

FLOOD RISK ASSESSMENT

**July
2026**

Codicote Road, Welwyn

For: Howarth Homes Ltd
Report Ref: 225091-FR001

FLOOD RISK ASSESSMENT

CODICOTE ROAD, WELWYN

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Contents

1. INTRODUCTION	3
2. SITE DESCRIPTION.....	5
3. POLICY CONTEXT	8
4. SUPPORTING INFORMATION	17
5. FLOOD RISK ASSESSMENT	31
6. FLOOD RESILIENCE AND RESISTANCE MEASURES	43
7. SURFACE WATER DRAINAGE STRATEGY	45
8. CONCLUSION.....	47
APPENDIX A – PROPOSED SITE LAYOUT AND LEVELS.....	48
APPENDIX B – TOPOGRAPHIC SURVEY	49
APPENDIX C – EA PRODUCT 6 DATA	50
APPENDIX D – GREENFIELD RUNOFF CALCULATION.....	51
APPENDIX E – DRAINAGE CALCULATIONS.....	52
APPENDIX F – DRAINAGE STRATEGY	53

1. INTRODUCTION

INTRODUCTION

- 1.1 Hardy Tunstall Engineering Ltd has been appointed by Howarth Homes to undertake a Flood Risk Assessment (FRA) for the proposed redevelopment of land off Codicote Road, north of Welwyn, centred on Post Code AL6 9TU.
- 1.2 An FRA for all development (including minor development and changes of use) should be provided if the proposed development is:
- 1.3 in flood zones 2 or 3 or see flood map for planning
- within flood zone 3b
 - within flood zone 1 with a site area of 1 hectare or more
 - within flood zone 1 and the flood map for planning shows it is at increased risk of flooding from rivers or sea during its lifetime
 - with flood zone 1 and the flood map for planning shows it is at risk of flooding from surface water
 - in areas with critical drainage problems
 - within flood zone 1 where the LPA's strategic flood risk assessment (SFRA) shows it will be at increased risk of flooding during its lifetime
 - that increases the vulnerability classification and may be subject to sources of flooding other than rivers or sea.
- 1.4 As the site is within Flood Zone 2, according to the Flood Map for Planning, an FRA is required.

FRA OBJECTIVES

- 1.5 The principal objectives of the FRA are to:
- Identify potential forms of flooding including rivers, watercourses, surface water flooding, groundwater flooding, flooding from sewer systems and other forms of flooding;
 - Establish the risk of flooding;

- Determine the effects of the development on flooding elsewhere either through displacement of floodwaters or increased runoff;
 - Suggest appropriate flood mitigation measures, including a strategy for disposal of surface water run-off following the principles of SuDS.
- 1.6 The detail included in the FRA and the accompanying drainage strategy will be sufficient to support a planning application for the development.

SCOPE OF WORK

- 1.7 In preparing the FRA, this report includes:
- Obtained relevant data and information from statutory and other authorities;
 - Considered the potential sources of flooding;
 - Assessed the risk of flooding to the site;
 - Assessed the impact of off-site flooding (displaced water) on third parties;
 - Considered the impact of climate change;
 - Considered likely mitigation requirements and any residual risk;

2. SITE DESCRIPTION

EXISTING SITE

- 2.1 The site is currently occupied by a farm and farm shop and access track, with surrounding buildings and outhouses; however, much of the land is permeable ground (grassed or permeable access tracks). The site is centred on NGR Reference: TL 22483 17117.
- 2.2 The land within the site boundary is effectively developed brownfield land with areas of made ground.
- 2.3 Refer to Figure 2-1 below for site location plan.

Figure 2-1– Site Location



- 2.4 Table 1 below reflects the existing permeable and impermeable areas. Due to the broken-up nature of the existing Site with various areas of made ground and various sized buildings and outbuildings / cages, the existing impermeable area has been estimated with a conservative assessment, of the Stables and main previous farm shop building. Cages and open ground are assumed to be permeable.

