

## FLOOD RISK ASSESSMENT REPORT

AT

5 THE BEANESIDE, WATTON AT STONE,  
HERTS SG14 3TS

**SEPTEMBER 2023**

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## INTRODUCTION

- 1.1 Turn2 Ltd. have been commissioned to produce a Flood Risk Assessment (FRA) for a proposed extension to an existing property at 5 The Beaneside, Watton at Stone.
- 1.2 The development site is located in Flood Zones 2 and 3 according to the Environment Agency's Flood Map for Planning.
- 1.3 The Planning Practice Guidance (PPG) for the National Planning Policy Framework (NPPF) requires a site-specific FRA to be carried out for developments located in Flood Zones 2 & 3 and for those which are 1 hectare (ha) or greater in size.
- 1.4 A site-specific FRA is required to ensure that the development is safe from flooding and will not increase the risk of flooding elsewhere.
- 1.5 This report has been prepared in accordance with the NPPF and the accompanying Technical Guidance.

## SITE LOCATION & DESCRIPTION

1.6 The 200m<sup>2</sup> site is located at 5 the Beanside, Watton at Sone and is currently occupied by a detached residential property

**TABLE 1: SITE LOCATION**

Description	Site Location
Post Code	SG14 3TS
Local Planning	East Hertfordshire Council
Statutory Sewerage Undertaker	Thames Water
Area	200m <sup>2</sup> (0.02Ha)
Lat, Long	52.859705, -0.11421919
OS X (Eastings)	529959
OS Y (Northings)	219583
Nearest watercourse	River Beane at the bottom of the property garden

**FIGURE 1: SITE ARIEL VIEW**





## SITE TOPOGRAPHY / LEVELS

- 1.7 OS mapping data indicates that the level of the road outside the property is circa 61m Above Ordnance Datum (m AOD). The property FFL is at or just above this level. The rear garden falls away to the river and is terraced part way down the garden.
- 1.8 The proposed FFL of the extension / infill to the rear of the property will match the existing FFL so will be circa 61m AOD.

## 2 POLICY CONTEXT

### NATIONAL PLANNING POLICY FRAMEWORK (NPPF)

2.1 The latest NPPF was adopted in July 2021, one of the overarching objectives of the NPPF is the encouragement of growth and acknowledgement that decision-makers should adopt a presumption in favour of sustainable development. Paragraph 11 of the document states:

*“For **decision-taking** this means:*

- approving development proposals that accord with an up-to-date development plan without delay; or*
- where there are no relevant development plan policies, or the policies which are most important for determining the application are out of date, granting permission unless:*
  - the application of policies in this Framework that protect areas or assets of particular importance provides a clear reason for refusing the development or*
  - any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole.”*

2.2 Section 14 of the NPPF seeks to address the issues of climate change, flooding and coastal change. In paragraph 155 it states: “Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere.”

### PLANNING PRACTICE GUIDANCE TO THE NATIONAL PLANNING POLICY FRAMEWORK

2.3 The Planning Practice Guidance (PPG) was first published in March 2014 and at the same time the Technical Guidance to the NPPF was withdrawn. The key difference with the new PPG is that it is a web-based resource, and each section is updated as needed.

2.4 Section 7 covers “Flood Risk and Coastal Change” and was last updated in June 2021.

2.5 The assessment of flood risk is based on the definitions in Table 1 of the PPG. This information is replicated below for ease of reference.

**TABLE 2: FLOOD ZONE DEFINITIONS**

Flood Zone	Annual probability of river or sea flooding
Zone 1 <i>Low Probability</i>	<ul style="list-style-type: none"> <li>Land having less than 1 in 1000 annual probability of river or sea flooding (&lt;0.1%)</li> </ul>
Zone 2 <i>Medium Probability</i>	<ul style="list-style-type: none"> <li>Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or</li> <li>Land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.</li> </ul>
Zone 3a <i>High Probability</i>	<ul style="list-style-type: none"> <li>Land having a 1 in 100 or greater annual probability of river flooding; or</li> <li>Land having a 1 in 200 or greater annual probability of sea flooding.</li> </ul>
Zone 3b <i>The Functional Floodplain</i>	<ul style="list-style-type: none"> <li>This zone comprises land where water has to flow or be stored in times of flood.</li> <li>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.</li> </ul>

2.6 The NPPF classifies the Flood Risk Vulnerability of various land uses in Table 2 (reproduced below). The More Vulnerable Classification encompasses usages such as hospitals and buildings used for dwellings. Less Vulnerable applies to buildings used for general industry, storage and distribution.

**TABLE 3: LAND USE CLASSIFICATION**

Classification	Land Use
Essential Infrastructure	<ul style="list-style-type: none"> <li>Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk.</li> <li>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.</li> <li>Wind turbines.</li> </ul>
Highly Vulnerable	<ul style="list-style-type: none"> <li>Police stations, ambulance stations and fire stations and command centres and telecommunications installations</li> </ul>

Classification	Land Use
	<p>required to be operational during flooding.</p> <ul style="list-style-type: none"> <li>■ Emergency dispersal points.</li> <li>■ Basement dwellings.</li> <li>■ Caravans, mobile homes and park homes intended for permanent residential use.</li> <li>■ 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”).</li> </ul>
More Vulnerable	<ul style="list-style-type: none"> <li>■ Hospitals.</li> <li>■ Residential institutions such as residential care homes, children’s homes, social services homes, prisons and hostels.</li> <li>■ Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.</li> <li>■ Non-residential uses for health services, nurseries and educational establishments.</li> <li>■ Landfill and sites used for waste management facilities for hazardous waste.</li> <li>■ Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.</li> </ul>
Less Vulnerable	<ul style="list-style-type: none"> <li>■ Buildings used for shops; financial, professional and other services, restaurants and cafes, hot</li> <li>■ food takeaways, offices, general industry, storage and distribution and assembly and leisure.</li> <li>■ Land and buildings used for agriculture and forestry.</li> <li>■ Waste treatment (except landfill and hazardous waste facilities).</li> <li>■ Minerals working and processing (except for sand and gravel working).</li> <li>■ Water treatment plants and sewage treatment plants (if adequate pollution control measures are in place).</li> </ul>

Classification	Land Use
Water-compatible development	<ul style="list-style-type: none"> <li>■ Flood control infrastructure.</li> <li>■ Water transmission infrastructure and pumping stations.</li> <li>■ Sewage transmission infrastructure and pumping stations.</li> <li>■ Sand and gravel working.</li> <li>■ Docks, marinas and wharves.</li> </ul>

2.8 The overall aim is to steer new development to Flood Zone 1. Where there are no reasonably available sites within Flood Zone 1, local planning authorities allocating land in local plans or determining planning applications for development at any particular location should take into account the flood risk vulnerability of land uses and consider reasonably available sites in Flood Zone 2, applying the Exception Test if required. The table below, replicated from Table 3 of the PPG, indicates which Flood Zones are considered to be appropriate for different land uses based upon the Sequential Test.

**TABLE 4: FLOOD RISK VULNERABILITY CLASSIFICATION**

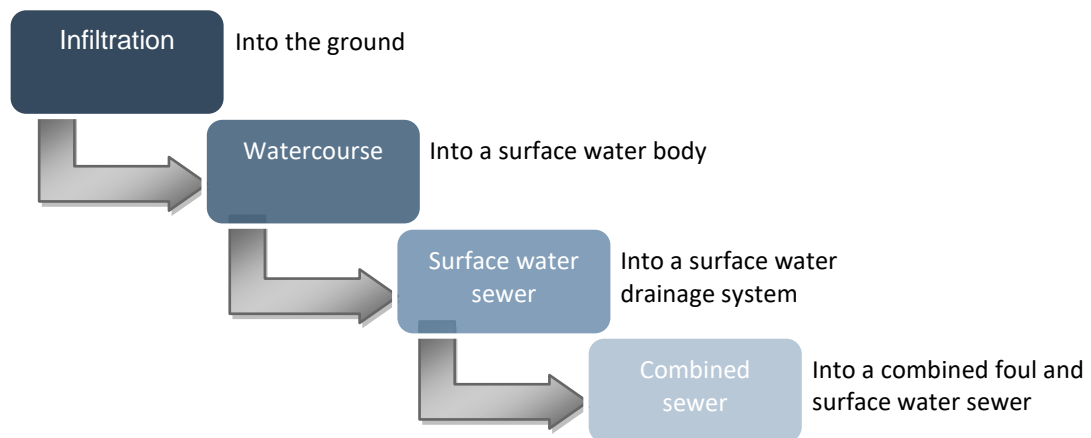
Flood Zone	Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable (Residential)	Less Vulnerable
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	✓	Exception Test Required	✓	✓
Zone 3a	Exception Test Required	✓	✗	Exception Test Required	✓
Zone 3b Functional Floodplain	Exception Test Required	✓	✗	✗	✗

- ✓ Development is appropriate
- ✗ Development should not be permitted

2.9 The sequential approach requires the application of the Sequential Test whereby, in addition to the requirements of Table 3, development should first be directed to Flood Zone 1, then Flood Zone 2 and lastly Flood Zone 3.

- 2.10 Where the Exception Test is required, it is necessary to demonstrate, partly through a site-specific flood risk assessment, that:
- The development will provide extensive sustainability benefits to the community
  - And that these benefits outweigh the flood risk
  - When considering the vulnerability of its users, the development will be safe for its lifetime
  - Flood risk is not increased elsewhere, and reduced overall where possible
- 2.11 Further detail on the lifetime of development is also given in the PPG, which advises for residential development that a period of 100 years should be considered whilst for non-residential this is dependent upon the development characteristics.
- 2.12 The use of sustainable drainage systems is considered by the PPG to offer the following benefits:
- Reduce the causes and impacts of flooding
  - Remove pollutants from urban run-off at source
  - Combine water management with green space with benefits for amenity, recreation and wildlife
- 2.13 In the consideration of major developments, sustainable drainage should be provided unless it can be demonstrated that this would be inappropriate. Major developments are defined in the Town and Country Planning Order 2015; some of these definitions encompass the following:
- Development site area of 1 hectare or more
  - Provision of 10 or more residential dwellings
  - Development of residential dwellings on a site having an area of 0.5 hectares or more and where the proposed no. of dwellings is not known to fall into the above criterion or not
  - Provision of buildings where the floor space to be created by the development is 1,000m<sup>2</sup> or greater
- 2.14 The aim of sustainable drainage systems is to dispose of surface water using the following hierarchy were reasonably practicable.

**FIGURE 2: SURFACE WATER DISPOSAL HIERARCHY**



2.15 The assessment of what is considered to be reasonably practicable in terms of sustainable drainage system provision should consider the costs associated with the design, construction, operation and maintenance of the system, and whether these are economically proportionate in relation to the consumer costs for an effective drainage system that instead connects directly to a public sewer.

## EAST HERTFORDSHIRE STRATEGIC FLOOD RISK ASSESSMENT

2.16 The main purpose of the Strategic Flood Risk Assessment (SFRA) is to provide sufficient flood risk information to enable an update of any flooding policies within the area. In achieving this, the SFRA will achieve the objectives of:

- Influencing Council policy regarding decisions that are made
- Aiding the Council's response to proposed developments
- Recognising means of reducing flood risk
- Inform the emergency flood plans

2.17 The Strategic Flood Risk Assessment (SFRA) for East Herts was published in 2016 and an addendum published in 2017.

2.18 The above SFRA will be consulted as part of this site-specific FRA.

## LOCAL CONSTRAINTS & PLANNING POLICIES

2.19 With reference to the East Herts Council District Plan. The following policies are applicable to flood risk and surface water management.

## 2.20 Policy WAT1 Flood Risk Management

*“i) The functional floodplain will be protected from inappropriate development and where possible developed floodplain should be returned to Greenfield status with an enhanced level of biodiversity.*

*ii) Development proposals should neither increase the likelihood or intensity of any form of flooding, nor increase the risk to people, property, crops or livestock from such events, both on site and to neighbouring land or further downstream.*

*iii) Development should take into account the impacts of climate change and should build in long term resilience against increased water levels. Therefore, appropriate distances and buffers between watercourses and built development should be maintained in accordance with Environment Agency guidelines.*

*iv) In order to steer new development to areas with the lowest probability of flooding, the Sequential Test will be used. In exceptional circumstances, if developments are proposed which are required to pass the NPPF Exceptions Test, they will need to address flood resilient design and emergency planning by demonstrating that:*

*(a) The development will remain safe and operational under flood conditions;*

*(b) A strategy of either safe evacuation and/or safely remaining in the building is followed under flood conditions;*

*(c) Key services will continue to be provided under flood conditions; and*

*(d) Buildings are designed for quick recovery following a flood.”*

## 2.21 Policy WAT5 Sustainable Drainage

*2.1 Development must utilise the most sustainable forms of drainage systems in accordance with the SUDS hierarchy, unless there are practical engineering reasons for not doing so.*

*2.2 Development should aim to achieve Greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible.*



*2.3 Drainage should be designed and implemented in ways that deliver other policy objectives of this Plan, including water use efficiency and quality, biodiversity, amenity and recreation. The provision of balancing ponds as part of an area of public open space for recreation or wildlife should be designed to ensure the safety of other users of the space. Where SUDs are provided as part of a development, applicants should detail how it will be maintained in the long term.*

*Where practicable, SUDS should be designed to ensure the sustainable drainage networks have the additional capacity required to cope with infrequent adverse weather conditions and therefore reduce flood risk.”*

## **CONSULTATIONS**

- 2.22 Consultation with the Environment Agency has been undertaken to ascertain the latest product 4 flood data for the site, the results are detailed in section 4.

