



Martin Grant Homes

LONDON ROAD, HITCHIN

Flood Risk Assessment





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1 INTRODUCTION

1.1 CONTEXT

- 1.1.1. WSP UK Ltd (WSP) has been commissioned to produce a Flood Risk Assessment (FRA) and accompanying Surface Water Drainage Strategy on behalf of Martin Grant Homes ('the Applicant'), in support of an outline planning application for the development of up to 41 residential properties, landscaping, drainage, and associated works (the 'Proposed Development').
- 1.1.2. This FRA has been carried out with reference to the National Planning Policy Framework (NPPF) and associated Flood Risk and Coastal Change Planning Practice Guidance (PPG), and the CIRIA Sustainable Drainage Systems (SuDS) Manual (C753, 2015).
- 1.1.3. The outcomes of pre-application consultation with key flood risk stakeholders, namely the Environment Agency, Anglian Water, North Hertfordshire District Council (NHDC), and Hertfordshire Country Council (as the Lead Local Flood Authority (LLFA)), are referenced throughout as appropriate.

1.2 SCOPE AND METHODOLOGY

SCOPE

- 1.2.1. This FRA comprises an assessment of the risk of flooding within the Site and surrounding area, assessing risks posed to and arising from the Proposed Development during its operation from all potential sources of flood risk.
- 1.2.2. The report also establishes the mitigation measures required to ensure the sustainability and safety of the Proposed Development.

METHODOLOGY

- 1.2.3. This FRA uses a source-pathway-receptor led approach for assessing flood risk, with the individual parts of that chain being defined as follows:
 - Sources - the potential source of flood risk to be assessed, such as direct rainfall, watercourses, the sea, groundwater or infrastructure (i.e. flood defence structures).
 - Pathways – the means by which the source of flood risk can impact potential receptors. A specific combination of sources and pathways is referred to as a flood mechanism, such as tidal overtopping of sea defences as a result of high tides and storm surge.
 - Receptors - comprise those persons or assets that could be vulnerable to the flood mechanisms identified.
- 1.2.4. The flood sources that have been assessed in this FRA include potential flooding from fluvial, tidal/coastal, surface water, groundwater, sewer and drainage infrastructure, and artificial sources (reservoirs and canals).
- 1.2.5. The receptors that have been assessed are the Proposed Development, users of and visitors to the Proposed Development, and other developments and people within the surrounding area.
- 1.2.6. The following sources of information have been used to inform this FRA:

- British Geological Survey (BGS) GeoIndex Onshore viewer¹;
- BGS Geology Viewer²;
- Department for Environment, Food and Rural Affairs (DEFRA) MAGIC Mapping³;
- Environment Agency Catchment Data Explorer⁴;
- Environment Agency Flood Map for Planning⁵;
- Environment Agency LiDAR Digital Terrain Model⁶;
- Environment Agency's online Long Term Flood Risk map⁷;
- Google Maps, Aerial Imagery⁸;
- Ordnance Survey Mapping (OSM)⁹; and
- UK Centre for Ecology and Hydrology's Flood Estimation Handbook (FEH) Web Service¹⁰.

1.3 ADVISORY INFORMATION

- 1.3.1. WSP UK Ltd has prepared this report in accordance with the instructions of our client, Martin Grant Homes, for their sole and specific use relating to the above Site. Any person who uses any information contained herein does so at their own risk and shall hold WSP UK Ltd. harmless in any event. The conclusions and recommendations contained herein are limited by the availability of background information and the planned use for the Site.
- 1.3.2. Third party information has been used in the preparation of this report which WSP UK Ltd by necessity assumes is correct at the time of writing. Whilst reasonable checks have been made on data sources and the accuracy of the data, WSP UK Ltd accepts no liability in relation to the report should any data, information or condition be incorrect or have been concealed, withheld, misrepresented, or otherwise not fully disclosed to WSP UK Ltd. In any event, WSP UK Ltd. shall not be liable for any loss or damages arising under, or in connection to, the use of this report.
- 1.3.3. This document contains public sector information licensed under the Open Government Licence v3.0. This document makes partial use of third-party information and contains Environment Agency information (© Environment Agency).
- 1.3.4. WSP UK Ltd makes no warranties or guarantees, actual or implied, in relation to this report, or the ultimate commercial, technical, economic, or financial effect on the project to which it relates, and bears no responsibility or liability related to its use other than as set out in the contract under which it was supplied.

¹ [GeoIndex - British Geological Survey](#)

² https://geologyviewer.bgs.ac.uk/?_ga=2.241530178.1350753581.1760263341-745825928.1760263340

³ <https://magic.defra.gov.uk/MagicMap.aspx>

⁴ <https://environment.data.gov.uk/catchment-planning/>

⁵ <https://flood-map-for-planning.service.gov.uk/>

⁶ [Defra Survey Data Download](#)

⁷ [Technical map - Check your long term flood risk - GOV.UK](#)

⁸ <https://www.google.com/maps>

⁹ <https://osmaps.ordnancesurvey.co.uk>

¹⁰ [Map - FEH Web Service](#)

2 SITE BACKGROUND

- 2.1.1. The site is located in St Ippolyts, Hitchin, North Hertfordshire. The Ordnance Survey (OS) Grid Reference for the approximate centre of the site is TL19138 27480 and the nearest postcode is SG4 7NF. The site falls under the Hertfordshire County Council and North Hertfordshire District Council (NHDC) authority area. A site location plan is provided in Figure 2-1 below.

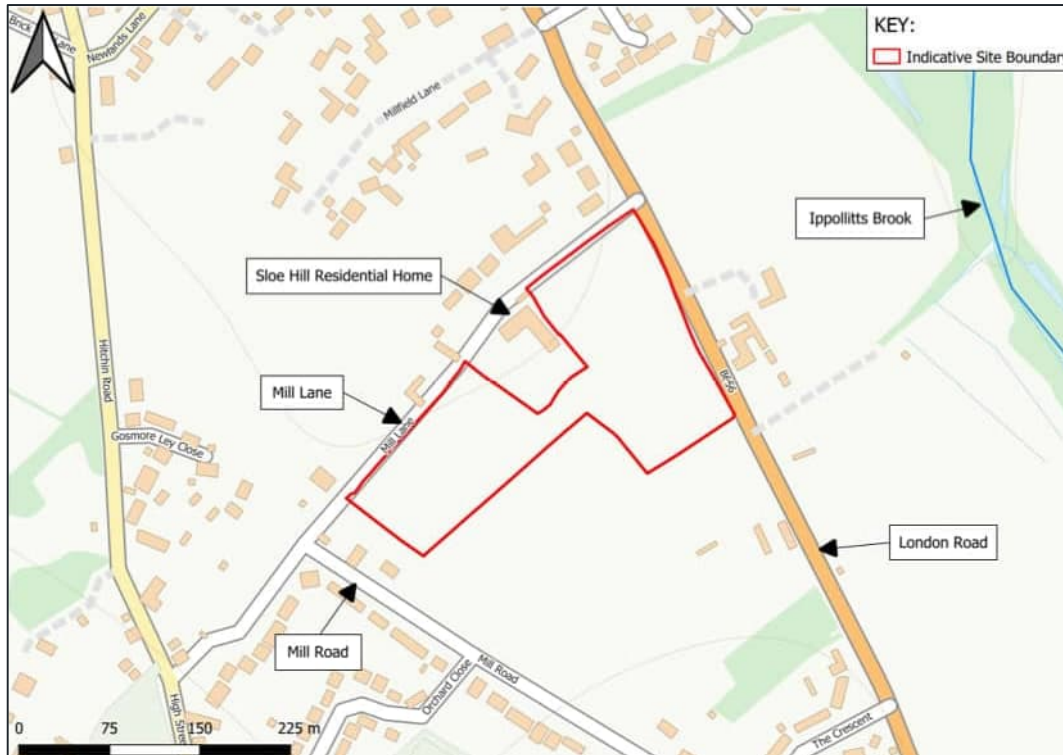


Figure 2-1 – Site Location Plan

2.2 SITE DESCRIPTION

- 2.2.1. The site encompasses approximately 3.3 hectares (ha) of greenfield land. Mill Lane runs along the northwestern boundary, Mill Road is situated to the southwest, and London Road (B656) borders the eastern edge. Residential and commercial areas of Hitchin town are directly to the north, while those of St Ippolyts are to the south and east. Greenfield areas are located to the south, east, and west. The site surrounds Sloe Hill Residential Home near its centre.

2.3 TOPOGRAPHY

- 2.3.1. Oak Surveys Limited undertook a topographical survey in 2019. The survey indicated that ground levels range from approximately 82 m AOD¹¹ to 74 m AOD, generally sloping from the northwest to the southeast. The lowest ground level of 74.95 m AOD is shown towards the southwest of the site and the highest ground level of 81.56 m AOD is shown towards the northern centre of the site. It is acknowledged that the survey is six years old but given the nature of the site (greenfield) it is very

¹¹ m AOD - metres Above Ordnance Datum

unlikely that any topographical changes would have occurred in the intervening period. A copy of the topographical survey can be found in Appendix A.

- 2.3.2. The Environment Agency's (EA) Light Detection and Ranging (LiDAR) 1 m Digital Terrain Model (DTM) 2022 data concur with the results from the topographical survey, as shown in Figure 2-2 below.

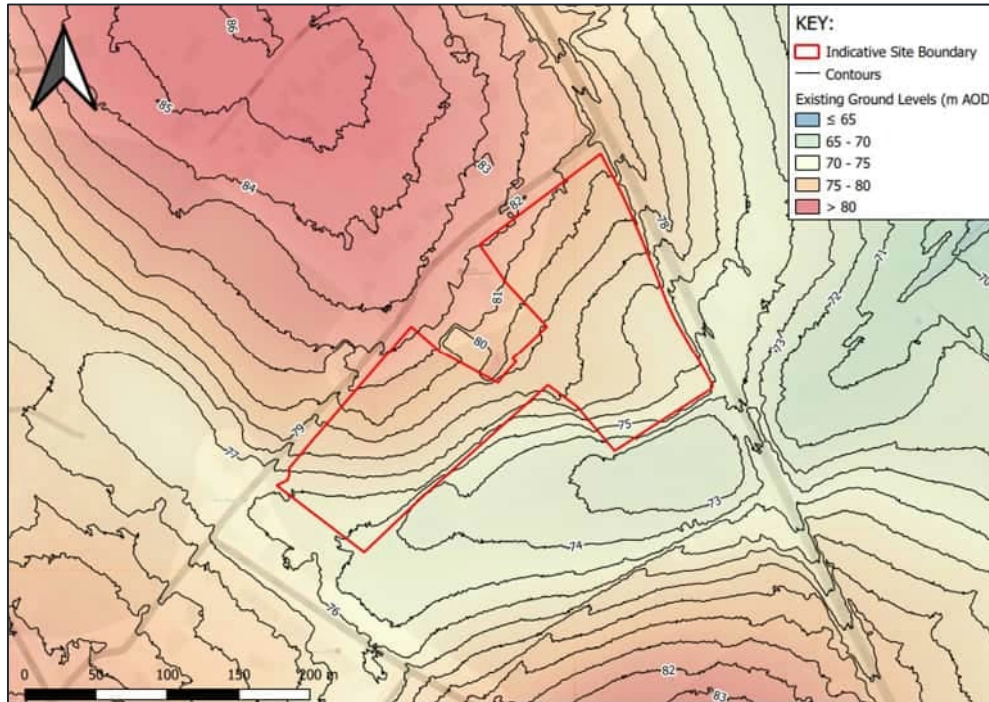


Figure 2-2 - Environment Agency Existing Ground Levels

2.4 GEOLOGY AND HYDROGEOLOGY

GEOLOGY

- 2.4.1. According to publicly available mapping produced by the British Geological Survey (BGS), the majority of the site, particularly towards the centre and eastern areas, is underlain by Zig Zag Chalk formation. The western portion of the site is characterised by West Melbury Marly Chalk Formation, also consisting of chalk, while the westernmost point is underlain by Gault Formation, comprising mudstone. An excerpt from the BGS bedrock geology mapping is presented in Figure 2-3 below.
- 2.4.2. BGS mapping shows that most of the site is underlain by superficial Glaciofluvial Deposits from the mid Pleistocene era, comprising sand and gravel. The southernmost area contains deposits of Head, which include clay, silt, sand, and gravel. An excerpt from the BGS superficial geology mapping is provided below in Figure 2-4.



Figure 2-3 - British Geological Survey – Bedrock



Figure 2-4 - British Geological Survey - Superficial Deposits

HYDROGEOLOGY

- 2.4.3. Based on DEFRA's Magic mapping, bedrock underlying the site is classified as being a Principal aquifer. BGS defines Principal aquifers as having a high permeability and significant water storage capacity. These aquifers are capable of supporting large-scale abstractions for public water supply.
- 2.4.4. The site's underlying superficial deposits are predominately Secondary A aquifers, which provide local water supplies and sometimes support river base flow. Along the southern and western edges, the land is classified as Secondary (Undifferentiated) aquifers, where rock characteristics make further classification unclear due to the variable characteristics.
- 2.4.5. MAGIC mapping indicates the site's eastern area falls within a Zone III Source Protection Zone (SPZ), where all groundwater flows to an abstraction point. The western area lies in a Zone II SPZ, defined as groundwater taking up to 400 days to reach the abstraction point, which helps protect against slowly degrading contaminants.
- 2.4.6. According to Cranfield Soils mapping, the site is covered entirely by freely draining, slightly acidic loamy soils. These soils allow water to pass through at a moderate rate, reducing risk of waterlogging.
- 2.4.7. During consultation, the Environment Agency indicated that groundwater below the site flows in an easterly direction, towards the Ippollitts Brook, a minor watercourse located about 0.26 km east of the site.

EXISTING WATERBODIES

- 2.4.8. The River Purwell, classified as an EA Main River, is situated approximately 2.4 km north of the site. A chalk stream, it originates from subterranean springs within chalk bedrock, which initially give rise

to Ippollitts Brook. The brook flows northwards, increasing in size before it becomes designated as the River Purwell.

- 2.4.9. A pond is situated approximately 0.22 km northeast of the site and is likely to be hydrologically connected to Ippollitts Brook.
- 2.4.10. There is a field drain located approximately 0.5 km west of the site, along with three ponds located between approximately 0.6 km – 0.85 km west of the site. However, these do not appear to be hydraulically linked to the site.
- 2.4.11. There are no open watercourses within the site.

2.5 EXISTING SEWER AND DRAINAGE INFRASTRUCTURE

- 2.5.1. The site is currently classified as a greenfield site, draining via a combination of natural overland runoff and localised infiltration.
- 2.5.2. The site lies within the Ashbrook sewer catchment, which is managed by Anglian Water, the statutory sewerage undertaker for the site.
- 2.5.3. According to the Anglian Water Assets Plan (2019) provided in Appendix B, there is a 150 mm foul water sewer located along the eastern section of Mill Lane. The plan also indicates the presence of a foul water sewer along Mill Road, as well as along the southern border of the field adjacent to the south of the site
- 2.5.4. Mapping for London Road and Mill Road indicates road gullies near the site boundary, though their connection to the public sewer network is unknown.
- 2.5.5. Any easements associated with the public sewer network should be incorporated into the detailed design of the Proposed Development as the project progresses.

3 PROPOSED DEVELOPMENT

3.1 DEVELOPMENT PROPOSALS

- 3.1.1. The Proposed Development will involve the erection of up to 41 residential homes, landscaping, drainage, and associated works. Figure 3-1 shows the Proposed Development drawing.



Figure 3-1 - Proposed Development at Hitchin (Source: CSA Environmental Drg. No. CSA/3922/122(D))

3.2 DEVELOPMENT LIFESPAN

- 3.2.1. This FRA has been written based on the Proposed Development having a lifespan of 100 years.

3.3 VULNERABILITY CLASSIFICATION

- 3.3.1. In accordance with Annex 3 (Flood risk vulnerability classification) of the National Planning Policy Framework (NPPF) Flood Risk and Coastal Change PPG, the Proposed Development is considered 'More Vulnerable' with respect to flood risk due to the proposed residential dwellings.

4 CONSULTATION, POLICY AND GUIDANCE

4.1 STAKEHOLDER CONSULTATION

4.1.1. Pre-application consultation has been undertaken with the following key flood risk stakeholders to inform this Flood Risk Assessment (FRA):

- Environment Agency (EA);
- Anglian Water (AW);
- Hertfordshire County Council (HCC); and
- North Hertfordshire District Council (NHDC).

4.1.2. A summary of the correspondence undertaken with the stakeholders identified above is given in Table 4-1 below, with full copies provided in Appendix C for reference. Where relevant, details from the responses have been used within this report.

Table 4-1 - Stakeholder Correspondence

Stakeholder Correspondence	Date of Consultation	Response
EA	May 2025	The EA confirmed that they hold no record of historic flood events recorded within the vicinity of the site. They stated that there are no EA defences within 500 m or which impact upon the site. The EA confirmed that there are currently no designated areas with critical drainage problems (ACDPs) that cover the site. The EA provided hydrogeological setting information, noting that an EA monitoring borehole (TL12/015), is located approximately 85 m southeast of the site and has average groundwater levels between 4.2 metres below ground level (m bgl) and 6.2 m bgl. They provided water quality requirements for surface water runoff, which are further discussed in the Surface Water Drainage Strategy (SWDS).
AW	April 2025	AW confirmed that there have been instances of flooding within the vicinity of the site, however, they could not provide information on the source, dates or extent of flooding.
HCC (Lead Local Flood Authority)	April 2025	HCC confirmed that they do not have any recorded reports of flooding within the site. The nearest reported flooding incident was to a property approximately 380 mm to the northwest. They are unaware of any flood defence structures at the site or in the surrounding area. Further detail was provided on attenuation system requirements and water quality, and this is further discussed in the SWDS.
NHC	April 2025	NHC did not provide further details apart from what is available on their website and in the Local Plan. They suggested obtaining pre-application advice.

