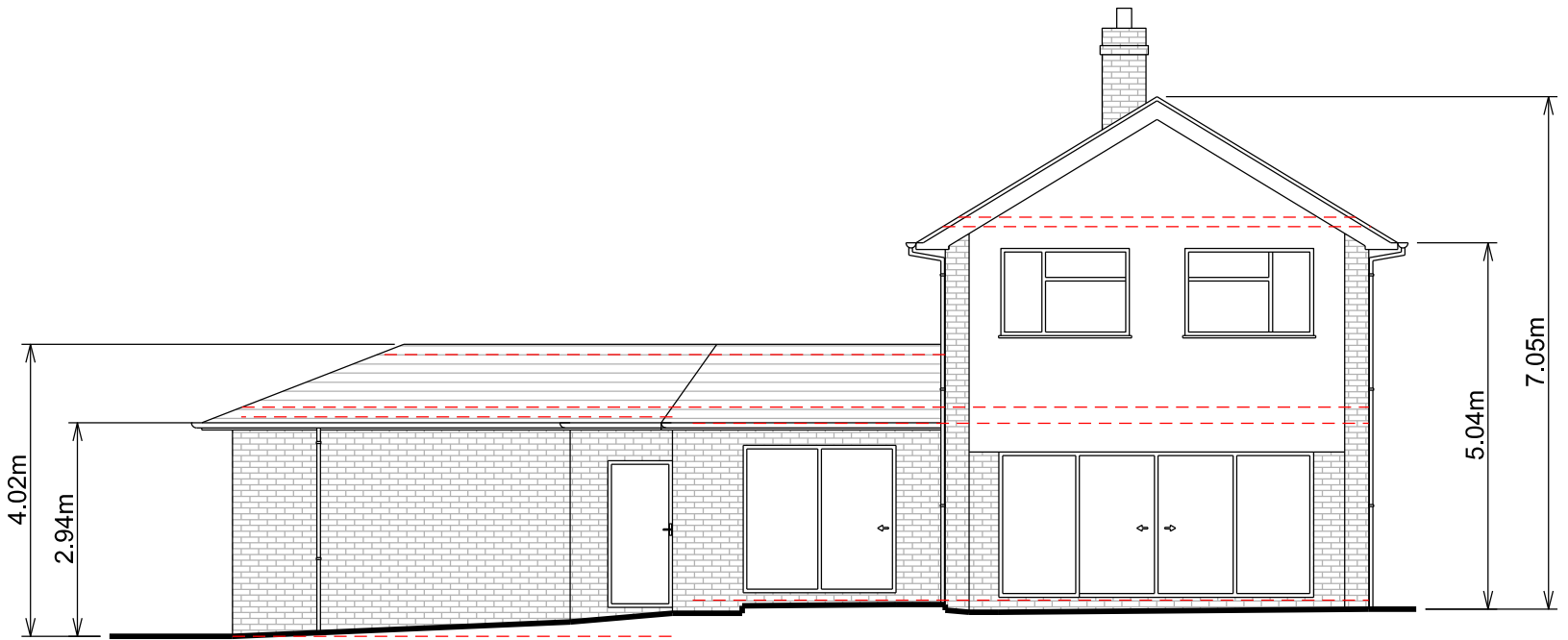
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PC

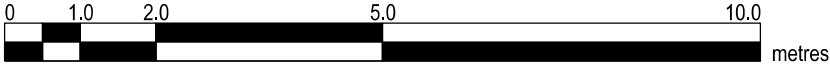
DRAWING NO. 54156 - 201



Front Elevation



Rear Elevation



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All dimensions to be cross-checked on site prior to completing a Building Regulations package, structural engineering, the party wall process and construction.

Print to scale (as actual size)

NOTES

- Existing Materials:
- Brickwork / Walls - Red brick and white painted render
- Pitched Roof - Concrete tiles
- Flat Roof - Felt
- Windows - White uPVC
- Doors - White aluminium
- RWP / Gutters / Fascia - Black uPVC downpipes, guttering and black and white painted timber fascias

Revision

Rev	Notes	Date
-	Planning Issue	09/11/2020

KEY	
	Boundary lines
	Proposed walls
	Proposed beam
	Existing walls
	Proposed drainage
	Existing removed
	1.8m head height
	Proposed rooflight
	1.5m head height

JOB TITLE

Proposed first floor side extension, garage conversion, ground floor internal alterations, floor plan redesign and all associated works at 231A Joel Street

STATUS

Planning

DRAWING TITLE

Existing Elevation and Section

CLIENT

Sujay Mansingh

SCALE

1:100 at A3

DRAWN

HD

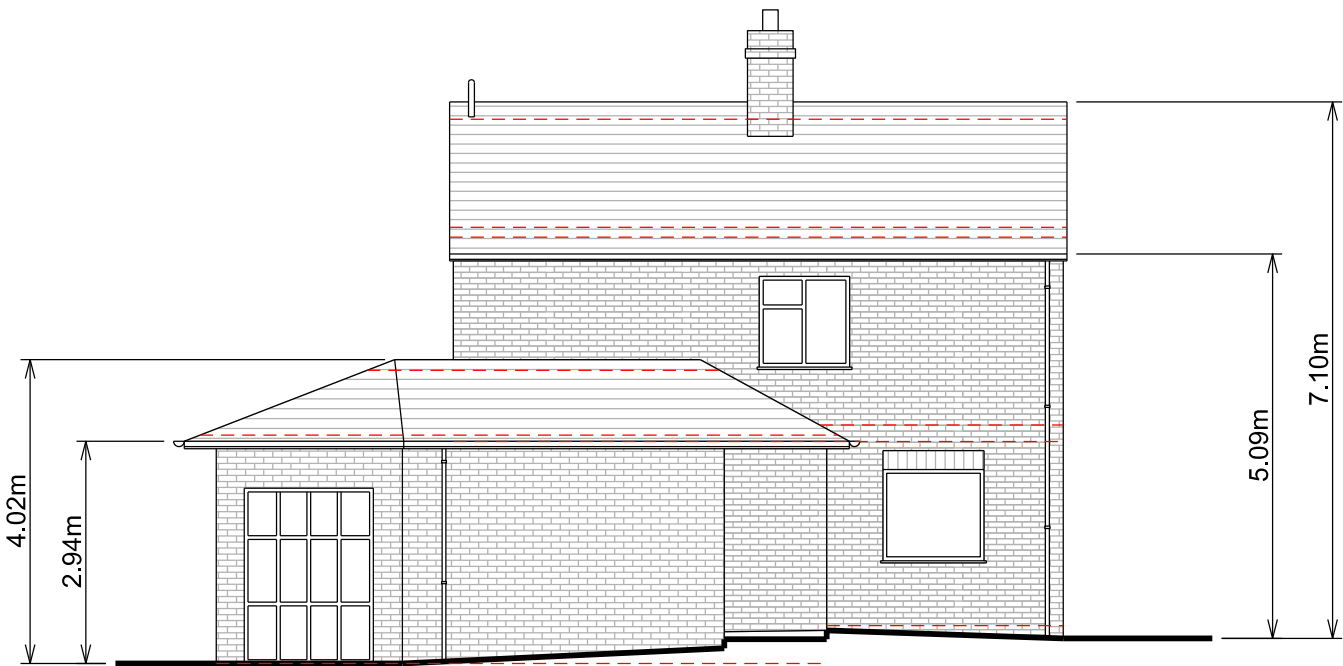
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November 2020

CHECKED

PC

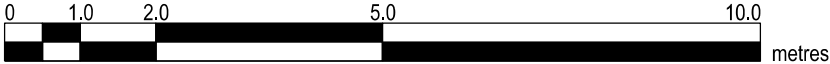
DRAWING NO. 54156 - 202



Right Side Elevation



Section A - A



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Print to scale (as actual size)

NOTES

Proposed Materials:

Brickwork / Walls - Red brick to match existing

Pitched Roof - Concrete tiles to match existing

Windows - White uPVC windows to match existing and grey aluminium rooflights

RWP / Gutters / Fascia - Black uPVC downpipes, guttering and black and white painted timber fascias, all to match existing

Revision

Rev	Notes	Date
-	Planning Issue	09/11/2020
A	Revised extension to half the width of original house	09/02/2021

KEY

	Boundary lines
	Proposed walls
	Existing walls
	Existing removed
	Proposed rooflight
	Proposed beam
	Proposed drainage
	1.8m head height
	1.5m head height

JOB TITLE

Proposed first floor side extension, garage conversion, ground floor internal alterations, floor plan redesign and all associated works at 231A Joel Street

STATUS

Planning

DRAWING TITLE

Proposed Elevations

CLIENT

Sujay Mansingh

SCALE

1:100 at A3

DRAWN

PC

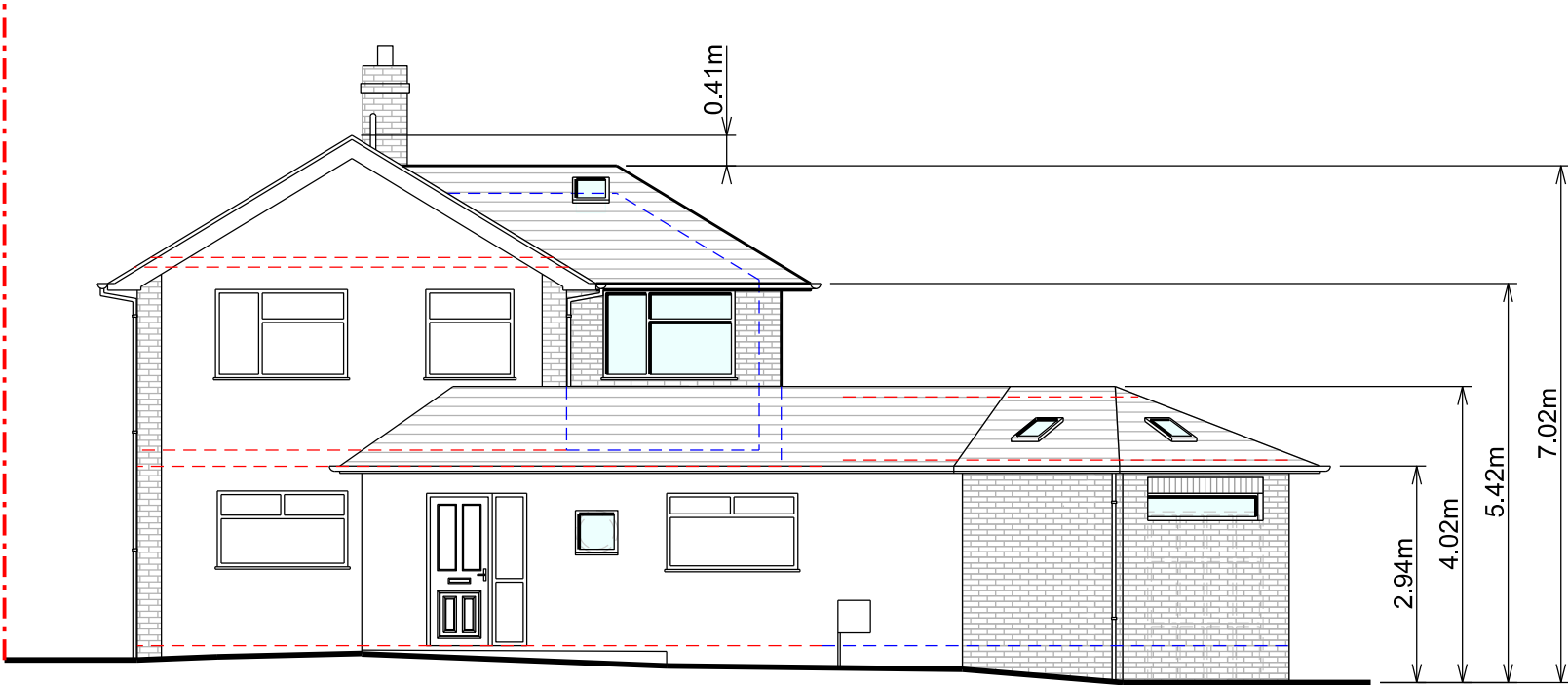
DATE

November 2020

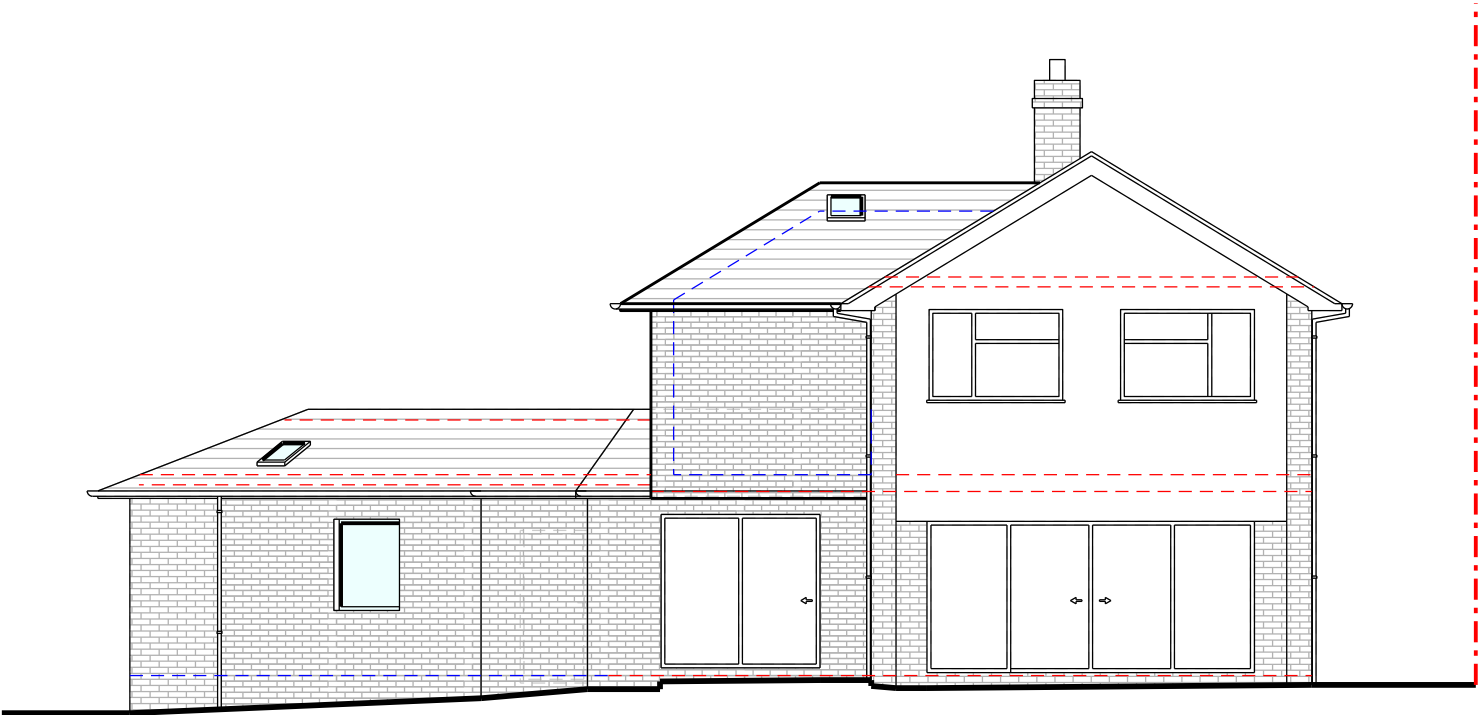
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PC

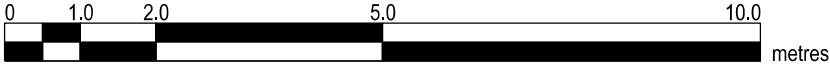
DRAWING NO. 54156 - 203 A



Front Elevation



Rear Elevation



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All dimensions to be cross-checked on site prior to completing a Building Regulations package, structural engineering, the party wall process and construction.