TABLE 1: EXISTING CONTRIBUTING AREAS

	Total Area (ha)	Permeable Area (ha)	Impermeable Area (ha)	Percentage Impermeable (%)
Development Site	4.035	3.600	0.435	10

- 2.5 The site is generally bounded as follows:

- To the east by Codicote Road (Access to the site)
- To the south by Nursery Way (Residential access road)
- To the North by woodland and agricultural fields
- To the west by agricultural fields

DEVELOPMENT PROPOSALS

- 2.6 The proposed development broadly comprises the redevelopment of the land to provide.
- 2.7 Approximately 109 new residential dwellings.
- 2.8 Refer to Appendix A for proposed development layout and Appendix B for Topographical Survey of existing site layout.

3. POLICY CONTEXT

NATIONAL PLANNING POLICY FRAMEWORK (NPPF)

- 3.1 The NPPF¹ was first adopted in March 2012, superseding national planning policy statements and guidance. One of the overarching objectives of the NPPF (latest publication December 2024, as amended February 2025) is the encouragement of growth and acknowledgement that decision-makers should adopt a presumption in favour of sustainable development. Paragraph 10 of the document states: *“AT THE HEART OF THE FRAMEWORK IS A PRESUMPTION IN FAVOUR OF SUSTAINABLE DEVELOPMENT”*
- 3.2 Paragraph 11 states for parts c and d, “For decision-taking this means:
- Approving development proposals that accord with an up-to-date development plan without delay; or
 - where there are no relevant development plan policies, or the policies which are most important for determining the application are out-of-date, granting permission unless:
 - the application of policies in this Framework that protect areas or assets of particular importance provides a strong reason for refusing the development proposed; or
 - any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole, having particular regard to key policies for directing development to sustainable locations, making effective use of land, securing well-designed places and providing affordable homes, individually or in combination.”
- 3.3 The Government expects the planning system to deliver the homes, business, infrastructure and thriving local places that the country needs, while protecting and enhancing the natural and historic environment.
- 3.4 Chapter 2, Paragraphs 7 to 14 set out the aims for achieving sustainable development.
- 3.5 Chapter 14: Meeting the Challenge of Climate Change, Flooding and Coastal Change (paragraphs. 161-186) sets out the requirements to assess flood risk and climate change for developments.
- 3.6 Paragraph 170 of the NPPF states that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere.
- 3.7 Paragraph 172 of the NPPF states that a sequential risk-based approach should be applied to the location of development – taking into account all sources of flood risk and

¹ Ministry of Housing, Communities & Local Government, National Planning Policy Framework (2024). Available online: [National Planning Policy Framework](#)

the current and future impacts of climate change – so as to avoid, where possible, flood risk to people and property. This should be done, and any residual risk managed, by:

- Applying the sequential test and then, if necessary, the exception test as set out below;
- Safeguarding land from development that is required, or likely to be required, for current or future flood management;
- Using opportunities provided by new development and improvement in green and other infrastructure to reduce the causes and impact of flooding, (making as much use as possible of natural flood management techniques as part of an integrated approach to flood risk management); and
- Where climate change is expected to increase flood risk so that some existing development may not be sustainable in the long-term, seeking opportunities to relocate development, including housing, to more sustainable locations.

- 3.8 Paragraph 173 of the NPPF states: *“A SEQUENTIAL RISK-BASED APPROACH SHOULD ALSO BE TAKEN TO INDIVIDUAL APPLICATIONS IN AREAS KNOWN TO BE AT RISK NOW OR IN FUTURE FROM ANY FORM OF FLOODING.”*
- 3.9 Paragraph 175 of the NPPF states the sequential test should be used in areas known to be at risk now or in the future from any form of flooding, except in situations where a site-specific flood risk assessment demonstrates that no built development within the site boundary. This includes access or escape routes, land raising or other potentially vulnerable elements, which would be located on an area that would be at risk of flooding from any source, now and in the future (having regard to potential changes in flood risk).
- 3.10 Paragraph 177 of the NPPF states that, having applied the sequential test, if it is not possible for development to be located in areas with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in Annex 3. Refer to Table 4 below development suitability and when to apply the Exception Test.
- 3.11 Under paragraph 180, the NPPF states where planning applications come forward on site allocated in the development plan through the sequential test, applicants need not apply the sequential test again. However, the exception test may need to be reapplied if relevant aspects of the proposal had not been considered when the test was applied at the plan-making stage, or if more recent information about existing or potential flood risk should be taken in account.
- 3.12 Paragraph 181 of the NPPF states that when determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment. A Flood Risk assessment should accompany all proposals:

- in flood zones 2, 3 or 3b
- within flood zone 1 with a site area of 1 hectare or more
- in areas with critical drainage problems
- within flood zone 1 where the LPA's strategic flood risk assessment (SFRA) shows it will be at increased risk of flooding during its lifetime
- that increases the vulnerability classification and may be subject to sources of flooding other than rivers or sea.