4.2 LEGISLATION, POLICY AND GUIDANCE

4.2.1. This FRA has been informed by, and makes reference to where appropriate, the following legislation, policy and guidance documents.

LEGISLATION

- Environment Act (2021)¹²;
- The Environment Permitting (England and Wales) Regulations (2016)¹³;
- Flood and Water Management Act (2010)¹⁴;
- The Flood Risk Regulations (2009)¹⁵;
- The Groundwater (Water Framework Directive) (England) Direction (2016)¹⁶;
- Land Drainage Act (1991)¹⁷;
- The Water Environment (Water Framework Directive) (England and Wales) Regulations (2017)¹⁸;
- Water Industry Act (1991)¹⁹; and,
- Water Resources Act (1991)²⁰.

NATIONAL POLICIES AND GUIDANCE

- Building Regulations Approved Document H, Ministry of Housing, Communities and Local Government (2015)²¹;
- Environment Agency Flood Risk Assessments: Climate Change Allowances guidance (2022)²²;
- National Planning Policy Framework (NPPF), Ministry of Housing, Communities & Local Government (2025)²³;
- National Standards for Sustainable Drainage Systems, Department for Environment, Food and Rural Affairs (DEFRA) (2025)²⁴ ;
- Planning Practice Guidance (PPG) Flood Risk and Coastal Change, Ministry of Housing, Communities & Local Government and Department for Levelling Up, Housing and Communities. (2022)²⁵; and
- The SuDS Manual (C753), CIRIA, (2015)²⁶.

¹² <https://www.legislation.gov.uk/ukpga/2021/30/contents>

¹³ <https://www.legislation.gov.uk/uksi/2016/1154/contents>

¹⁴ <https://www.legislation.gov.uk/ukpga/2010/29/contents>

¹⁵ <https://www.legislation.gov.uk/uksi/2009/3042/contents/made?view=plain>

¹⁶ https://www.legislation.gov.uk/uksi/2015/1623/pdfs/uksiod_20151623_en.pdf

¹⁷ <https://www.legislation.gov.uk/ukpga/1991/59/contents>

¹⁸ <https://www.legislation.gov.uk/uksi/2017/407/contents>

¹⁹ <https://www.legislation.gov.uk/ukpga/1991/56/contents>

²⁰ <https://www.legislation.gov.uk/ukpga/1991/57/contents>

²¹ <https://www.gov.uk/government/publications/drainage-and-waste-disposal-approved-document-h>

²² <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

²³ <https://www.gov.uk/guidance/national-planning-policy-framework>

²⁴ <https://www.gov.uk/government/publications/national-standards-for-sustainable-drainage-systems/national-standards-for-sustainable-drainage-systems-suds>

²⁵ <https://www.gov.uk/guidance/flood-risk-and-coastal-change>

²⁶ <https://www.calderdale.gov.uk/docs/planning/ciria-c753-the-suds-manual.pdf>

LOCAL/REGIONAL POLICIES AND GUIDANCE

- Hertfordshire County Council Lead Local Flood Authority SuDS Policy Statement (2015)²⁷;
- Hertfordshire County Council Local Flood Risk Management Strategy 2 (2019)²⁸;
- Hertfordshire County Council Preliminary Flood Risk Assessment (PFRA) (2011)²⁹;
- Hertfordshire County Council Review of Hertfordshire's Local Flood Risk Management Strategy Issues & Options document (2016)³⁰;
- North Hertfordshire District Council Strategic Flood Risk Assessment Update (2016)³¹; and
- North Hertfordshire Local Plan 2011-2031 (2025)³².

4.3 CLIMATE CHANGE GUIDANCE

- 4.3.1. The Environment Agency's guidance on climate change allowances provides up to date predictions on the changes in peak river flows, peak rainfall intensities, and sea levels that are expected to occur as a result of climate change.
- 4.3.2. The allowances are considered as part of this assessment to ensure that the Proposed Development would remain safe and would not increase flood risk elsewhere over its intended design life in accordance with the requirements of the NPPF.
- 4.3.3. The Environment Agency confirmed during consultation that the assessment should follow East_Anglian_External Climate Change Allowances Guidance_March2022.
- 4.3.4. The anticipated impact of climate change on sea levels is not relevant to this assessment as the site is not located in the vicinity of the coast or a tidal estuary.

PEAK RAINFALL INTENSITY

- The EA's climate change allowances for peak rainfall intensity are to be used for the design of surface water drainage infrastructure and for the assessment of surface water flood risk in small catchments with an area of less than five square kilometres.
- The latest allowances for peak rainfall intensity for the Upper and Bedford Ouse Management Catchment, of which the site is located, are summarised in Table 4-2 below.

²⁷<https://democracy.hertfordshire.gov.uk/Data/Cabinet/201503231400/Agenda/KoICNnV2fqB7TRmzIIMB8VYz8OUip.pdf>

²⁸<https://www.hertfordshire.gov.uk/media-library/documents/environment-and-planning/water/flood-risk-management/lfrms-for-hertfordshire-non-technical-summary.pdf>

²⁹<https://www.hertfordshire.gov.uk/media-library/documents/environment-and-planning/water/flood-investigations/archive-consultations/hcc-preliminary-flood-risk-assessment.pdf>

³⁰<https://democracy.hertfordshire.gov.uk/Data/Environment,%20Planning%20and%20Transport%20Cabinet%20Panel/201606301000/Agenda/UPiLEZ5oiL9Jp0cUS32fZfT6yGMqG.pdf>

³¹<https://www.north-herts.gov.uk/sites/default/files/NHE12a%20-%20North%20Hertfordshire%20District%20Council%20SFRA%20Update%202016%20%28p1-26%29.pdf>

³²<https://www.north-herts.gov.uk/north-herts-local-plan-2011-2031>

Table 4-2 - Upper and Bedford Ouse Management Catchment Peak Rainfall Allowances

	3.3% Annual Exceedance Rainfall Event		1% Annual Exceedance Rainfall Event	
Epoch	Central Allowance (%)	Upper end allowance (%)	Central Allowance (%)	Upper end allowance (%)
2050s	20	35	20	40
2070s	25	35	25	40

- 4.3.5. The Environment Agency's climate change guidance provides advice on the application of allowances for peak rainfall intensity for developments with an expected lifetime beyond 2100, stating that developments should use the upper end allowance for both the 1% and 3% annual exceedance probability (AEP) events for the 2070s epoch (between 2061 and 2125).

PEAK RIVER FLOW

- 4.3.6. The EA's allowances for peak river flow details the anticipated changes to peak flow by sub-catchments of river basin districts known as management catchments.
- 4.3.7. The latest allowances for peak river flow for the Upper and Bedford Ouse Management Catchment, in which the site is located, are summarised in Table 4-3 below.

Table 4-3 - Upper and Bedford Ouse Management Catchment Peak River Flow Allowances

Epoch	Central (%)	Higher Central (%)	Upper (%)
2020s	5	10	24
2050s	4	11	30
2080s	19	30	58

- 4.3.8. The EA's climate change guidance advises that the central allowance should be used for More Vulnerable developments (i.e. the Proposed Development) within Flood Zones 2 and 3a. Although no guidance is specifically given for More Vulnerable developments within Flood Zone 1, the central allowance will be used as a conservative approach. As the Proposed Development has a lifespan of at least 100 years, the 2080s epoch would be appropriate.

5 SEQUENTIAL AND EXCEPTION TEST

- 5.1.1. The purpose of the Sequential Test is to ensure that land use planning takes due regard of all sources of flood risks, to ensure that areas at low or no risk of flooding are developed in preference to areas at higher risk. The Sequential Test aims to steer development, if possible, towards areas at the lowest risk of flooding.
- 5.1.2. Table 2 (Flood risk vulnerability and flood zone 'incompatibility') of the NPPF Flood Risk and Coastal Change PPG identifies different land use vulnerabilities that are appropriate within each of the Flood Zones; this has been replicated in Table 5-1 below. This shows that 'More Vulnerable' developments are permitted within Flood Zone 1.

Table 5-1 - Flood risk vulnerability and flood zone compatibility

Flood Risk Vulnerability Classification	Flood Zone 1	Flood Zone 2	Flood Zone 3A	Flood Zone 3B
More Vulnerable	Development is appropriate	Development is appropriate	Exception Test required	Development is not permitted

- 5.1.3. While a Low risk of surface water exists to the south of the site, no development is proposed in this area. Accordingly, the Proposed Development can be considered to satisfy the Sequential Test requirements, and an Exception Test is not necessary.

6 ASSESSMENT OF FLOOD RISK

6.1 INTRODUCTION

- 6.1.1. The following section provides an overview of flood risk to the site, along with flood risk to and from the Proposed Development. An assessment has been undertaken for each source that could affect the Proposed Development in accordance with the NPPF Flood Risk and Coastal Change PPG.

6.2 HISTORIC FLOOD RISK

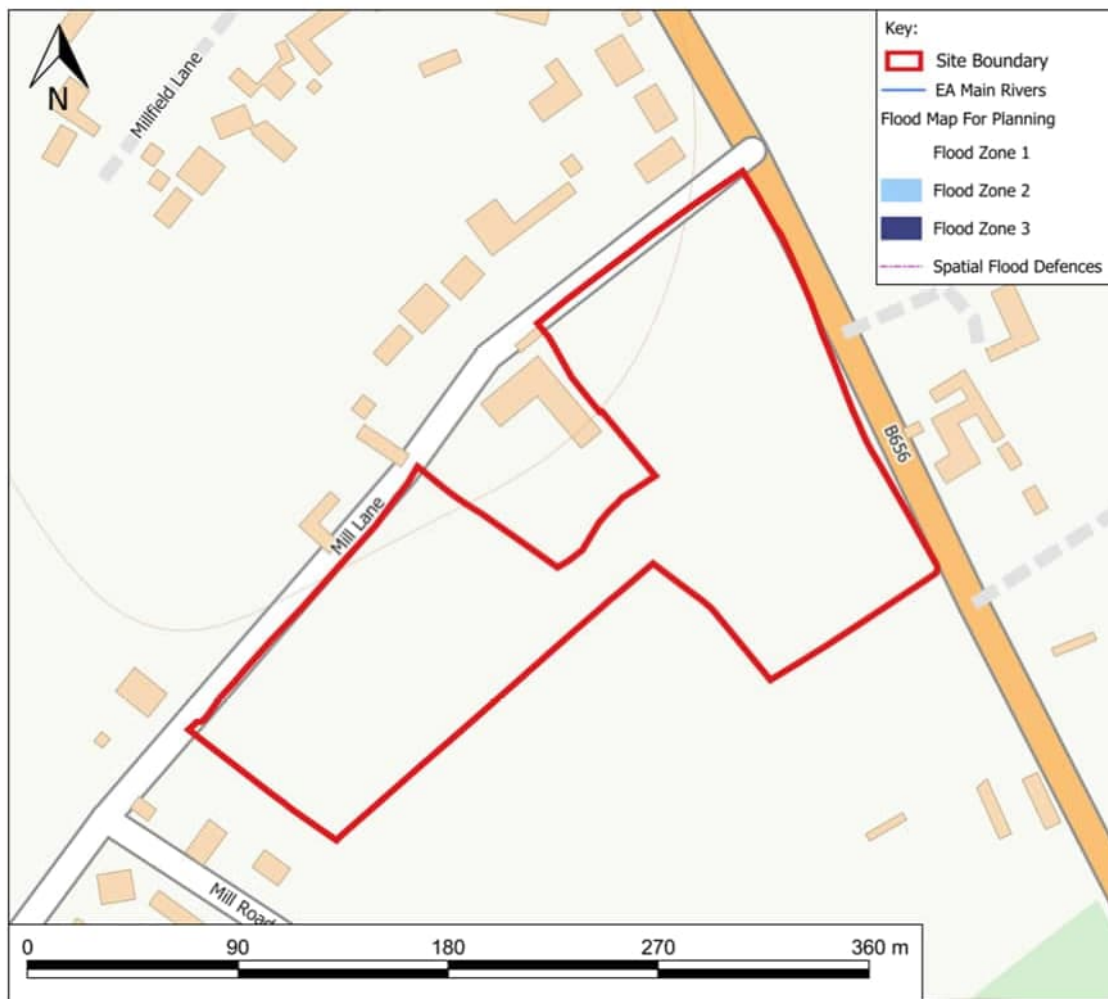
- 6.2.1. A review of the Environment Agency's (EA) Historic Flood Map shows that there are no historical records of flooding at the site or the surrounding area.
- 6.2.2. The EA confirmed that they do not hold any records of flooding within the site.
- 6.2.3. Hertfordshire County Council (HCC) confirmed that the nearest reported flood incident occurred at a property approximately 380 m northwest of the site. Anglian Water confirmed that there have been instances of flooding within the vicinity of the site, however, they were not able to provide the source, date or extent of the incident.

6.3 FLOOD RISK FROM TIDAL AND FLUVIAL SOURCES

- 6.3.1. The Proposed Development is not located in the vicinity of the coast or a tidal watercourse. The risk of coastal and tidal flooding to the site is negligible and the risk of the Proposed Development exacerbating this risk is also considered to be negligible. As a result, the risk of flooding detailed below is linked to fluvial sources.

FLOOD MAP FOR PLANNING

- 6.3.2. The EA's Flood Map for Planning presents the indicative flood risk to the Proposed Development from fluvial and tidal sources for an undefended, present-day scenario.
- 6.3.3. The flood zones are defined as follows:
- **Flood Zone 1** comprises land assessed as having a less than 1 in 1000 annual exceedance probability (AEP) of river or sea flooding in any year (<0.1%);
 - **Flood Zone 2** comprises land assessed as having between a 1 in 100 (1%) and 1 in 1000 (0.1%) AEP of river flooding; or between a 1 in 200 (0.5%) and 1 in 1000 (0.1%) AEP of sea flooding in any year; and
 - **Flood Zone 3** comprises land assessed as having a 1 in 100 (1%) or greater AEP of river flooding; or a 1 in 200 (0.5%) or greater AEP of sea flooding in any year.
- 6.3.4. An extract of the Flood Map for Planning is shown in Figure 6-1 below and Appendix D.
- 6.3.5. The mapping indicates that the entirety of the site is located within Flood Zone 1, indicating a Low risk of flooding from fluvial sources.



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Figure 6-1 – EA Flood Risk Map for Planning (2025)

RISK OF FLOODING FROM RIVERS AND SEA

- 6.3.6. The EA's Risk of Flooding from Rivers and Sea mapping shows the chance of flooding from rivers and the sea to the site, taking into account the presence and condition of flood defences.
- The level of risk is displayed as one of four likelihood categories:
 - High – greater than or equal to 1 in 30 (3.3%) chance of flooding in any year
 - Medium – Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance of river flooding in any given year; or less than 1 in 30 (3.3%) but greater than or equal to 1 in 200 (0.5%) chance of sea flooding in any given year;
 - Low – Less than 1 in 100 (1%) chance of river flooding or less than in 200 (0.5%) chance of sea flooding, but greater than or equal to 1 in 1000 (0.1%) chance of flooding from rivers or sea in any given year; and
 - Very low – less than 1 in 1000 (0.1%) chance of flooding in any given year (not mapped).
- 6.3.7. Extracts of the EA's Risk of Flooding from Rivers and Sea mapping for the present-day scenario and the future baseline are provided in Figure 6-2 and Figure 6-3, respectively and Appendix D.

6.3.8. The mapping indicates that the site is at a Very Low risk of flooding from rivers and sea for both a present day and future scenario.