Print to scale (as actual size)

NOTES

Proposed Materials:

Brickwork / Walls - Red brick to match existing

Pitched Roof - Concrete tiles to match existing

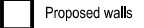
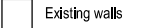
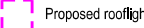
Windows - White uPVC to match existing

RWP / Gutters / Fascia - Black uPVC downpipes, guttering and black and white painted timber fascias, all to match existing

Revision

Rev	Notes	Date
-	Planning Issue	09/11/2020
A	Revised extension to half the width of original house	06/02/2021

KEY

	Boundary lines
	Proposed walls
	Proposed beam
	Existing walls
	Proposed drainage
	Existing removed
	1.8m head height
	Proposed rooflight
	1.5m head height

JOB TITLE

Proposed first floor side extension, garage conversion, ground floor internal alterations, floor plan redesign and all associated works at 231A Joel Street

STATUS

Planning

DRAWING TITLE

Proposed Elevation and Section

CLIENT

Sujay Mansingh

SCALE

1:100 at A3

DRAWN

PC

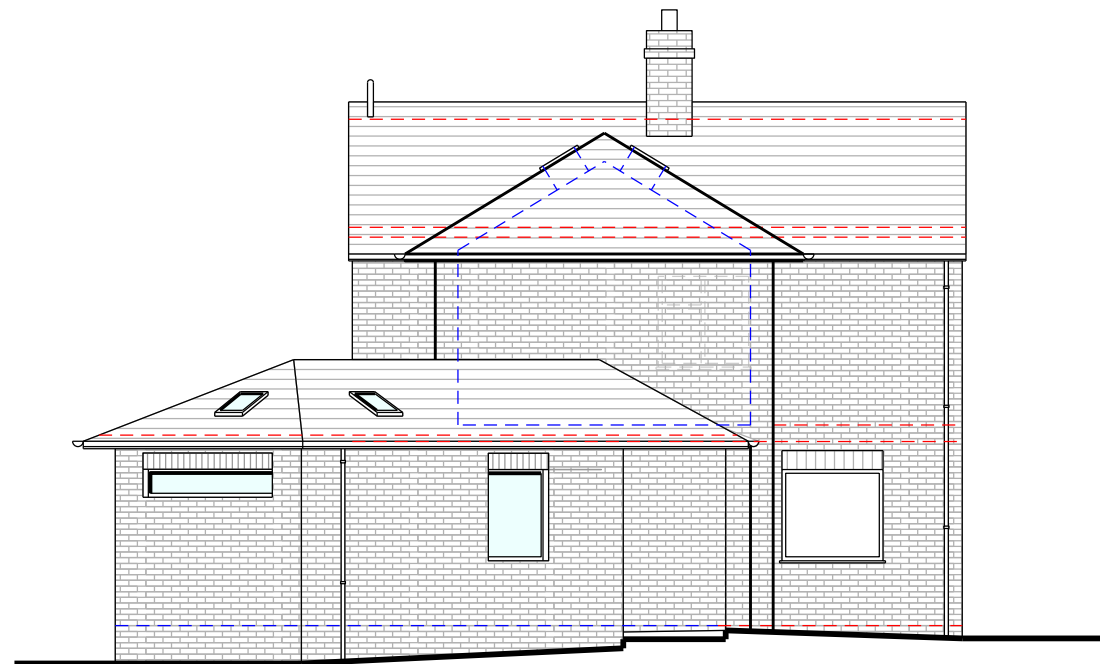
DATE

November 2020

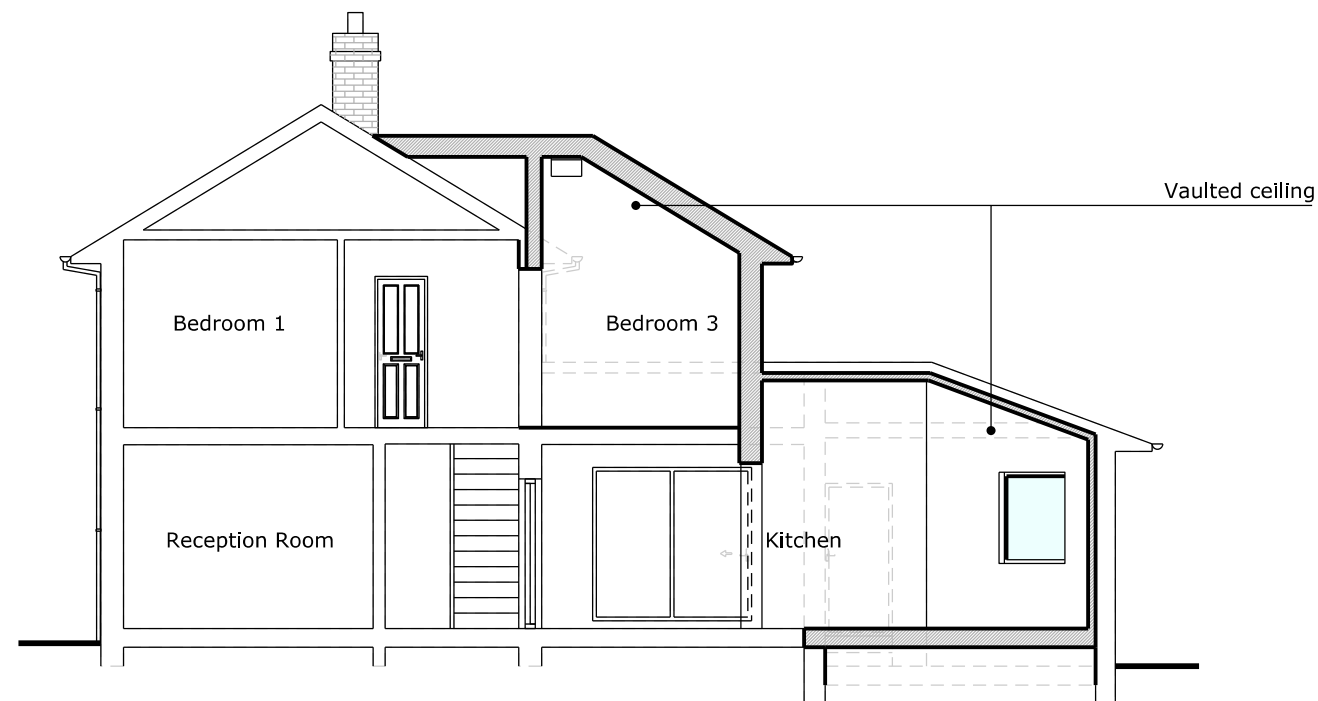
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PC

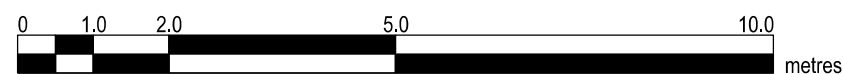
DRAWING NO. 54156 - 204 A



Right Side Elevation



Section A - A





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Print to scale (as actual size)

NOTES

Revision

Rev	Notes	Date
-	Planning Issue	09/11/2020

KEY

	Boundary lines
	Proposed walls
	Proposed beam
	Proposed drainage
	Existing walls
	Existing removed
	1.8m head height
	Proposed rooflight
	1.5m head height

JOB TITLE

Proposed first floor side extension, garage conversion, ground floor internal alterations, floor plan redesign and all associated works at 231A Joel Street

STATUS

Planning

DRAWING TITLE

Existing Block Plan

CLIENT

Sujay Mansingh

SCALE

1:200 at A3

DRAWN

HD

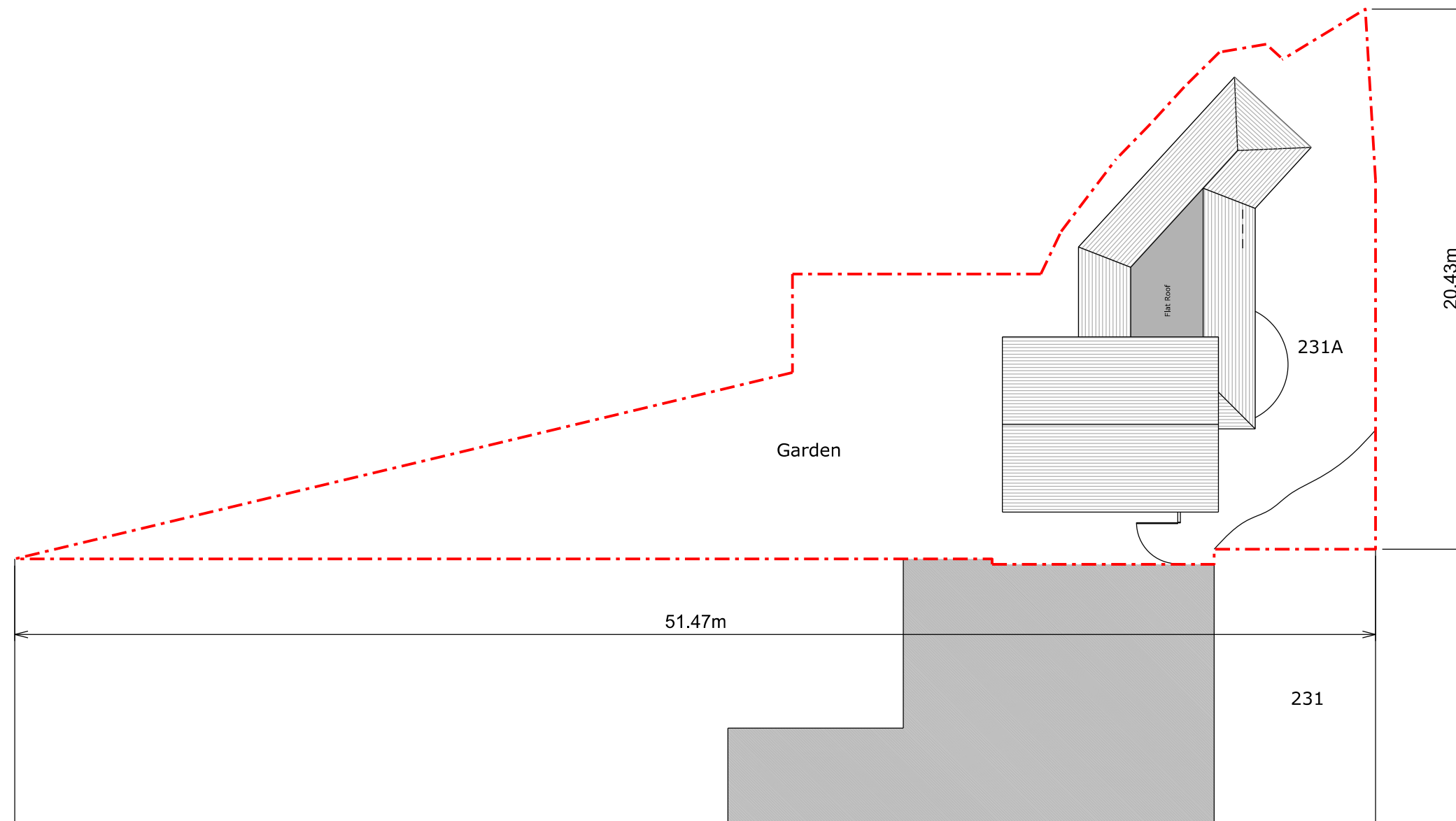
DATE

November 2020

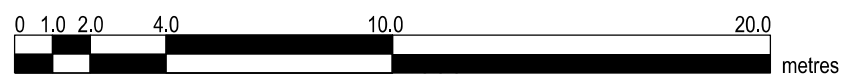
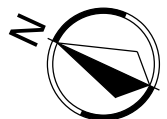
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PC

DRAWING NO. 54156 - 401



Existing Block Plan





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Print to scale (as actual size)

NOTES

Revision

Rev	Notes	Date
-	Planning Issue	09/11/2020
A	Revised extension to half the width of original house	06/02/2021

KEY	
	Boundary lines
	Proposed walls
	Existing walls
	Existing removed
	Proposed rooflight
	Proposed beam
	Proposed drainage
	1.8m head height
	1.5m head height

JOB TITLE

Proposed first floor side extension, garage conversion, ground floor internal alterations, floor plan redesign and all associated works at 231A Joel Street

STATUS

Planning

DRAWING TITLE

Proposed Block Plan

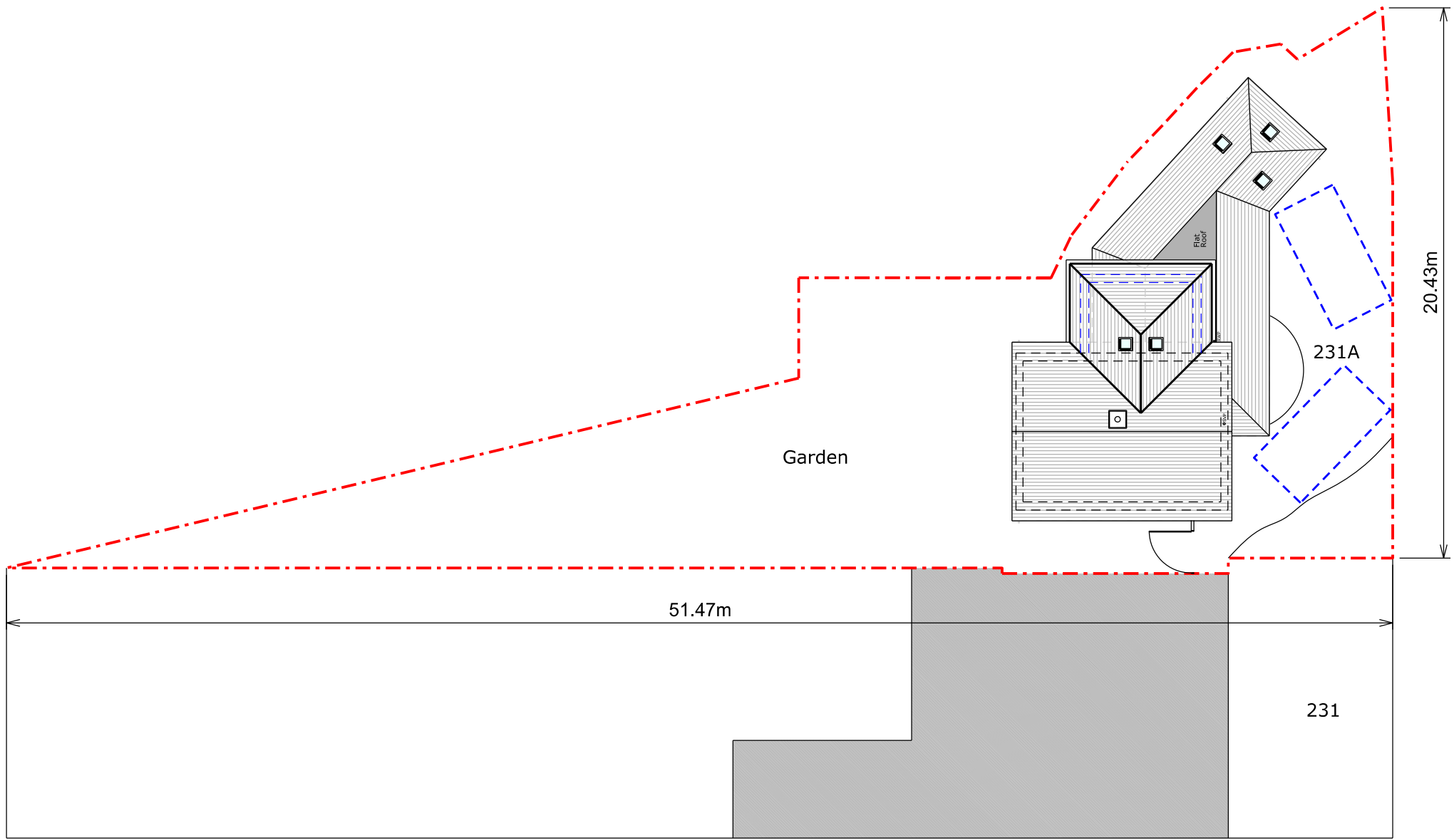
CLIENT

Sujay Mansingh

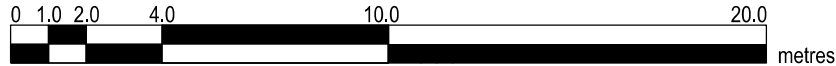
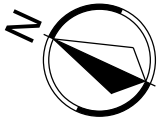
SCALE	DRAWN
1:200 at A3	HD

DATE	CHECKED
November 2020	PC

DRAWING NO. 54156 - 402 A



Proposed Block Plan

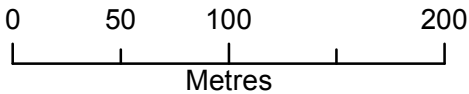


APPENDIX B – Flood Mapping

Detailed FRA centred on: 231A Joel Street, Pinner, HA5 2PJ - 11/03/2021 - HNL 207048 HH



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE



Legend

- Main Rivers
- Site location

Defended Flood Outlines

- 1 in 2 year (50%) Defended
- 1 in 5 year (20%) Defended
- 1 in 10 year (10%) Defended
- 1 in 20 year (5%) Defended

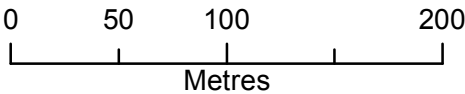
The data in this map has been extracted from the River Pinn Mapping Study (JBA, 2015). This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites within the catchment. Modelled outlines take into account catchment wide defences. Flood risk data requests including an allowance for climate change will be based on the 1 in 100 flood plus 20% allowance for climate change, unless otherwise stated. You should refer to 'Flood risk assessments: climate change allowances' to check if this allowance is still appropriate for the type of development you are proposing and its location. You may need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence. <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

Detailed FRA centred on: 231A Joel Street, Pinner, HA5 2PJ - 11/03/2021 - HNL 207048 HH



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE



Legend

- Main Rivers
- Site location

Defended Flood Outlines

- 1 in 30 year (3.33%) Defended
- 1 in 50 year (2%) Defended
- 1 in 75 year (1.33%) Defended
- 1 in 100 year (1%) Defended