PLANNING PRACTICE GUIDANCE

- 3.13 The Planning Practice Guidance (PPG) guidance for flood risk and climate changes was published in March 2014. The PPG was last updated in September 2025.
- 3.14 The assessment of flood risk is based on the Flood Zone definitions in Table 1 of the PPG. This information is replicated below for ease of reference (Red box indicates flood risk the site sits within):

TABLE 2: FLOOD ZONE DEFINITIONS

Flood Zone	Definition
Zone 1 Low Probability	▪ Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map for Planning– all land outside Zones 2 and 3) (<0.1% Annual Exceedance Probability, AEP)
Zone 2 <i>Medium Probability</i>	▪ Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; (between 0.1% AEP and 1% AEP) or ▪ Land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (between 0.1% AEP and 0.5% AEP). (Land shown in light blue on the Flood Map for Planning)
Zone 3a <i>High Probability</i>	▪ Land having a 1 in 100 or greater annual probability of river flooding (>1% AEP); or ▪ Land having a 1 in 200 or greater annual probability of sea flooding (>0.5% AEP) (Land shown in dark blue on the Flood Map for Planning)
Zone 3b <i>The Functional Floodplain</i>	▪ This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map for Planning)

- 3.15 The NPPF classifies the Flood Risk Vulnerability of various land uses in Annex 3 of the NPPF (reproduced below: red Box indicates vulnerability and classification). The More Vulnerable Classification encompasses usages such as hospitals and buildings used for

dwellings. Less Vulnerable applies to buildings used for general industry, storage, and distribution.

TABLE 3: LAND USE CLASSIFICATION

Classification	Land Use
Essential Infrastructure	▪ Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk. ▪ Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood. ▪ Wind turbines. ▪ Solar Farms
Highly Vulnerable	▪ Police stations, ambulance stations and fire stations and command centres and telecommunications installations required to be operational during flooding. ▪ Emergency dispersal points. ▪ Basement dwellings. ▪ Caravans, mobile homes, and park homes intended for permanent residential use. ▪ Installations requiring hazardous substances consent (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as “essential infrastructure”).
More Vulnerable	▪ Hospitals. ▪ Residential institutions such as residential care homes, children’s homes, social services homes, prisons, and hostels. ▪ Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs, and hotels. ▪ Non–residential uses for health services, nurseries, and educational establishments.

Classification	Land Use
	▪ Landfill and sites used for waste management facilities for hazardous waste. ▪ Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.
Less vulnerable	▪ Police, ambulance, and fire stations which are not required to be operational during flooding. ▪ Buildings used for shops; financial, professional, and other services; restaurants, cafes, and hot food takeaways; offices; general industry, storage, and distribution; non-residential institutions not included in the 'more vulnerable' class; and assembly and leisure. ▪ Land and buildings used for agriculture and forestry. ▪ Waste treatment (except landfill* and hazardous waste facilities). ▪ Minerals working and processing (except for sand and gravel working). ▪ Water treatment works which do not need to remain operational during times of flood. ▪ Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.
Water-compatible development	▪ Flood control infrastructure. ▪ Water transmission infrastructure and pumping stations. ▪ Sewage transmission infrastructure and pumping stations. ▪ Sand and gravel working. ▪ Docks, marinas, and wharves. ▪ Navigation facilities. ▪ Ministry of Defence installations. ▪ Ship building, repairing, and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location. ▪ Water-based recreation (excluding sleeping accommodation). ▪ Lifeguard and coastguard stations.