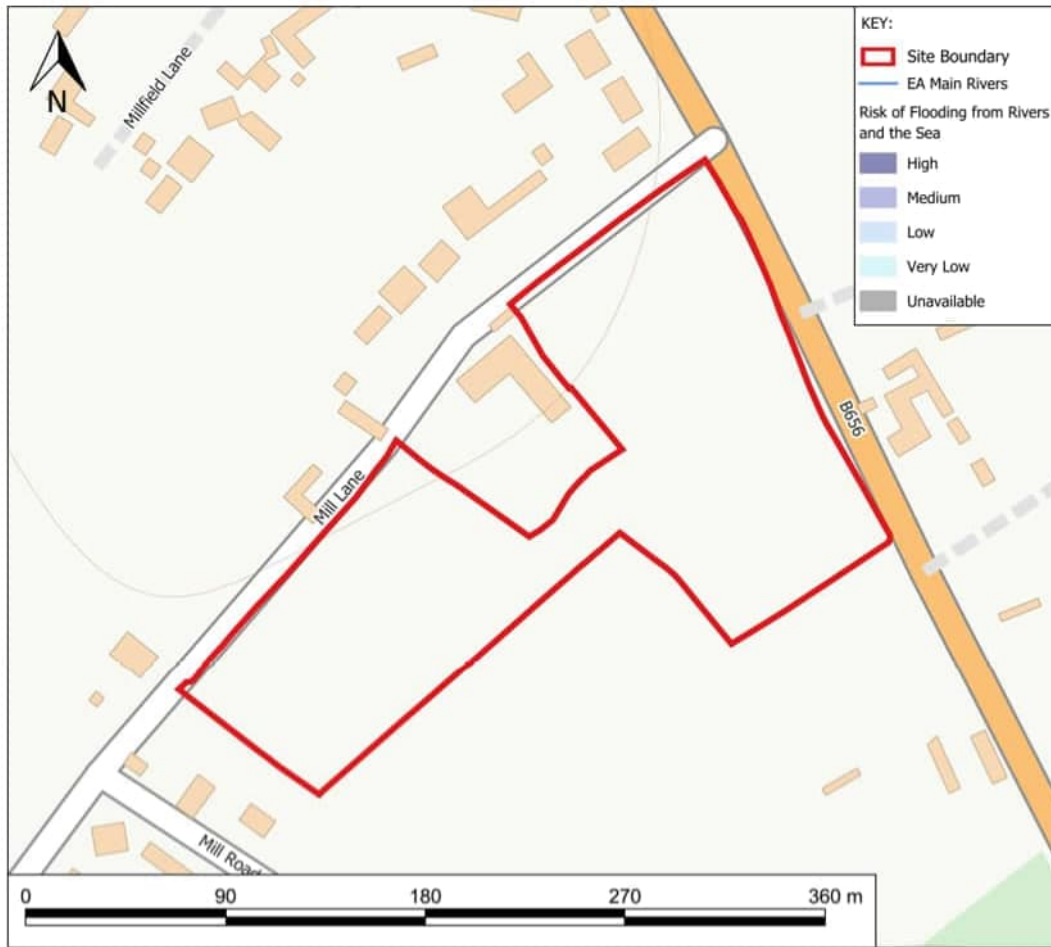


Figure 6-2 – EA Flood Risk from River and Sea (2025)

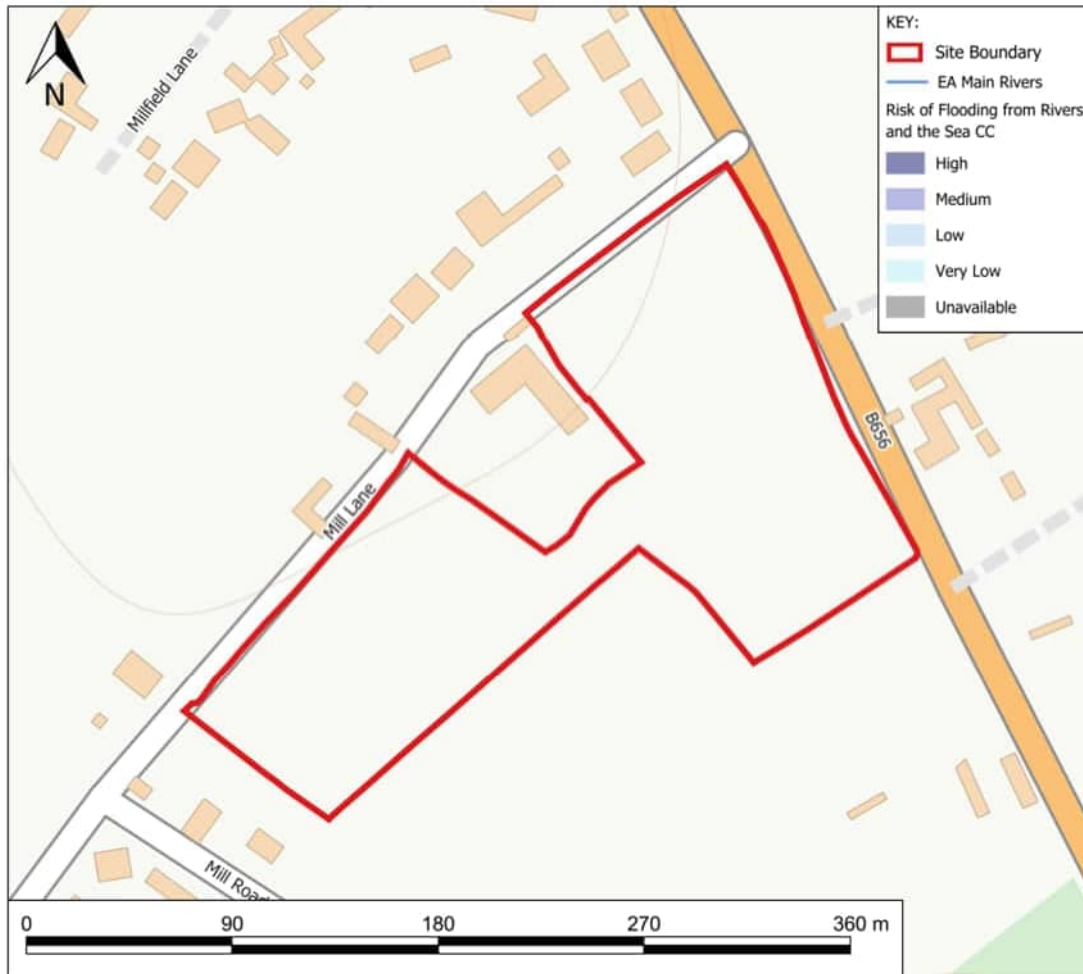


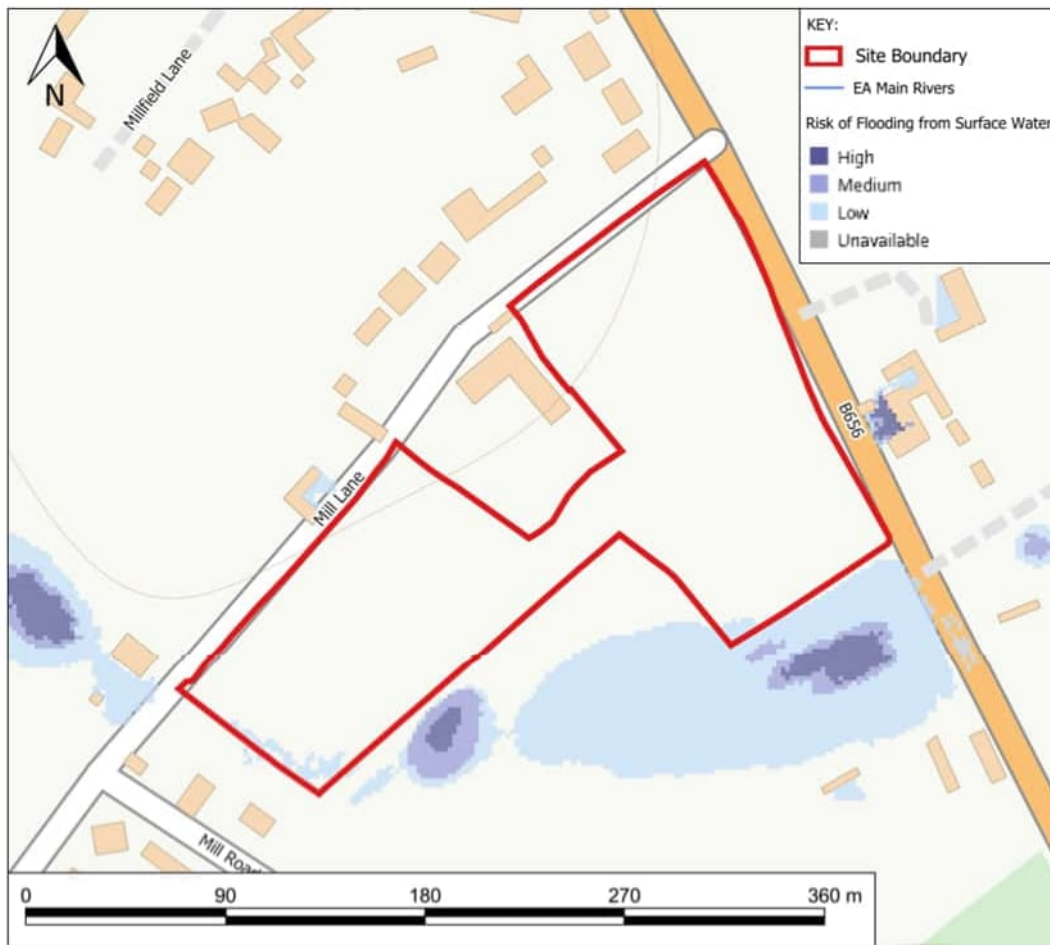
Figure 6-3 – EA Risk of Flooding from Rivers and the Sea including Climate Change (2025)

6.4 FLOOD RISK FROM SURFACE WATER

- 6.4.1. During storm events rainfall may exceed the capacity of the underlying soil or drainage infrastructure provision, resulting in overland flows potentially leading to pluvial (surface water) flooding.
- 6.4.2. The EA's Risk of Flooding from Surface Water mapping categorises the results of their surface water modelling into one of four likelihood categories:
- High - greater than or equal to 1 in 30 (3.3%) chance of flooding in any year;
 - Medium – Less than 1 in 30 (3.3%) but greater than or equal to 1 in 100 (1%) chance of flooding in any given year;
 - Low – Less than 1 in 100 (1%) but greater than or equal to 1 in 1000 (0.1%) chance of flooding in any given year; and
 - Very Low – less than 1 in 1000 (0.1%) chance of flooding in any given year (not mapped).
- 6.4.3. An excerpt from the EA's Risk of Flooding from Surface Water mapping for a present-day scenario and the 2040 and 2060 scenario are provided in Figure 6-4 and Figure 6-5, respectively.

- 6.4.4. The mapping indicates that the site is predominantly located in an area of Very Low risk of surface water flooding with a small area of Low risk to the southwestern and southeastern edges of the site. This is relatively similar for the future scenario, with only a slight increase in the extent of flood risk to the southwestern edge, indicating that climate change does not substantially increase flood risk.
- 6.4.5. The mapping suggests surface water flood risk is associated with localised depressions in topography south of the site where there is a Low, Medium and High risk of flooding from this source.

The residential dwellings will be built in an area of Very Low risk of flooding from surface water. Therefore, it is considered that the Proposed Development will not be at risk of surface water flooding, and will not increase surface water flood risk to neighbouring property or land.



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Figure 6-4 – EA Flood Risk from Surface Water (2025)

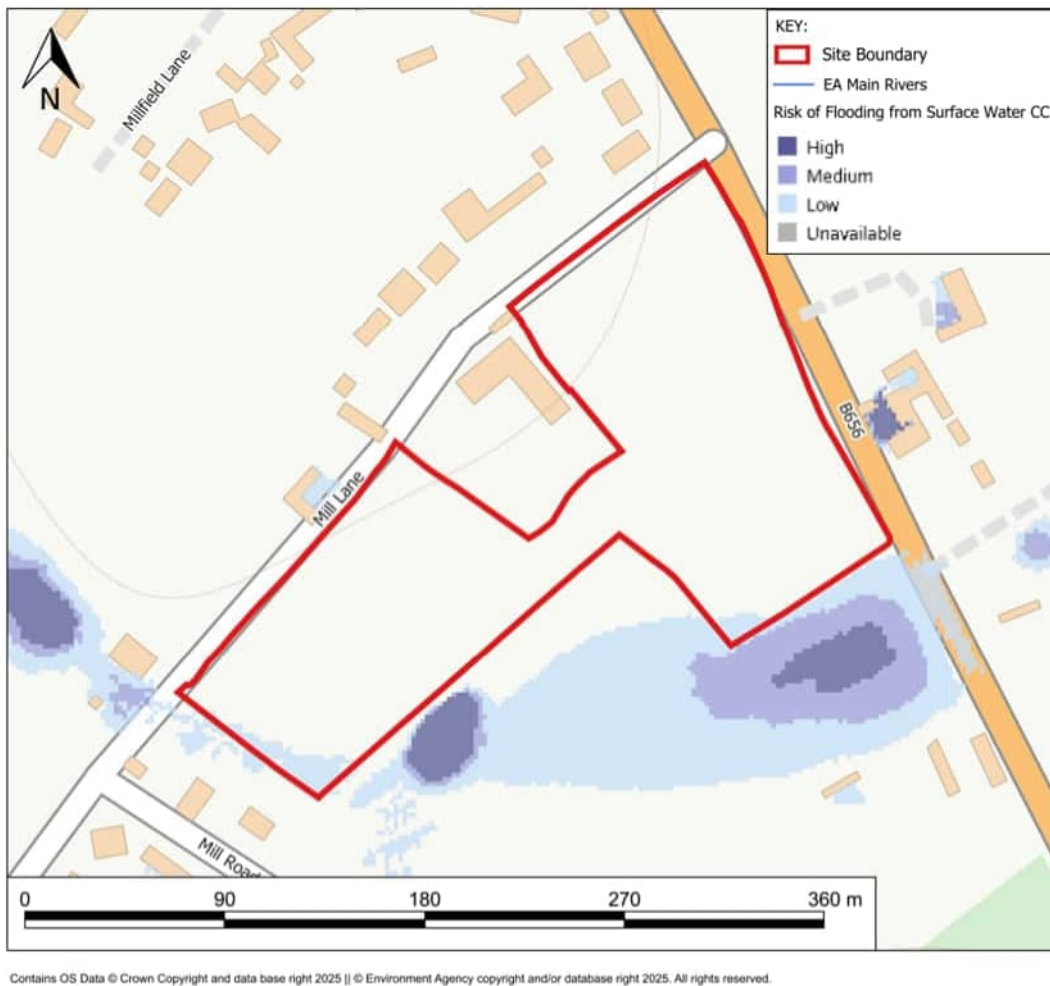


Figure 6-5 – EA Flood Risk from Surface Water including Climate Change (2025)

6.5 FLOOD RISK FROM GROUNDWATER

- 6.5.1. Groundwater flooding occurs when water emerges from underground, either at specific points or diffuse locations. Groundwater flooding typically happens after prolonged rainfall, which leads to increased infiltration and recharge into local aquifers, causing the water table to rise above normal levels.
- 6.5.2. The site's geology and soils suggest that flood risk from groundwater is low under normal conditions, but there is a potential for groundwater flooding during prolonged or extreme rainfall events, especially due to the high permeability of the Principal aquifer.

6.6 FLOOD RISK FROM SEWERS

- 6.6.1. Flooding from artificial drainage infrastructure occurs when flow entering a system exceeds the conveyance or discharge capacity. Exceeding the capacity of drainage infrastructure can cause surcharging or flooding from the system, therefore by leading to ponding or overland surface water flow.
- 6.6.2. As previously stated, Anglian Water confirmed that there have been instances of flooding within the vicinity of the site, however, they were unable to provide the source, date or extent of the incident.

- 6.6.3. As the asset location plan does not show there to be drainage infrastructure within the site, the risk of sewer flooding to the Proposed Development is considered to be low.

6.7 FLOOD RISK FROM ARTIFICIAL SOURCES

- 6.7.1. Artificial sources of flooding can include reservoirs, lakes and canals. The potential effects of flood risk management infrastructure and other structures need to be considered.

FLOOD RISK FROM RESERVOIRS

- 6.7.2. Reservoir flood maps have been created for over 2,000 reservoirs in England and Wales. These maps show the likelihood of flooding from large reservoirs that retain at least 25,000 cubic metres of water above natural ground level. The maps show the largest area that might be flooded if a reservoir were to fail in a credible worst-case scenario for both a dry day and a wet day (i.e. when the rivers are in flood) scenarios.
- 6.7.3. There are no reservoirs within close proximity to the site, with the closest reservoirs (Tring Reservoirs) being located approximately 28 km west of the site. Therefore, based on the information available, the overall flood risk from reservoirs is considered to be negligible.

FLOOD RISK FROM OTHER ARTIFICIAL SOURCES

- 6.7.4. There are no canals or pumped catchments within the vicinity of the site. Therefore, the overall flood risk from other artificial sources is considered to be negligible.

7 SURFACE WATER DRAINAGE

7.1 INTRODUCTION

- 7.1.1. The scope of the drainage section of this report is to provide a strategy for the management of surface water runoff from the Proposed Development, providing attenuation and restricting discharge to pre-development rates. With reference to Section 6.4, Flood Risk from Surface Water, the scope also covers how extreme rainfall events will be managed within the drainage system to ensure that the development does not increase flood risk either on-site or off-site.
- 7.1.2. Within this scope, the surface water drainage strategy addresses the direct impacts of the Proposed Development on a previously undeveloped site, where the introduction of impermeable surfaces will alter natural flow paths and reduce permeable areas.

7.2 EXISTING SURFACE WATER DRAINAGE

- 7.2.1. Data confirming the layout and levels of the surface water drainage network in the vicinity of the site are currently unavailable. Detailed information on the existing road network will be required to assess the potential for connectivity of exceedance flows from the proposed basins.
- 7.2.2. For the purposes of this report, it is assumed that surface water infrastructure exists to the east and west of the site along London Road and Mill Road, as indicated by road gullies visible on publicly available maps. The RSK report (RSK London Road 1920378-L01 (00), 2019) identifies a foul sewer network managed by Anglian Water and a distribution main network operated by Affinity Water. These datasets will be reviewed and incorporated during the detailed design stage to finalise the drainage design.
- 7.2.3. At present, there is no evidence of formal drainage infrastructure on the site, with runoff likely managed through natural infiltration, land drains, or naturally formed channels. As outlined in Section 6.4, Flood Risk from Surface Water, the site is subject only to minor areas of low risk in the south-west corner. Existing drainage on site is likely to be generally effective, although there may be areas of less efficient management within the defined low-risk zone.

7.3 DESIGN CRITERIA

PLANNING POLICY

- 7.3.1. The National Planning Policy Framework (NPPF) ensures that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding and to direct development away from areas of highest flood risk.
- 7.3.2. The National Standards for Sustainable Drainage Systems (SuDS) published by Department for Environment, Food & Rural Affairs (DEFRA) sets criteria for the assessment and design of surface water drainage systems for new developments.

DRAINAGE DESIGN OBJECTIVES

- 7.3.3. Sustainable drainage design is considered an integral part of managing flood risk in new developments. By adopting sustainable drainage solutions, the project will meet the objectives of the Hertfordshire County Council (HCC) SuDS Design Guidance, local strategy for flood risk management and national standards.

- 7.3.4. The SuDS design shall provide surface water runoff treatment to ensure mitigation of pollution hazards from the intended land use before infiltration to the ground.
- 7.3.5. The proposed SuDS design shall provide enhancement of biodiversity by creating beneficial habitats and contribute to the local amenity by providing opportunities for recreation.