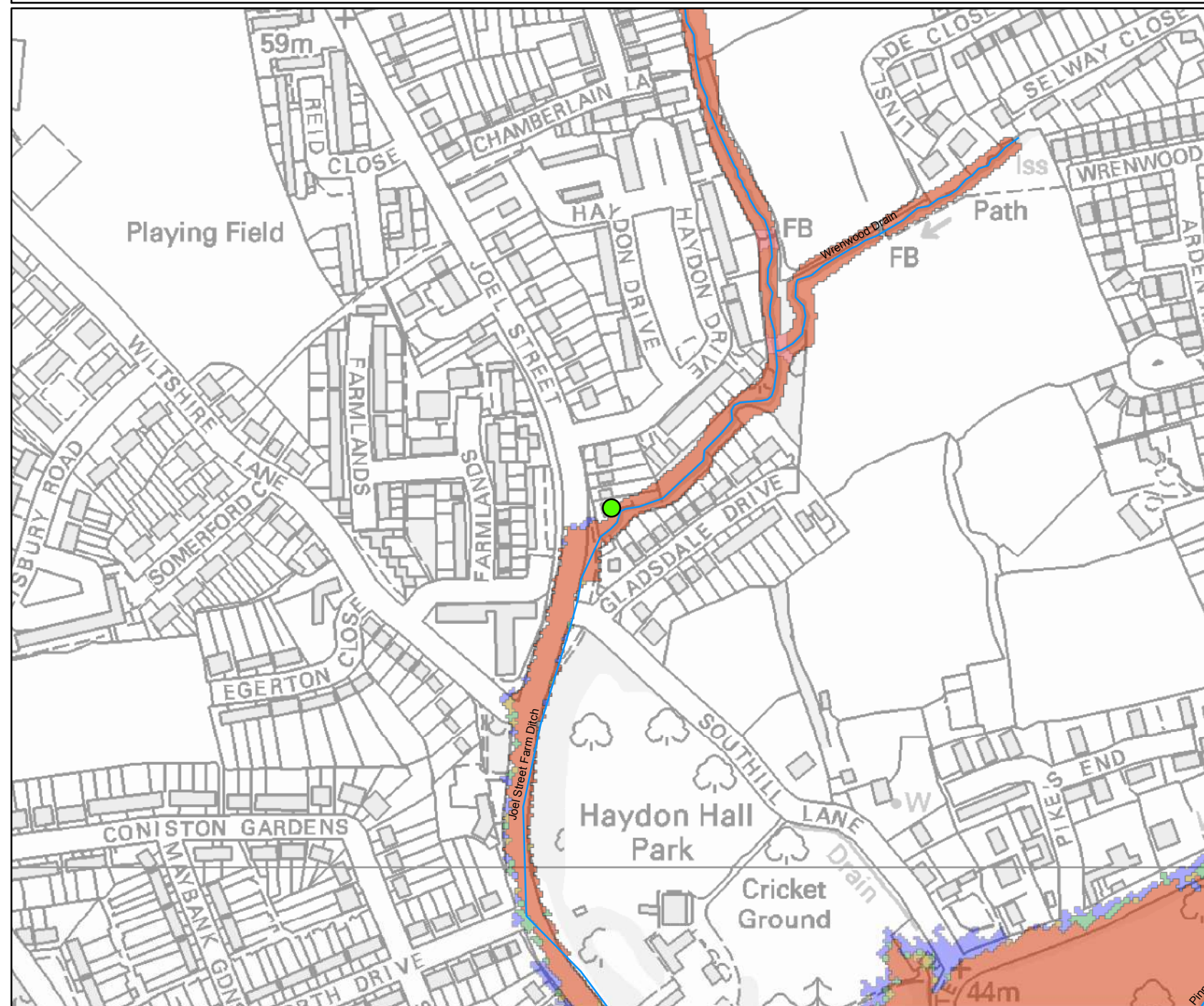
The data in this map has been extracted from the River Pinn Mapping Study (JBA, 2015). This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites within the catchment. Modelled outlines take into account catchment wide defences. Flood risk data requests including an allowance for climate change will be based on the 1 in 100 flood plus 20% allowance for climate change, unless otherwise stated. You should refer to 'Flood risk assessments: climate change allowances' to check if this allowance is still appropriate for the type of development you are proposing and its location. You may need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence. <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

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Detailed FRA centred on: 231A Joel Street, Pinner, HA5 2PJ - 11/03/2021 - HNL 207048 HH



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE



Legend

-  Main Rivers
 Site location

Defended Flood Outlines

-  1 in 100 year + 20% (*CC) Defended
 1 in 100 year + 25% (*CC) Defended
 1 in 100 year + 35% (*CC) Defended
 1 in 100 year + 70% (*CC) Defended

The data in this map has been extracted from the River Pinn Mapping Study (JBA, 2015). This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites within the catchment.

Modelled outlines take into account catchment wide defences.

Flood risk data requests including an allowance for climate change will be based on the 1 in 100 flood plus 20% allowance for climate change, unless otherwise stated. You should refer to 'Flood risk assessments: climate change allowances' to check if this allowance is still appropriate for the type of development you are proposing and its location. You may need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.

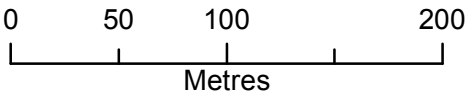
<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

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Detailed FRA centred on: 231A Joel Street, Pinner, HA5 2PJ - 11/03/2021 - HNL 207048 HH



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE



Legend

- Main Rivers
- Site location

Defended Flood Outlines

- 1 in 250 year (0.4%) Defended
- 1 in 1000 year (0.1%) Defended

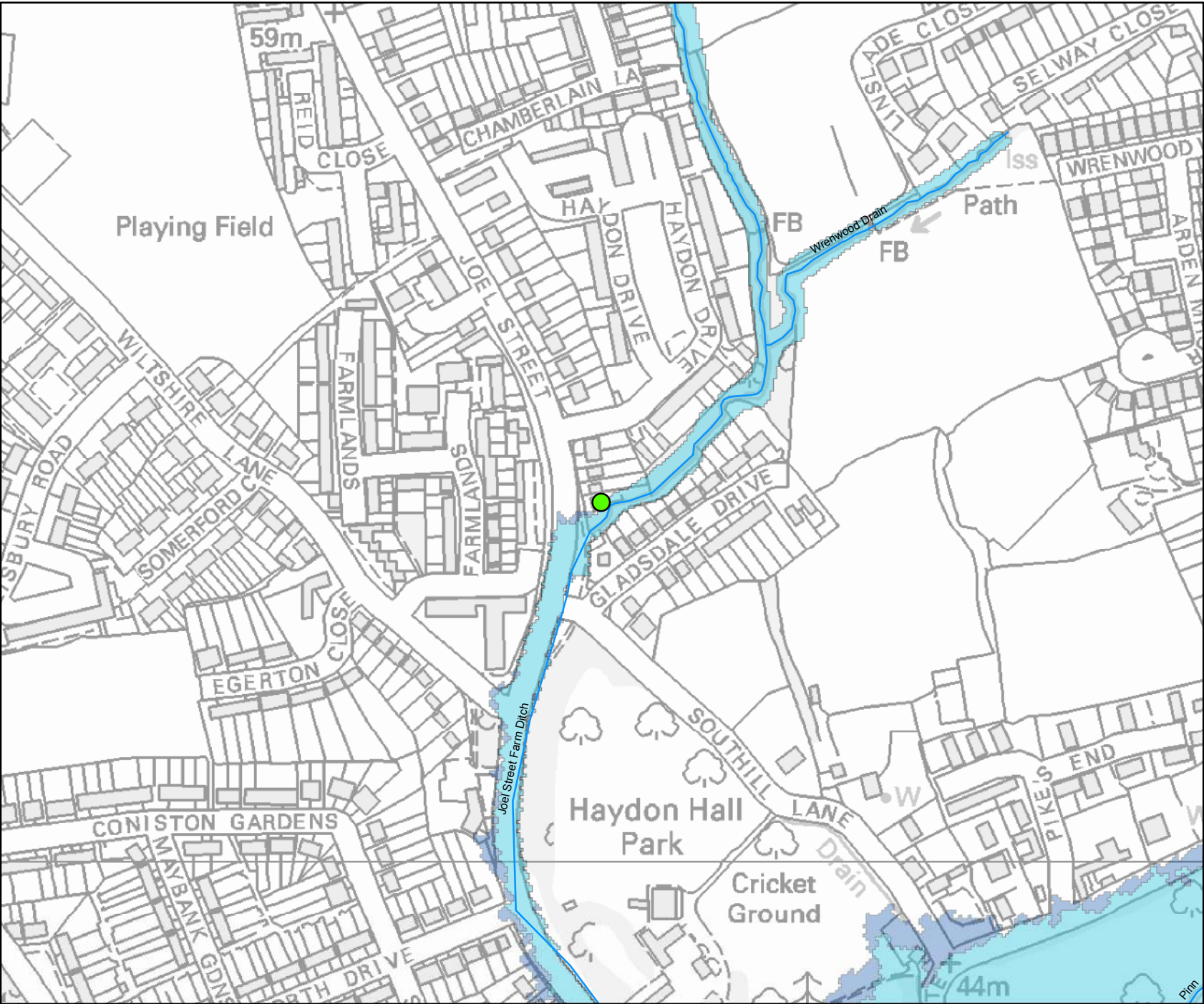
The data in this map has been extracted from the River Pinn Mapping Study (JBA, 2015). This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites within the catchment.

Modelled outlines take into account catchment wide defences.

Flood risk data requests including an allowance for climate change will be based on the 1 in 100 flood plus 20% allowance for climate change, unless otherwise stated. You should refer to 'Flood risk assessments: climate change allowances' to check if this allowance is still appropriate for the type of development you are proposing and its location. You may need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.

<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

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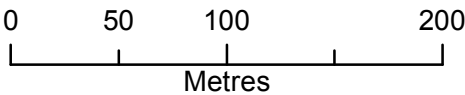


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Detailed FRA centred on: 231A Joel Street, Pinner, HA5 2PJ - 11/03/2021 - HNL 207048 HH



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE



Legend

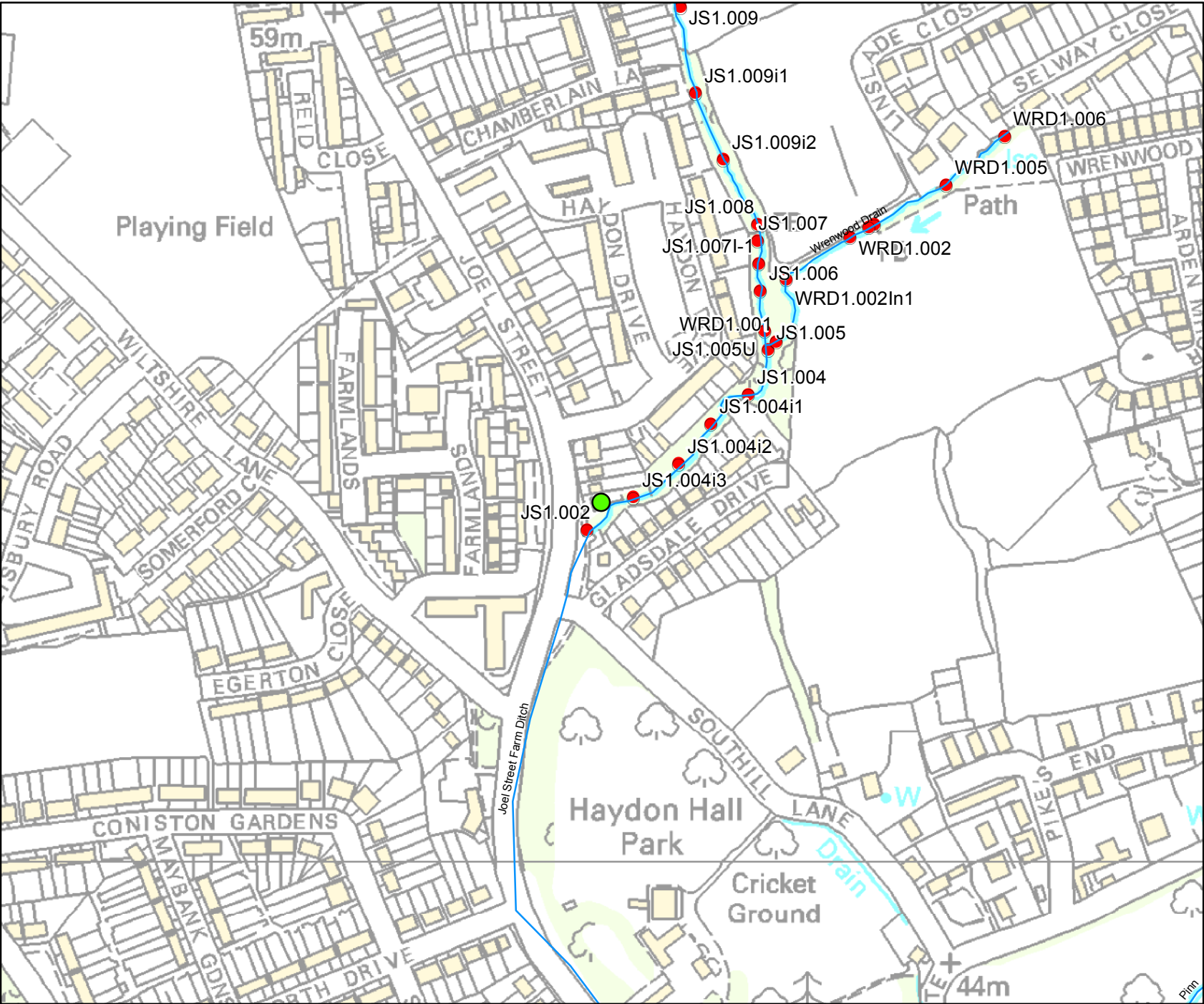
- Main Rivers
- Site location

1D Node Results

- Nodes

The data in this map has been extracted from the River Pinn Mapping Study (JBA, 2015). This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites within the catchment. Modelled outlines take into account catchment wide defences. Flood risk data requests including an allowance for climate change will be based on the 1 in 100 flood plus 20% allowance for climate change, unless otherwise stated. You should refer to 'Flood risk assessments: climate change allowances' to check if this allowance is still appropriate for the type of development you are proposing and its location. You may need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence. <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

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Environment Agency ref: HNL 207048 HH

The following information has been extracted from the River Pinn Mapping Study (JBA, 2015)

Flood risk data requests including an allowance for climate change will be based on the 1 in 100 flood plus 20% allowance for climate change, unless otherwise stated. You should refer to 'Flood risk assessments: climate change allowances' to check if this allowance is still appropriate for the type of development you are proposing and its location. You may need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.

<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

Caution:

This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites across the entire catchment.

All flood levels are given in metres Above Ordnance Datum (mAOD)

All flows are given in cubic metres per second (cumecs)