Classification	Land Use
	▪ Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms. ▪ Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

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

**TABLE 4: FLOOD RISK VULNERABILITY CLASSIFICATION
(ACCORDING TO FLOOD MAP FOR PLANNING)**

Flood Zone	Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable		Less Vulnerable
Zone 1	ü	ü	ü	ü		ü
Zone 2	ü	ü	Exception Test Required	ü	ü	ü
Zone 3a	Exception Test Required	ü	û	Exception Test Required		ü
Zone 3b Functional Floodplain	Exception Test Required	ü	û	û		û

ü Exception Test is not required

û Development should not be permitted

 Site Vulnerability Classification according to Flood Map for Planning

 Site Vulnerability Classification when factoring in Climate Change

THE SEQUENTIAL TEST AND EXCEPTION TEST

- 3.17 The Sequential Test is a risk-based test at should be applied at all stages of development and aims to steer new development to areas with the lowest probability of

- flooding from all sources. This is applied by the Local Authority by means of a Strategic Flood Risk Assessment (SFRA).
- 3.18 Furthermore, large sites partially affected by Flood Zones 2 and 3 should be developed sequentially, placing the most vulnerable land uses in the areas with lowest risk of flooding, from all sources.
- 3.19 The SFRA may require the Exception Test to be applied to certain forms of new development. The test considers the vulnerability of the new development to flood risk and, to be passed, must demonstrate:
- 3.20 If it is not possible for development to be located in zones with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in national planning guidance.
- 3.21 For the exception test to be passed it should be demonstrated that:
- Part a: the development would provide wider sustainability benefits to the community that outweigh the flood risk; and
 - Part b: the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.
- 3.22 Both elements of the exception test should be satisfied for development to be allocated or permitted.
- 3.23 Further detail on the lifetime of development is also given in the PPG, which advises for residential development that a period of 100 years should be considered whilst for non-residential this is dependent upon the development characteristics.
- 3.24 The use of sustainable drainage systems is considered by the PPG to offer the following benefits:
- Reduce the causes and impacts of flooding.
 - Remove pollutants from urban run-off at source.
 - Combine water management with green space with benefits for amenity, recreation, and wildlife.
- 3.25 In the consideration of major developments, sustainable drainage should be provided unless it can be demonstrated that this would be inappropriate. Major developments are defined in the Town and Country Planning Order 2015; some of these definitions encompass the following:

- Development site area of 1 hectare or more
- Provision of 10 or more residential dwellings

LOCAL PLANNING POLICY

3.26 Hertfordshire County Council is the Lead Local Flood Authority (LLFA) and will adjudge the FRA (through consultation with the Environment Agency as necessary) for the site.

3.27 The following documents have been considered to inform the FRA for the site:

- Welwyn Hatfield Local Plan Local Plan 2016-2036
 - **Policy SADM 14:** Parts i to v
- North Hertfordshire - Local Plan: Local Development Scheme: Adopted November 2022
- North Hertfordshire Local Plan 2011 – 2031 (Noting Intention to commence consultation on new Local Plan from April 2026, and planned adoption early 2029)
 - **Strategic Objective ENV 4:** To manage flood risk and the impacts of flooding and climate change.
 - **Policy SP11:** Natural resources and sustainability (taking into account flood risk for development sites)
 - Key Core Strategy **Policy 29:** Water Management
- Sustainability Supplementary Planning Document (SPD); Adopted September 2024
 - **Chapter 8:** Sustainable Drainage Systems
- Hertfordshire County Council Climate Change Advice Note: 2017
- North Herts Level 1 and Level 2 Strategic Flood Risk Assessment, 2008
- North Herts Strategic Flood Risk Assessment Update, 2016
- Hertfordshire Local Flood Risk Management Strategy 2 (LFRMS 2): 2019 to 2029
 - 6 Principles to manage flood risk in Hertfordshire:
 - **Principle 6:** Ensuring that flood risk arising from new development is managed.
- Hertfordshire County Council Web maps (maps supersede SFRA mapping:
 - Fluvial Flood Risk Mapping
 - Surface Water Flood Risk Mapping
 - Areas Susceptible to Groundwater Flooding

4. SUPPORTING INFORMATION

CONTRIBUTING AREAS

4.1 The site area combines to provide a total of approx. 4.035ha, including buildings and car parking. :

4.2 Table 5 below summarised the pre and post development contributing areas:

4.3 Table 5: Contributing Areas

	Total Site Area (ha)	Proposed Development Area (ha)	Pre-Development area PIMP* (%)	Post-Development area PIMP* (%)	Post-Development Contributing Area (ha)
Development Site	4.035	4.035	10	39	1.557

*- Percentage Impermeable (PIMP)