### 3. DEVELOPMENT DESCRIPTION

3.1 The proposed scheme involves the extension / infilling (approx. 7m<sup>2</sup>) of the existing kitchen / dining area at the rear of the property.

3.2 Refer to Appendix B for a copy of the proposed plans.

## 4 FLOOD RISK

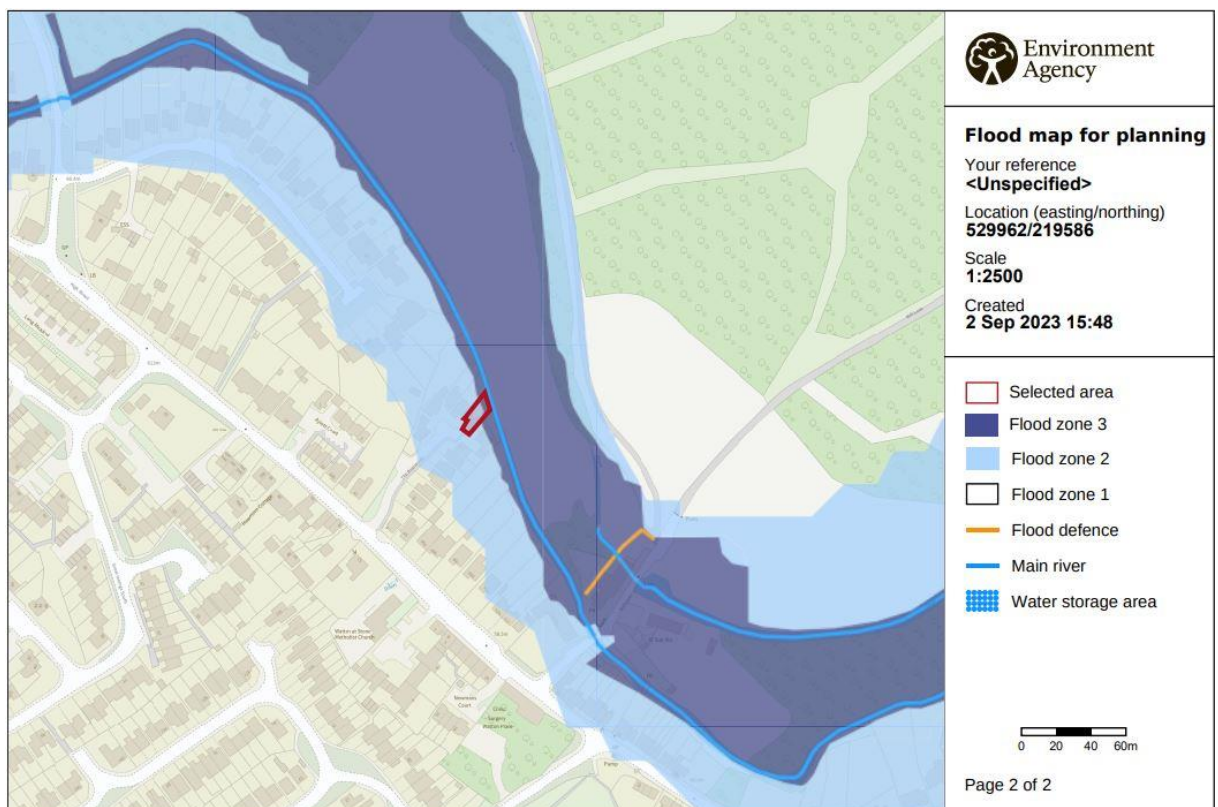
4.1 The NPPF and the SFRA identifies several potential sources of flooding that must be considered when assessing flood risk, these are considered below in the following order:-

- Flooding from rivers (fluvial flooding)
- Flooding from the sea (tidal flooding)
- Flooding from land
- Flooding from sewers
- Flooding from groundwater
- Flooding from reservoirs, canals, and other artificial sources

### FLOODING FROM RIVERS (FLUVIAL FLOODING) & SEA (TIDAL FLOODING)

4.2 The indicative flood maps published by the Environment Agency (EA) identify that the site is largely located in flood zone 2 with an area covered by flood zone 3

**FIGURE 3: EA FLOOD MAP FOR PLANNING**

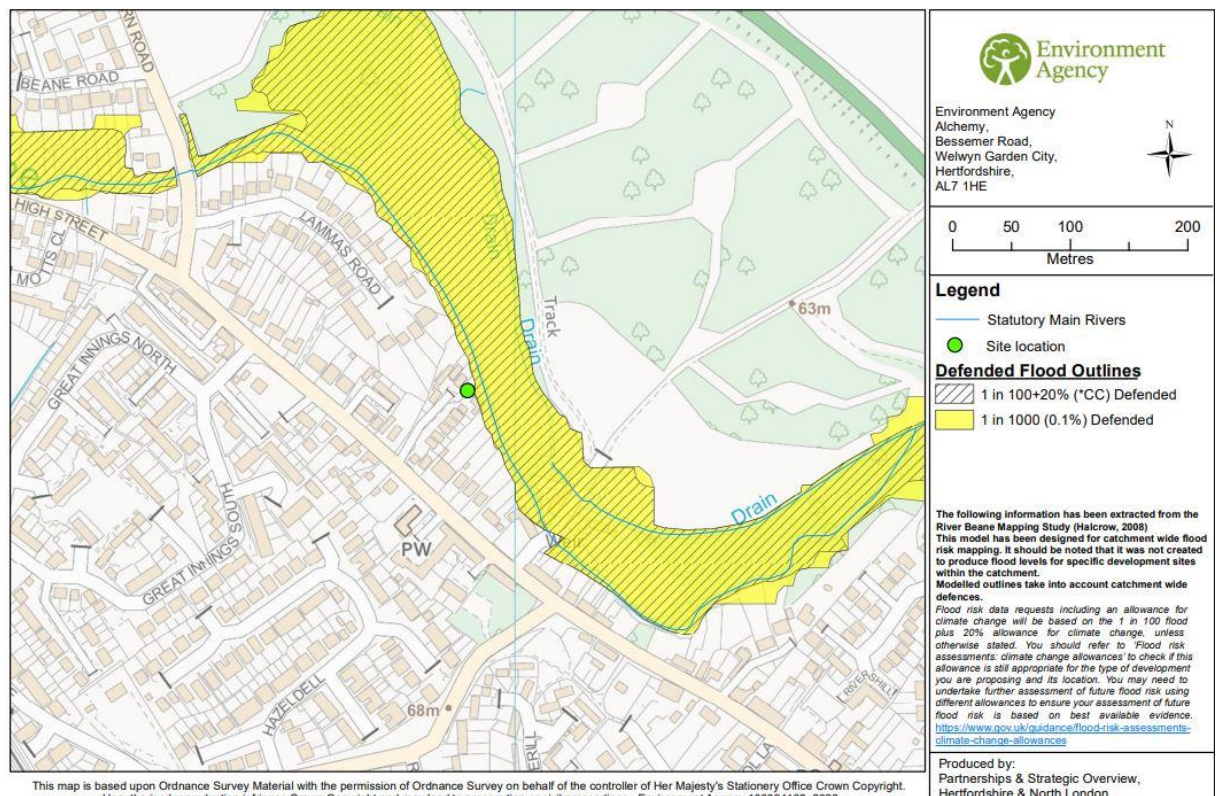


- 4.3 Flood Zones 2 and 3 are fluvial events with annual probabilities of between 1% and 0.1% and >0.1% in any given year, which are considered low occurrence probabilities.
- 4.4 The existing building on the site is located in flood zone 2 and the proposed extension to the building is also located in flood zone 2.

## MODELLED FLOOD DATA

- 4.5 The product 4 flood level data has been provided by the EA in August 2023 and includes information from the River Beane mapping study undertaken by Halcrow in 2008)
- 4.6 The information provided indicates that although parts of the garden are in the flood zone, the property / building is outside of the 1 in 100 (+20%) and 1 in 1000 defended flood outline.
- 4.7 The modelled flood level for the 1 in 100 +20% and 1 in 1000 return period are indicated as 57.25 and 57.36 respectively. Please refer to a copy of the flood data in appendix C.

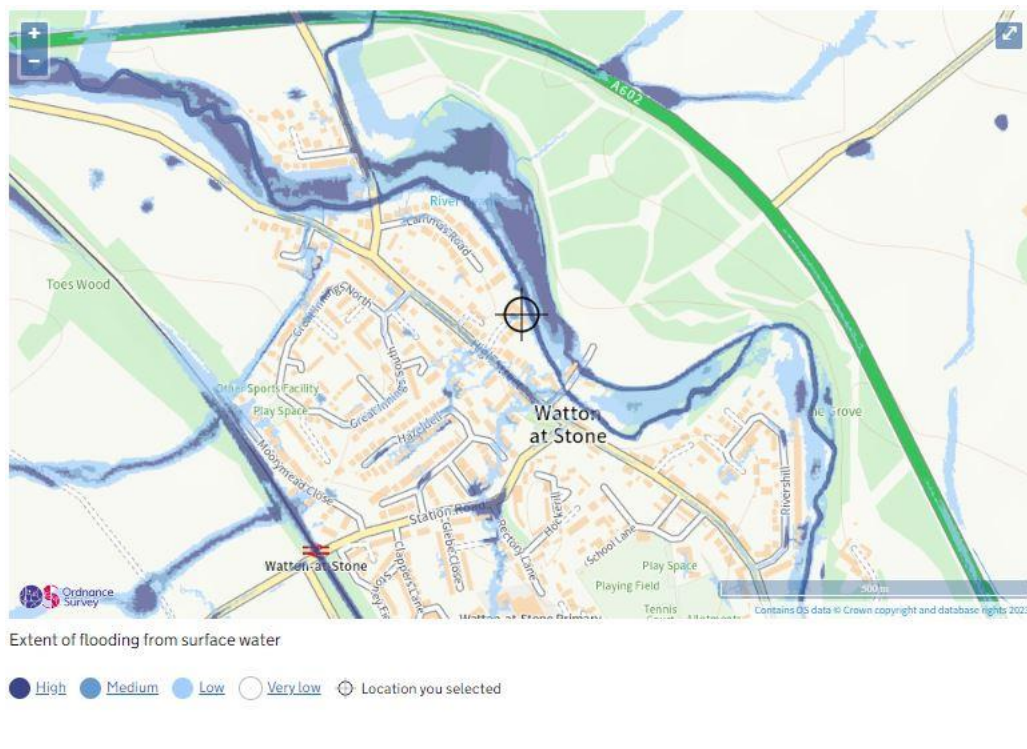
**FIGURE 4: EA PRODUCT 4 FLOOD MAP**



## FLOODING FROM SURFACE WATER

- 4.8 The EA Risk of Flooding from Surface Water map is published on their website to identify areas potentially at risk of flooding from surface water. This mapping identifies overland flows and surface water flooding which typically arises following periods of intense rainfall, often of short duration, that is unable to soak into the ground or enter drainage systems, it can run quickly off land and result in localised flooding. As such, surface water flooding is often more frequent but less severe than fluvial flooding. Figure 4 below shows that on the Environment Agency’s flooding from surface water map.

**FIGURE 5: EA SURFACE WATER FLOOD MAP**



- 4.9 With reference to Figure 4 above, the large majority of the site is considered at low or very low risk from surface water flooding, however the area along the river is indicated as an area at high probability of flooding form surface water
- 4.10 The proposed development does not result in any change to the area of hardstanding and therefore does not increase the risk of flooding as a result of surface water runoff.



## FLOODING FROM GROUNDWATER

4.11 Flooding from groundwater can happen when the water table rises. The level of the water table changes with the seasons due to variations in long term rainfall and water abstraction. When the water table rises and reaches ground level, water starts to emerge on the surface and flooding can happen.

4.12 The SFRA provides information on the historic groundwater flooding and states:

*“The East Hertfordshire District Council Flood Incident Database has recorded 13 incidents of groundwater flooding. Although the incidents are largely isolated, the settlement with the greatest recorded number of incidents is Ware and Tewin/ Tewin Wood.”*

There have been no incidents of ground water flooding in Watton at Stone

4.13 Based on the above, the site is not deemed to be at significant risk from groundwater flooding.

## FLOODING FROM SEWERS

4.14 During heavy rainfall, flooding from the sewer system may occur where the rainfall event exceeds the capacity of the drainage system. The system becomes blocked by debris or sediment. The system surcharges due to high water levels in receiving watercourses.

4.15 The 2016 SFRA provides historical incidents of flooding as detailed by Thames Water. The report confirms that for the SG14 3 postcode area there were 21 recorded flood incidents as of 12<sup>th</sup> July 2016.