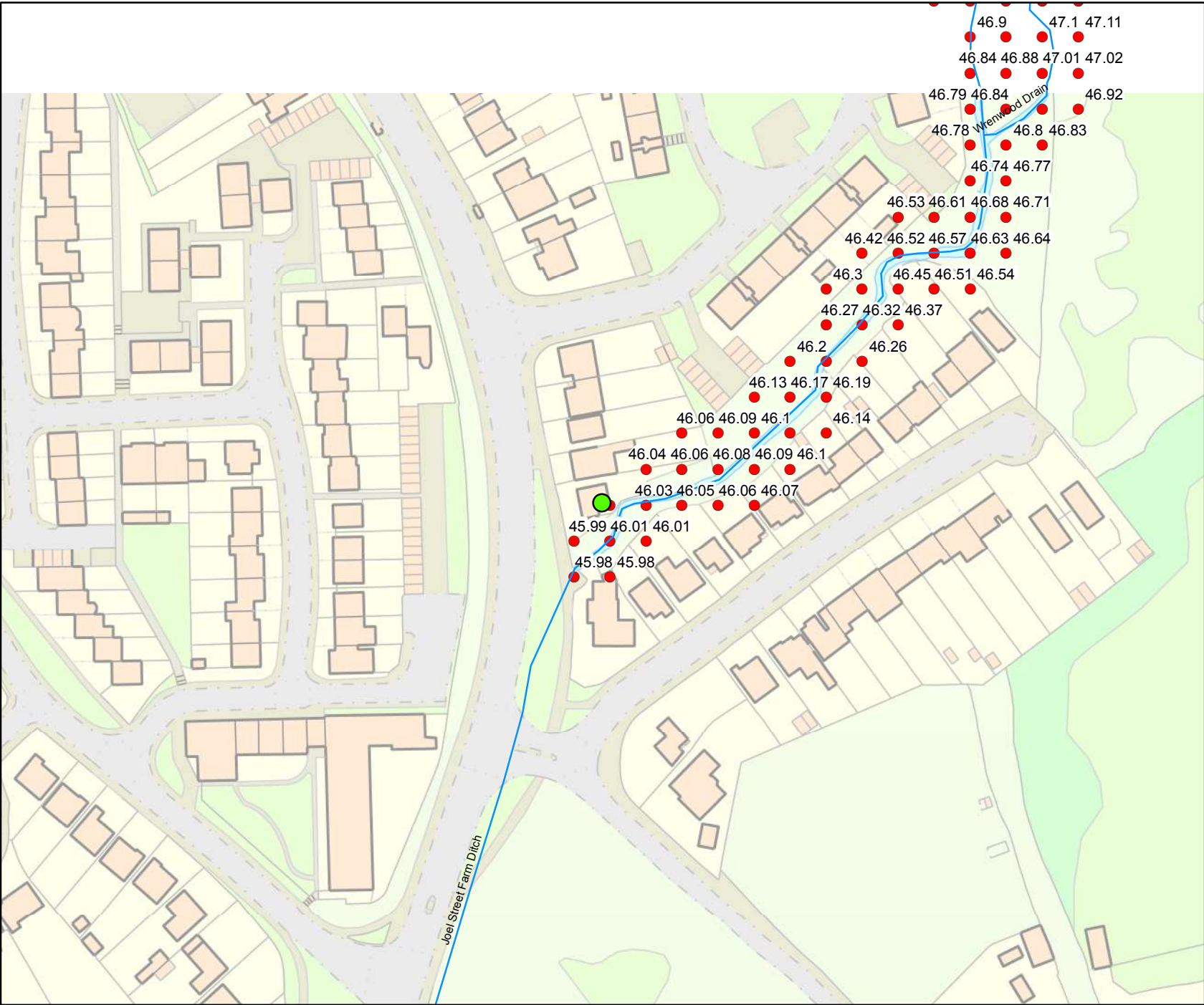
MODELLED FLOOD LEVEL

Node Label	Easting	Northing	Return Period													
			2 yr	5 yr	10 yr	20 yr	30 yr	50 yr	75 yr	100 yr	100yr + 20%	100yr + 25%	100yr + 35%	100yr + 70%	250 yr	1000yr
JS1.009	510518	189552	48.60	48.67	48.72	48.77	48.80	48.85	48.89	48.92	49.03	49.06	49.12	49.25	49.08	49.34
JS1.009i1	510528	189497	48.25	48.33	48.39	48.46	48.51	48.57	48.63	48.67	48.86	48.92	49.00	49.15	48.95	49.24
JS1.009i2	510545	189454	47.96	48.07	48.17	48.27	48.34	48.42	48.49	48.55	48.79	48.86	48.95	49.10	48.90	49.20
JS1.008	510568	189412	47.82	47.97	48.08	48.20	48.27	48.35	48.43	48.49	48.77	48.83	48.94	49.09	48.88	49.18
JS1.007	510568	189401	47.54	47.60	47.64	47.68	47.69	47.75	47.79	47.81	47.88	47.90	47.93	48.02	47.91	48.09
JS1.007I-1	510569	189386	47.20	47.25	47.29	47.36	47.50	47.60	47.65	47.68	47.76	47.78	47.81	47.91	47.79	47.97
JS1.006	510569	189369	46.92	46.99	47.05	47.23	47.45	47.57	47.62	47.66	47.74	47.76	47.79	47.89	47.77	47.95
JS1.005U	510572	189342	46.78	46.85	46.92	47.20	47.44	47.56	47.61	47.65	47.73	47.75	47.78	47.88	47.76	47.94
JS1.005	510574	189330	46.78	46.85	46.92	47.20	47.44	47.56	47.61	47.65	47.73	47.75	47.78	47.88	47.76	47.94
JS1.004	510562	189301	46.55	46.64	46.81	47.17	47.43	47.55	47.60	47.63	47.71	47.73	47.76	47.86	47.74	47.91
JS1.004i1	510537	189282	46.27	46.47	46.75	47.15	47.42	47.54	47.59	47.62	47.70	47.71	47.74	47.84	47.72	47.88
JS1.004i2	510517	189256	46.11	46.40	46.72	47.14	47.41	47.53	47.58	47.61	47.68	47.70	47.73	47.82	47.71	47.86
JS1.004i3	510487	189235	46.04	46.36	46.70	47.13	47.40	47.52	47.57	47.60	47.67	47.68	47.71	47.79	47.69	47.82
JS1.002	510457	189214	45.97	46.30	46.65	47.09	47.37	47.49	47.53	47.56	47.62	47.64	47.67	47.76	47.65	47.80
WRD1.006	510728	189469	49.77	49.86	49.92	49.98	50.02	50.08	50.12	50.16	50.24	50.26	50.30	50.42	50.27	50.48
WRD1.005	510690	189437	48.56	48.69	48.77	48.83	48.86	48.90	48.94	48.97	49.06	49.08	49.12	49.23	49.09	49.28
WRD1.004	510643	189411	48.20	48.23	48.25	48.29	48.32	48.36	48.39	48.41	48.47	48.48	48.51	48.60	48.49	48.64
WRD1.003	510640	189410	48.13	48.18	48.22	48.26	48.29	48.33	48.37	48.39	48.44	48.46	48.48	48.57	48.46	48.61
WRD1.002	510627	189403	47.88	47.93	47.98	48.01	48.02	48.05	48.09	48.11	48.18	48.19	48.22	48.30	48.20	48.34
WRD1.002In1	510586	189376	47.20	47.25	47.29	47.38	47.51	47.62	47.66	47.70	47.77	47.79	47.82	47.92	47.80	47.97
WRD1.001	510580	189336	46.78	46.85	46.92	47.20	47.44	47.56	47.61	47.65	47.73	47.75	47.78	47.88	47.76	47.94

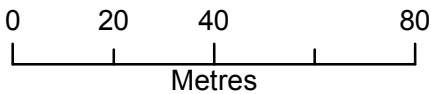
MODELLED FLOWS

Node Label	Easting	Northing	Return Period								100yr+20%	100yr+25%	100yr+35%	100yr+70%	250 yr	1000yr
			2 yr	5 yr	10 yr	20 yr	30 yr	50 yr	75 yr	100 yr						
JS1.009	510518	189552	0.63	0.86	1.06	1.27	1.42	1.63	1.81	1.96	2.35	2.45	2.63	3.31	2.52	3.94
JS1.009i1	510528	189497	0.63	0.86	1.06	1.27	1.42	1.63	1.81	1.96	2.35	2.45	2.63	3.31	2.52	3.94
JS1.009i2	510545	189454	0.63	0.86	1.06	1.27	1.42	1.63	1.81	1.95	2.35	2.44	2.63	3.31	2.51	3.94
JS1.008	510568	189412	0.63	0.86	1.06	1.28	1.42	1.63	1.81	1.95	2.34	2.44	2.63	3.31	2.51	3.94
JS1.007	510568	189401	0.63	0.86	1.06	1.28	1.42	1.63	1.81	1.95	2.34	2.44	2.63	3.31	2.51	3.94
JS1.007i-1	510569	189386	0.74	1.01	1.23	1.49	1.65	1.90	2.11	2.28	2.74	2.85	3.08	3.86	2.94	4.66
JS1.006	510569	189369	0.74	1.01	1.23	1.48	1.63	1.90	2.12	2.28	2.74	2.85	3.08	3.87	2.94	4.66
JS1.005U	510572	189342	0.74	1.01	1.23	1.47	1.62	1.90	2.12	2.29	2.74	2.86	3.08	3.87	2.94	4.66
JS1.005	510574	189330	1.17	1.60	1.96	2.33	2.55	3.00	3.35	3.62	4.34	4.52	4.89	6.16	4.65	6.93
JS1.004	510562	189301	1.17	1.60	1.95	2.32	2.53	3.00	3.35	3.62	4.34	4.52	4.89	6.16	4.65	6.93
JS1.004i1	510537	189282	1.28	1.74	2.13	2.52	2.76	3.27	3.65	3.94	4.73	4.93	5.33	6.71	5.08	7.63
JS1.004i2	510517	189256	1.28	1.74	2.12	2.52	2.75	3.27	3.65	3.95	4.73	4.93	5.33	6.71	5.08	7.63
JS1.004i3	510487	189235	1.28	1.74	2.12	2.52	2.75	3.27	3.65	3.95	4.73	4.93	5.33	6.71	5.08	7.63
JS1.002	510457	189214	1.28	1.74	2.12	2.52	2.75	3.26	3.61	3.84	4.41	4.53	4.75	5.33	4.61	5.62
WRD1.006	510728	189469	0.40	0.54	0.66	0.80	0.89	1.02	1.13	1.22	1.47	1.53	1.65	2.08	1.57	2.30
WRD1.005	510690	189437	0.40	0.54	0.66	0.80	0.89	1.02	1.13	1.22	1.47	1.53	1.65	2.08	1.57	2.30
WRD1.004	510643	189411	0.40	0.54	0.66	0.80	0.89	1.02	1.13	1.22	1.47	1.53	1.65	2.08	1.57	2.30
WRD1.003	510640	189410	0.40	0.54	0.66	0.80	0.89	1.02	1.13	1.22	1.47	1.53	1.65	2.08	1.57	2.30
WRD1.002	510627	189403	0.40	0.54	0.66	0.80	0.89	1.02	1.13	1.22	1.47	1.53	1.65	2.08	1.57	2.30
WRD1.002In1	510586	189376	0.40	0.54	0.66	0.80	0.89	1.01	1.13	1.22	1.47	1.53	1.65	2.08	1.57	2.30
WRD1.001	510580	189336	0.40	0.54	0.66	0.78	0.85	1.00	1.12	1.21	1.46	1.52	1.64	2.07	1.56	2.29

Detailed FRA centred on: 231A Joel Street, Pinner, HA5 2PJ - 11/03/2021 - HNL 207048 HH



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Legend

- Main Rivers
- Site location

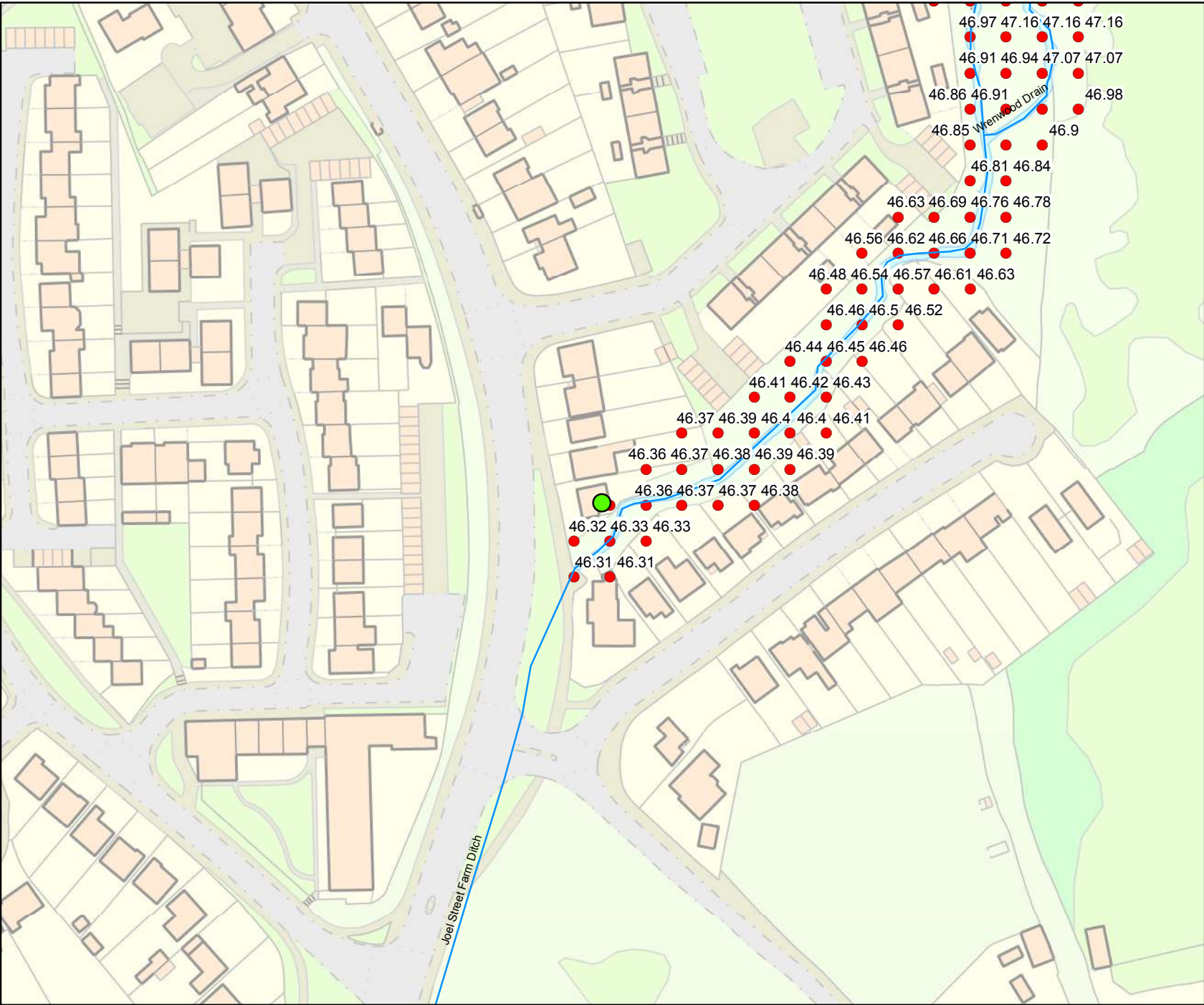
2D Node Results: Heights

- 1 in 2 year (50%) Defended

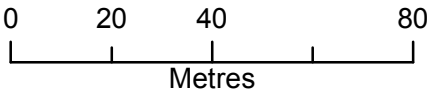
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Legend

- Main Rivers
- Site location

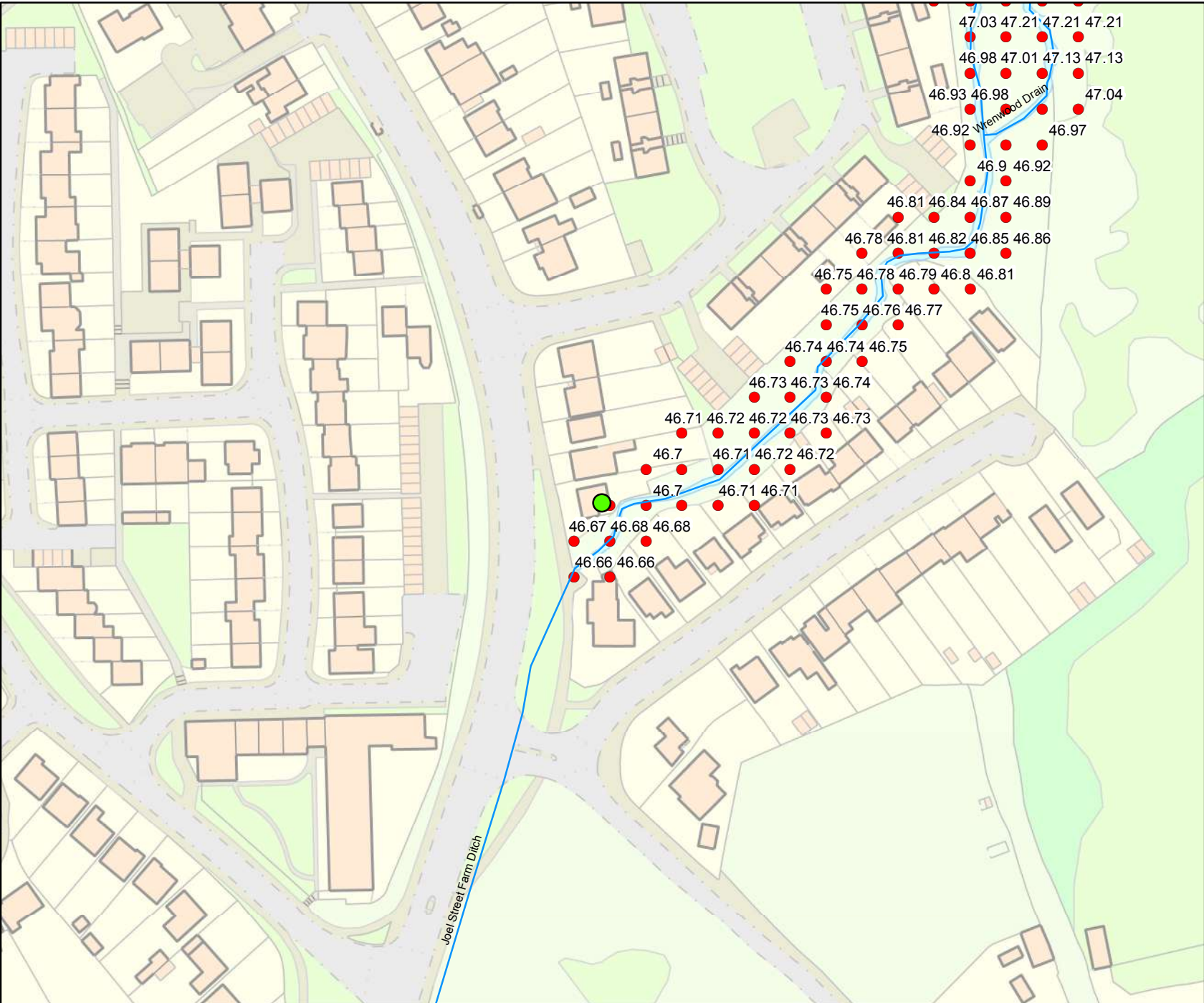
2D Node Results: Heights

- 1 in 5 year (20%) Defended

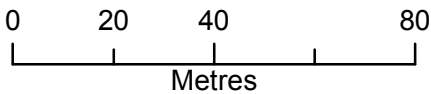
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Legend