4.4 The development drainage proposals are summarised in Section 7 of the FRA.

WATERCOURSES / WATERBODIES

Main River

4.5 The nearest Main River to the Site is the River Mimram

Ordinary Watercourse

4.6 There are no other watercourses in immediate vicinity of the Site.

Other Waterbodies

4.7 There are no other water bodies in the vicinity of the Site.

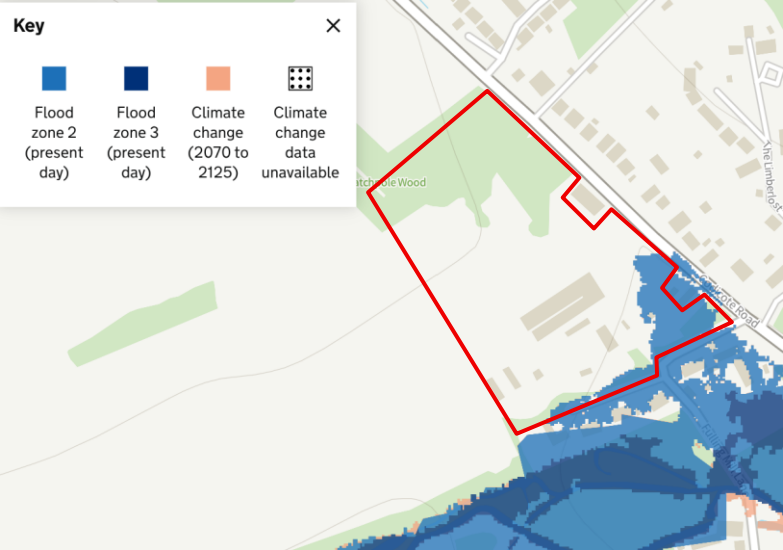
SITE AND SURROUNDING LEVELS

- 4.8 From the topographical survey, undertaken in August 2025, ground levels slope from north west to south east, in a relatively uniform gradient.
- 4.9 Levels range in the north west of the site at approx. 85.8m AOD, falling south east to approx. 68.2m AOD, adjacent to Old Nursey Way.
- 4.10 Levels fall across a distance of approx. 261m. With a fall of approx. 17.6m, the Site has an average approx. southward gradient of 1 in 15.
- 4.11 Due to the relative steepness of the Site, land raising is proposed to create the platform levels for access road and dwellings. This is discussed in Section 5 for flood risk.
- 4.12 Refer to Appendix B for Topographical Survey.

BASELINE FLOOD RISK

4.13 The following section discusses the existing flood risk to the site. Table 6 summarises the baseline flood risk:

TABLE 6: FLOOD RISK BASELINE REVIEW

Source	Flood Risk Level	Comments
Fluvial	Low (Present Day)	The majority of the Site lies in Flood Zone 1, according to the Flood Map for Planning, with the southern part of the Site partially within Flood Zone 2, under present day mapping, without defences included. Fluvial risk is from the main river, the river Mimram to the south of the Site. Figure 4-1 below notes present day flood online mapping with the site boundary shown (Including Climate Change)  Figure 4-1 – Flood Map for Planning (Viewed 29/04/2026) However, the Hertfordshire County Council (Herts CC) web mapping service provides flood risk mapping for fluvial and surface water sources indicate the site is not within Flood Zone 1 or Flood Zone 2, as shown in Figure 4-2 below (noting this map does not include climate change).