4.16 Based on available information to date, the risk of sewer flooding is considered Low.

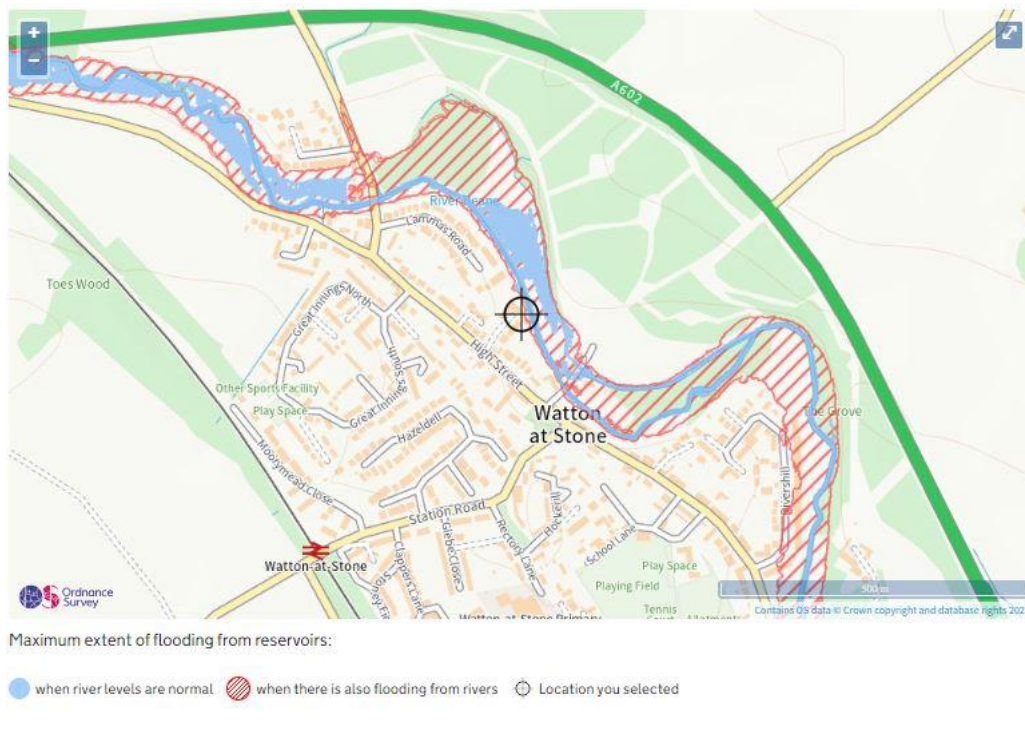
## FLOODING FROM RESERVOIRS, CANALS & OTHER ARTIFICIAL SOURCES

4.17 The EA Risk of Flooding from Reservoirs Map is published on their website to identify areas potentially at risk of flooding from large reservoirs (>25,000 m<sup>3</sup> of

water), if they were to fail and release the water they hold. It does not display data for smaller reservoirs.

There are no canals within the vicinity of the Site, and therefore canal flood risk is considered Negligible.

**FIGURE 6: EA FLOOD MAP FOR RESERVOIR BREACH EVENT**



- 4.18 Although the site is shown within the extremities of the maximum extent of flooding, the likelihood of a flood occurrence is considered low and in the unlikely event of a flood, there is likely to be prior warning of flood risk. Therefore, the flood risk is considered low.

## 5 MITIGATION MEASURES

### RECOMMENDED FINISHED FLOOR LEVELS

- 5.1 In line with the Environment Agency standing advice the floor level of the extension will be set no lower than existing floor levels.
- 5.2 The road outside the property (The Beanside) has an approximate level of 61m Above Ordnance Datum (m AOD). The property FFL is at or just above this level. The rear garden falls away to the river and is terraced part way down the garden.
- 5.3 The proposed FFL of the extension / infill to the rear of the property will match the existing FFL so will be circa 61m AOD.

### SURFACE WATER RUNOFF

- 5.4 It is assumed that the existing site discharges to public sewers in Beanside freely. It is proposed to maintain this method of disposal for the proposed site.
- 5.5 As the proposed development retains the existing building and structure and involves the infilling of a small (7m<sup>2</sup>) area of hardstanding, it is proposed that the surface water strategy for the site remains as per the existing arrangement and utilises the existing outfalls from the site.
- 5.6 There is no proposed increase in impermeable area as a result of the development meaning there will be no effect on the surface water runoff.



## 6 CONCLUSION / RECOMMENDATIONS

- 6.1 The site at 5 The Beaneside Watton at Stone is located on indicative flood maps published by the Environment Agency (EA) largely in flood zone 2 with an area covered by flood zone 3 along the River Beane.
- 6.2 The proposal involves a small rear extension to the existing building
- 6.3 According to the EA modelled flood data and outlines, the existing building is outside of the 1 in 100 (+20%) and 1 in 1000 defended flood outline.
- 6.4 The modelled flood level for the 1 in 100 +20% and 1 in 1000 return period are indicated as 57.25 and 57.36 respectively.
- 6.5 The FFL of the existing building and infill / extension will be set at circa 61m AOD, which is well above the modelled flood level for the site and therefore the building is not at risk of flooding from the adjacent river.
- 6.6 The site is predominantly at low risk of flooding from surface water and a low risk from all other sources including groundwater and reservoir.
- 6.7 Taking into account the flood risks to the site from all sources following the proposed development, the overall post-development flood risk is deemed to remain low.
- 6.8 The proposed development will not increase the impermeable area of the existing site.
- 6.9 It can be concluded that the proposed extension will be safe from flooding hazards, and not impede the path of flood water, and it will remain safe for its lifetime while not increasing flood risk elsewhere.

# Turn2 Ltd

Structural Engineering Design

# Turn2 Ltd

Structural Engineering Design

APPENDICES

## APPENDIX A

### Existing Site Plans

**TURN2 Ltd**  
**30c High St,**  
**Welwyn,**  
**Hertfordshire, AL69EQ**

NOTES

Rev	Date	Detail	Made	Chk'd	App'd

Client: -  
 -  
 -  
 -

Job: **5 THE BEANESIDE  
 WATTON at STONE  
 HERTS  
 SG14 3TS**

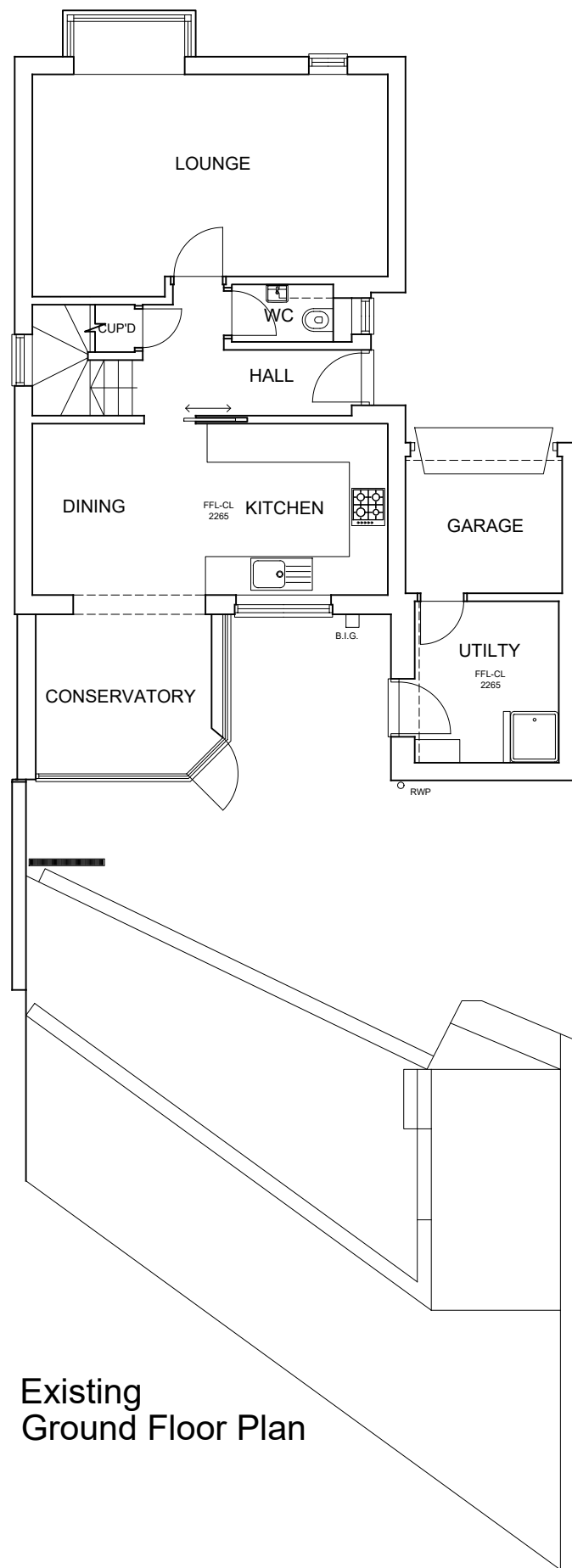
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 GROUND FLOOR &  
 ROOF PLANS**  
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Design: CT      CAD: IB

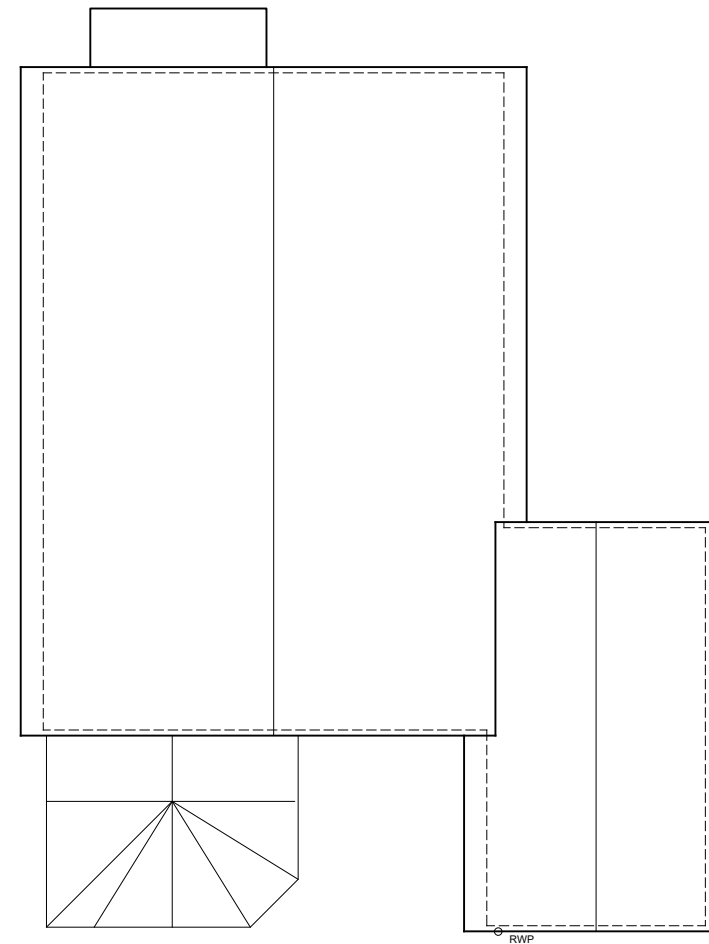
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Date: APRIL 2023      Scale: 1:100      A3