- Main Rivers
- Site location

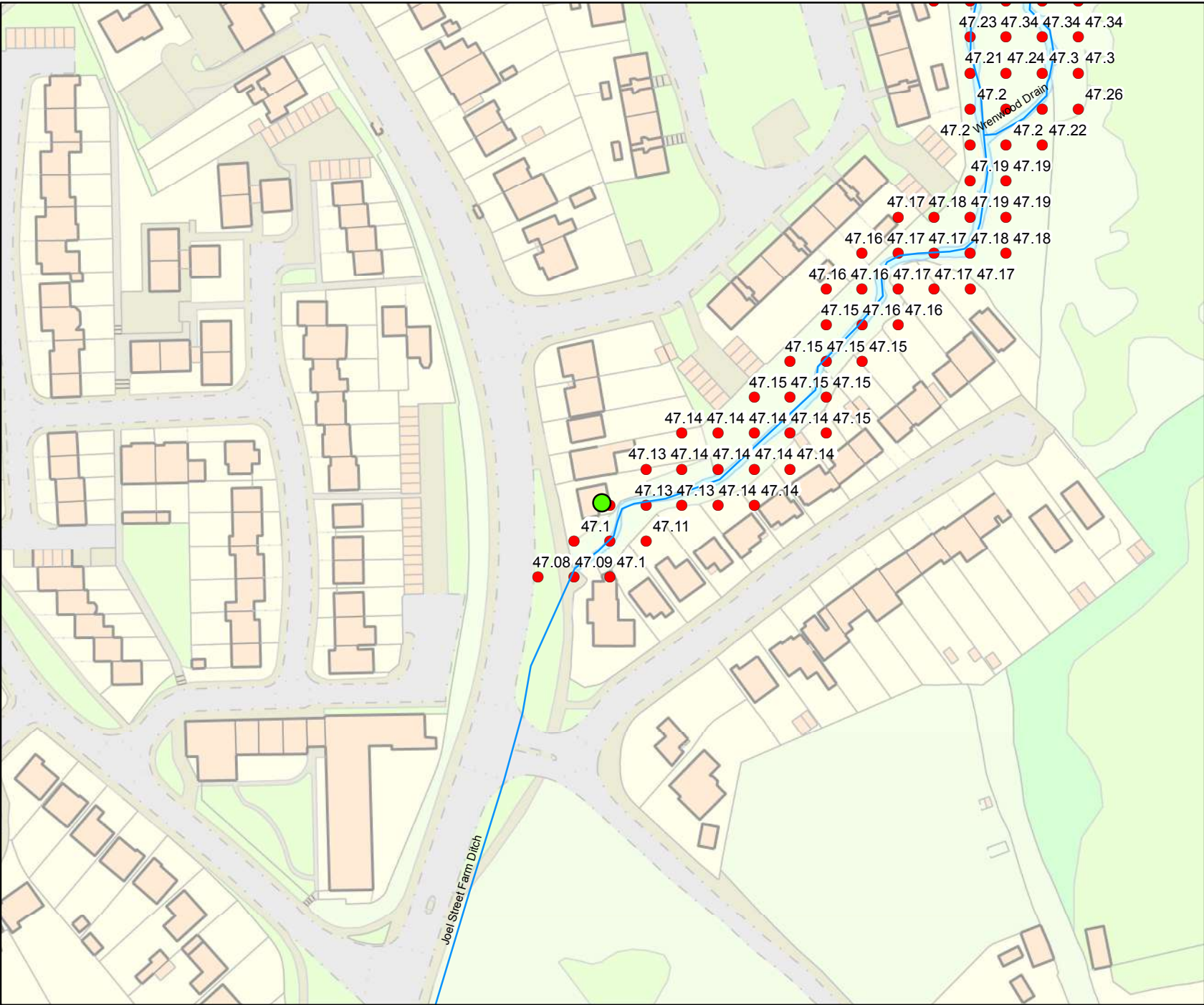
2D Node Results: Heights

- 1 in 10 year (10%) Defended

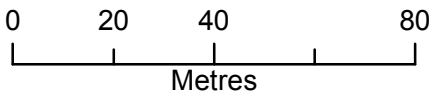
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Legend

- Main Rivers
- Site location

2D Node Results: Heights

- 1 in 20 year (5%) Defended

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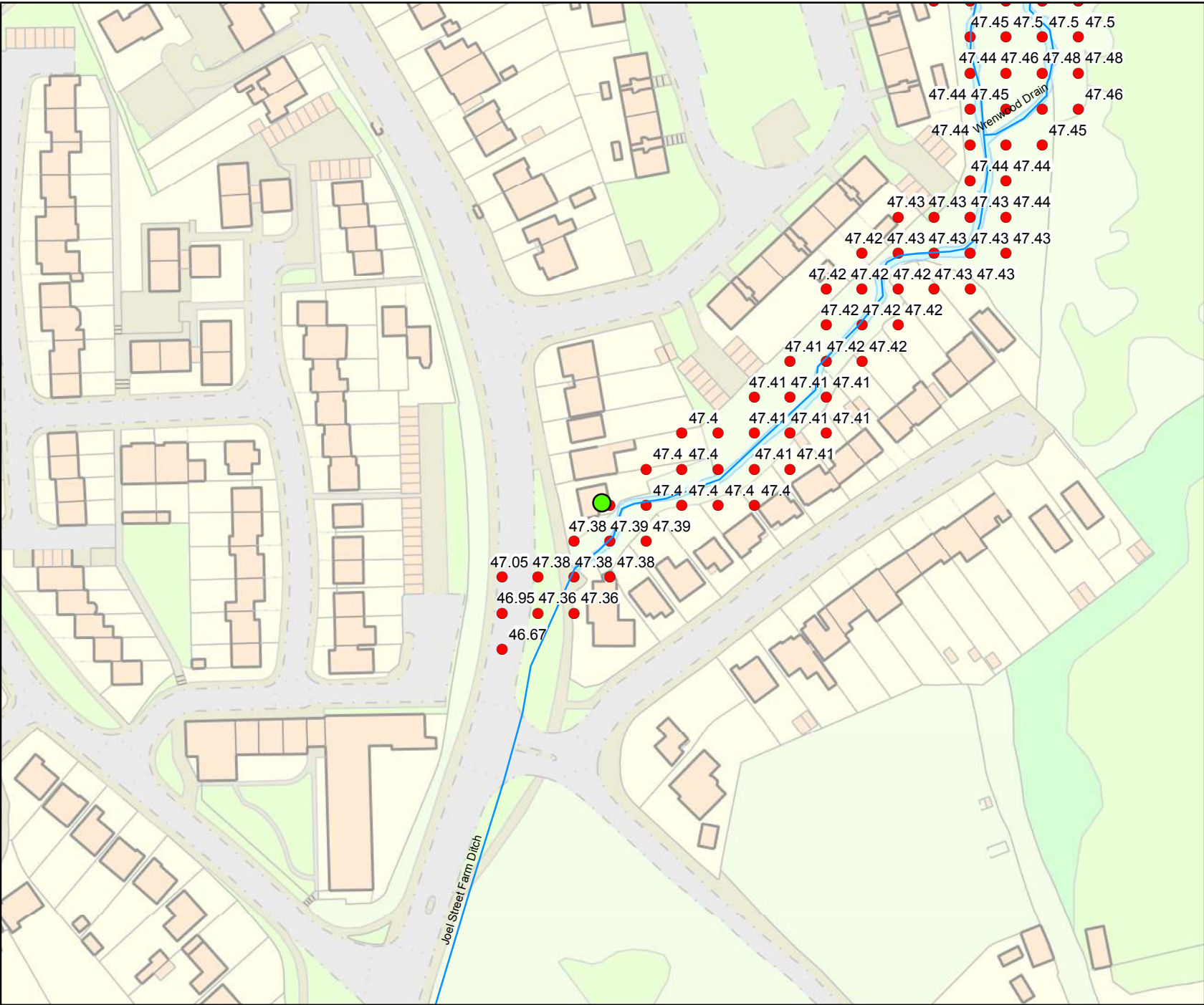
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Modelled outlines take into account catchment wide defences.

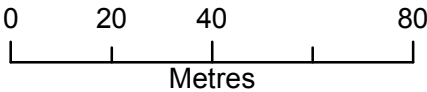
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Legend

- Main Rivers
- Site location

2D Node Results: Heights

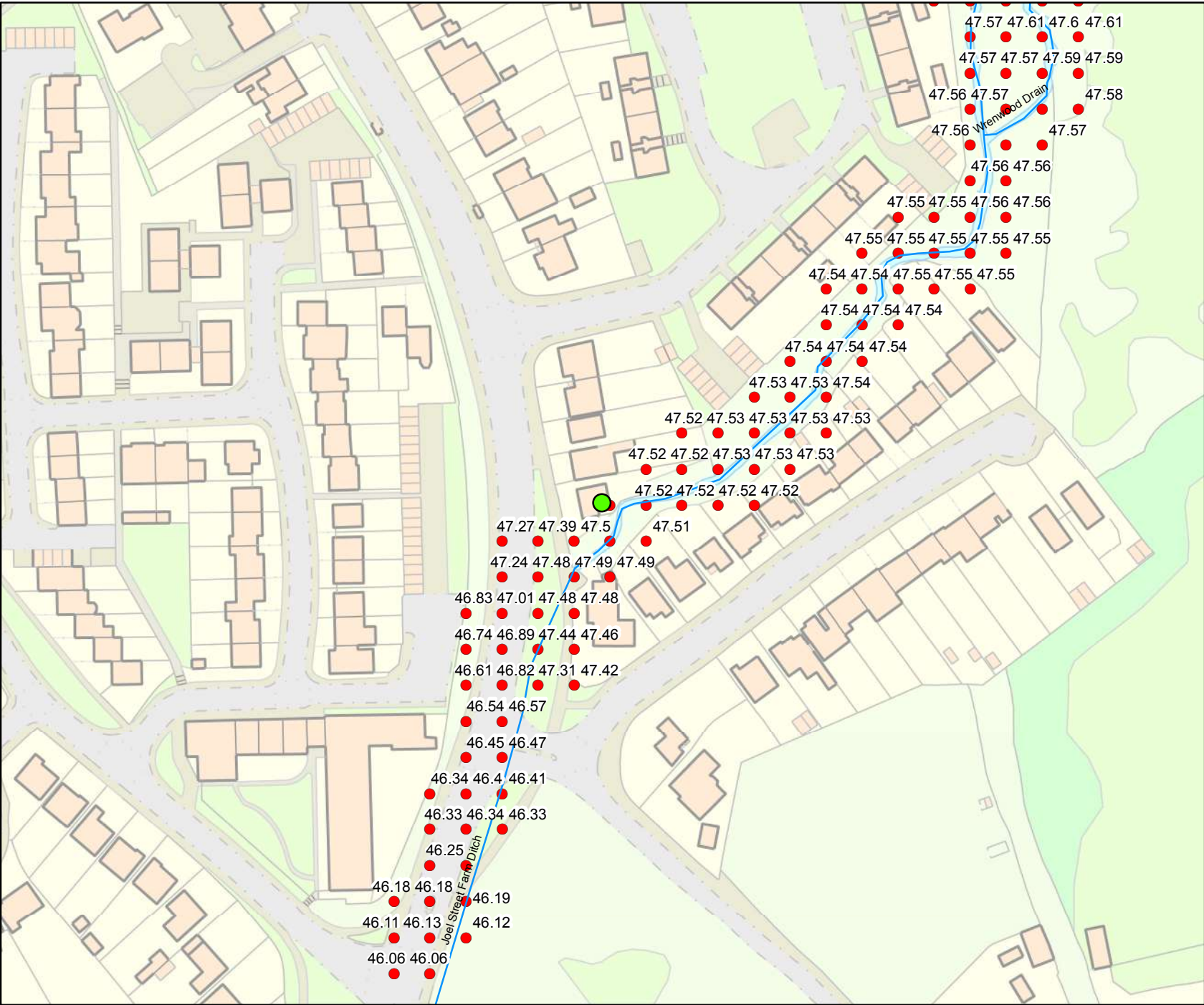
- 1 in 30 year (3.33%) Defended

The data in this map has been extracted from the River Pinn Mapping Study (JBA, 2015). This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites within the catchment. Modelled outlines take into account catchment wide defences.

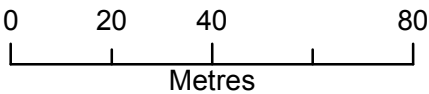
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Legend

- Main Rivers
- Site location

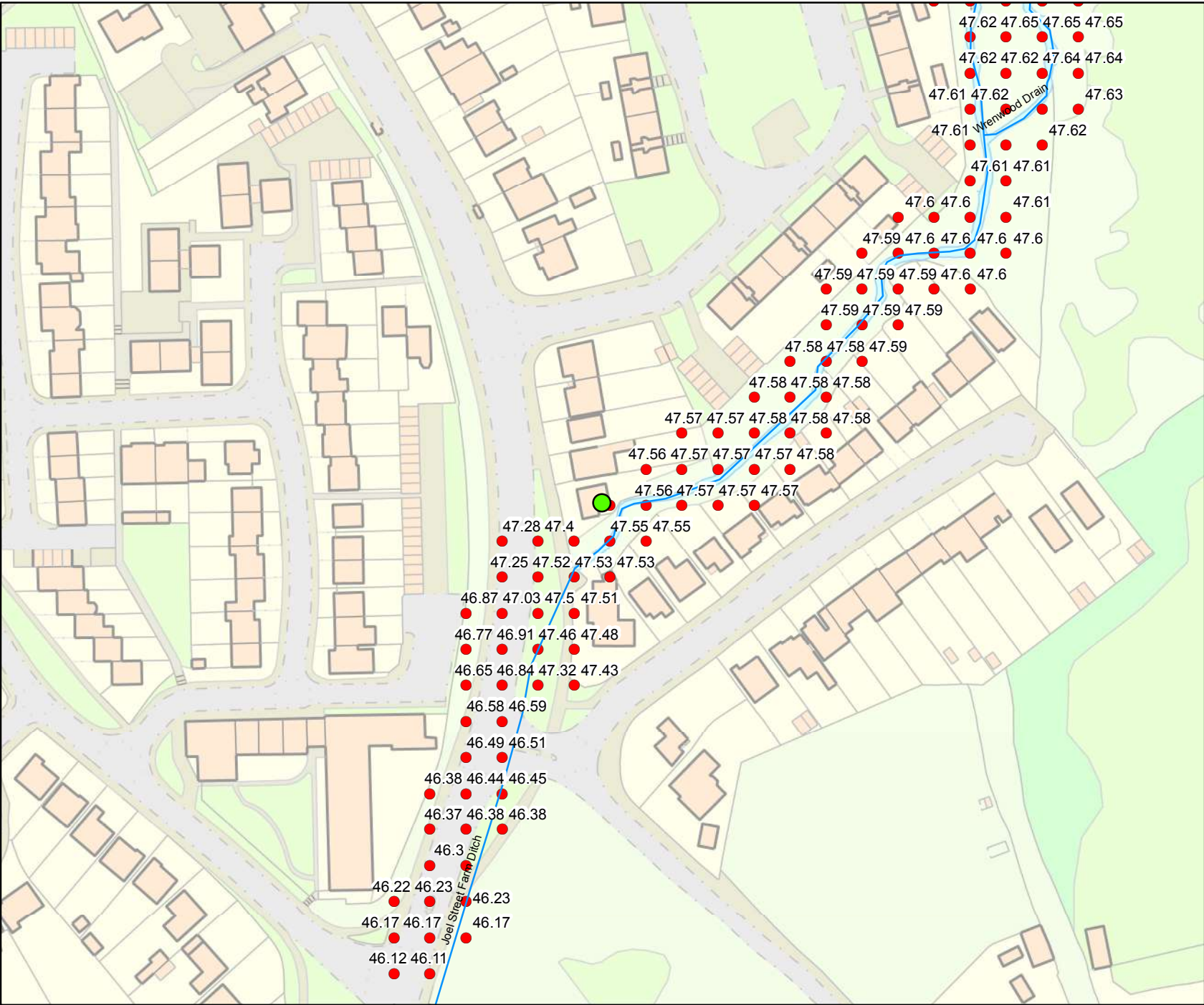
2D Node Results: Heights

- 1 in 50 year (2%) Defended

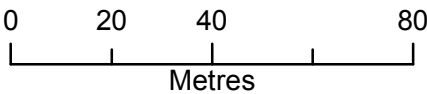
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Legend

- Main Rivers
- Site location

2D Node Results: Heights

- 1 in 75 year (1.33%) Defended

The data in this map has been extracted from the River Pinn Mapping Study (JBA, 2015).