7.4 PROPOSED SURFACE WATER DRAINAGE

- 7.4.1. Surface water runoff generated by the Proposed Development will be managed within the site boundary through a suitably designed surface water management strategy, prepared in line with the NPPF, the national standards and local drainage policies.
- 7.4.2. The surface water drainage strategy will ensure that the proposed development does not increase surface water flood risk downstream. All runoff arising from the site is intended to be contained within the site boundary with no discharge occurring through means other than that of exceedance flows in the event such conditions arise.
- 7.4.3. Part H of the Building Regulations: Drainage and Waste Disposal establishes a hierarchy for surface water disposal. This hierarchy stipulates that surface water runoff not collected for reuse must be discharged to one or more of the following in order of priority:
 - Discharge into the ground (infiltration); or, where not reasonably practicable;
 - Discharge to a surface water body; or, where not reasonably practicable;
 - Discharge to a surface water sewer, highway drain, or another drainage system; or, where not reasonably practicable; and
 - Discharge to a combined sewer.
- 7.4.4. Discharge to ground is considered feasible owing to the high permeability of the underlying soils, as supported by the available geological information, trial pit records, and conservative assumptions regarding infiltration rates presented in this section.
- 7.4.5. The total impermeable catchment area associated with the proposed residential development, including access roads, recreational paths, cycle routes, and storage areas, has been identified as 1.44ha. To account for potential future urban creep, an additional 10% of the catchment area has been included in the assessment.
- 7.4.6. For the purposes of the outline drainage design, the catchment has been divided between two attenuation features. The first basin, located to the east, will receive runoff from a 1.10 ha catchment, while the second basin to the west will provide storage for runoff from a 0.34 ha catchment.
- 7.4.7. Based on indicative site levels, as shown in Section 2.3, Topography (Figure 1-2, LiDAR 1m DTM, EA 2022), the general flow of surface water is from the higher areas towards the proposed pond locations at the lower parts of the site.
- 7.4.8. In the eastern part of the site, surface water is expected to flow towards the south-eastern corner, where a conveyance swale, integrated into the landscaping can direct flows westwards to the basin. For the western catchment, surface water will be conveyed via a network of swales designed to direct runoff efficiently to the second basin located south of the proposed residential development.

- 7.4.9. The figure below presents the locations of the two basins, with their size reflecting the results of the outline design and the footprint indicating the top surface area required. Corresponding dimensions are provided in Table 7-1.
- 7.4.10. The eastern basin (Infiltration Basin 1) is located immediately south of recreational paths and the residential development, while the western basin (Infiltration Basin 2) is positioned to the south of the residential development, between the development and recreational routes.



Figure 7-1 - Drainage Catchments and Infiltration Basins

- 7.4.11. It is intended that the proposed SuDS features will also include source control measures for attenuation and water quality purposes - such as porous paving and green roofs, as effective means of run-off control. Such options would be explored during further stages of design development.
- 7.4.12. A designated area within the Proposed Development has been identified for the proposed surface water basins, intended to provide both storage and infiltration to ground. Two infiltration basins will receive stormwater runoff, delivering pollutant treatment and controlled discharge via infiltration.
- 7.4.13. The basins have been designed to manage the 1 in 100-year storm event with a 40% allowance for climate change, ensuring the system remains resilient under future conditions and in accordance with Lead Local Flood Authority (LLFA) requirements. Based on guidance received from Hertfordshire County Council, the attenuation systems have been sized using FEH2013 rainfall data

with the runoff coefficient (Cv) set to 1, in line with LLFA specifications. The results of the greenfield runoff assessment and storage calculations are shown in Appendix E.

- 7.4.14. Table 7-1 below provides a summary of the required infiltration basin dimensions, calculated on the basis of a 1 in 3 side slope and a water depth of 2.0 metres under the 1% (1 in 100) event with climate change allowance. Incorporating a 0.5 metre freeboard, the total design depth of the basins is 2.5 metres.
- 7.4.15. For the purposes of this preliminary design, a 0.5 metre freeboard has been applied as a guiding parameter in determining the maximum indicative footprint of the basins. However, in line with the CIRIA SuDS Manual (C753), a freeboard of 0.3 metres is generally considered sufficient. At the detailed design stage, the risks associated with flooding and exceedance events will be assessed, and an appropriate solution will be developed both to manage exceedance flows and to determine whether a reduction in freeboard is feasible.

Table 7-1 - Drainage Attenuation Results Summary

Attenuation Type Proposed	Drainage Catchment Imp. Area Incl. 10% Urban Creep (ha)	Allowable Discharge Rate Qbar (l/s)	Infiltration Coefficient (m/hr)	Attenuation Volume Required (m³)	Infiltration Basin Base Area (m²)	Infiltration Basin Top Area (m²)	Estimated Volume (m³)
Infiltration Basin 1	1.2148	0.59	0.0108	1436	438	1139	1436
Infiltration Basin 2	0.3751	0.18	0.0108	403	77	389	403

- 7.4.16. Vegetated detention basins will provide interception, with no runoff occurring during the majority of small rainfall events. Water will be absorbed into the basin's topsoil layer and subsequently managed through evapotranspiration and infiltration.
- 7.4.17. There is strong evidence from the geological maps contained within the RSK site report undertaken in 2019 (RSK London Road 1920378-L01 (00)) that the site is predominantly underlain by chalk bedrock. This is supported by trial pit records, which indicate that for depths up to 3.5 m, the ground comprises glaciofluvial deposits of medium-dense, slightly gravelly sand, with no groundwater encountered at these levels. The RSK site report is provided in the Appendix F of this report, with exploratory hole records included in Appendix D of the RSK report.
- 7.4.18. On this basis, it is reasonable to assume that infiltration basins could be accommodated within the site, with these assumptions broadly consistent with the Infiltration to Ground section of the National Standards for Sustainable Drainage Systems (DEFRA). Paragraph 1.15 of the guidance indicates that the base of infiltration features should be at least 1 m above the maximum groundwater level. This assumption remains subject to the results of infiltration testing across the site.
- 7.4.19. It should be noted, however, that the trial pit investigations were limited to the western part of the Proposed Development and did not provide full coverage across the entire site. At this stage, it is assumed that the ground conditions in the remaining areas will not differ significantly from those

recorded, although this will be subject to confirmation through further site-specific investigations at the detailed design stage.

- 7.4.20. To confirm the suitability of this approach, infiltration testing and groundwater monitoring have been commissioned across the site; however, the results were not available at the time of writing this report.
- 7.4.21. In the interim, and to ensure a precautionary approach, a conservative infiltration rate of 3×10^{-6} m/s has been adopted in line with guidance from the CIRIA SuDS Manual (C753) for chalk formations. This provides a robust design basis pending confirmation of the site-specific infiltration parameters.

7.5 WATER QUALITY

- 7.5.1. The C753 CIRIA manual has informed the pollution hazard assessment using the mitigation indices methodology, which confirms that infiltration basins are effective in mitigating pollution risks arising from residential development and associated access roads. As the site is located above a Principal Aquifer, careful consideration will be required in the design of the basins to ensure that water quality is appropriately safeguarded. In line with CIRIA guidance, and based on the nature of the proposed development, the indices approach confirms that infiltration basins are suitable, provided their detailed design gives due regard to aquifer protection.

7.6 SUDS OPERATION AND MAINTENANCE

- 7.6.1. Maintenance arrangements should be incorporated into the planning and management of new developments from the outset. Long-term management of SuDS features must be considered during the early design stages to ensure their continued effectiveness.
- 7.6.2. Suitable access for maintenance activities should be provided and, where appropriate, integrated with public pathways. The maintenance requirements for the infiltration basin are summarised in Table 7-2 below and include regular grass cutting, sediment removal, and inspection of associated components. In some instances, sediment testing may be required prior to excavation to determine suitable disposal methods in accordance with environmental guidance and regulatory requirements.

Table 7-2 - Infiltration Basin –Operation and maintenance requirements

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Remove litter and debris.	Monthly
	Cut grass- for spillways and access routes.	Monthly (during growing season), or as required
	Cut grass – meadow grass in and around basin.	Half yearly (spring – before nesting season, and autumn)
	Manage other vegetation and remove nuisance plants.	Monthly (at start, then as required)
	Inspect inlets, outlets and overflows for blockages, and clear if required.	Monthly
	Inspect banksides, structures, pipework etc for evidence of physical damage.	Monthly
	Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies.	Monthly (for first year), then annually or as required
	Check any penstocks and other mechanical devices.	Annually
	Tidy all dead growth before start of growing season.	Annually
	Remove sediment from inlets, outlet and forebay.	Annually (or as required)
	Manage wetland plants in outlet pool – where provided.	Annually
Occasional maintenance	Reseed areas of poor vegetation growth	As required
	Prune and trim any trees and remove cuttings	Every 2 years, or as required
	Remove sediment from inlets, outlets, forebay and main basin when required.	Every 5 years, or as required (likely to be minimal requirements where effective upstream source control is provided)
Remedial actions	Repair erosion or other damage by reseedling or re-turfing	As required
	Realignment of rip-rap	As required

Maintenance schedule	Required action	Typical frequency
	Repair/rehabilitation of inlets, outlets and overflows	As required
	Relevel uneven surfaces and reinstate design levels	As required

SOURCE: CIRIA C753 SUDS MANUAL 2015

8 FLOOD RISK MITIGATION MEASURES

8.1 BRIEF CONSIDERATIONS

- 8.1.1. Following a review of the flood risks to the Proposed Development, the following section discusses the management measures proposed to ensure the Proposed Development remains safe over its lifetime and does not exacerbate flood risk to neighbouring property or land (including allowances for the effects of climate change).

8.2 PROPOSED MITIGATION MEASURES

SURFACE WATER FLOOD RISK

- 8.2.1. The southern sections of the site are subject to a low risk of surface water flooding during periods of intense rainfall. To mitigate this risk, the residential dwellings will be positioned away from the southern edges of the site where there is a slight risk of surface water flooding. In addition, all residential dwellings will be constructed with finished floor levels set at a minimum of 150 mm above adjacent ground levels.
- 8.2.2. Drainage basins have been proposed and designed to manage the 1% (1 in 100) storm event with a 40% allowance for climate change, ensuring the system remains resilient under future conditions and in accordance with Lead Local Flood Authority (LLFA) requirements.

GROUNDWATER FLOOD RISK

- 8.2.3. To protect against potential groundwater emergence, particularly during prolonged wet periods, the site will be designed to minimise deep excavations unless appropriate groundwater protection measures are implemented.

8.3 SAFE ACCESS AND EGRESS

- 8.3.1. The main vehicular access to the Proposed Development will be to / from London Road, with another access being provided to / from Mill Lane. Both roads are located within Flood Zone 1 and have a very low risk of surface water flooding, and therefore, can be used to access and exit the site during times of fluvial and tidal flood events, as well as periods of intense rainfall.

9 CONCLUSIONS

- 9.1.1. This Flood Risk Assessment (FRA) has been carried out with reference to the National Planning Policy Framework (NPPF) and Planning Practice Guidance (PPG) – Flood Risk and Coastal Change, along with existing information available on the Environment Agency website, and local flood risk information available from North Hertfordshire District Council and Hertfordshire County Council (HCC) as the Lead Local Flood Authority (LLFA).
- 9.1.2. The Proposed Development is located entirely within Flood Zone 1, indicating an annual flood probability of less than 0.1% from rivers or the sea. Accordingly, the associated flood risk from these sources is classified as very low.
- 9.1.3. The Proposed Development is predominantly located in an area of very low risk of surface water flooding with localised areas of low risk to the southern edges of the site. Therefore, the overall flood risk from surface water is low.
- 9.1.4. The risk of groundwater flooding is considered low, based on site geology, soil characteristics, and available groundwater data. However, the potential for groundwater emergence during extreme rainfall events is acknowledged, and further site-specific infiltration and groundwater monitoring is recommended at the detailed design stage.
- 9.1.5. The risk of flooding from sewers is low, with no evidence of drainage infrastructure within the site. In addition, The risk from artificial sources (reservoirs, canals, etc.) is negligible, with no such features in proximity to the site.
- 9.1.6. A surface water drainage strategy has been designed in accordance with the National Standards for Sustainable Drainage Systems, and HCC's SuDS guidance.
- 9.1.7. Surface water runoff will be managed on-site via two infiltration basins, sized to accommodate the 1% (1 in 100) storm event plus a 40% climate change allowance, ensuring resilience to future conditions.
- 9.1.8. The drainage design incorporates SuDS features such as infiltration basins, swales, and provision for source control measures (e.g., permeable paving, green roofs), which will be further developed at the detailed design stage.
- 9.1.9. Finished floor levels for all dwellings will be set a minimum of 150 mm above adjacent ground levels to provide additional protection against surface water and groundwater emergence.
- 9.1.10. Safe access and egress will be maintained via London Road and Mill Lane, both of which are in Flood Zone 1 and at very low risk of flooding.

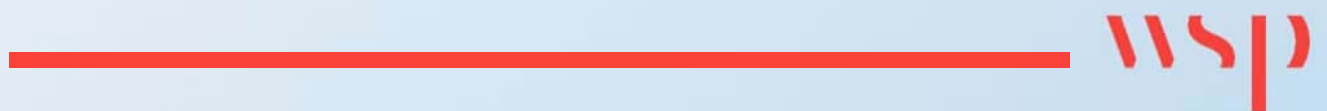
Appendix A

TOPOGRAPHICAL SURVEY



Appendix B

ANGLIAN WATER ASSET PLAN





Matrix Reference	Coasting	Normal	Liquid Type	Cover Level	Invert Level	Dip to Invert
0101	519008	227163	F	-	-	-
0201	519065	227211	F	-	-	-
0400	519091	227464	F	-	-	-
0401	519027	227465	F	-	-	-
0500	519073	227027	F	-	-	-
1201	519188	227288	F	-	-	-
1202	519136	227257	F	-	-	-
1501	519138	227575	F	-	-	-
1505	519176	226897	F	76.43	-	-
1900	519090	227000	F	-	-	-
2000	519260	227000	F	-	-	-
2301	519282	227513	F	-	-	-
2302	519284	227307	F	-	-	-
2303	519272	227269	F	-	-	-
2304	519270	227335	F	-	-	-
2500	519266	227544	F	-	-	-
2602	519243	226892	F	-	-	-
3001	519383	227038	F	-	-	-
3002	519385	227011	F	-	-	-
3003	519382	227011	F	-	-	-
3004	519383	227009	F	-	-	-
3005	519385	227002	F	-	-	-
3006	519373	227005	F	-	-	-
3007	519374	227004	F	-	-	-
3101	519357	227114	F	-	-	-
3125	519334	227101	F	-	-	-
3127	519326	227107	F	-	-	-
3128	519340	227105	F	-	-	-
3140	519338	227114	F	-	-	-
3140	519338	227164	F	-	-	-
3201	519318	227208	F	-	-	-
3401	519350	227435	F	-	-	-
3602	519350	226863	F	-	-	-
4301	519402	227389	F	-	-	-
4400	519393	227428	F	-	-	-
6000	519392	227028	F	-	-	-
7001	518779	227046	F	-	-	-
7002	518757	227040	F	-	-	-
7003	518759	227040	F	-	-	-
7028	518772	227057	F	-	-	-
7029	518774	227041	F	-	-	-
7030	519702	227041	F	-	-	-
7101	518768	227109	F	-	-	-
7102	518769	227174	F	-	-	-
7201	518726	227219	F	-	-	-
7226	518722	227217	F	-	-	-
7301	518771	227342	F	-	-	-
7302	518744	227335	F	-	-	-
7303	518745	227335	F	-	-	-
8001	518868	227021	F	-	-	-
8002	518811	227049	F	-	-	-
8025	518811	227062	F	-	-	-
8026	518875	227052	F	-	-	-
8027	518854	227066	F	-	-	-
8201	518804	227203	F	-	-	-
8202	518866	227281	F	-	-	-
8203	518858	227287	F	-	-	-
8301	518829	227315	F	-	-	-
8302	518829	227315	F	-	-	-
8303	518800	227324	F	-	-	-
8501	518870	227368	F	84.99	83.89	1.1
8601	518868	227603	F	85.28	83.29	1.99
9001	518902	227060	F	-	-	-
9101	518859	227131	F	-	-	-
9102	518930	227142	F	-	-	-
9104	518892	227179	F	-	-	-
9201	518863	227216	F	-	-	-
9501	518524	226866	F	-	-	-

Appendix C

CONSULTATION



Shannon Harris

shannon.harris@wsp.com

Our ref: EIR2025/05925

Your ref:

Date: 8 May 2025

Dear Shannon Harris,

RE: Environmental Information Regulations: EIR2025/05925

Thank you for your request for information regarding information relating to Hitchin, London road, Hertfordshire, which we received on 14 April 2025.

We respond to requests for information that we hold under the Environmental Information Regulations 2004 (EIR). The Regulations requires that we respond to requests by advising you whether information is held or not, and if so by providing you with that information.

Information provided

Flood map for planning

We do not hold any Product 4 data, please see "information not held" below.

The model which has been used to produce the Flood Map for Planning (Rivers and Sea) only has 1% and 0.1% AEP undefended outlines. Therefore, this is our best available information. The flood zones are the result of 2D only modelling from the Environment Agency's New National Model.

The Flood Map for Planning (Rivers and Sea) can be viewed on GOV.UK by following this link: <https://flood-map-for-planning.service.gov.uk>

The outlines from the Flood Map for Planning can also be downloaded from the Defra Data Services Platform using the following links:

[Flood Map for Planning - Flood Zones](#)

[Flood Map for Planning – Present day extents \(defended and undefended\)](#)

[Flood Map for Planning – 3.3% AEP defended \(present day\)](#)

[Flood Map for Planning – 3.3% AEP defended \(Climate Change\)](#)

[Flood Map for Planning – Climate Change Extents \(defended and undefended\)](#)

Long term flood risk mapping including: **Risk of Flooding from Rivers or the Sea**, **Flood Risk from Surface Water** and **Flood Risk from Reservoirs** can be viewed on GOV.UK:
[Check the long term flood risk for an area in England - GOV.UK](#)

Historical records of flooding

We have no historic flood event information for this area. It is possible that other flooding may have occurred that we do not have records for, and other organisations such as local authorities or IDBs may have records.