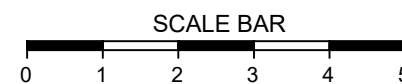
No. DD3385-0 SHT 1/2      Rev: A



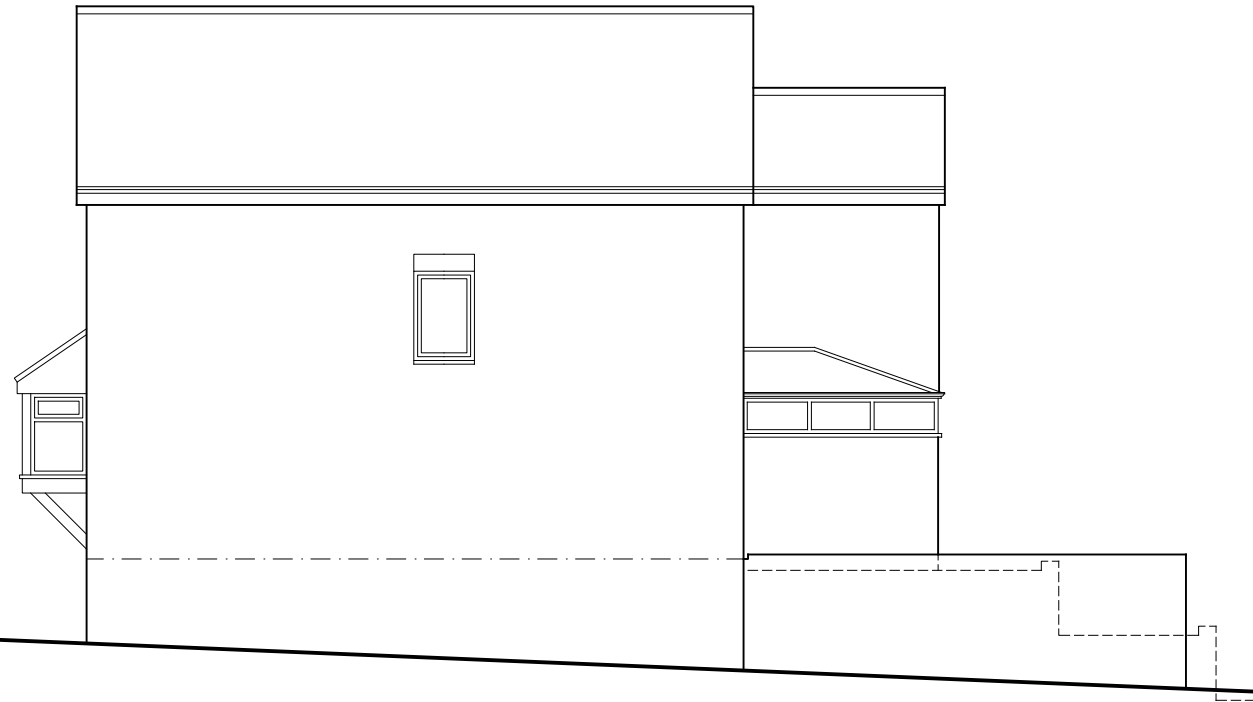
Existing  
Ground Floor Plan



Existing  
Roof Plan



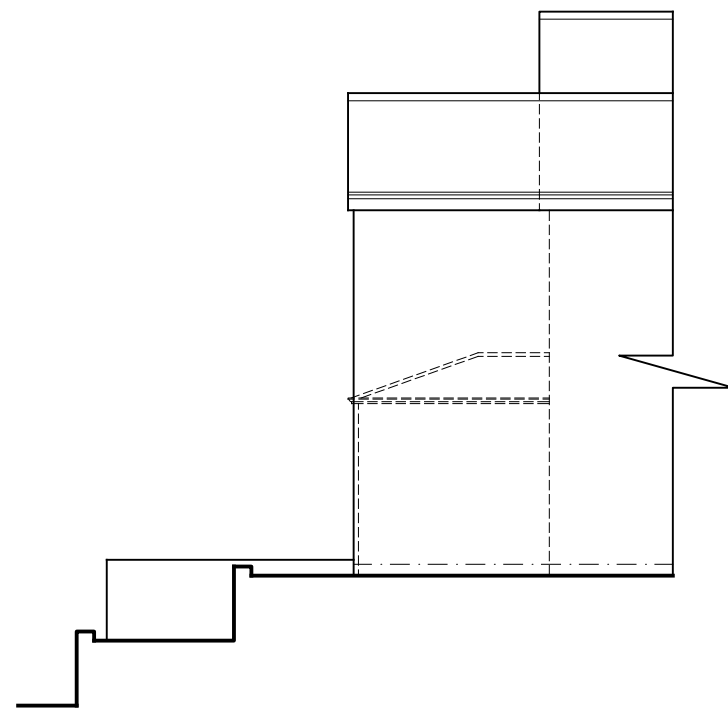
**TURN2 Ltd**  
**30c High St,**  
**Welwyn,**  
**Hertfordshire, AL69EQ**



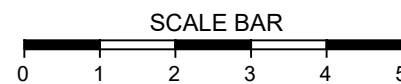
Existing  
Side Elevation



Existing  
Rear Elevation



Existing Part  
Side Elevation



NOTES

Rev	Date	Detail	Made	Chk'd	App'd

Client: -  
-  
-  
-

Job: **5 THE BEANESIDE  
WATTON at STONE  
HERTS  
SG14 3TS**

Title: **EXISTING  
ELEVATIONAL  
VIEWS**  
-

Design: CT CAD: IB

Chk'd: CT App'd: CT

Date: APRIL 2023 Scale: 1:100 A3

No. DD3385-0 SHT 2/2 Rev: A

## APPENDIX B

### Proposed Site Plans

**TURN2 Ltd**  
**30c High St,**  
**Welwyn,**  
**Hertfordshire, AL69EQ**

NOTES

Rev	Date	Detail	Made	Chk'd	App'd

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Job: **5 THE BEANESIDE  
 WATTON at STONE  
 HERTS  
 SG14 3TS**

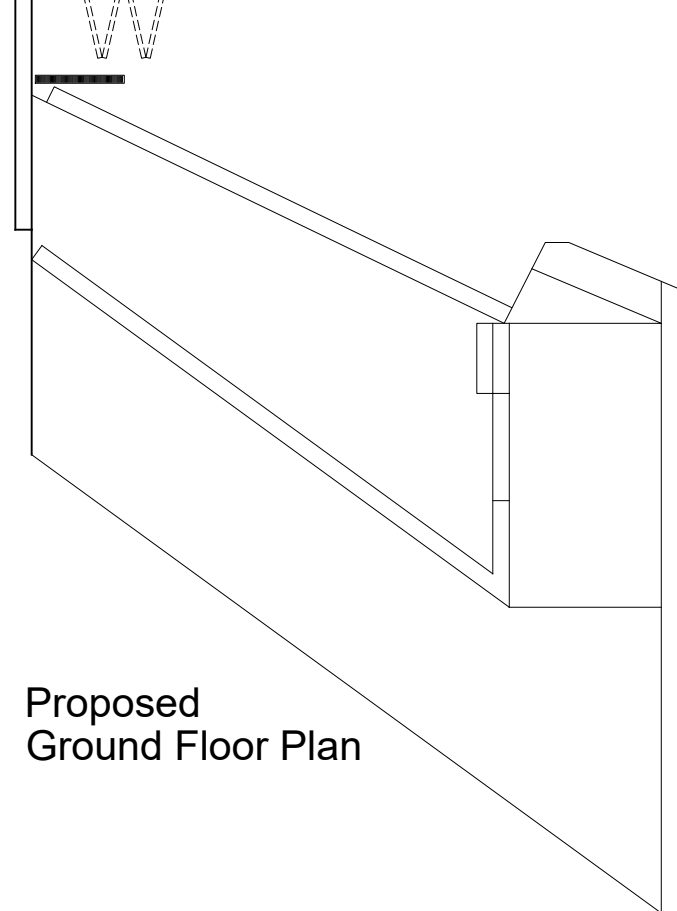
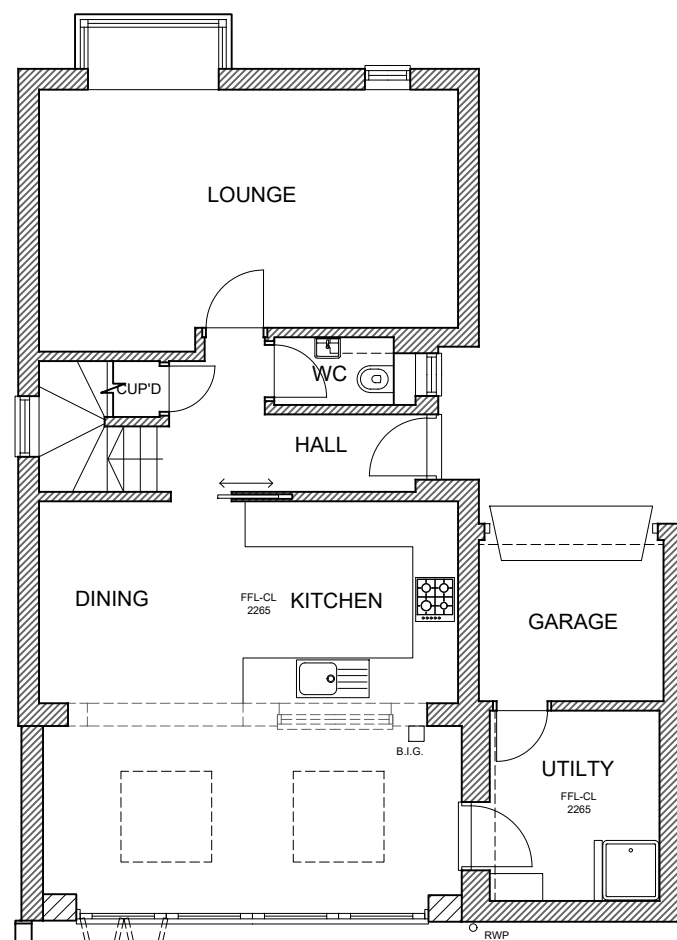
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 GROUND FLOOR &  
 ROOF PLANS**  
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Design: CT CAD: IB

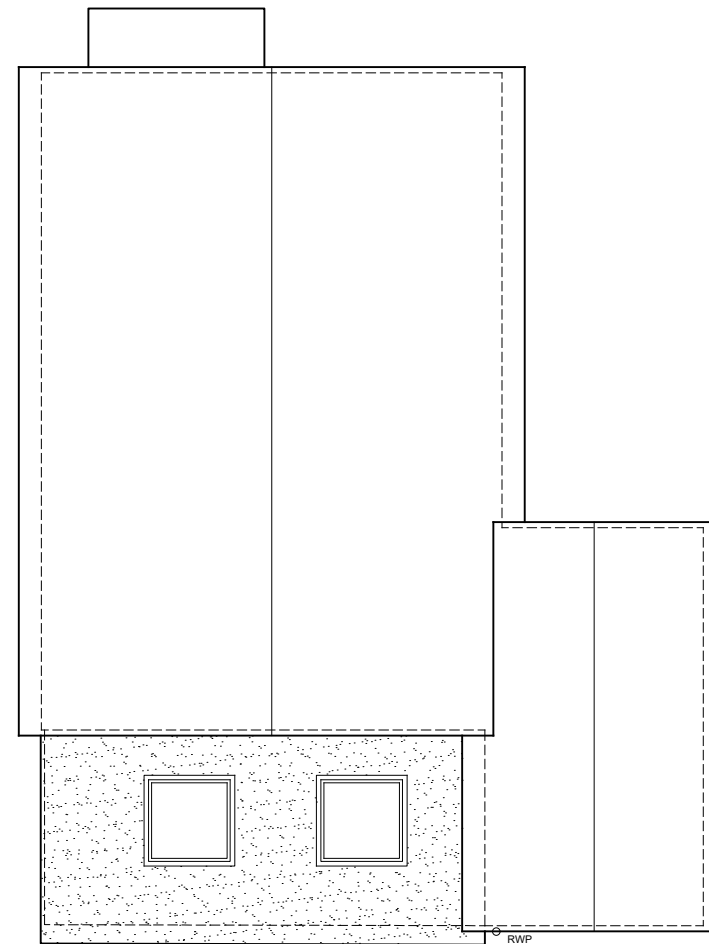
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Date: JUNE 2023 Scale: 1:100 A3

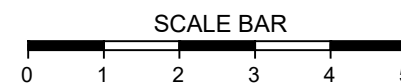
No. DD3385-1 SHT 1/2 Rev: A



Proposed  
Ground Floor Plan

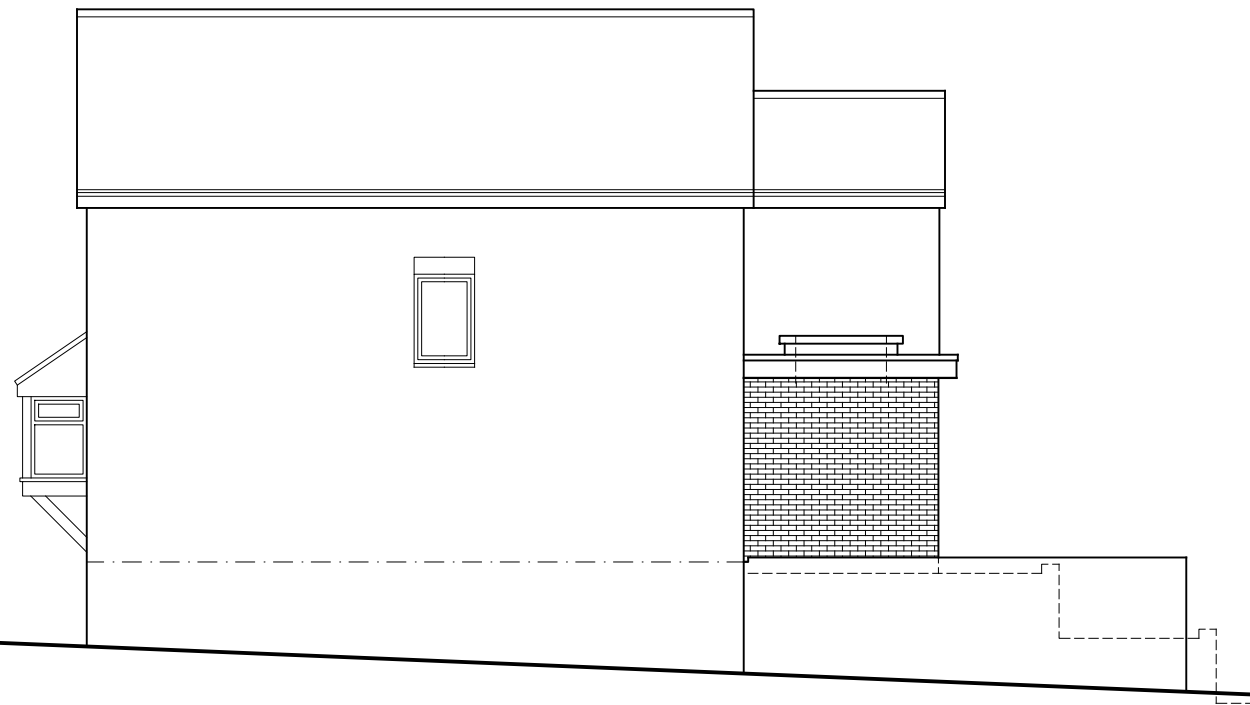


Proposed  
Roof Plan





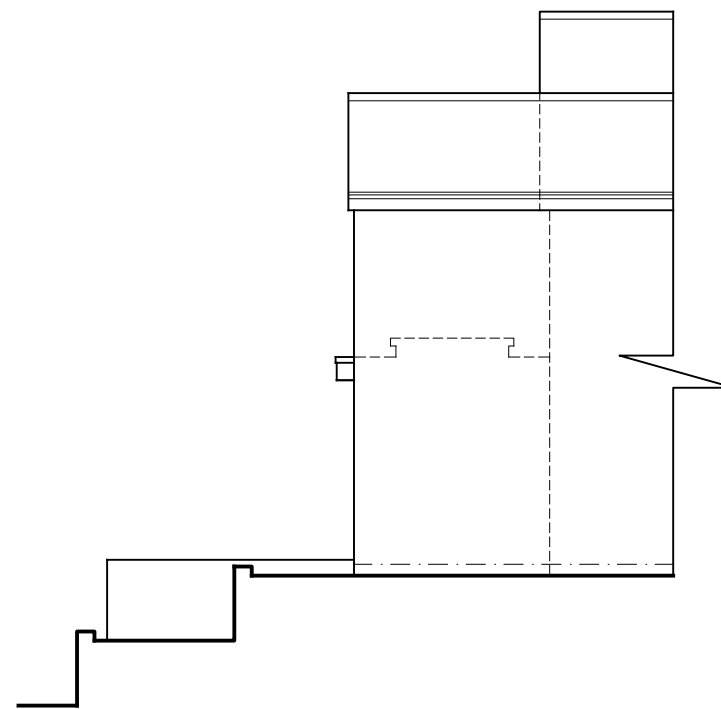
**TURN2 Ltd**  
**30c High St,**  
**Welwyn,**  
**Hertfordshire, AL69EQ**