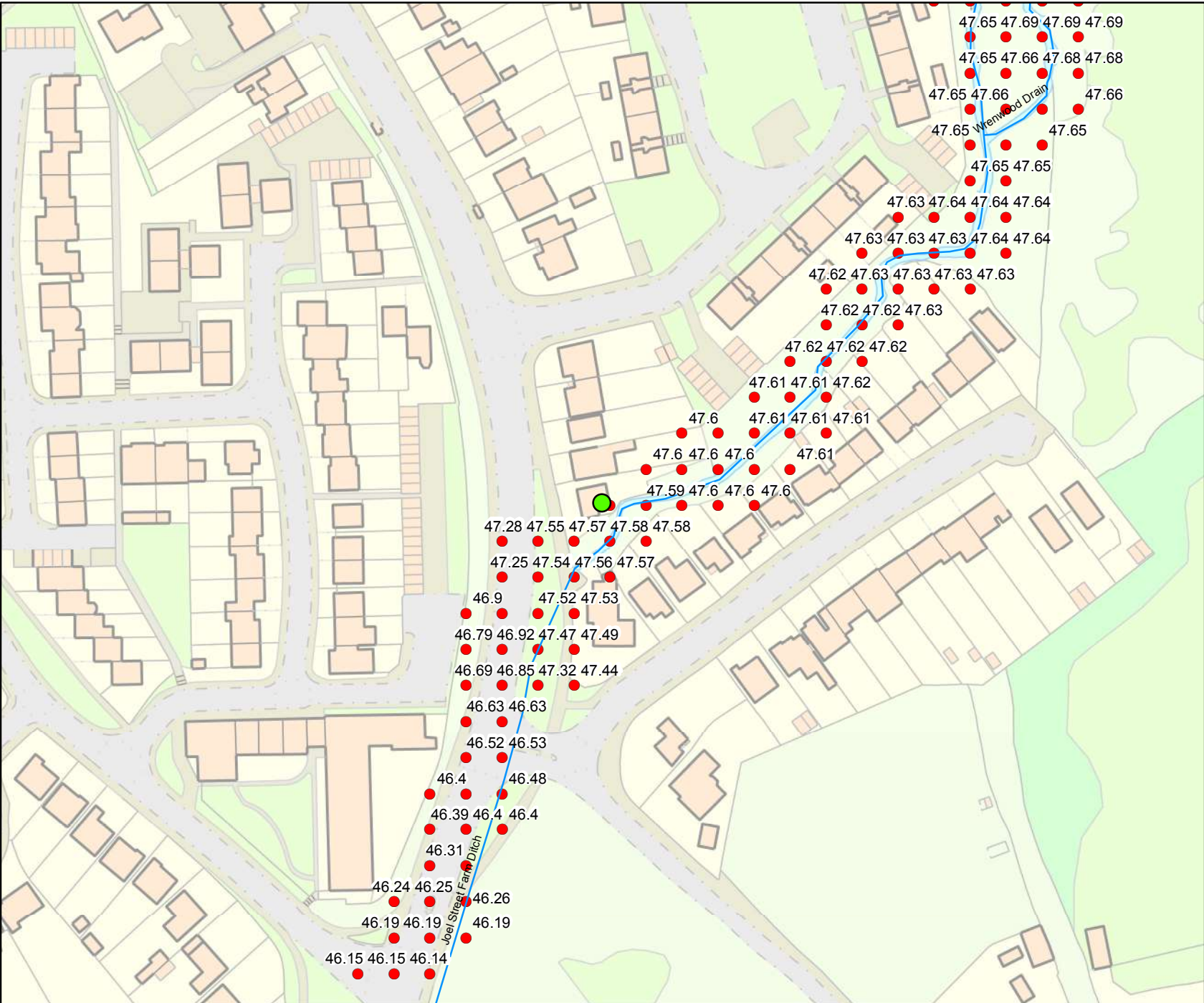
This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites within the catchment.

Modelled outlines take into account catchment wide defences.

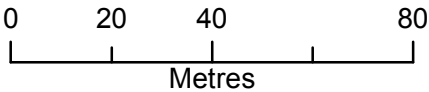
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Legend

- Main Rivers
- Site location

2D Node Results: Heights

- 1 in 100 year (1%) Defended

The data in this map has been extracted from the River Pinn Mapping Study (JBA, 2015).

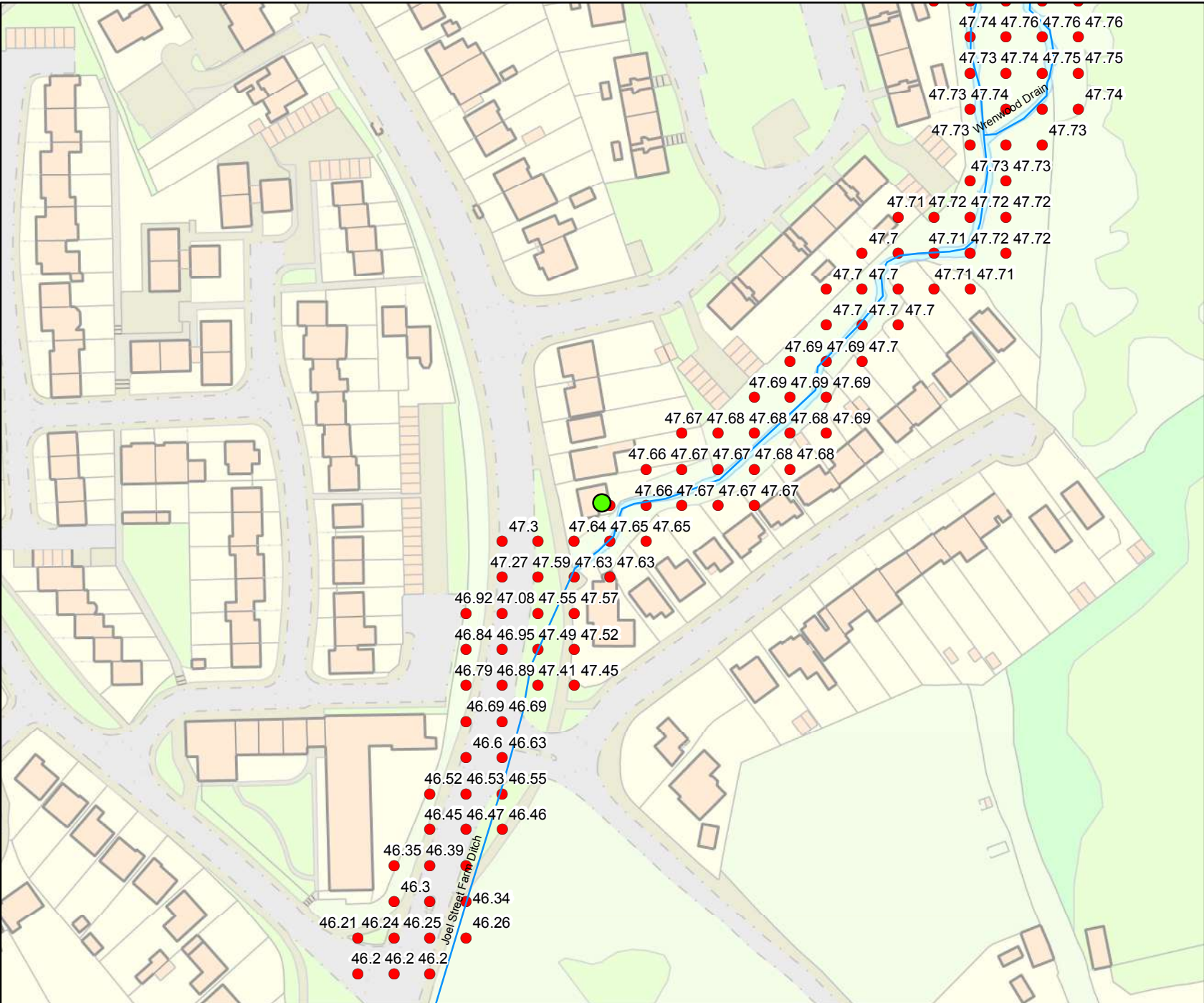
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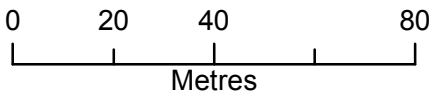
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Legend

- Main Rivers
- Site location

2D Node Results: Heights

- 1 in 100 year+20% (*CC) Defended

The data in this map has been extracted from the River Pinn Mapping Study (JBA, 2015).

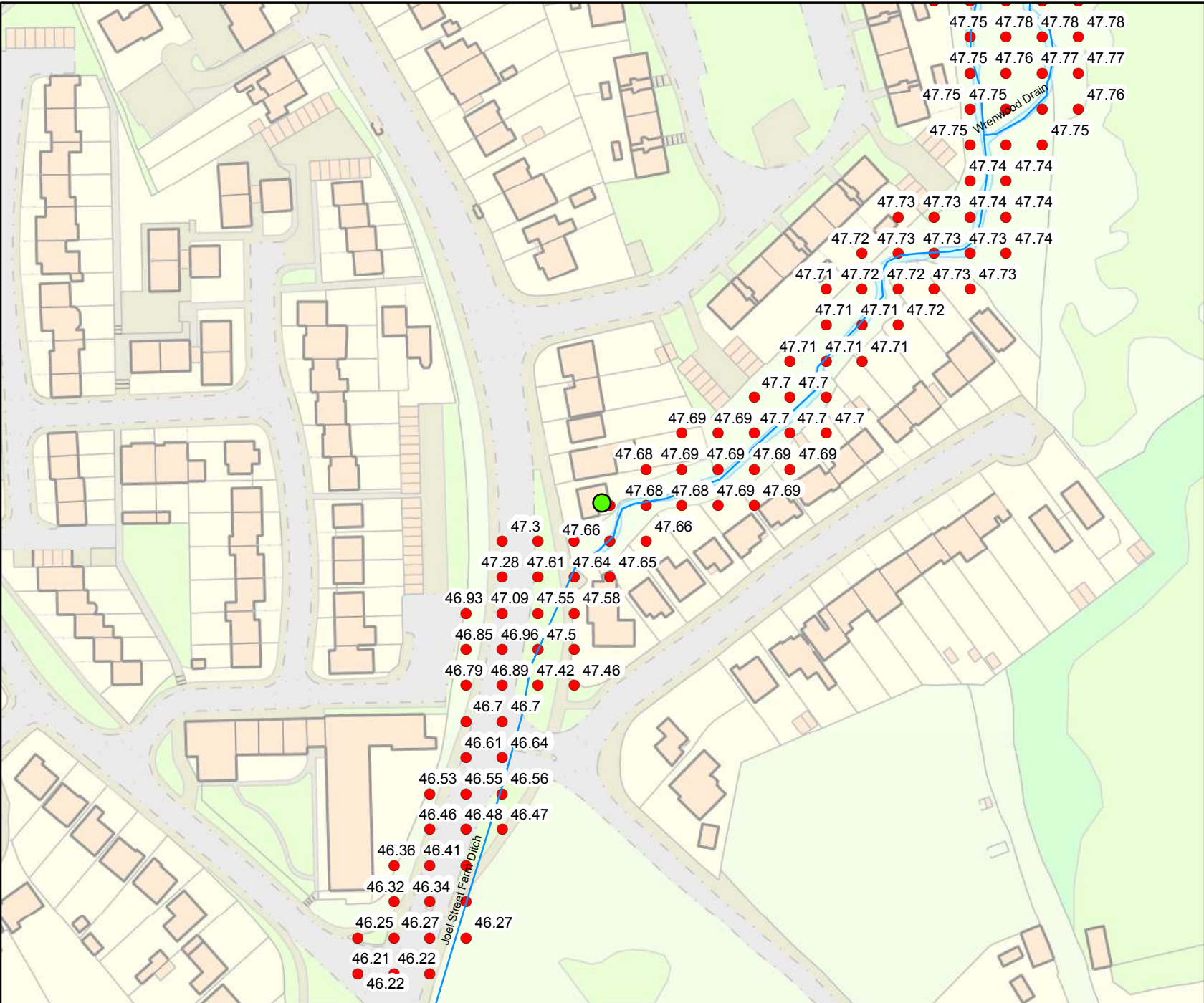
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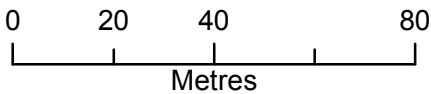
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Legend

- Main Rivers
- Site location

2D Node Results: Heights

- 1 in 100 year+25% (*CC) Defended

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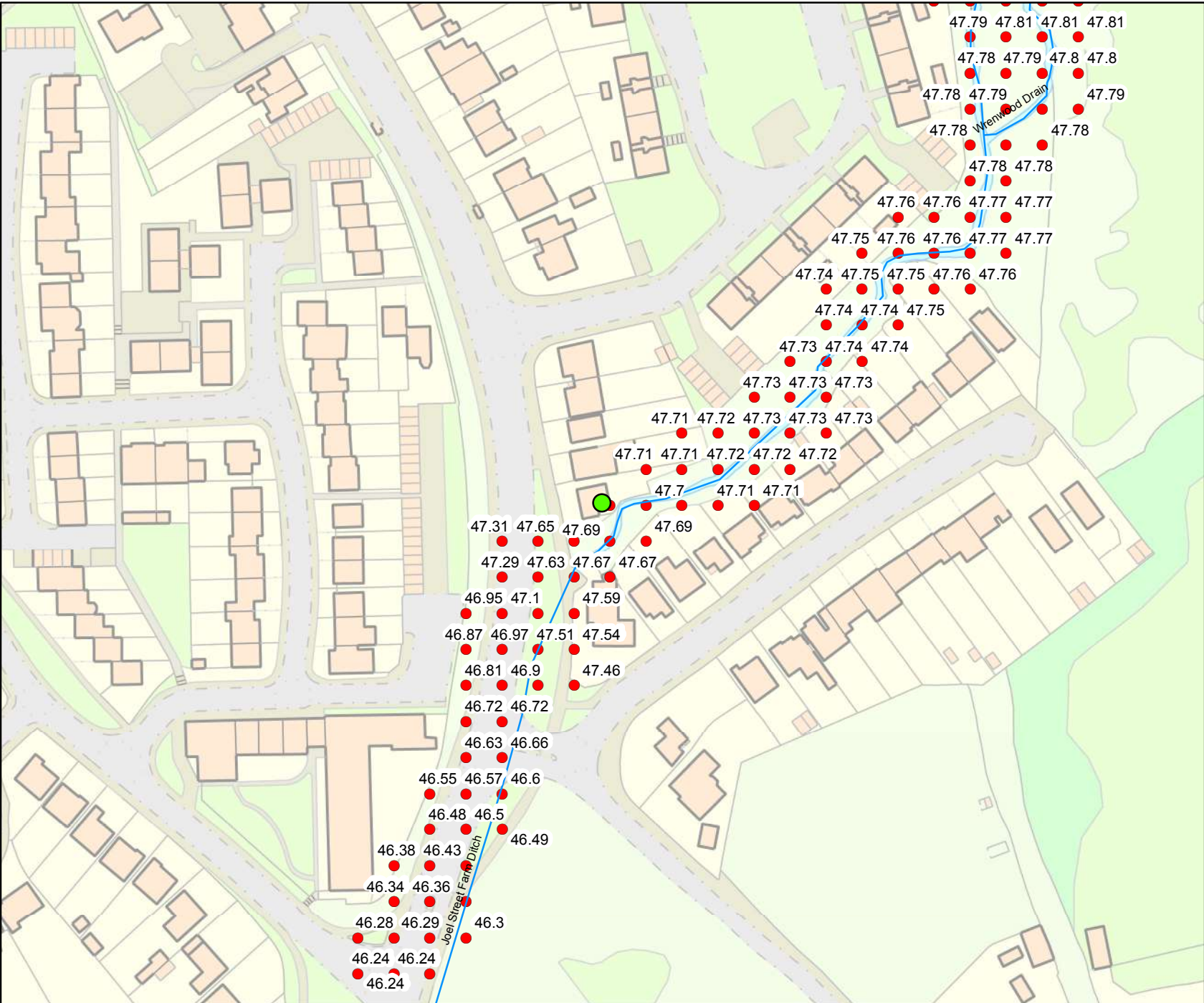
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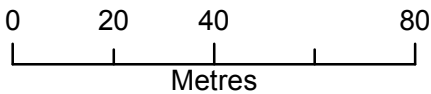
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Legend

- Main Rivers
- Site location

2D Node Results: Heights

- 1 in 100 year+35% (*CC) Defended

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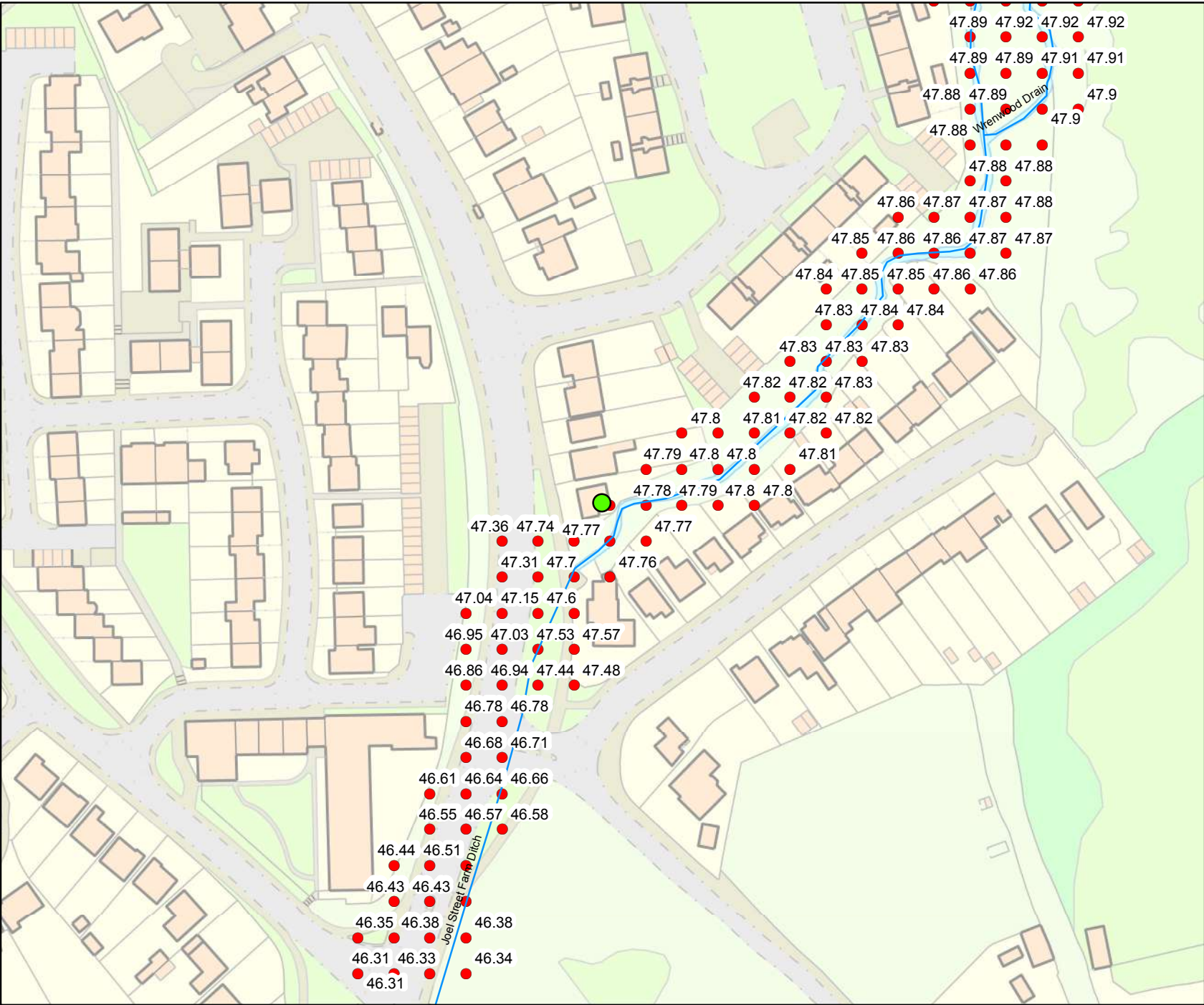
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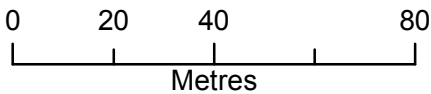
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Legend