Flood defences

There are no Environment Agency defences within 500m or which impact upon the area of interest.

Water quality requirements for surface water runoff

Regarding the question about specific water quality requirements for surface water runoff, SuDS could be used. Here is the guidance about SuDS:

Advice to Applicant / LPA Sustainable Drainage Systems (SuDS) Informative:

1. Infiltration sustainable drainage systems (SuDS) such as soakaways, unsealed porous pavement systems or infiltration basins shall only be used where it can be demonstrated that they will not pose a risk to the water environment.
2. Infiltration SuDS have the potential to provide mobilise pollutants and must not be constructed in contaminated ground. They would only be acceptable if a site investigation showed the presence of no significant contamination.
3. Only clean water from roofs can be directly discharged to any soakaway or watercourse. Systems for the discharge of surface water from associated hard-standing, roads and impermeable vehicle parking areas shall incorporate appropriate pollution prevention measures and a suitable number of SuDS treatment train components appropriate to the environmental sensitivity of the receiving waters.
4. The maximum acceptable depth for infiltration SuDS is 2.0 m below ground level, with a minimum of 1.2 m clearance between the base of infiltration SuDS and peak seasonal groundwater levels.
5. Deep bore and other deep soakaway systems are not appropriate in areas where groundwater constitutes a significant resource (that is where aquifer yield may support or already supports abstraction).
6. SuDS should be constructed in line with good practice and guidance documents which include the SuDS Manual (CIRIA C753, 2015) and the Susdrain website.

For further information on our requirements regarding SuDS, see our Groundwater protection position statements (2018), particularly G1 and G9 – G13 available at: Groundwater protection position statements - GOV.UK www.gov.uk

Our groundwater quality data is available to the public through Open Data. Full details of supporting information and licensing are available when you access the data: [Open WIMS data](#).

Groundwater levels

The hydrogeological setting of the site is on a Principal Chalk Aquifer of the Zig Zag Chalk Formation, overlain by glaciofluvial superficial deposits primarily composed of sands and gravels designated a Secondary A Aquifer. The preferential groundwater flow direction easterly, towards the Ippollitts Brook, 300m from the NGR provided.

There is an Environment Agency monitoring borehole (reference TL12/015, NGR: TL1923227394), located approximately 85m south east of the NGR provided. This borehole shows average groundwater levels to be between 4.2mbgl and 6.2mbgl. This site is also overlain by the superficial deposits described above.

There is also an Environment Agency monitoring borehole (reference TL12/129A, NGR: TL1867527596), situated approximately 500m north west of the NGR provided. This borehole shows average groundwater levels to be between 7.75mbgl and 10.2mbgl, deeper than the borehole closer to the site. This borehole is located on the boundary between the Principal Chalk Aquifer bedrock (of the West Melbury Formation) and unproductive strata of the Gault Clay Formation. There are undifferentiated superficial deposits comprised of clays, silts, sands, and gravels.

In addition, the customer may also find groundwater level information on the British Geological Survey website:

- Scanned hydrogeology maps - [Viewer for scanned hydrogeology maps of the UK | British Geological Survey \(BGS\)](#)

Onshore borehole records - [Geology of Britain viewer | British Geological Survey \(BGS\)](#)

Critical drainage areas

There are currently no designated areas with critical drainage problems (ACDPs) that cover the development site. However, you should check with your local authority (it may be in their local plan) whether there are any local surface water designations.

Please read the Open Government Licence: www.nationalarchives.gov.uk/doc/open-government-licence/version/3/ which explains the permitted use of this information.

Data Available Online

Many of our flood datasets are available online:

- Flood Map For Planning ([Flood Zone 2](#), [Flood Zone 3](#), [Flood Storage Areas](#), [Flood Defences](#), [Areas Benefiting from Defences](#))
- [Risk of Flooding from Rivers and Sea](#)
- [Historic Flood Map](#)
- [Current Flood Warnings](#)

What's In Your BackYard (WIYBY) is no longer available

Most of the data is still available via other sharing services such as [DATA.GOV.UK](#), [MAGIC map](#) and new [GOV.UK digital services](#). Where the datasets are no longer available as maps, you will be able to download and use within specialist applications.

To find out all the services the Environment Agency have available, please click [here](#).

Additional information

Please be aware that we now charge for planning advice provided to developers, agents and landowners. If you would like advice to inform a future planning application for this site then please complete our

<https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion> and email it to our Sustainable Places team at:

planning.eastanglia@environment-agency.gov.uk. They will initially provide you with a free response identifying the following:

- the environmental constraints affecting the proposal;
- the environmental issues raised by the proposal;
- the information we need for the subsequent planning application to address the issues identified and demonstrate an acceptable development;
- any required environmental permits.

If you require any further information from them (for example, a meeting or the detailed review of a technical document) they will need to set up a charging agreement. Further information can be found on our [website](#).

Climate Change Allowances

For information on the use climate change allowances in Flood Risk Assessments, please see the attached document - **East_Anglian_External Climate Change Allowances Guidance_March2022.pdf**.

The guidance provides climate change allowances for peak river flow, peak rainfall, sea level rise, wind speed and wave height. The guidance provides a range of

allowances to assess fluvial flooding, which varies depending on which management catchment a site lies within. It advises on which allowances to use for assessing the impact of climate change on fluvial flood risk based on vulnerability classification, flood zone and development lifetime.

If you want to discuss this please call our Sustainable Places team on 020 8474 5242.

Information not held

EIR Regulation 3(2) states that information is held if it is in our possession and has been produced or received by us, or it is held by another person on our behalf at the time the request is received.

In this case, the Product 4 information you have requested is not held by the Environment Agency, and we are therefore refusing your request on the grounds that there is no information we can provide.

Where a request is for environmental information, the Regulations allow us to refuse to disclose it if the exception at EIR Regulation 12(4)(a) applies. The regulation states that a public authority may refuse to disclose environmental information to the extent that it does not hold that information when an applicant's request is received.

It is not possible for us to conduct a public interest balancing test because the reason for non-disclosure is that the information is not held.

Rights of appeal

If you are not satisfied with our decision, you can contact us within two calendar months to ask for the decision to be reviewed. We will then conduct an internal review of our response to your request and give you our decision in writing within 40 working days.

If you are not satisfied with the outcome of the internal review, you can then make an appeal to the Information Commissioner Office, the statutory regulator for EIR and the Freedom of Information Act 2002. The address is: Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, Cheshire. SK9 5AF.

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for people and wildlife



Tel: 0303 123 1113 (local rate) or 01625 545 745 (national rate) | Fax: 01625 524
510 Email: casework@ico.org.uk | Website: www.ico.org.uk

Yours sincerely,

Sam Clemens
EAN Area Customers & Engagement Team

Harris, Shannon

From: FRMConsultations <FRMConsultations@hertfordshire.gov.uk>
Sent: 14 April 2025 16:38
To: Harris, Shannon; FRMConsultations
Cc: Quinnell, Mat
Subject: RE: Flood Risk Assessment – Enquiry

Dear Shannon

Thank you for your email. Please find responses below in **red**.

- Historic records of flooding at the site or in close proximity to the site **We have no recorded reports of the site flooding. The nearest reported property flooding incident is approximately 380mm north west of the site.**
- Details of any flood defence structure at the site or in the surrounding area **None known**
- Drainage and water quality requirements (see below)

Please could Hertfordshire County Council provide advice on how they would expect the Climate Change guidance to be applied with regards to surface water attenuation requirements? Typically, we have been designing attenuation systems for the 100 year + 20%CC event and testing for the 100 year + 40%CC event. **Please design for a 1:100 year + 40% climate change event. A +35% allowance should also be applied to the 1:30 year event.**

Please could Hertfordshire County Council provide us with any specific SuDS guidance which is not already available on the website? Please could Hertfordshire County Council confirm whether they have any specific water quality requirements for surface water run off? **Please see proforma and validation checklist available on our website to see information we ask to be submitted with the application. Please note we also expect calculations to use FEH2013 or 2022 rainfall data, with CV set to 1. A source control approach to the SuDS design should be taken from the outset.**

Regarding water quality, the site is split between groundwater Source Protection Zones 2 and 3. Accordingly, robust treatment should be provided. The CIRIA Simple Index Approach is an acceptable method to demonstrated water quality benefits, however care should be taken in the design to ensure that all areas that may be contributing pollutants (highways etc) benefit from the treatment train. Treatment should be provided through open/near-surface SuDS as far as possible, with proprietary products such as oil interceptors being used as a residual last resort only (if at all).

Best wishes,

David Uncle
Senior Flood Risk Officer | Lead Local Flood Authority
Growth and Environment
Hertfordshire County Council
Farnham House, Six Hills Way, Stevenage, SG1 2ST
E: David.Uncle@hertfordshire.gov.uk
T: 01992 555839 (**Internal:** 25839)
Working hours: 08:00 – 16:00 Monday - Friday



[Our vision](#) is to create a cleaner, greener and healthier Hertfordshire, guided by our RISE values

We improve
Residents' lives

We work with
Integrity

We act
Sustainably

We champion
Equality & fairness

Leave arrangements: 22 May – 02 June, 04 June – 06 June

From: Harris, Shannon <shannon.harris@wsp.com>

Sent: 14 April 2025 15:58

To: FRMConsultations <FRMconsultations@hertfordshire.gov.uk>

Cc: Quinnell, Mat <Matthew.Quinnell@wsp.com>

Subject: Flood Risk Assessment – Enquiry

You don't often get email from shannon.harris@wsp.com. [Learn why this is important](#)

Dear Sir / Madam,

London Road, Hitchin, Hertfordshire

Flood Risk Assessment – Enquiry

We have been instructed by our client to carry out an assessment of flood risk at the above site.

We are writing to request any flood risk and flood defence data and information with respect to the above site and any other pertinent information or opinion regarding development at the application site.

From a review of data on the Environment Agency's Website we understand the site lies within Flood Zone 1. The OS grid reference for the site is 519151, 227436 and the nearest post code is SG4 7NF. Please find enclosed a location map for your reference.

Please can you provide us with the following:

- Historic records of flooding at the site or in close proximity to the site
- Details of any flood defence structure at the site or in the surrounding area
- Drainage and water quality requirements (see below)

Please could Hertfordshire County Council provide advice on how they would expect the Climate Change guidance to be applied with regards to surface water attenuation requirements? Typically, we have been designing attenuation systems for the 100 year + 20%CC event and testing for the 100 year + 40%CC event.

Please could Hertfordshire County Council provide us with any specific SuDS guidance which is not already available on the website? Please could Hertfordshire County Council confirm whether they have any specific water quality requirements for surface water run off?

We trust the above to be satisfactory, however, should you have any queries or require any further information from WSP to be able to answer the above queries, please do not hesitate to get in contact.

Kind Regards,

Shannon

WSP
Davidson House (Floor 2)
Forbury Square
Reading. RG1 3EU
United Kingdom
wsp.com



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Harris, Shannon

From: Planning Liaison <planningliaison@anglianwater.co.uk>
Sent: 12 May 2025 14:59
To: Harris, Shannon
Subject: RE: Flood Risk Assessment – Enquiry

Good afternoon,

This is not information that can be provided.

Kind Regards
Planning Liaison

From: Harris, Shannon <shannon.harris@wsp.com>
Sent: 08 May 2025 15:18
To: Planning Liaison <planningliaison@anglianwater.co.uk>
Subject: RE: Flood Risk Assessment – Enquiry

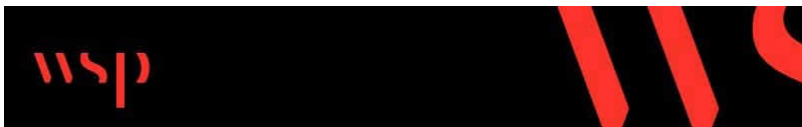
EXTERNAL MAIL - Please be aware this mail is from an external sender - THINK BEFORE YOU CLICK

Hi Maks,

Are Anglian Water able to provide further detail on the source, date and extend of flooding within the vicinity of the proposed development?

Thanks,
Shannon

WSP
Davidson House (Floor 2)
Forbury Square
Reading. RG1 3EU
United Kingdom
wsp.com



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Registered office: WSP House, 70 Chancery Lane, London, WC2A 1AF.

From: Planning Liaison <planningliaison@anglianwater.co.uk>
Sent: 15 April 2025 09:13
To: Harris, Shannon <shannon.harris@wsp.com>
Cc: Quinnell, Mat <Matthew.Quinnell@wsp.com>
Subject: RE: Flood Risk Assessment – Enquiry

Good Afternoon,

Anglian Water are able to confirm that there have been instances of flooding within the vicinity of the proposed development. It is also possible that other flooding may have occurred that we do not have records of, other organisations such as the Local Authority, Internal Drainage Board or the Environment Agency may have records.

We recommend you submit a pre planning application form to enable Anglian Water to advise you of any suitable connection points for the proposed development and identify any mitigation that would be required. Further details including the application form can be found on our website.

Kind regards

Maks Zdunek
Pre Development Engineer

Team: 07929 786 955



For further information please email us at planningliaison@anglianwater.co.uk or visit our website at:

<https://www.anglianwater.co.uk/developing/planning--capacity/planning-and-capacity/>

From: Harris, Shannon <shannon.harris@wsp.com>
Sent: 14 April 2025 15:31
To: Planning Liaison <planningliaison@anglianwater.co.uk>
Cc: Quinnell, Mat <Matthew.Quinnell@wsp.com>
Subject: Flood Risk Assessment – Enquiry

EXTERNAL MAIL - Please be aware this mail is from an external sender - THINK BEFORE YOU CLICK

Dear Sir / Madam,

London Road, Hitchin, Hertfordshire

Flood Risk Assessment – Enquiry

WSP has been commissioned to carry out an assessment of flood risk at the above site.

We are writing to request historic sewer records and flood risk and defence information with respect to proposed development at the above site.

The OS grid reference for the site is 519151, 227436 and the nearest postcode is SG4 7NF. Please find enclosed a location map for your reference.

Please could Anglian Water provide the following data:

Registered in England No 2366656
Please consider the environment before printing this email.

--*-----*-----*-----*-----*-----*-----*-----*-----*-----*-----*-----*-----*-----*-----*-----*

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Registered Office: Lancaster House, Lancaster Way, Ermine Business Park, Huntingdon, Cambridgeshire, PE29 6XU
Registered in England No 2366656
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Harris, Shannon

From: Sam Dicocco <Sam.Dicocco@north-herts.gov.uk>
Sent: 24 April 2025 13:22
To: Harris, Shannon
Subject: FW: Flood Risk Assessment - Enquiry
Attachments: Site Location.pdf

Good Afternoon Shannon,

I have no information to provide beyond that published on our website in the development of our Local Plan –

[Local Plan 2011-2031 | North Herts Council](#)

I suggest engaging the Environment Agency and Lead Local Flood Authority.

If an application for development is forthcoming on the site, I would recommend pre-application advice, for which information can be found on the below link –

[Check if you need planning permission | North Herts Council](#)



Sam Dicocco
BSc(Hons) MSc MRTPI
Principal Planning Officer
(Major Sites)
01462 474169

www.north-herts.gov.uk

From: Harris, Shannon <shannon.harris@wsp.com>
Sent: 24 April 2025 09:38
To: Planning Control <planning.control@north-herts.gov.uk>
Subject: Flood Risk Assessment - Enquiry

Dear Sir / Madam,

London Road, Hitchin, Hertfordshire

Flood Risk Assessment – Enquiry

We have been instructed by our client to carry out an assessment of flood risk at the above site.

We are writing to request any flood risk and flood defence data and information with respect to the above site and any other pertinent information or opinion regarding development at the application site.

From a review of data on the Environment Agency's Website we understand the site lies within Flood Zone 1. The OS grid reference for the site is 519151, 227436 and the nearest post code is SG4 7NF. Please find enclosed a location map for your reference.

Please can you provide us with the following:

- Historic records of flooding at the site or in close proximity to the site
- Details of any flood defence structure at the site or in the surrounding area

We trust the above to be satisfactory, however, should you have any queries or require any further information from WSP to be able to answer the above queries, please do not hesitate to get in contact.

Kind Regards,

Shannon

WSP
Davidson House (Floor 2)
Forbury Square
Reading. RG1 3EU
United Kingdom
wsp.com



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The Customer Service Centre at the Council Offices is now open on Monday-Friday 9am-5pm. If you need to speak to us, please [contact us](#) to discuss how we can help.

Received your annual Council Tax bill? It's quick and easy to [manage your account online with MyAccount](#).

Appendix D

FLOOD MAP PACK





FLOOD MAP PACK



Limitations & Quality Assurance

Pack Prepared By

SH

Pack Checked By

MQ

Pack Authorised By

LM

Limitations:

This pack is based on flood risk information available and current at the time of preparation based on data provided by third parties.

Conclusions drawn based on this pack are limited in their accuracy in proportion to the validity of the datasets this pack is based on.

WSP cannot be held responsible for the accuracy of the third-party data and the interpretation of this pack may change if the data is amended or updated after the date of production.

WSP UK Ltd makes no warranties or guarantees, actual or implied, in relation to this pack, or the ultimate commercial, technical, economic, or financial effect on the project to which it relates, and bears no responsibility or liability related to its use other than as set out in the contract under which it was supplied.