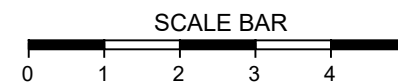
Proposed  
Side Elevation



Proposed  
Rear Elevation



Proposed Part  
Side Elevation



NOTES

Rev	Date	Detail	Made	Chk'd	App'd
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Client:	-
	-
	-
	-

Job: **5 THE BEANESIDE  
WATTON at STONE  
HERTS  
SG14 3TS**

Title: **PROPOSED  
ELEVATIONAL  
VIEWS**  
-

Design: CT	CAD: IB
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Chk'd: CT	App'd: CT
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Date: JUNE 2023	Scale: 1:100	A3
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No. DD3385-1 SHT 2/2	Rev: A
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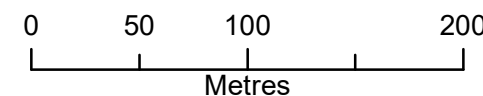
## APPENDIX C

### Environment Agency Product 4 Data

Detailed FRA centred on: 5 The Beanside, Watton at Stone, Herts, SG14 3TS - 25/08/2023 - HNL 323451 BF



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



**Legend**

- Statutory Main Rivers
- Site location

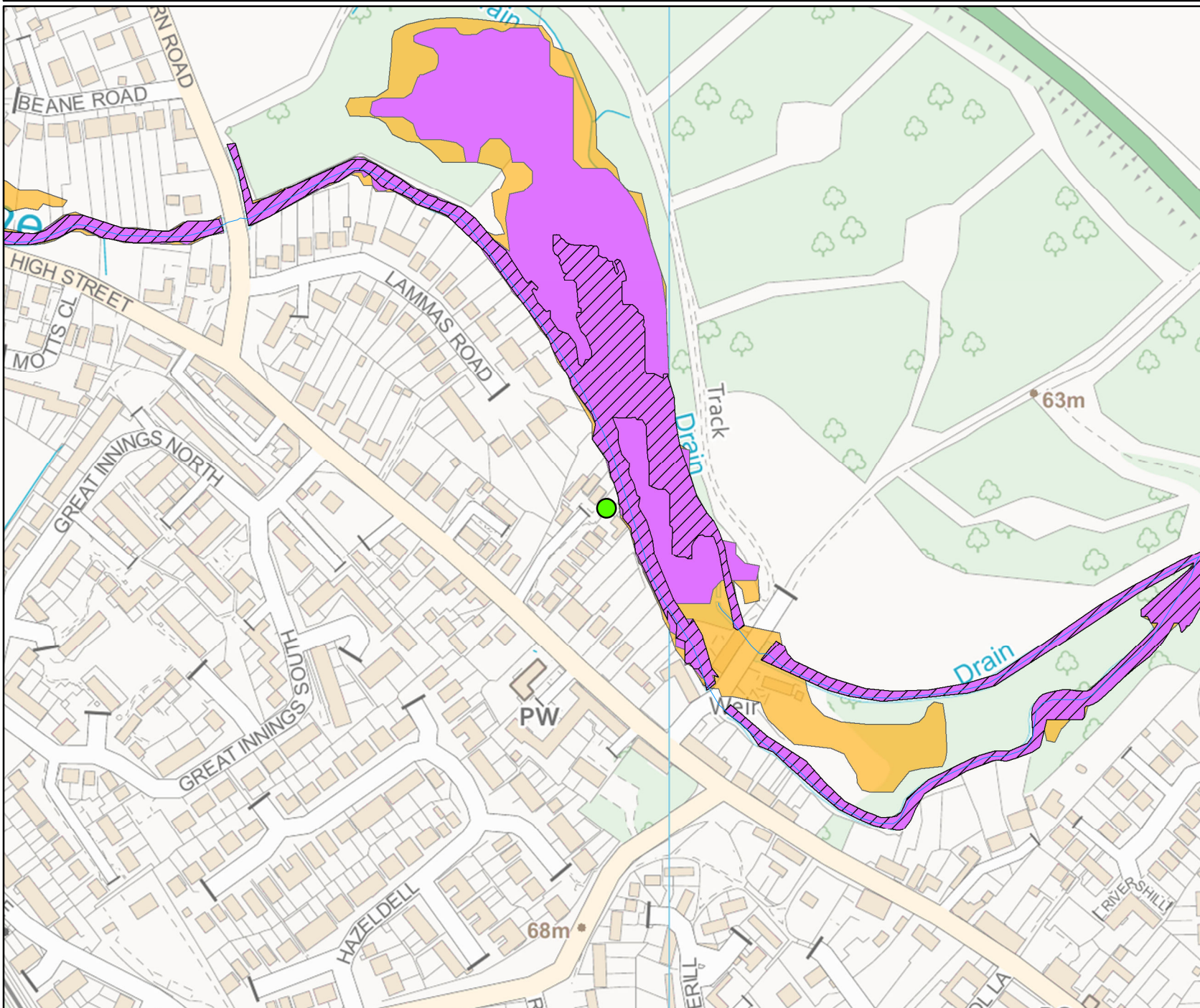
**Defended Flood Outlines**

- 1 in 5 (20%) Defended
- 1 in 10 (10%) Defended
- 1 in 20 (5%) Defended

The following information has been extracted from the River Beane Mapping Study (Halcrow, 2008)  
 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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<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

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 Hertfordshire & North London

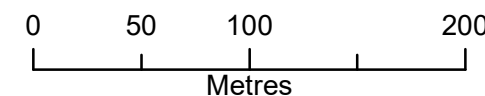




Detailed FRA centred on: 5 The Beanside, Watton at Stone, Herts, SG14 3TS - 25/08/2023 - HNL 323451 BF



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 Alchemy,  
 Bessemer Road,  
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 Hertfordshire,  
 AL7 1HE



**Legend**

- Statutory Main Rivers
- Site location

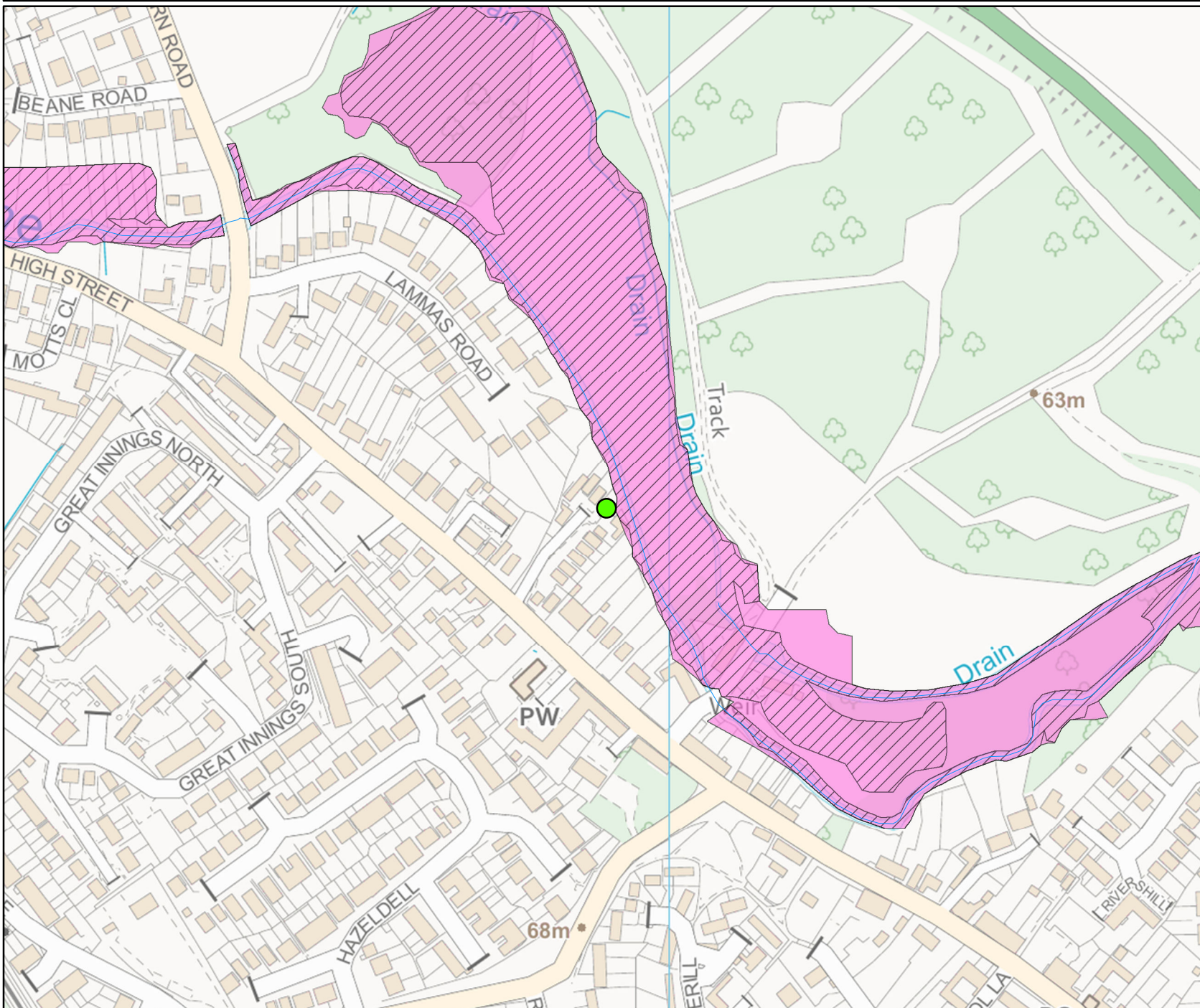
**Defended Flood Outlines**

- 1 in 50 (2.5%) Defended
- 1 in 100 (1%) Defended

The following information has been extracted from the River Beane Mapping Study (Halcrow, 2008)  
 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.  
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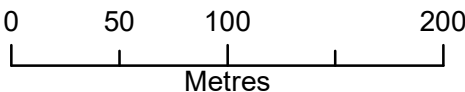




Detailed FRA centred on: 5 The Beanside, Watton at Stone, Herts, SG14 3TS - 25/08/2023 - HNL 323451 BF