- Main Rivers
- Site location

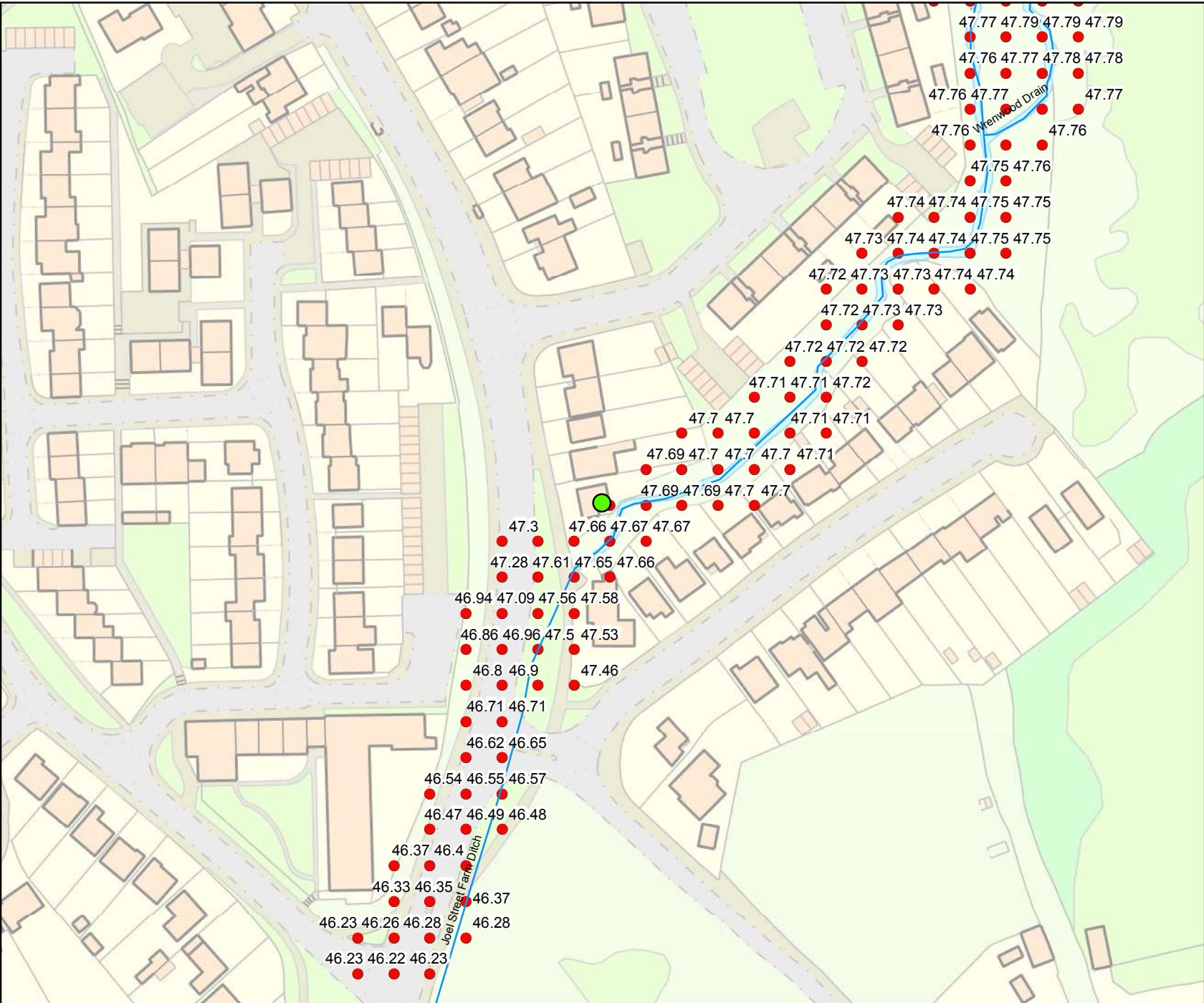
2D Node Results: Heights

- 1 in 100 year+70% (*CC) Defended

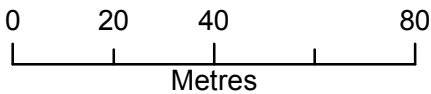
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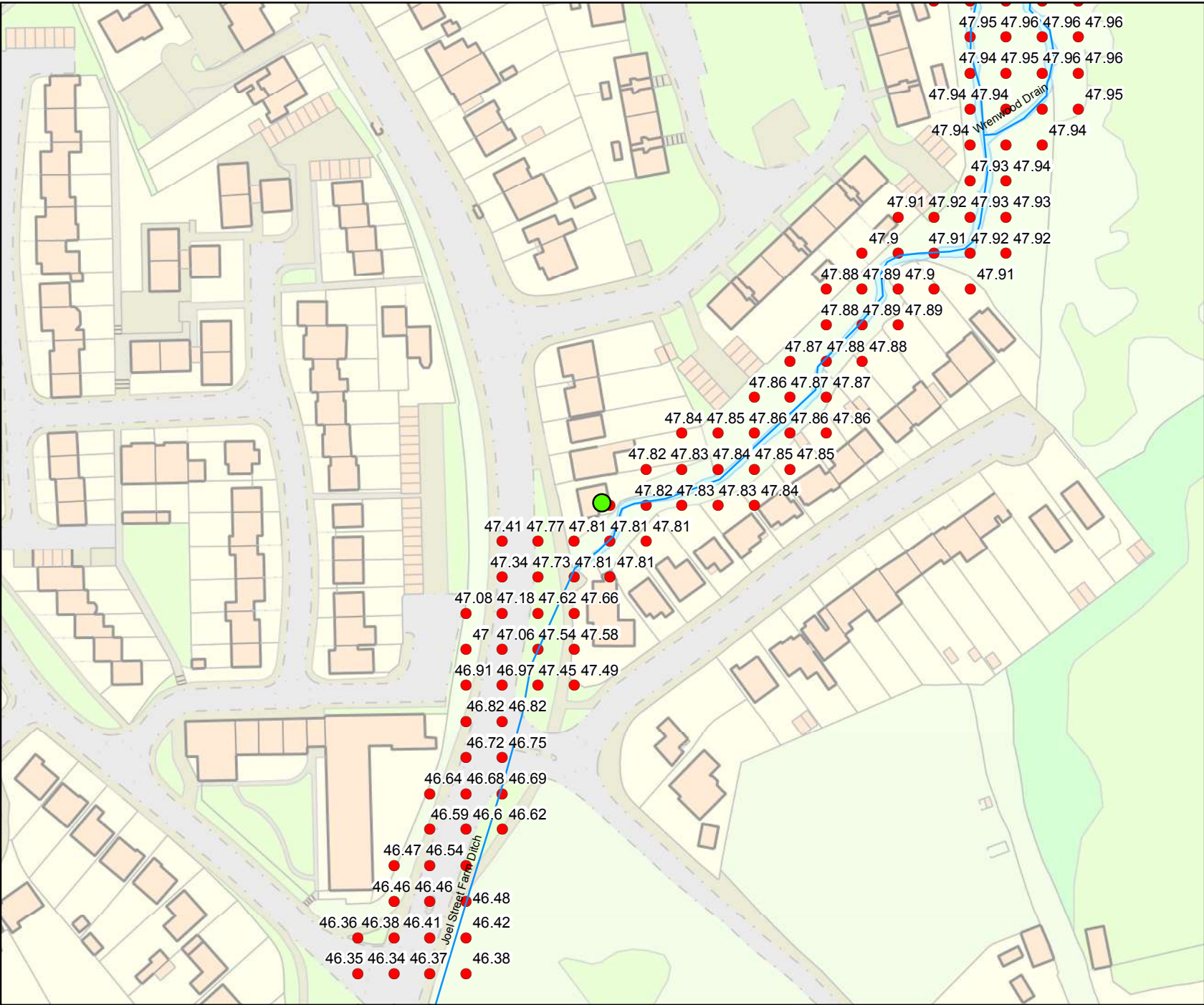
2D Node Results: Heights

- 1 in 250 year (0.4%) Defended

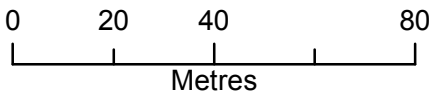
The data in this map has been extracted from the River Pinn Mapping Study (JBA, 2015). This model has been designed for catchment wide flood risk mapping. It should be noted that it was not created to produce flood levels for specific development sites within the catchment. Modelled outlines take into account catchment wide defences. Flood risk data requests including an allowance for climate change will be based on the 1 in 100 flood plus 20% allowance for climate change, unless otherwise stated. You should refer to 'Flood risk assessments: climate change allowances' to check if this allowance is still appropriate for the type of development you are proposing and its location. You may need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.

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Partnerships & Strategic Overview,
Hertfordshire & North London

Detailed FRA centred on: 231A Joel Street, Pinner, HA5 2PJ - 11/03/2021 - HNL 207048 HH



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE



Legend

- Main Rivers
- Site location

2D Node Results: Heights

- 1 in 1000 year (0.1%) Defended

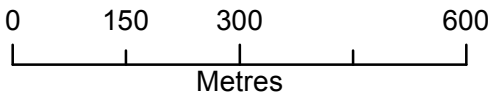
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Historic Flood Map centred on: 231A Joel Street, Pinner, HA5 2PJ - 11/03/2021 - HNL 207048 HH



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE



Legend

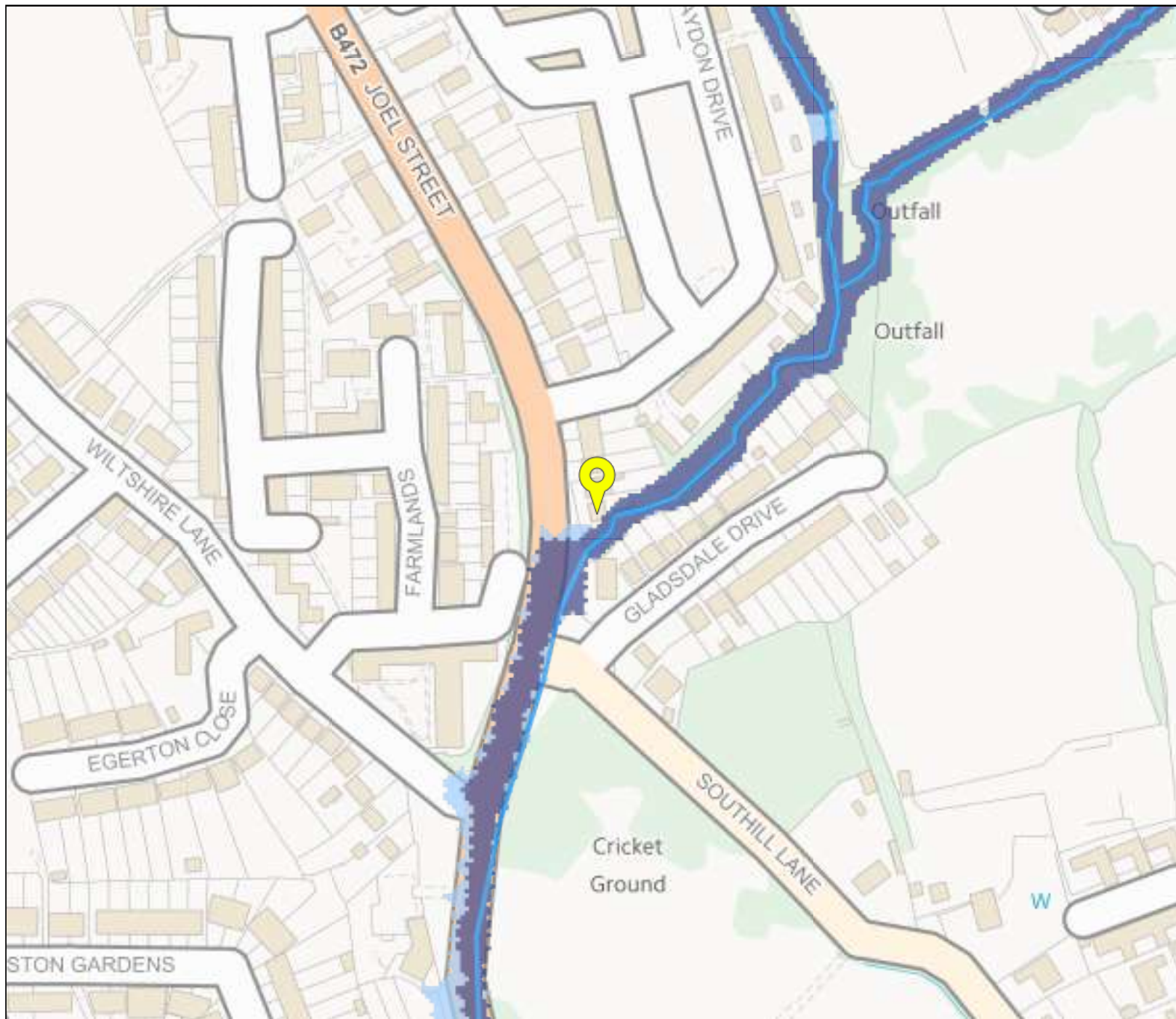
- Main Rivers
- Site location

Flood Event Outlines

- 1988
- 1977

The historic flood event outlines are based on a combination of anecdotal evidence, Environment Agency staff observations and survey. Our historic flood event outlines do not provide a definitive record of flooding. It is possible that there will be an absence of data in places where we have not been able to record the extent of flooding. It is also possible for errors occur in the digitisation of historic records of flooding.

Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London



Flood map for planning

Your reference
<Unspecified>

Location (easting/northing)
510464/189230

Scale
1:2500

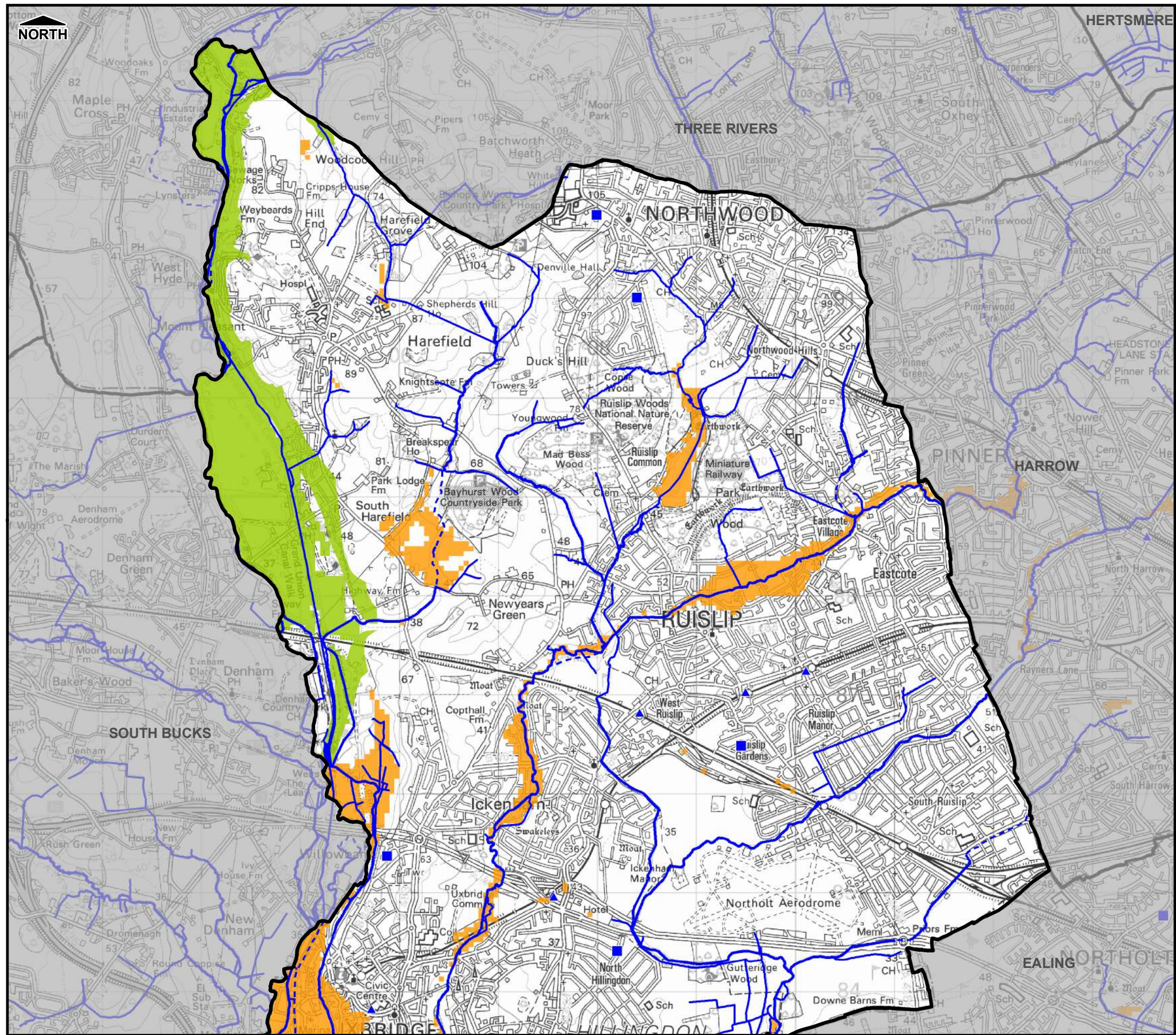
Created
17 Mar 2021 10:54

-  Selected point
-  Flood zone 3
-  Flood zone 3: areas benefiting from flood defences
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Flood storage area


 0 20 40 60m

APPENDIX C – SFRA Extracts

Filepath: L:\Environment\zwet\CS046913_DrainLondon_Tier2\Group1\ARC\mxd\GP1_Hillingdon_Fig10.1_PotentialElevatedGWMMap.mxd



THIS DRAWING MAY BE USED ONLY FOR THE PURPOSE INTENDED

Legend

Borough Administrative Boundary

Main River

Ordinary Watercourse

Groundwater Flood Incident (EA Records)

Increased Potential for Elevated Groundwater in Permeable Superficial Deposits

Culverted Watercourse (Main River)

Groundwater Flood Incident (Other Records)

Consolidated Aquifers

- Notes**
1. The increased Potential for Elevated Groundwater map shows those areas within the London Boroughs where there is an increased potential for groundwater to rise sufficiently to interact with the ground surface or be within 2 m of the ground surface. Such groundwater rise could lead to the following consequences:
 - flooding of basements of buildings below ground level;
 - flooding of buried services or other assets below ground level;
 - inundation of farmland, roads, commercial, residential and amenity areas;
 - flooding of ground floors of buildings above ground level; and
 - overflowing of sewers and drains.