Site Information

PROJECT

41258

SITE

London Road, Hitchin

CLIENT

Martin Grant Homes

EASTINGS, NORTHINGS

519074, 227411

WSP CONTACT

SH

DATE CREATED

12/09/2025

Pages

2	Site Location
3	Flood Map for Planning
4	Flood Map for Planning CC
5	Risk of Flooding from Rivers and Sea
6	Risk of Flooding from Rivers and Sea CC
7	Risk of Flooding from Surface Water
8	Risk of Flooding from Surface Water CC
9	Risk of Flooding from Reservoirs
10	Previous Flooding
11	Flood Alert and Warning Areas
12	Source Protection Zones & Borehole Records

Site Location

2

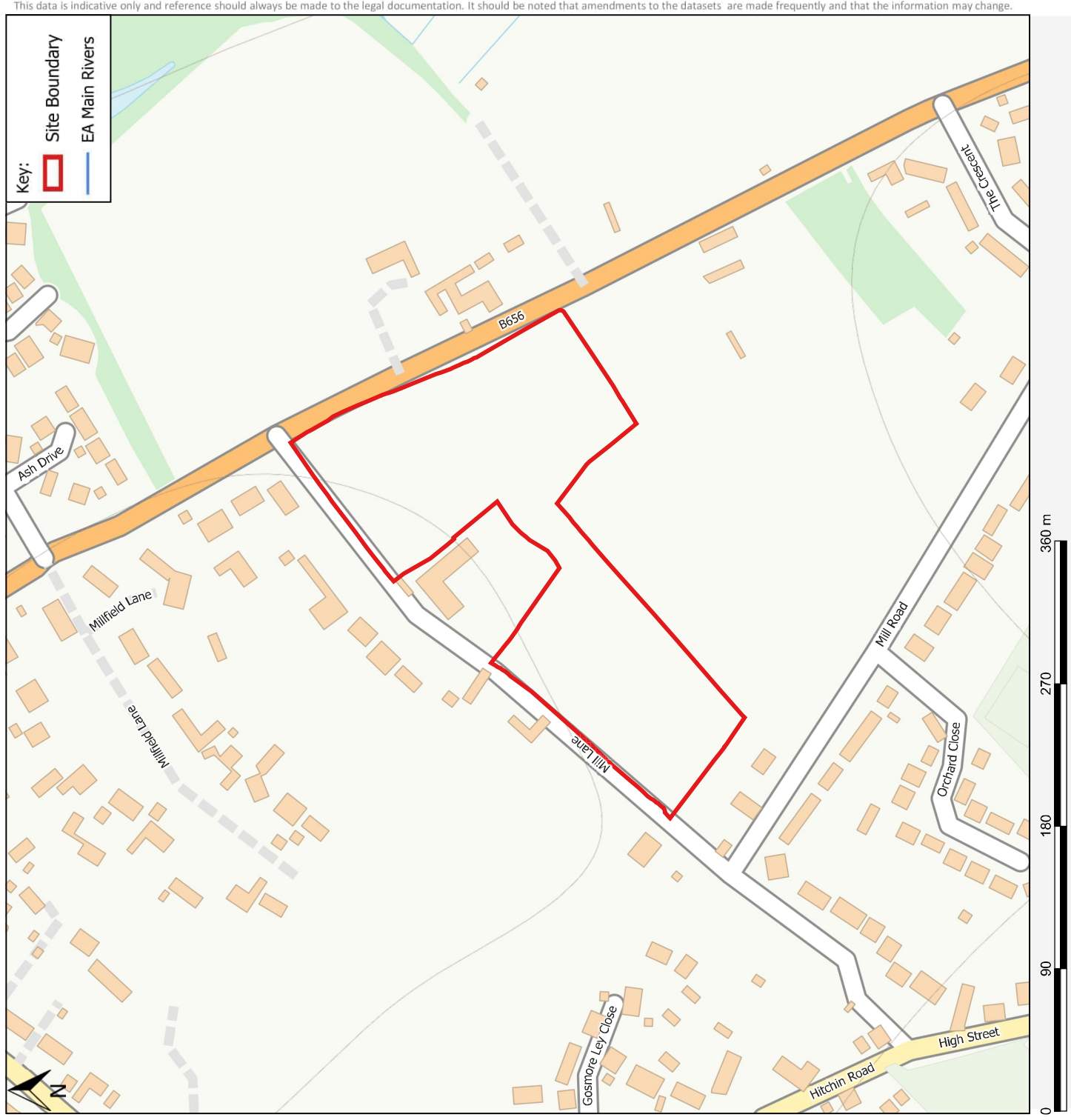
SITE AREA

3.27 hectares

CLOSEST MAIN RIVER

River Purwell / Hiz

2470.2m away from site



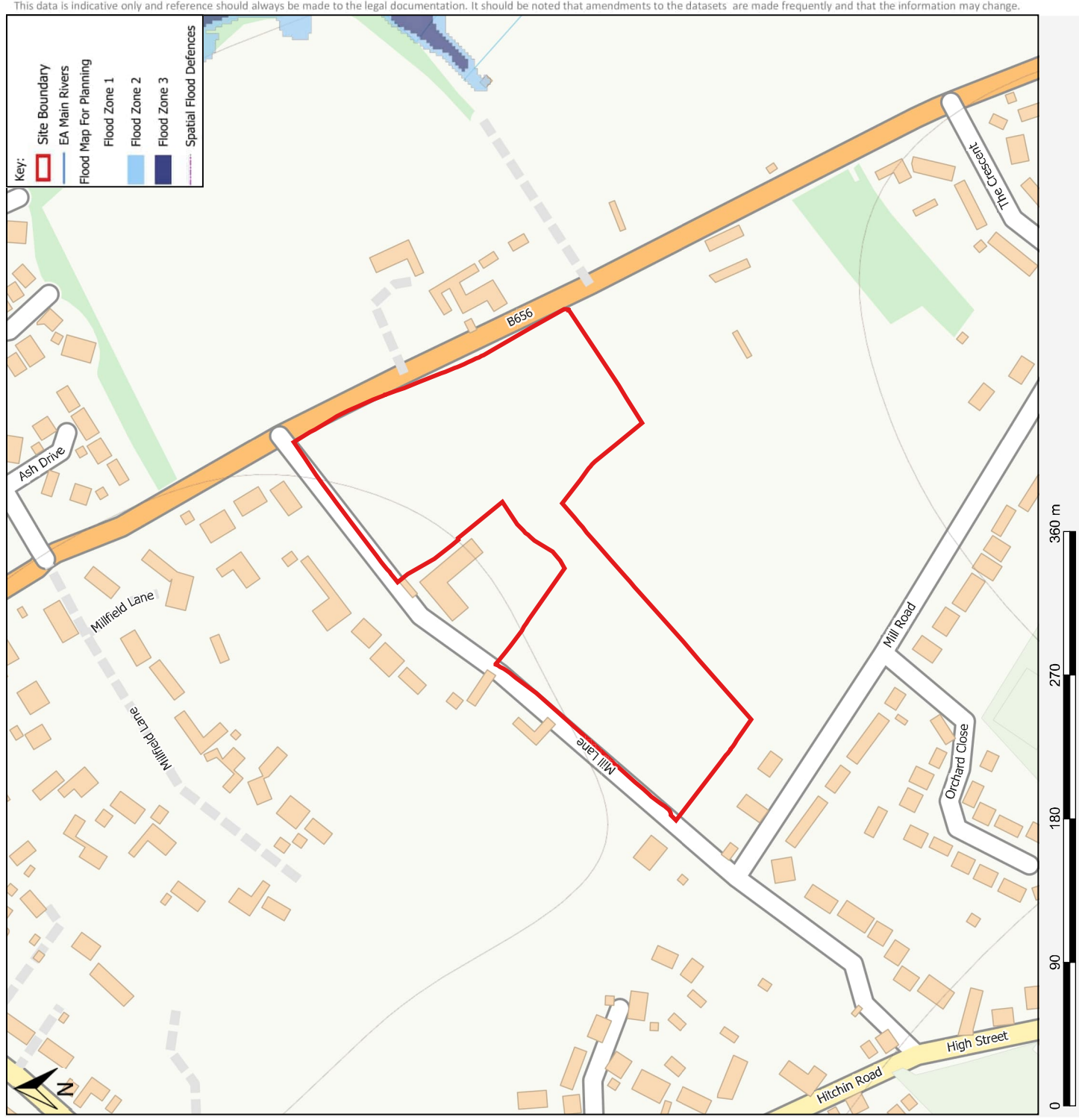
Flood Map for Planning

The Flood Zones show the extent of land at present day risk of flooding from rivers and the sea, ignoring the benefits of flood defences, for the following annual probabilities:

- **Flood Zone 1** - Land having a less than 1 in 1,000 annual probability (0.1% AEP) of river or sea flooding - all land outside Zones 2 and 3).
- **Flood Zone 2** - Land having between a 1 in 100 and 1 in 1,000 annual probability (0.1% - 1.0% AEP) of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability (0.1% - 0.5% AEP) of sea flooding.
- **Flood Zone 3** - Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability (> 0.5% AEP) of sea flooding.

Spatial Flood Defences – Flood defences can be structures, buildings or parts of buildings. Typically, these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

The assets shown in this dataset are flood defences currently owned, managed or inspected by the Environment Agency.



Flood Map for Planning CC

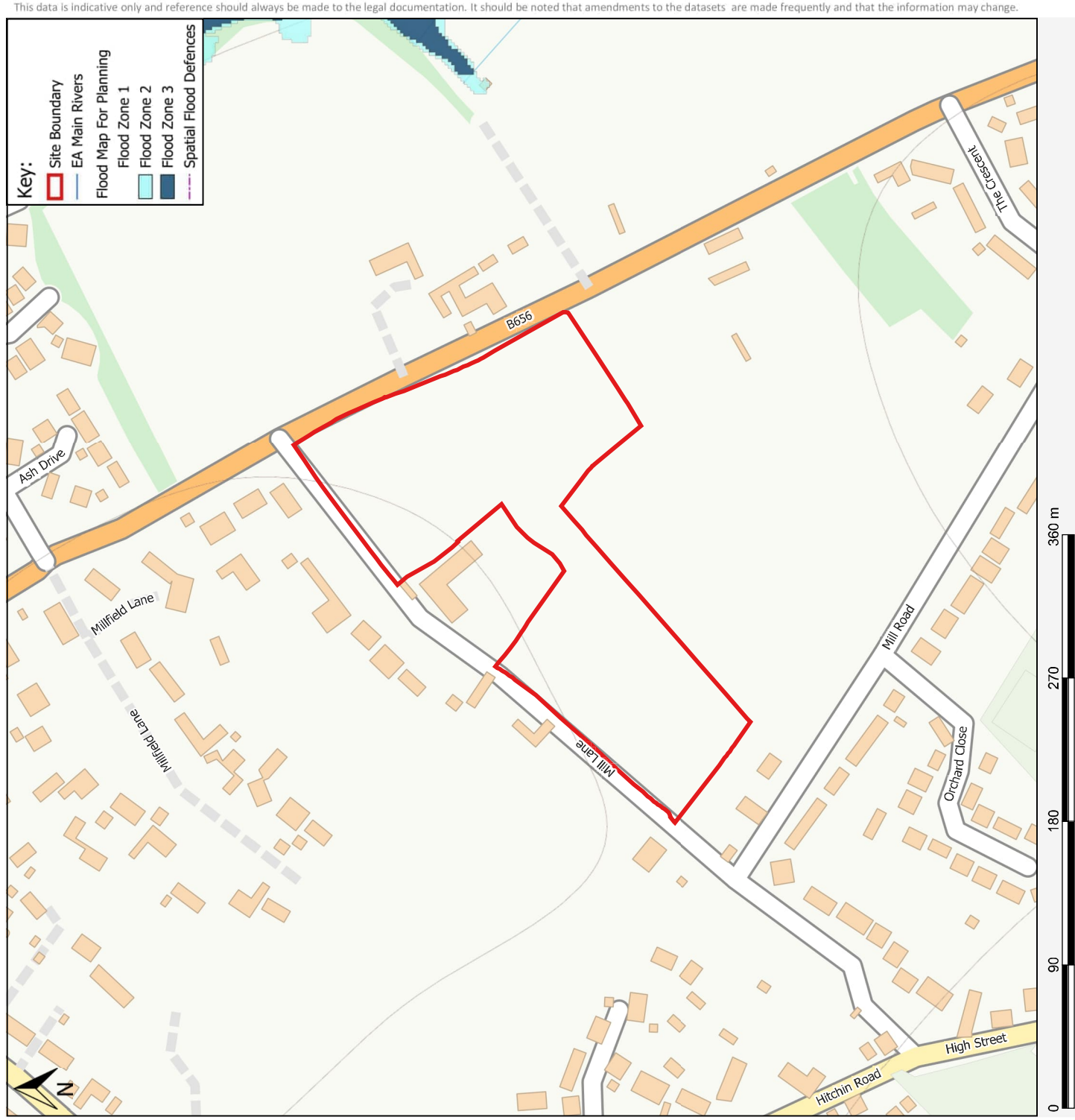
Climate change scenarios have been produced to indicate the predicted impacts of climate change on future risk. The climate change allowances are based on the latest UK Climate Projections (UKCP18) from the Met Office, using the Representative Concentration Pathway (RCP) 8.5.

The datasets shown on Flood Map for Planning are aimed at supporting planners and developers to make long-term decisions about the location and design of development and the use of land. Such decisions need to account for the full anticipated lifetime of the development being planned. Therefore, the following allowances have been chosen:

- the 'Central' allowance for the 2080s epoch (2070-2125) for risk of flooding from rivers
- the 'Upper End' allowance for risk of flooding from the sea, accounting for cumulative sea level rise to 2125

The Flood Zones show the extent of land at future risk of flooding from rivers and the sea, ignoring the benefits of flood defences, for the following annual probabilities:

- **Flood Zone 1** - Land having a less than 1 in 1,000 annual probability (0.1% AEP) of river or sea flooding - all land outside Zones 2 and 3).
- **Flood Zone 2** - Land having between a 1 in 100 and 1 in 1,000 annual probability (0.1% - 1.0% AEP) of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability (0.1% - 0.5% AEP) of sea flooding.
- **Flood Zone 3** - Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability (> 0.5% AEP) of sea flooding.



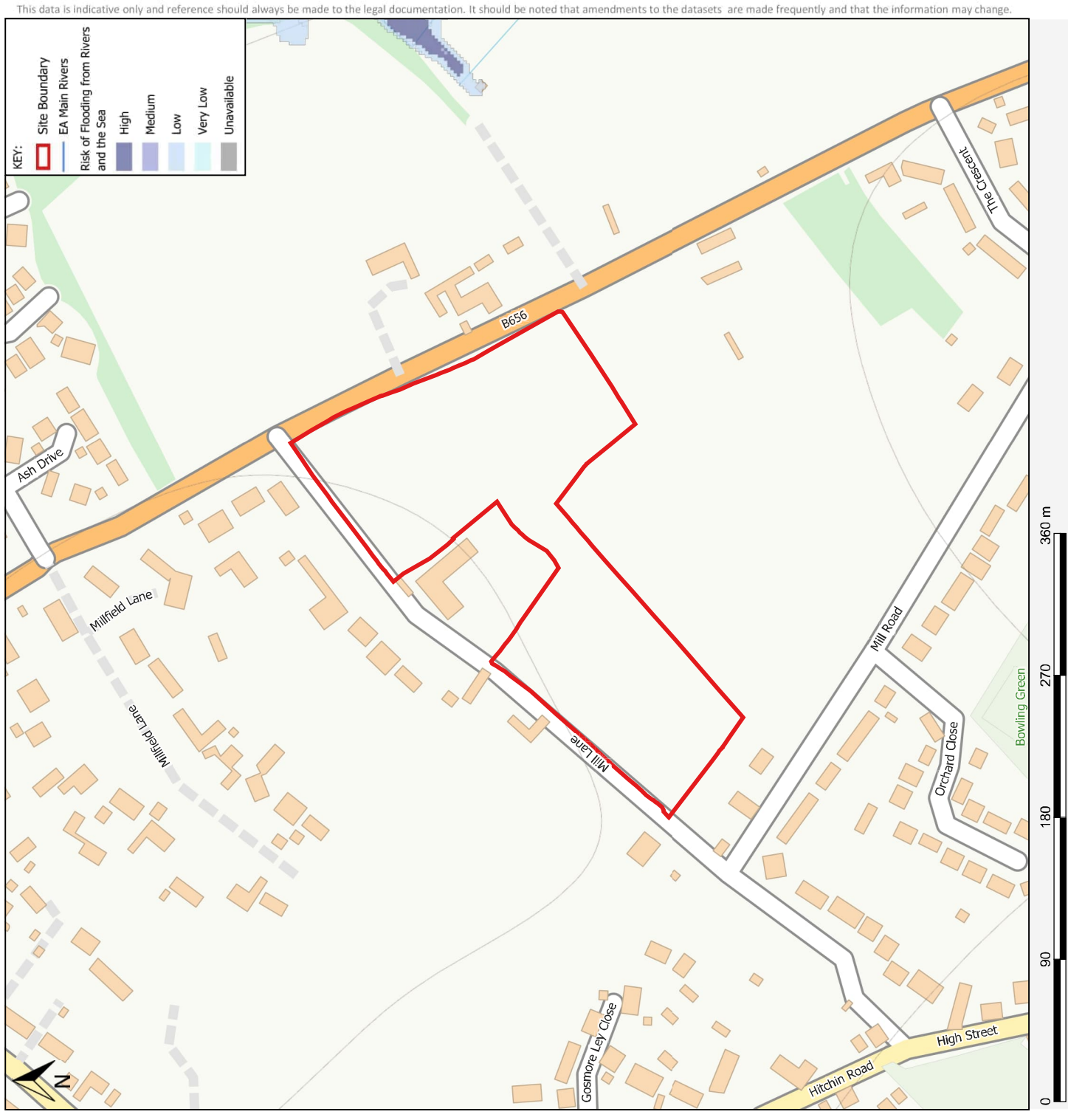
Risk of Flooding from Rivers and Sea

The RoFRS represent risk considering the presence and condition of flood risk management assets and takes account of the chance of them overtopping or failing. They show the overall flood risk from rivers and the sea. The data is presented in flood risk likelihood categories, which indicate the chance of flooding in any given year.

While flood defences reduce the level of risk, they do not completely remove it. For example, water can flow over the top of the defence, or they can fail in extreme weather conditions or if they are in poor condition. As a result, RoFRS may show that there is risk to areas behind some flood defences.