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**Legend**

- Statutory Main Rivers
- Site location

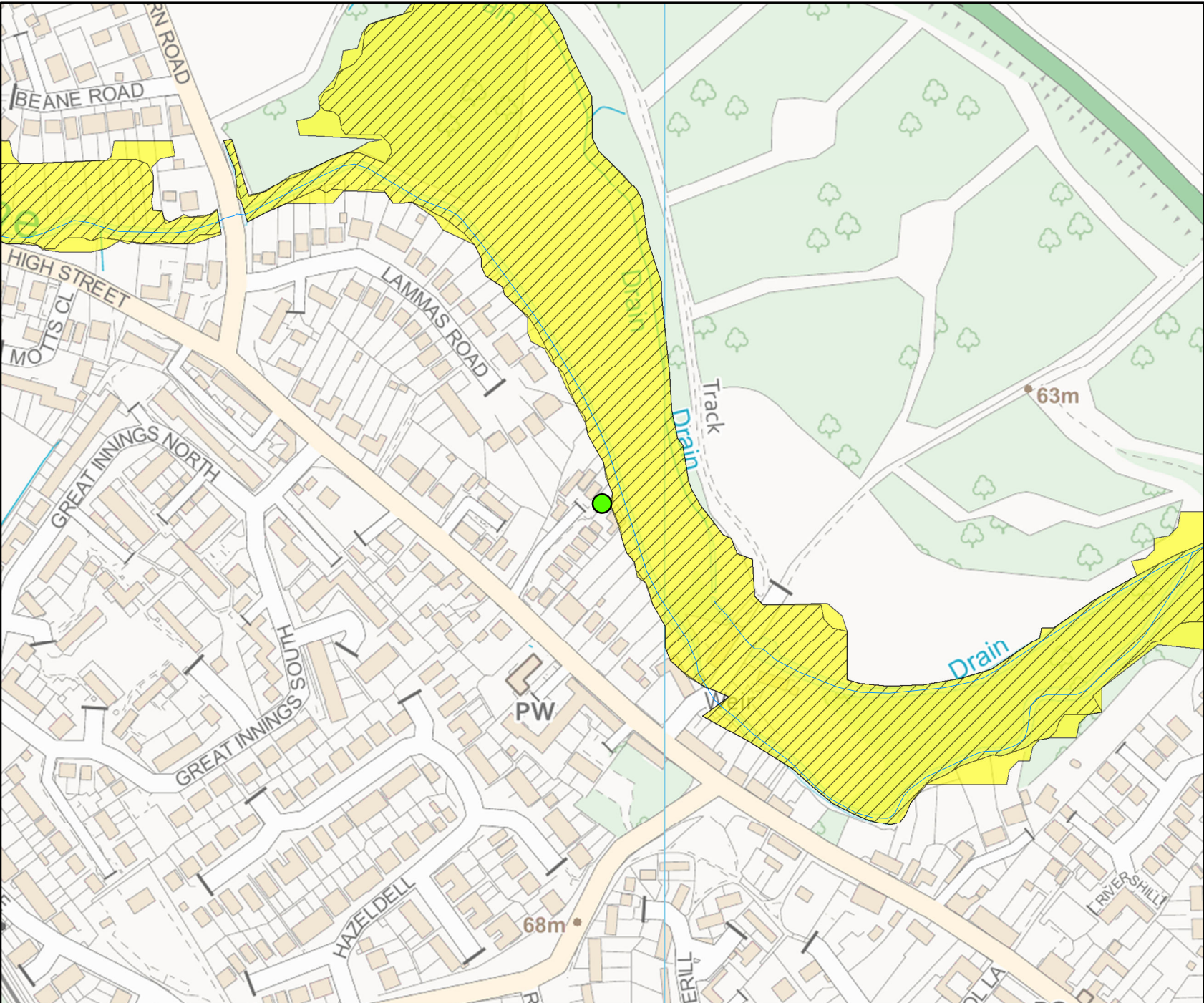
**Defended Flood Outlines**

- 1 in 100+20% (\*CC) Defended
- 1 in 1000 (0.1%) Defended

The following information has been extracted from the River Beane Mapping Study (Halcrow, 2008)  
 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.  
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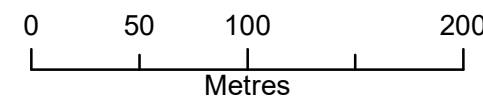




# Detailed FRA centred on: 5 The Beanside, Watton at Stone, Herts, SG14 3TS - 25/08/2023 - HNL 323451 BF



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 AL7 1HE

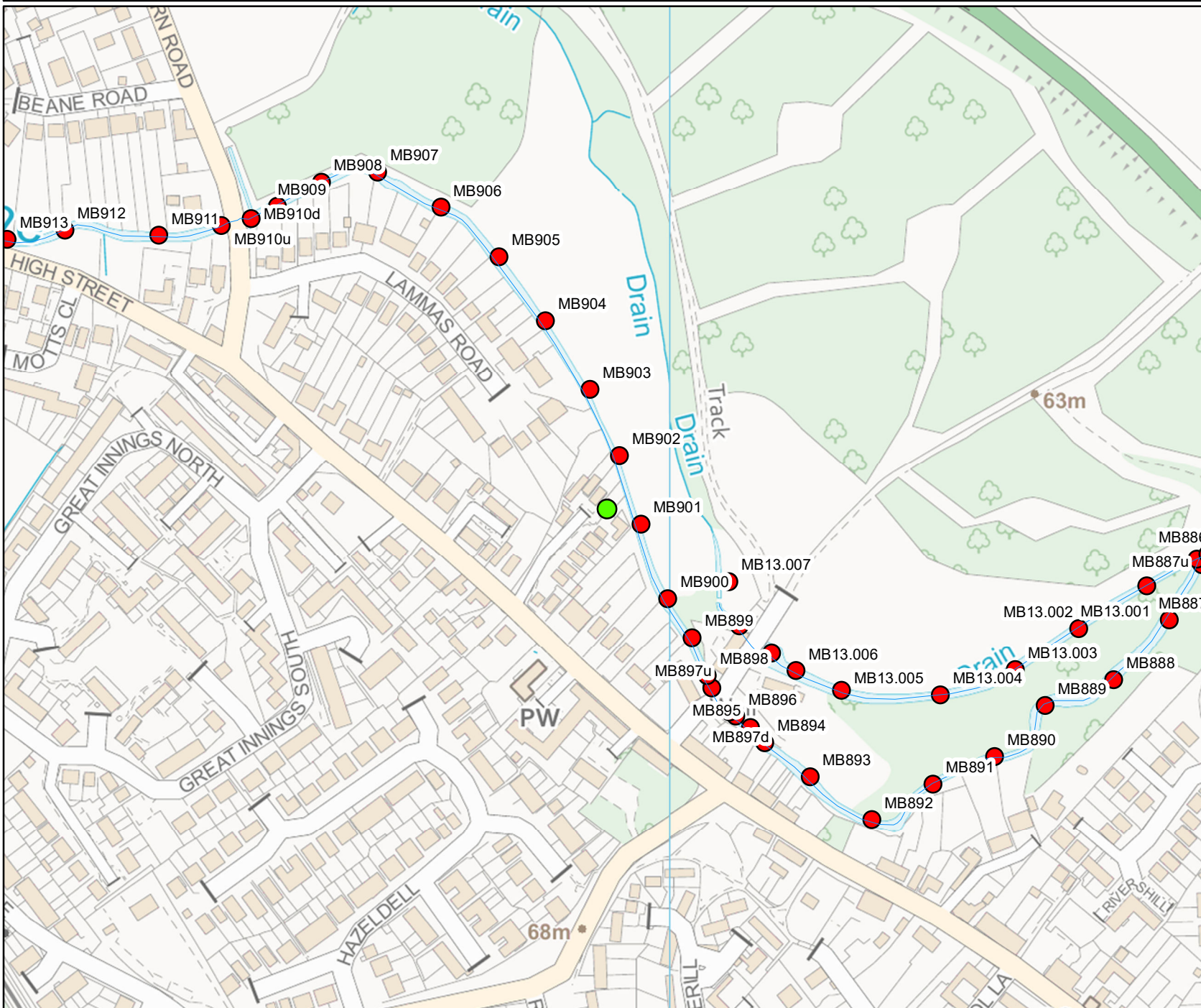


## Legend

- Statutory Main Rivers
- Site location
- 1D Node Results**
- Node Results

The following information has been extracted from the River Beane Mapping Study (Halcrow, 2008)  
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Produced by:  
 Partnerships & Strategic Overview,  
 Hertfordshire & North London



**Environment Agency ref: HNL 323451 BF**

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<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 within the catchment. Modelled outlines take into account catchment wide defences.

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

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

**MODELLED FLOOD LEVEL**

			Return Period						
Node Label	Easting	Northing	5yr	10yr	20yr	50yr	100yr	100yr+20%	1000yr
MB892	530127	219369	54.65	54.74	54.88	55.02	55.11	55.18	55.47
MB891	530175	219394	54.46	54.58	54.77	54.94	55.05	55.13	55.47
MB893	530085	219402	55.00	55.10	55.25	55.36	55.43	55.48	55.71
MB890	530212	219411	54.41	54.53	54.73	54.91	55.02	55.10	55.43
MB894	530058	219425	55.05	55.13	55.26	55.36	55.42	55.47	55.68
MB895	530046	219431	55.14	55.23	55.38	55.48	55.55	55.61	55.80
MB896	530037	219452	55.14	55.22	55.36	55.46	55.53	55.57	55.71
MB897d	530025	219454	55.24	55.33	55.46	55.56	55.62	55.67	55.79
MB889	530249	219449	54.32	54.43	54.62	54.80	54.90	54.98	55.37
MB13.004	530175	219459	54.07	54.16	54.41	54.70	54.89	55.03	55.37
MB13.005	530110	219461	54.07	54.16	54.43	54.75	54.97	55.12	55.45
MB897u	530025	219454	55.42	55.56	55.80	56.01	56.14	56.24	56.53
MB888	530294	219466	54.27	54.38	54.58	54.77	54.89	54.97	55.31
MB898	530029	219474	56.31	56.43	56.62	56.76	56.86	56.91	57.03
MB13.006	530080	219473	54.08	54.17	54.45	54.78	55.00	55.16	55.51
MB13.003	530221	219479	54.07	54.16	54.40	54.69	54.87	55.00	55.34
MB13.007d	530033	219533	54.66	54.70	55.10	55.37	55.51	55.61	55.79
MB899	530000	219483	56.43	56.57	56.79	56.96	57.06	57.12	57.22
MB13.002	530263	219505	54.07	54.16	54.39	54.65	54.82	54.95	55.33
MB13.007u	530033	219533	54.79	54.82	55.08	55.37	55.51	55.61	55.77



MB887	530332	219504	54.26	54.37	54.56	54.76	54.87	54.96	55.27
MB900	529990	219514	56.44	56.58	56.79	56.97	57.07	57.12	57.22
MB13.001	530307	219532	54.07	54.16	54.38	54.63	54.79	54.91	55.27
MB13.007	530033	219533	55.33	55.37	55.43	55.48	55.55	55.64	55.78
MB887u	530332	219504	54.07	54.16	54.37	54.60	54.74	54.84	55.27
MB13.001u	530307	219532	54.07	54.16	54.37	54.61	54.76	54.87	55.28
MB886	530355	219543	54.07	54.16	54.37	54.60	54.74	54.84	55.27
MB901	529972	219563	56.48	56.63	56.85	57.02	57.12	57.18	57.29
MB902	529958	219610	56.51	56.65	56.86	57.03	57.18	57.25	57.36
MB903	529940	219653	56.52	56.66	56.87	57.04	57.22	57.31	57.44
MB904	529914	219697	56.56	56.67	56.87	57.04	57.22	57.31	57.46
MB905	529882	219736	56.61	56.72	56.90	57.05	57.18	57.24	57.35
MB913	529571	219744	57.24	57.36	57.53	57.73	57.87	57.98	58.31
MB911	529671	219744	57.05	57.15	57.32	57.52	57.66	57.79	58.14
MB912	529623	219757	57.14	57.25	57.43	57.63	57.78	57.91	58.24
MB910u	529720	219757	56.92	57.03	57.22	57.44	57.60	57.73	58.13
MB910d	529720	219757	56.82	56.93	57.12	57.31	57.45	57.56	57.77
MB906	529854	219768	56.65	56.77	56.95	57.09	57.20	57.27	57.39
MB909	529743	219787	56.75	56.88	57.07	57.24	57.37	57.46	57.66
MB908	529780	219785	56.75	56.87	57.06	57.24	57.36	57.45	57.63
MB907	529804	219782	56.70	56.82	57.01	57.17	57.29	57.38	57.53

## MODELLED FLOWS

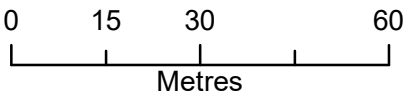
			Return Period						
Node Label	Easting	Northing	5yr	10yr	20yr	50yr	100yr	100yr+20%	1000yr
MB892	530127	219369	7.30	8.67	10.93	12.84	14.04	15.04	18.74
MB891	530175	219394	7.30	8.67	10.93	12.84	14.04	15.04	18.63
MB893	530085	219402	7.30	8.67	10.93	12.85	14.06	15.06	18.44
MB890	530212	219411	7.30	8.67	10.93	12.84	14.04	15.03	20.39
MB894	530058	219425	7.30	8.67	10.93	12.84	14.05	15.06	18.32
MB895	530046	219431	7.30	8.67	10.93	12.84	14.06	15.07	18.08
MB896	530037	219452	7.30	8.67	10.93	12.84	14.06	14.85	16.69
MB897d	530025	219454	7.30	8.67	10.93	12.84	14.06	14.85	16.67
MB889	530249	219449	7.30	8.67	10.93	12.84	14.05	15.04	20.28
MB13.004	530175	219459	0.24	0.32	1.84	4.70	7.30	9.61	15.14
MB13.005	530110	219461	0.24	0.32	1.84	4.51	6.87	9.10	15.07
MB897u	530025	219454	7.30	8.67	10.93	12.84	14.06	14.85	16.67
MB888	530294	219466	7.30	8.67	10.93	12.84	14.03	15.02	19.44
MB898	530029	219474	7.30	8.67	10.93	12.84	14.07	14.86	16.55
MB13.006	530080	219473	0.24	0.32	1.83	4.42	6.62	8.77	13.48
MB13.003	530221	219479	0.24	0.32	1.84	4.70	7.30	9.62	15.43
MB13.007d	530033	219533	0.24	0.32	0.44	0.62	0.79	0.94	1.67
MB899	530000	219483	7.30	8.67	10.93	12.84	14.33	16.00	20.43
MB13.002	530263	219505	0.23	0.32	1.84	4.70	7.30	9.63	15.17
MB13.007u	530033	219533	0.24	0.32	0.44	0.62	0.78	0.94	1.72