2. Incident records shown are generally unconfirmed and may include issues such as water main bursts or non-groundwater related problems.

3. Areas not shown to have increased potential for elevated groundwater should be considered to have a low potential for elevated groundwater – Lack of information does not imply 'no potential' of elevated groundwater in that area.

4. Includes groundwater flood mapping provided by JBA Consulting Copyright © Jeremy Benn Associates Limited 2008 - 2011, partially derived from data supplied by the Environment Agency

London Borough of Hillingdon

Surface Water Management Plan

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Scale at A3 1:40,000	Date 05/04/2011	Drawn by R.MOORE	Approved by P.HLINOVSKY
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Increased Potential for Elevated Groundwater Map

Consultants

Capita Symonds
Level Seven,
52 Grosvenor Gardens,
Belgravia,
London
SW1W 0AU

Drain London Programme Board Members

GREATERLONDONAUTHORITY

FIGURE 10.1

Legend

-  Borough Administrative Boundary
-  Critical Drainage Area

Notes

London Borough of Hillingdon



Surface Water Management Plan

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Scale at A3	Date	Drawn by	Approved by
1:40,000	15/04/2011	R.MOORE	P.HLINOVSKY

Critical Drainage Area Index Map

Consultants



Capita Symonds
Level Seven,
52 Grosvenor Gardens,
Belgravia,
London
SW1W 0AU

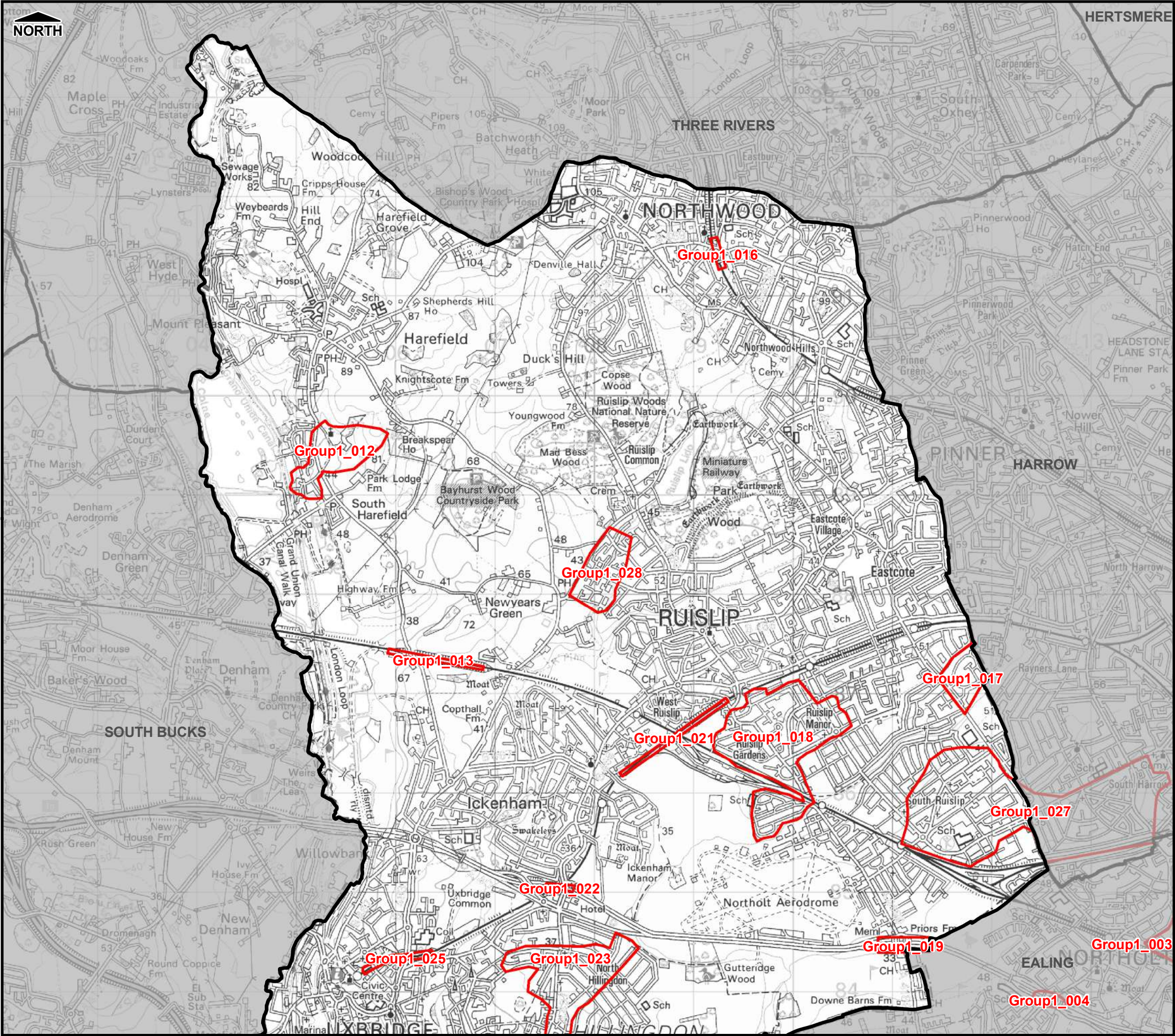
Flood Risk Management

Drain London Programme Board Members

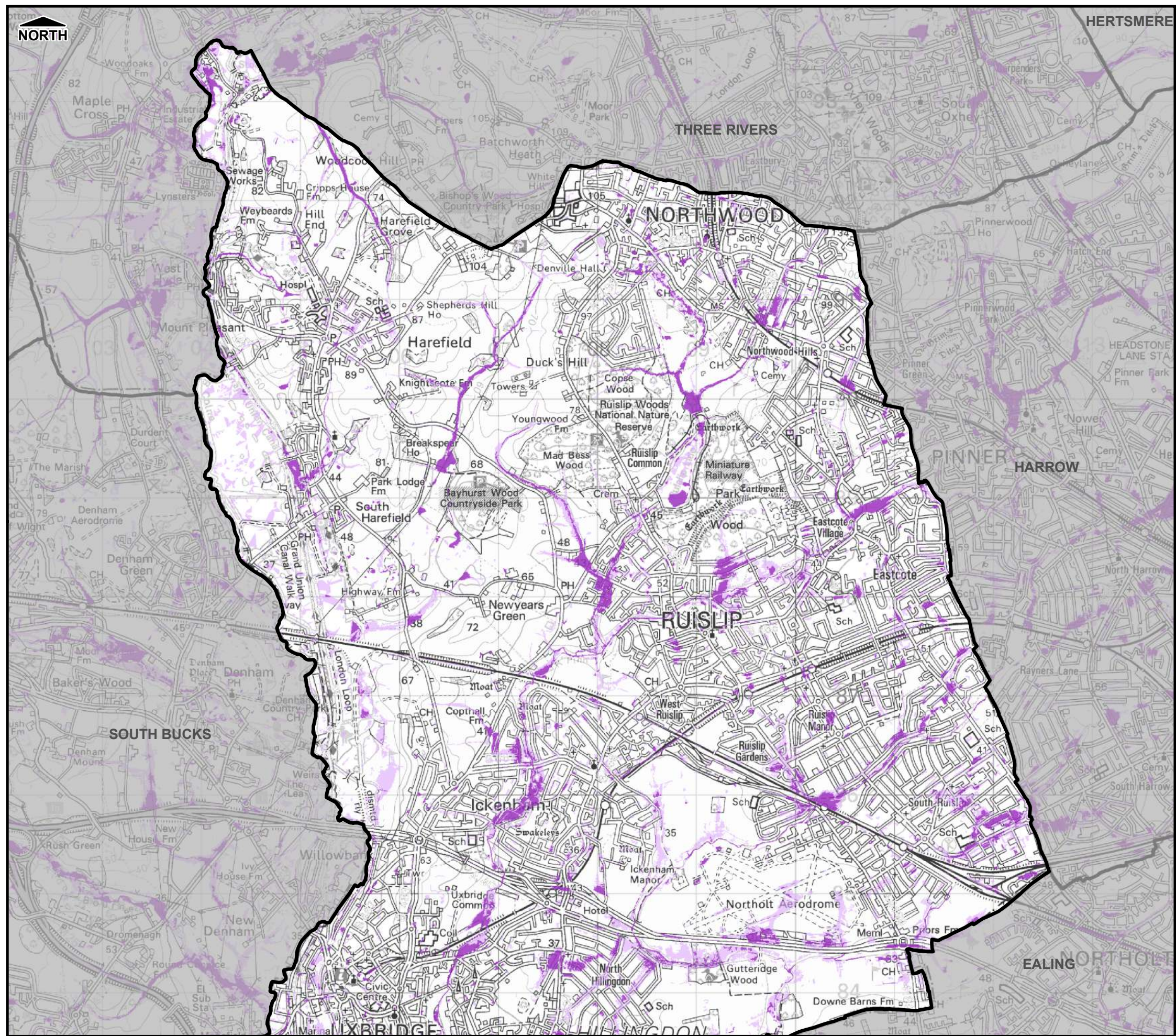


GREATER LONDON AUTHORITY

FIGURE 1.1



Filepath: L:\Environment\zwet\CS046913_DrainLondon_Tier2\Group1\ARC\mxd\GP1_Hillingdon_Fig4.1_EAFloodMapSW.mxd



THIS DRAWING MAY BE USED ONLY FOR
THE PURPOSE INTENDED

Legend

-  Borough Administrative Boundary
-  200yr Surface Water Event (Shallow)
-  200yr Surface Water Event (Deep)

Notes

London Borough of Hillingdon



Surface Water Management Plan

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Scale at A3	Date	Drawn by	Approved by
1:40,000	08/04/2011	R.MOORE	P.HLINOVSKY

Environment Agency Flood Map for Surface Water

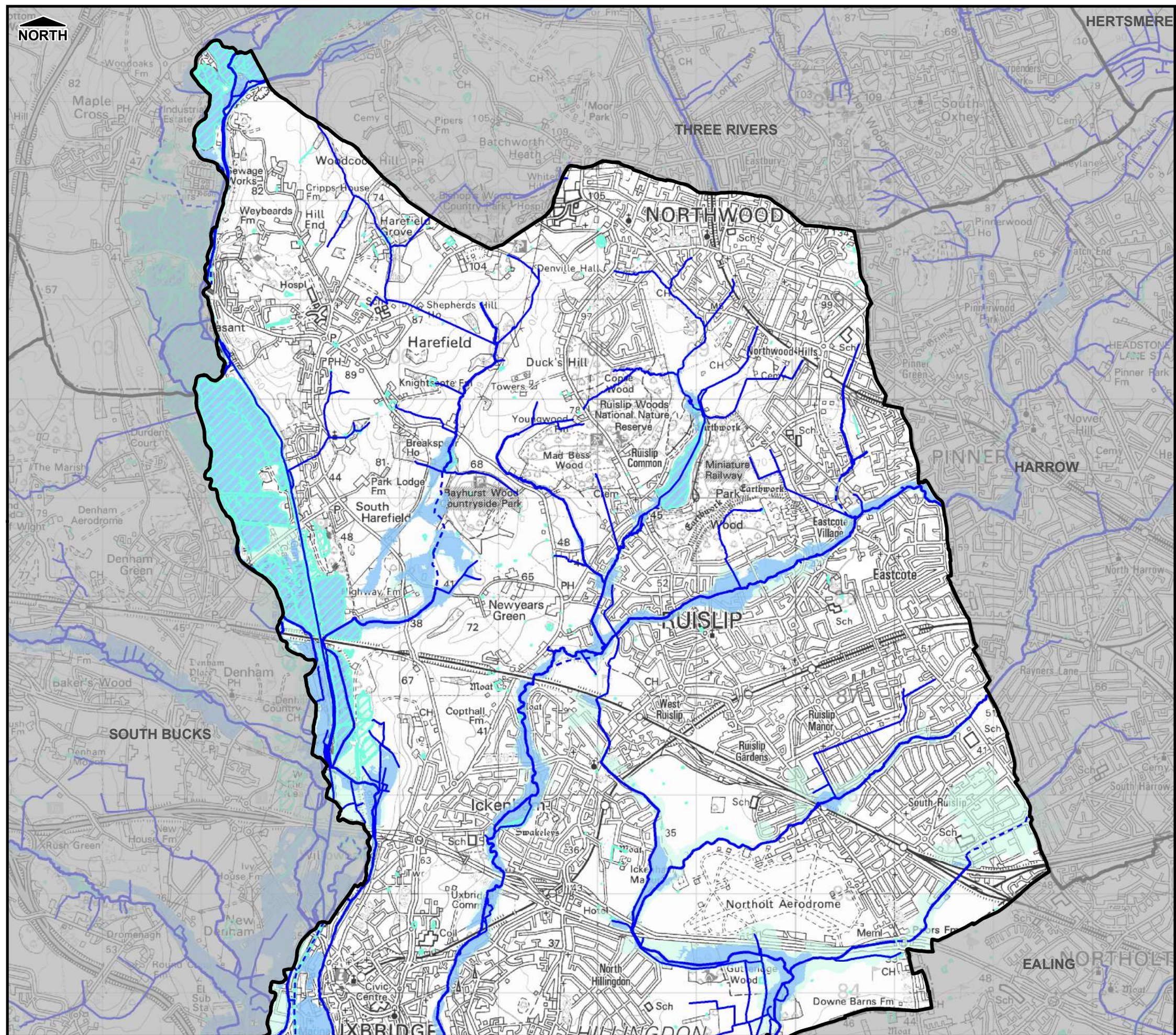
Consultants	Capita Symonds Flood Risk Management	Scot Wilson	Capita Symonds Level Seven, 52 Grosvenor Gardens, Belgravia, London SW1W 0AU
-------------	---	-------------	---

Drain London Programme Board Members



FIGURE 4.1

Filepath: L:\Environment\zwet\CS046913_DrainLondon_Tier2\Group1\ARC\mxd\GP1_Hillingdon_Fig6.1_EAFloodMap.mxd



THIS DRAWING MAY BE USED ONLY FOR
THE PURPOSE INTENDED

Legend

- Borough Administrative Boundary
- Main River
- Ordinary Watercourse
- Culverted Watercourse (Main River)
- Permanent Water Bodies
- Environment Agency Flood Zone 3
- Environment Agency Flood Zone 2

Notes

1. Environment Agency Flood Zone 3 represents a 1% AEP flood event.
2. Environment Agency Flood Zone 2 represents a 0.1% AEP flood event.

London Borough of Hillingdon



Surface Water Management Plan

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Scale at A3	Date	Drawn by	Approved by
1:40,000	08/04/2011	R.MOORE	P.HLINOVSKY

Environment Agency Flood Map

Consultants
CAPITA SYMONDS
Flood Risk Management
Capita Symonds
Level Seven,
52 Grosvenor Gardens,
Belgravia,
London
SW1W 0AU

Drain London Programme Board Members



FIGURE 6.1

0 0.25 0.5 1 1.5 2
Kilometres