Risk is displayed as one of four likelihood categories:

- High Risk** – Land having a 1 in 30 or greater annual probability (>3.3% AEP) of flooding from rivers or the sea.
- Medium Risk** – Land having between a 1 in 30 and a 1 in 100 annual probability (1.0% - 3.3%) of flooding from rivers or the sea.
- Low Risk** – Land having between a 1 in 100 and 1 in 1,000 annual probability (0.1% - 1.0%) of flooding from rivers or the sea.
- Very Low Risk** – Land having a less than 1 in 1,000 annual probability (0.1% AEP) of flooding from rivers or the sea.



Risk of Flooding from Rivers and Sea CC

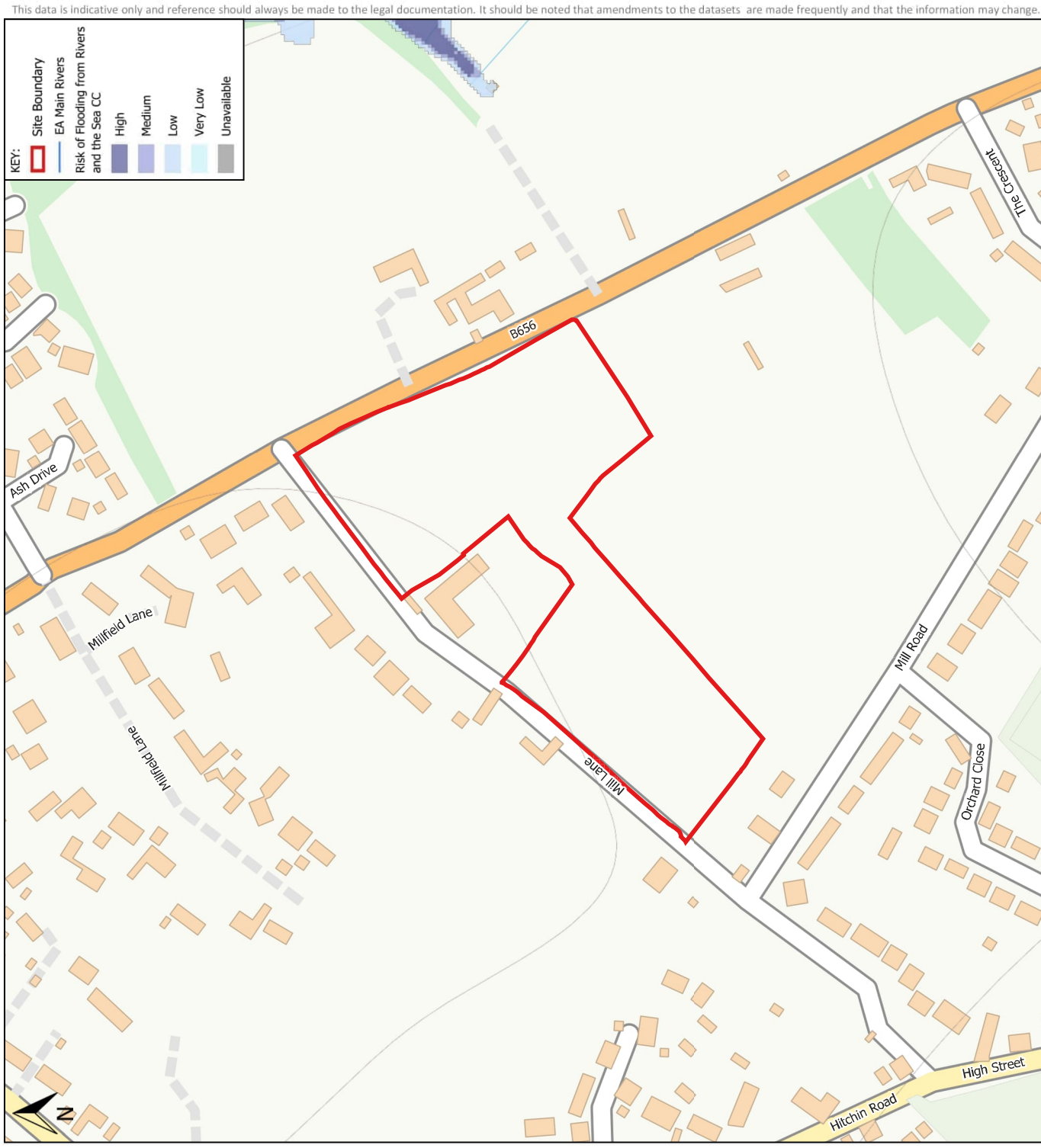
As well as present day risk of flooding from rivers and the sea, climate change scenarios have been produced to indicate the predicted impacts of climate change on future flood risk. The climate change allowances are based on the latest UK Climate Projections (UKCP18) from the Met Office, using the Representative Concentration Pathway (RCP) 8.5.

Near-term epochs and central/higher central allowances are being used initially, to support short and medium-term decisions informed by the highest flood likelihood projections:

- Fluvial: central allowance - 2040-2069 ("2050s" epoch)
- Coastal: higher central allowance - 2036-2065

Risk is displayed as one of four likelihood categories:

- High Risk** – Land having a 1 in 30 or greater annual probability ($\geq 3.3\%$ AEP) of flooding from rivers or the sea.
- Medium Risk** – Land having between a 1 in 30 and a 1 in 100 annual probability (1.0% - 3.3%) of flooding from rivers or the sea.
- Low Risk** – Land having between a 1 in 100 and 1 in 1,000 annual probability (0.1% - 1.0%) of flooding from rivers or the sea.
- Very Low Risk** – Land having a less than 1 in 1,000 annual probability (0.1% AEP) of flooding from rivers or the sea.

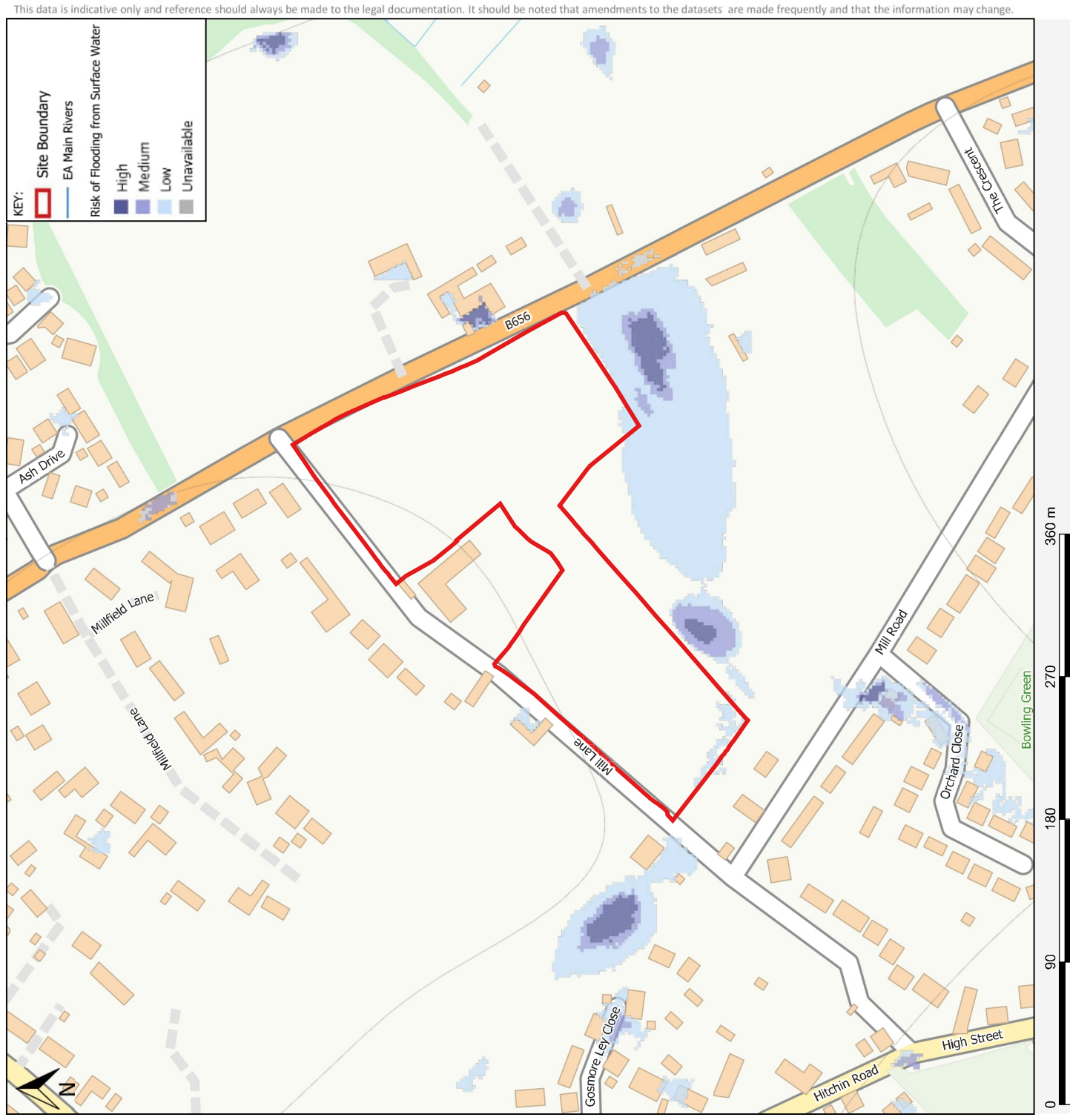


Risk of Flooding from Surface Water

The RoFSW products are an assessment of where surface water flooding may occur when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead. It includes information about flooding extents and depths.

Risk is displayed as one of three likelihood categories:

- High Risk** - Land having a 1 in 30 or greater annual probability (> 3.3% AEP) of flooding from surface water.
- Medium Risk** - Land having between a 1 in 30 and a 1 in 100 annual probability (1.0% - 3.3%) of flooding from surface water.
- Low Risk** - Land having between a 1 in 100 and a 1 in 1,000 annual probability (0.1% - 1.0%) of flooding from surface water.
- Very Low Risk** - Land having a less than 1 in 1,000 annual probability (0.1% AEP) of flooding from surface water.



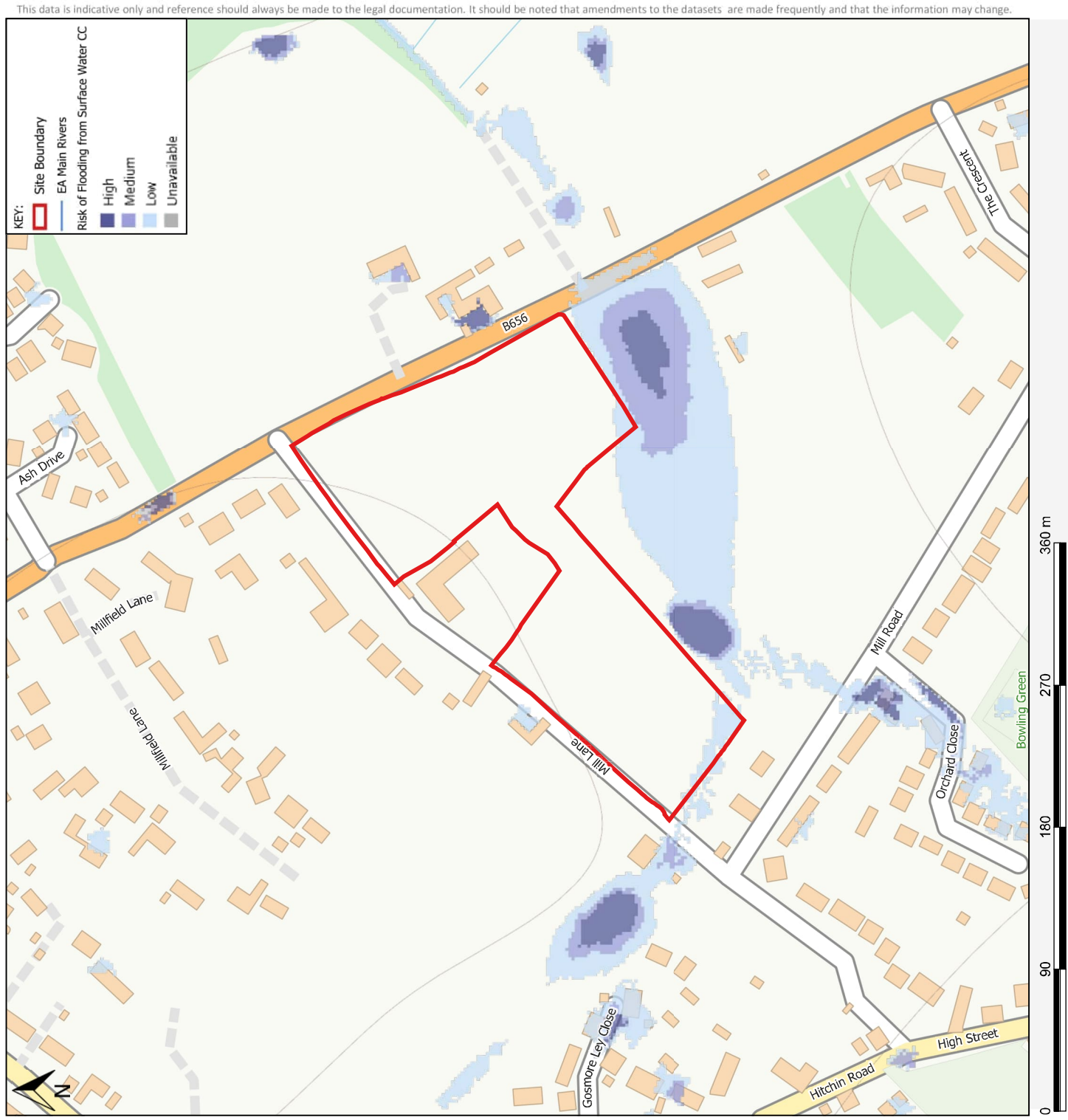
Risk of Flooding from Surface Water CC

As well as present day risk of flooding from surface water, climate change scenarios have been produced to indicate the predicted impacts of climate change on future flood risk. The climate change allowances are based on the latest UK Climate Projections (UKCP18) from the Met Office, using the Representative Concentration Pathway (RCP) 8.5.

A near-term epoch (2040 – 2060 “2050s” epoch) and central allowances are being used initially, to support short and medium-term decisions informed by the highest flood likelihood projections.

Risk is displayed as one of three likelihood categories:

- High Risk** - Land having a 1 in 30 or greater annual probability (> 3.3% AEP) of flooding from surface water.
- Medium Risk** – Land having between a 1 in 30 and a 1 in 100 annual probability (1.0% - 3.3%) of flooding from surface water.
- Low Risk** – Land having between a 1 in 100 and a 1 in 1,000 annual probability (0.1% - 1.0%) of flooding from surface water.
- Very Low Risk** – Land having a less than 1 in 1,000 annual probability (0.1% AEP) of flooding from surface water.



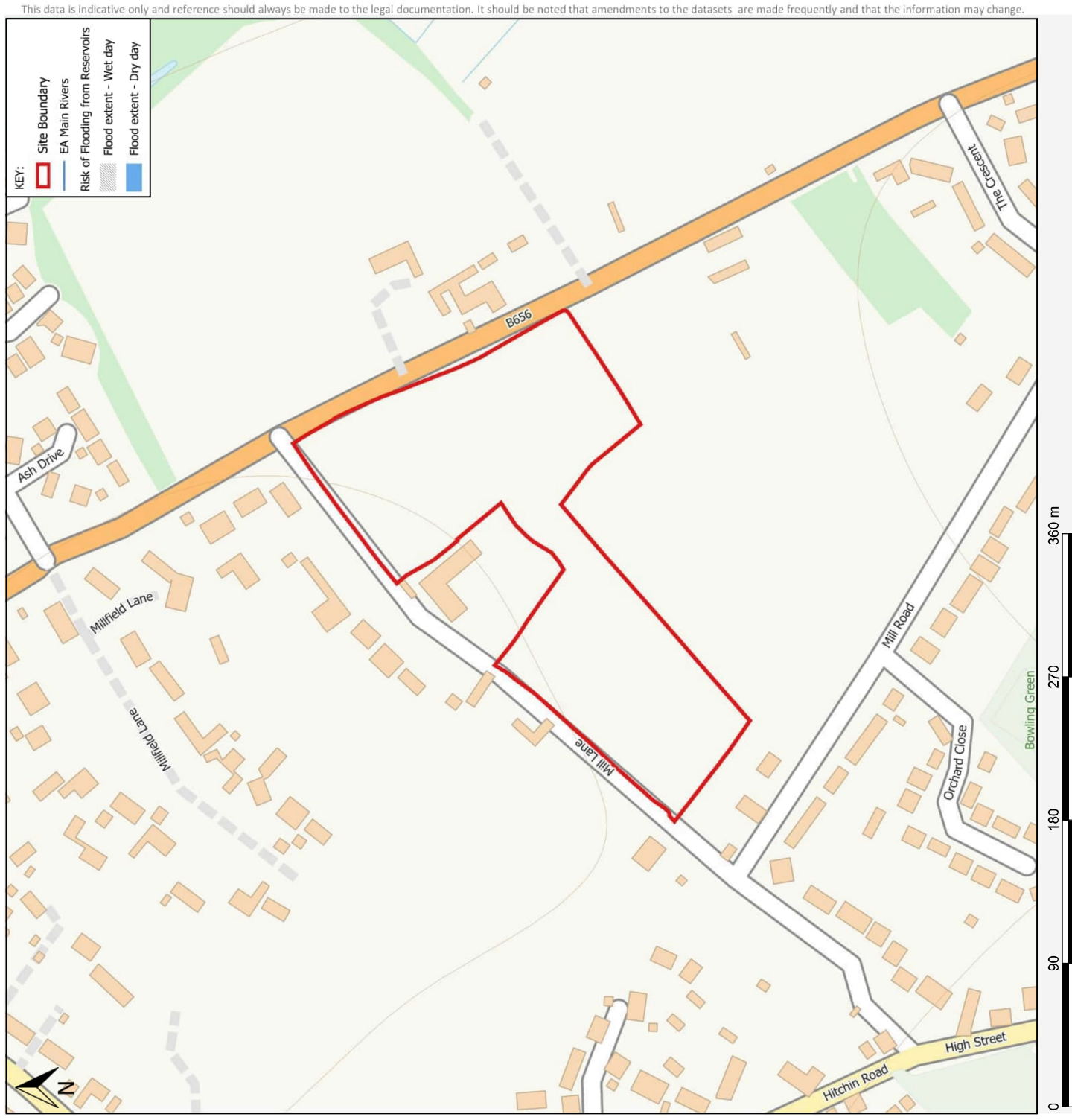
Risk of Flooding from Reservoirs

The Risk of Flooding from Reservoirs (wet day) layer shows the individual flood extents for all large raised reservoirs in the event that they were to fail and release the water held on a "wet day" when local rivers had already overflowed their banks.