MB887	530332	219504	7.30	8.67	10.93	12.84	14.05	15.02	21.83
MB900	529990	219514	7.30	8.67	10.93	12.84	14.36	16.09	20.37
MB13.001	530307	219532	0.23	0.32	1.84	4.70	7.30	9.62	16.58
MB13.007	530033	219533	0.24	0.32	0.44	0.62	0.77	0.92	1.54
MB887u	530332	219504	7.30	8.67	10.93	12.84	13.94	14.64	18.95
MB13.001u	530307	219532	0.24	0.32	1.84	4.70	7.31	9.63	16.10
MB886	530355	219543	7.53	8.97	12.77	17.54	21.20	24.22	34.85
MB901	529972	219563	7.30	8.10	8.73	10.54	13.62	15.43	19.37
MB902	529958	219610	7.30	8.13	8.91	11.77	16.49	19.59	25.30
MB903	529940	219653	7.30	8.58	9.83	12.28	15.56	17.83	23.21
MB904	529914	219697	7.45	9.50	11.72	13.82	17.43	20.03	25.75
MB905	529882	219736	7.45	9.50	12.59	16.43	20.65	23.73	29.72
MB913	529571	219744	7.30	9.29	12.35	16.83	19.94	22.63	29.47
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MB906	529854	219768	7.45	9.50	12.59	17.16	21.25	24.47	31.83
MB909	529743	219787	7.30	9.29	12.34	16.83	20.66	23.83	30.52
MB908	529780	219785	7.45	9.50	12.60	17.17	21.11	24.53	31.87
MB907	529804	219782	7.45	9.50	12.59	17.17	21.06	24.65	31.67

# Detailed FRA centred on: 5 The Beaneside, Watton at Stone, Herts, SG14 3TS - 25/08/2023 - HNL 323451 BF



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



### Legend

— Statutory Main Rivers

● Site location

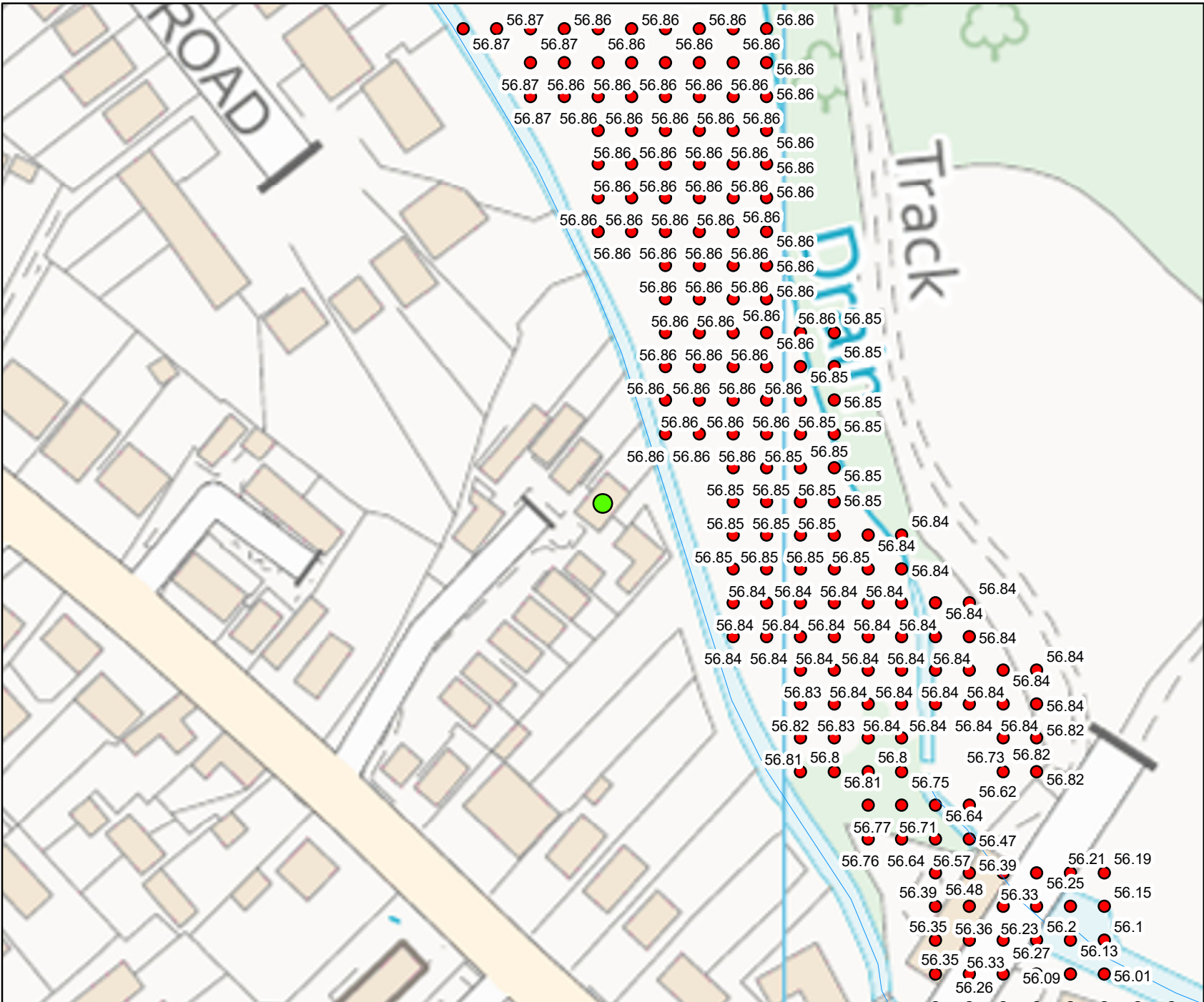
### 2D Node Results: Heights

● 1 in 20 (5%) Defended

The following information has been extracted from the River Beane Mapping Study (Halcrow, 2008)  
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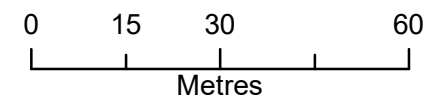




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**Legend**

— Statutory Main Rivers

● Site location

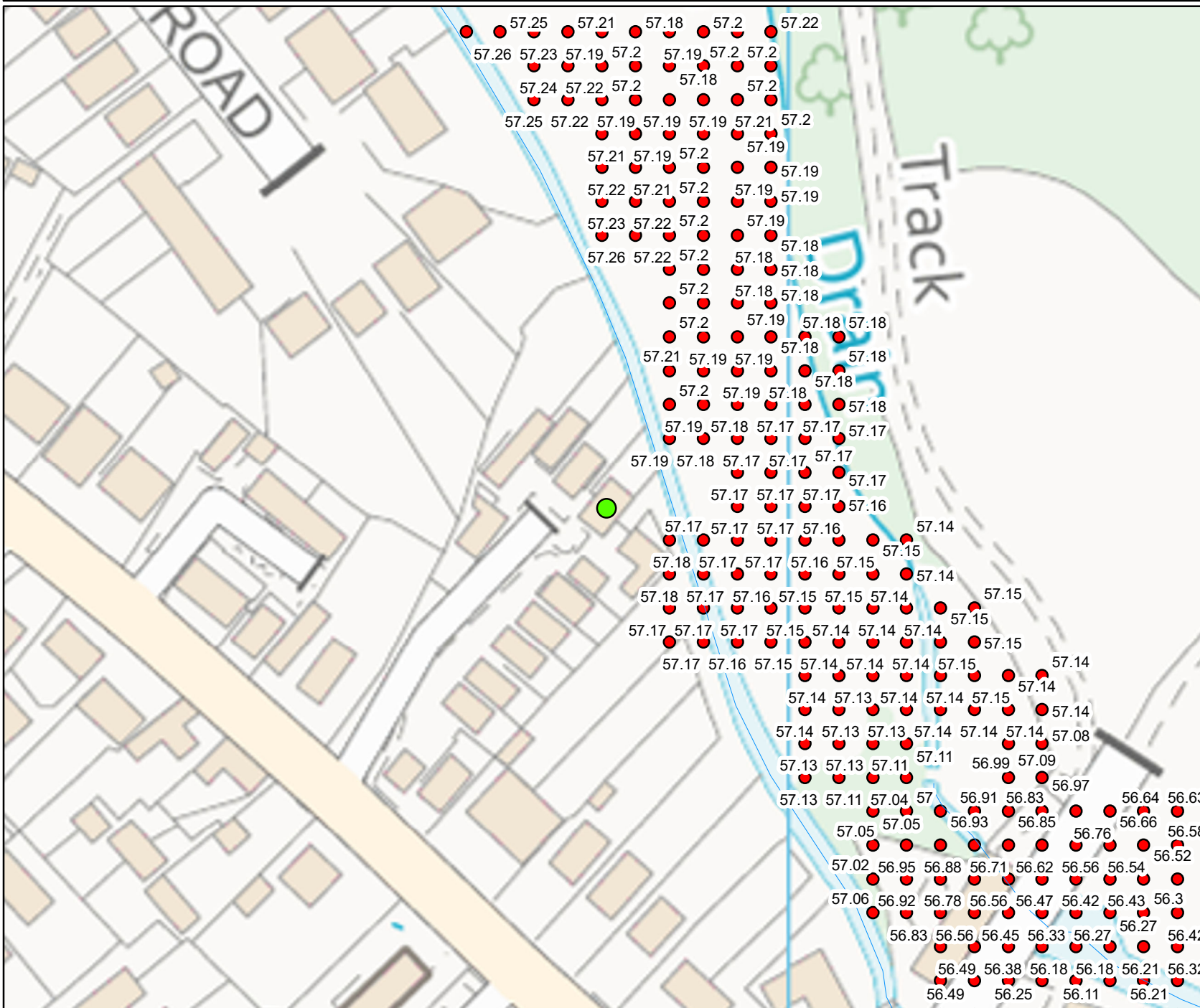
**2D Node Results: Heights**

● 1 in 50 (2.5%) Defended

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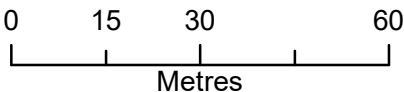
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**Legend**

- Statutory Main Rivers
- Site location

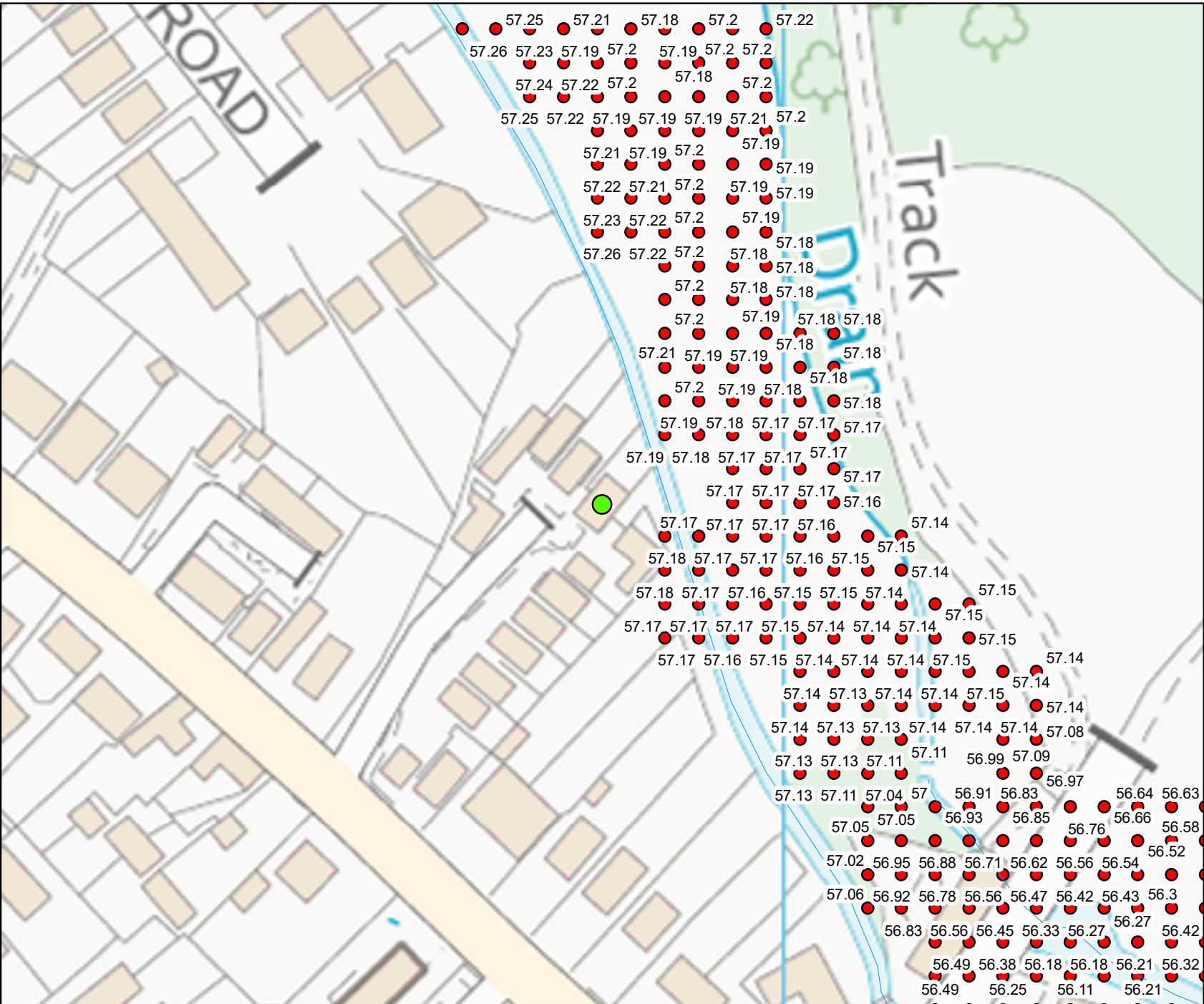
**2D Node Results: Heights**

- 1 in 100 (1%) Defended

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 Partnerships & Strategic Overview,  
 Hertfordshire & North London

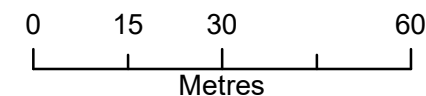




# Detailed FRA centred on: 5 The Beanside, Watton at Stone, Herts, SG14 3TS - 25/08/2023 - HNL 323451 BF



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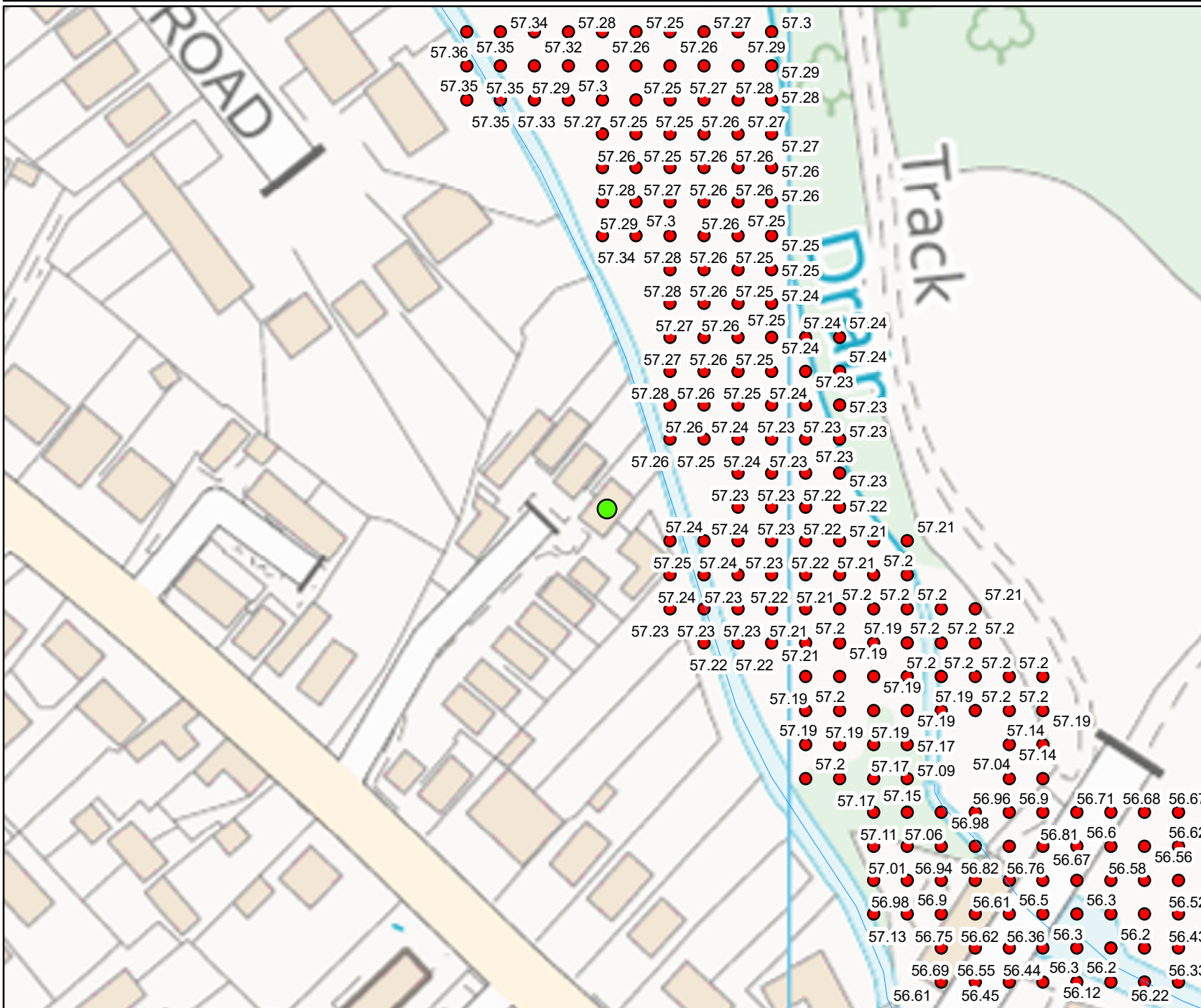
## Legend

- Statutory Main Rivers
- Site location
- 2D Node Results: Heights**
- 1 in 100+20% (\*CC) Defended

The following information has been extracted from the River Beane Mapping Study (Halcrow, 2008)  
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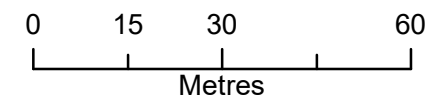
Produced by:  
 Partnerships & Strategic Overview,  
 Hertfordshire & North London



# Detailed FRA centred on: 5 The Beanside, Watton at Stone, Herts, SG14 3TS - 25/08/2023 - HNL 323451 BF



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



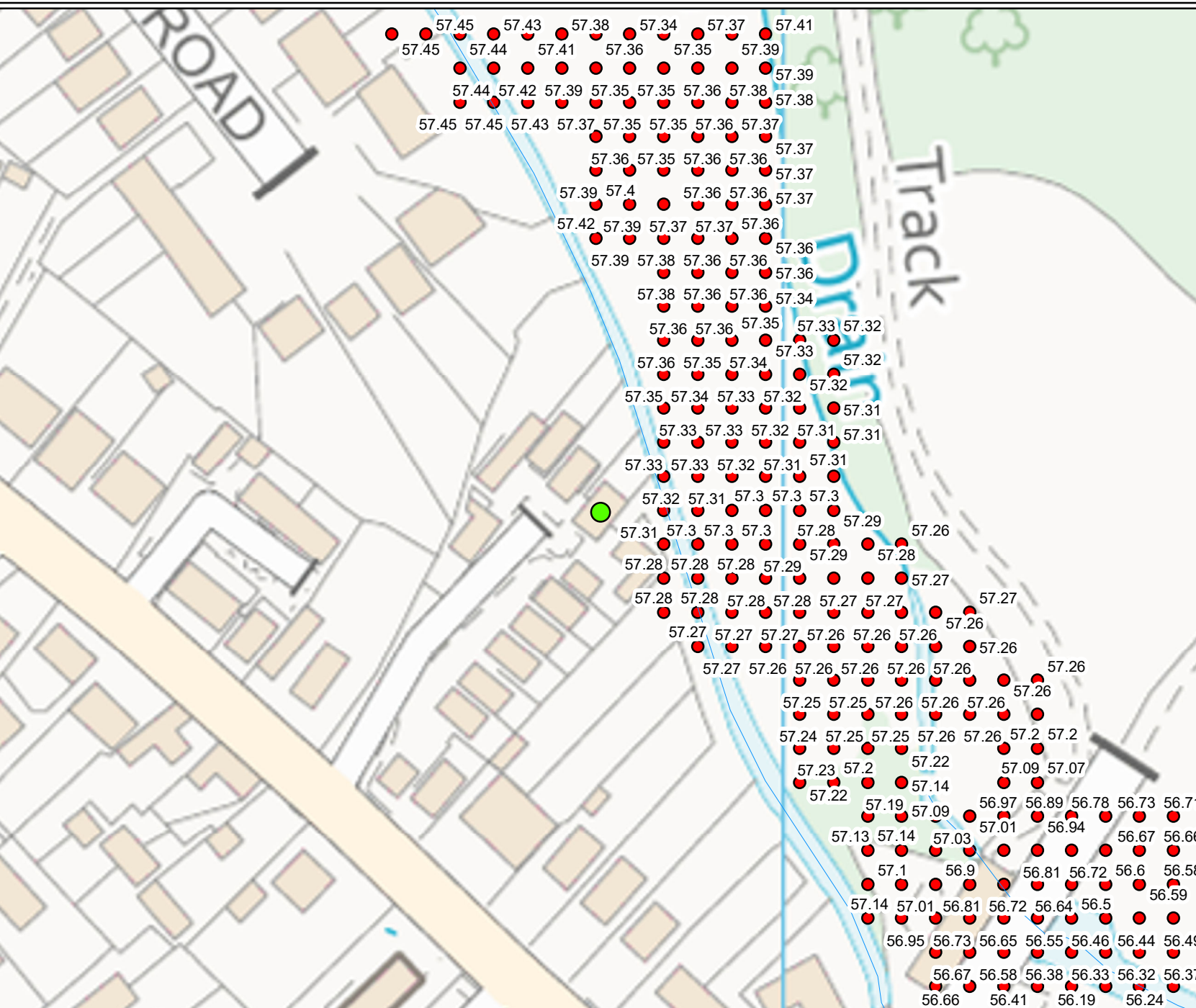
## Legend

- Statutory Main Rivers
- Site location
- 2D Node Results: Heights**
- 1 in 1000 (0.1%) Defended

The following information has been extracted from the River Beane Mapping Study (Halcrow, 2008)  
 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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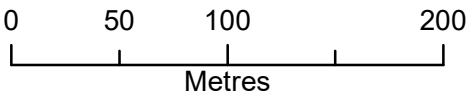




# Historic Flood Map centred on: 5 The Beanside, Watton at Stone, Herts, SG14 3TS - 25/08/2023 - HNL 323451 BF



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### Legend

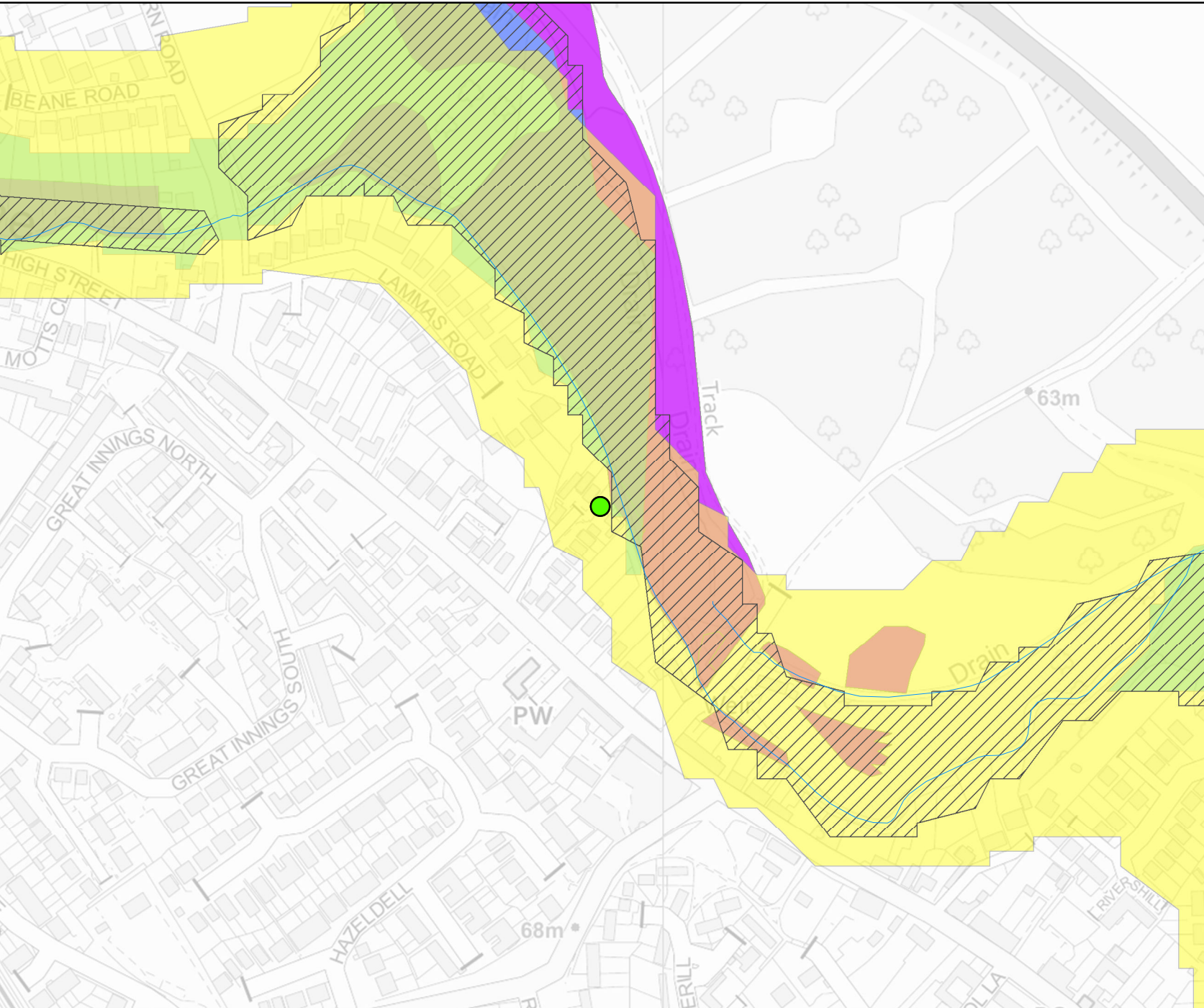
- Statutory Main Rivers
- Site location

### Flood Event Outlines

- 1947
- 1968
- 1978
- 1993

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.

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