It represents a prediction of a credible worst-case scenario, however it's unlikely that any actual flood would be this large. The data gives no indication of likelihood or probability of reservoir flooding.

The Risk of Flooding from Reservoirs (dry day) shows flood extents for all large raised reservoirs in the event that they were to fail and release the water held on a "dry day" when local rivers are at normal levels.

These national datasets are "indicative" not "definitive". Definitive information can only be provided by individual local authorities, and you should refer directly to their information for all purposes that require the most up to date and complete dataset.



Previous Flooding

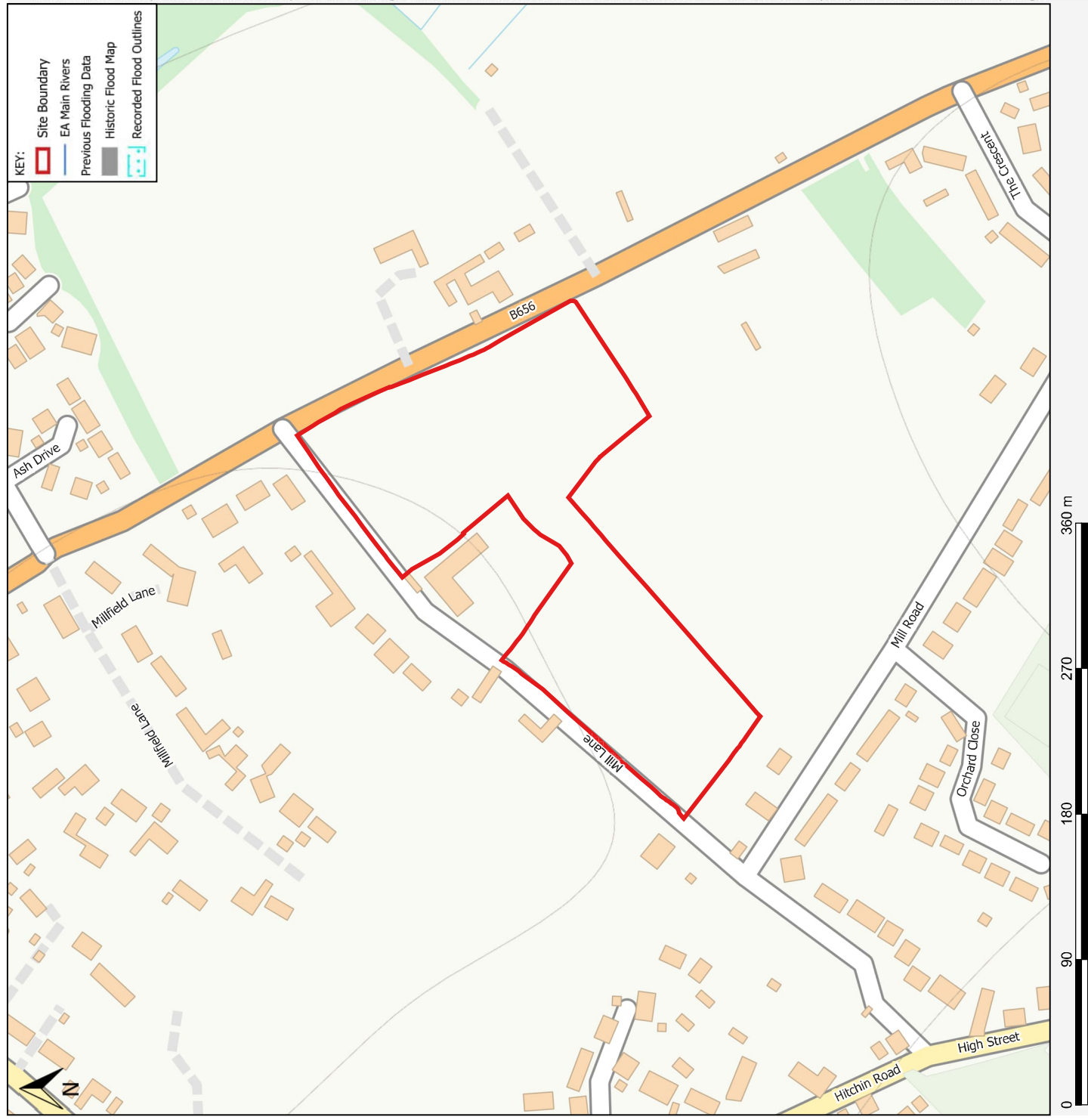
RECORDED FLOOD OUTLINES

Recorded Flood Outlines shows all records of historic flooding from rivers, the sea, groundwater and surface water. The absence of coverage by Recorded Flood Outlines for an area does not mean that the area has never flooded, only that there are currently no records of flooding in this area. It is also possible that the pattern of flooding in this area has changed and that this area would now flood or not flood under different circumstances. The Recorded Flood Outlines take into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding. It includes flood extents that may have been affected by overtopping, breaches or blockages. Any flood extents shown do not necessarily indicate that properties were flooded internally.

HISTORIC FLOOD MAP

The Historic Flooding shows the maximum extent of individual Recorded Flood Outlines from river, the sea and groundwater springs that meet a set criteria. It shows areas of land that has previously been subject to flooding. This excludes flooding from surface water, except in areas where it is impossible to determine whether the source is fluvial or surface water, but the dominant source is fluvial. If an area is not covered by the Historic Flood Map it does not mean that the area has never flooded, only that we do not currently have records of flooding in this area that meet the criteria for inclusion. It is also possible that the pattern of flooding in this area has changed and that this area would now flood or not flood under different circumstances. Outlines that don't meet these criteria are stored in the Recorded Flood Outlines dataset. The Historic Flood Map takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding. It will include flood extents that may have been affected by overtopping, breaches or blockages. Flooding is shown to the land and does not necessarily indicate that properties were flooded internally.

If an area is not covered by these layers, it does not mean that the area has never flooded, only that there are not currently records of flooding in the area.



Flood Alert and Warning Areas

FLOOD ALERT AREAS

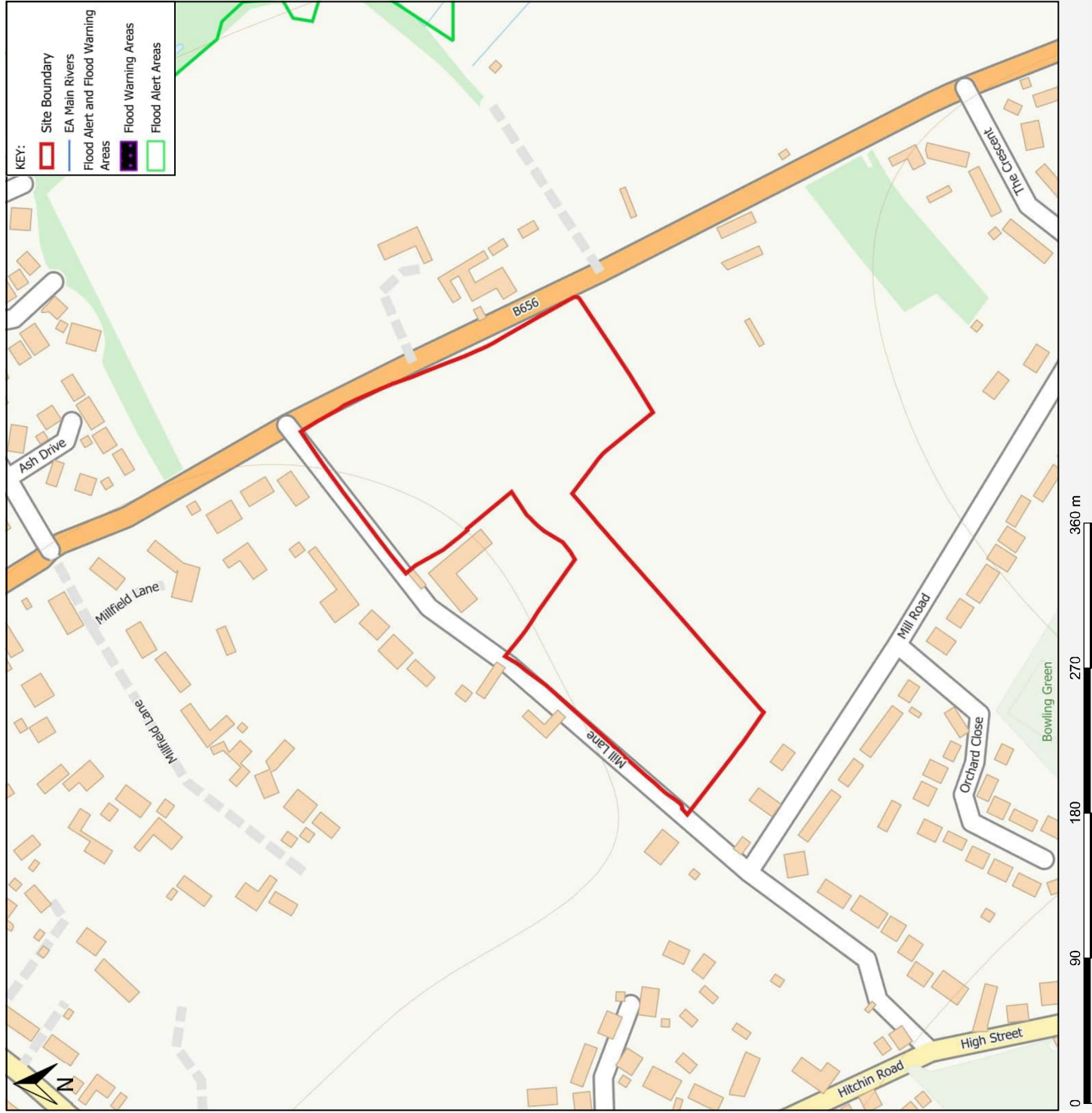
Flood Alert Areas are areas where it is possible for flooding to occur from rivers, sea and in some location's groundwater. A single Flood Alert Area may cover the floodplain within the Flood Warning Service Limit of multiple catchments of similar characteristics containing a number of Flood Warning Areas. A Flood Alert Area may also match that of a corresponding Flood Warning Area and warn for the possibility of flooding in that area. In some coastal locations a Flood Alert may be issued for spray or overtopping and be defined by a stretch of coastline. Practical and administrative factors may also influence the exact extent of a Flood Alert Area. A Flood Alert is issued to warn people of the possibility of flooding and encourage them to be alert stay vigilant and make early / low impact preparations for flooding. Flood Alerts are issued earlier than Flood Warnings to provide advance notice of the possibility of flooding and may be issued when there is less confidence that flooding will occur in a Flood Warning Area.

FLOOD WARNING AREAS

Flood Warning Areas are areas where flooding is expected to occur and where a Flood Warning Service is provided. Areas generally contain properties that are expected to flood from rivers or the sea and in some areas, from groundwater. Specifically, Flood Warning Areas define locations within the Flood Warning Service Limit that represent a discrete community at risk of flooding. The purpose of Flood Warnings is to alert people that flooding is expected, and they should take action to protect themselves and their property. Flood Warnings are issued when flooding is expected to occur, Severe Flood Warnings are issued to similar areas when there is a danger to life or widespread disruption is expected.

If an area is not covered by these layers, it does not mean that the area has never flooded, only that there are not currently records of flooding in the area.

This data is indicative only and reference should always be made to the legal documentation. It should be noted that amendments to the datasets are made frequently and that the information may change.



Source Protection Zones & Borehole Records

Source Protection Zones

Source Protection Zones (SPZs) are defined around large and public potable groundwater abstraction sites. The purpose of SPZs is to provide additional protection to safeguard drinking water quality through constraining the proximity of an activity that may impact upon a drinking water abstraction.

The following subdivisions are defined within SPZs:

Zone 1: (Inner Protection Zone) - This zone is defined by a travel time of 50-days or less from any point within the zone at, or below, the water table. Additionally, the zone has as a minimum a 50-metre radius. It is based principally on biological decay criteria and is designed to protect against the transmission of toxic chemicals and water-borne disease.

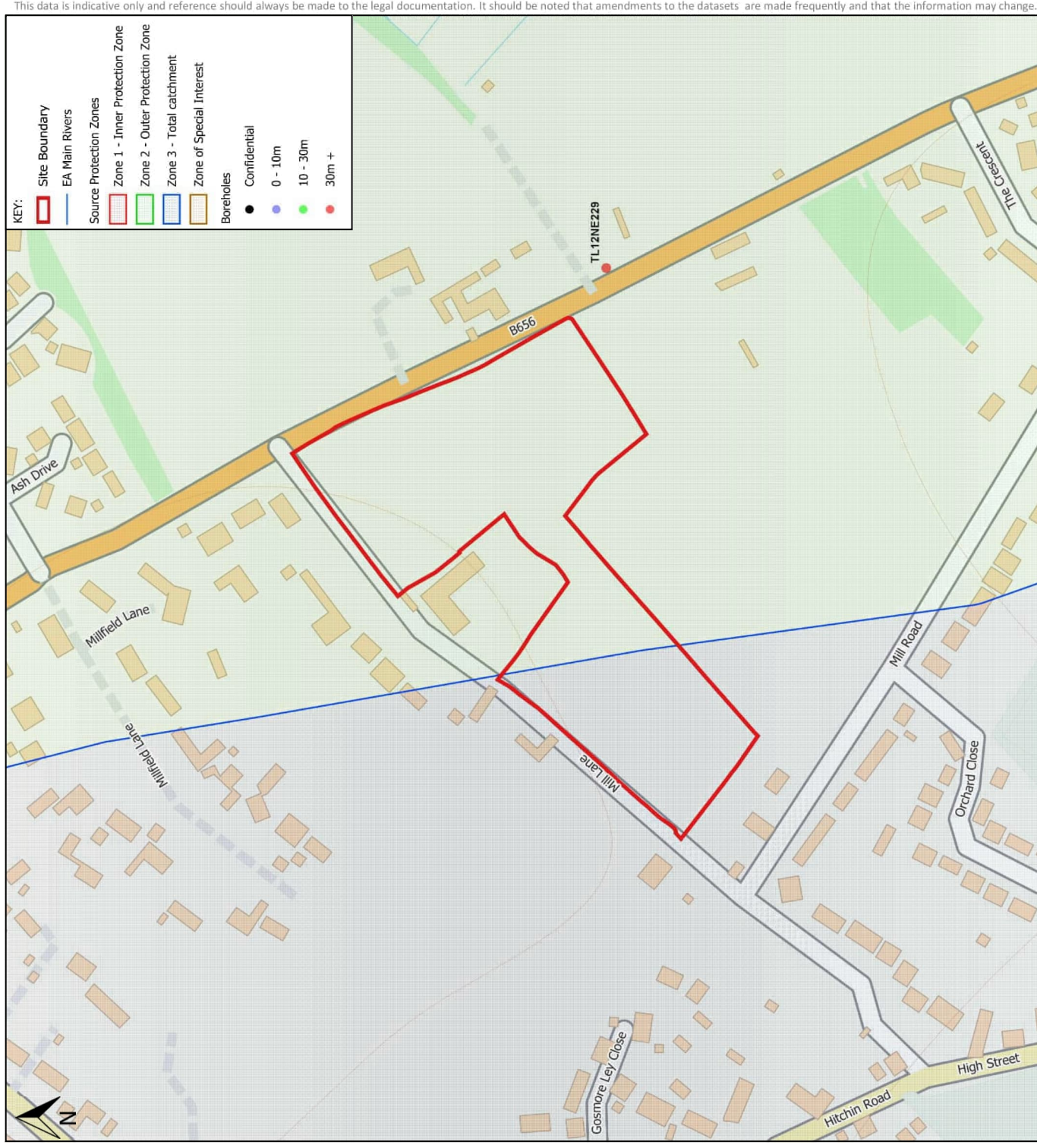
Zone 2: (Outer Protection Zone) - This zone is defined by the 400-day travel time from a point below the water table. Additionally, this zone has a minimum radius of 250 or 500 metres, depending on the size of the abstraction. The travel time is derived from consideration of the minimum time required to provide delay, dilution and attenuation of slowly degrading pollutants.

Zone 3: (Total catchment) - This zone is defined as the total area needed to support the abstraction or discharge from the protected groundwater source.

Zone 4, or 'Zone of Special Interest': is occasionally defined for some groundwater sources. These zones highlight areas (mainly on non-aquifers) where known local conditions mean that potentially polluting activities could impact on a groundwater source, even though the area is outside the normal catchment of that source

Borehole Records

Borehole records are made available from the British Geological Survey. Boreholes range from one to several thousands' metres deep. Borehole records are produced from a geologist's or surveyor's observations of the rock core extracted from the ground and typically include locality and lithological descriptions with depths and thickness. Geophysical logs may also be noted from on-site measurements.





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Flood Map Pack | wsp.com



WATER ADVISORY

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Appendix E

GREENFIELD RUNOFF RATES



Appendix F

RSK SITE INVESTIGATION





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