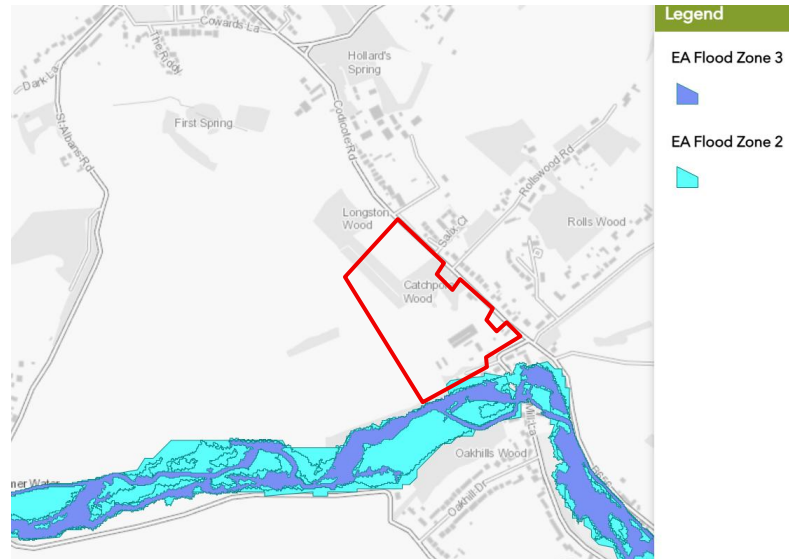


Figure 4-2 – Herts CC – Online Webmap Fluvial Risk (viewed 29/04/2026)

The Environment Agency (EA) was contacted to request Product 4 and 6 data; the EA provided product 6 data on 20/04/2026. The data included model data from the 2019 River Mimram model. This data matches the date displayed on the Herts CC web mapping service. Figure 3-3 below indicated the proposed development site and the 1% AEP + 22% climate change (Higher allowance) and the 0.1% AEP extents.

The 1% AEP plus 59% CC (upper allowance) event has the greatest extent (including when testing the provided 0.1% AEP extent), with maximum flood levels of 67.41m AOD (Refer to Section 5 for details).

Figure 4-3 presents the 0.1% AEP and 1% AEP plus 59% climate change fluvial extents, show in light Blue and Cyan, respectively. The mapping demonstrates fluvial flood risk does not impact the Site.

Source	Flood Risk Level	Comments
		 Figure 4-3 – 2019 River Mimram model extents (0.1% AEP Extent and 1% AEP + 59% CC Extent) with development proposals (Product 6 Data) Therefore, fluvial flood risk overall is considered low risk, based on the 2019 Mimram model, which is reflected on the Herts CC web mapping service, and including climate change (as provided in the 2019 Mimram model data).
Tidal	Low	There is no Tidal flood risk in this area, risk is Low and not considered further within this FRA

Surface Water (Pluvial)	Medium (Majority Low to Very Low)	The vast majority of the site is at low risk of surface water flooding, with an area of medium to high risk in the south east corner of the site. Figure 4-4 below provides the flood risk map for the Site, including predicted climate change (2061-2125). Flood depths on site vary with maximum depths indicated to be up to 600mm. Figure 4-4 – Flood Map for Planning 1% AEP Surface Water Risk Extent + Climate Change (viewed 04/06/2026) Figure 4-5 below indicates the areas where depth range from 300-600mm. the maximum flood depth is experienced in the south east of three. Figure 4-6 below shows the site is at very low risk of depths greater than 600mm. Figure 4-5 – Flood Map for Planning 1% AEP Surface Water Risk Extent 300-600mm Depth – Including Climate Change (viewed 04/06/26)
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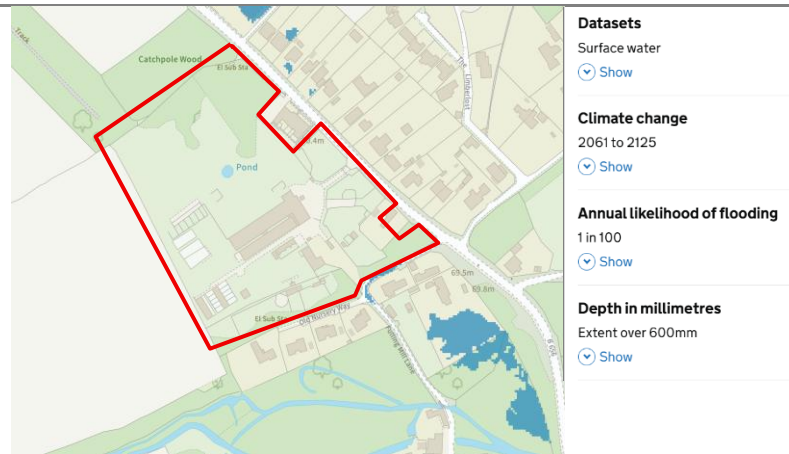


Figure 4-6 – Flood Map for Planning 1% AEP Surface Water Risk Extent >600mm Depth – Including Climate Change (viewed 04/06/26)

The Herts CC web mapping effectively matches the 1% AEP flood map for planning boundary for surface water flood risk, as shown in Figure 4-7 below.

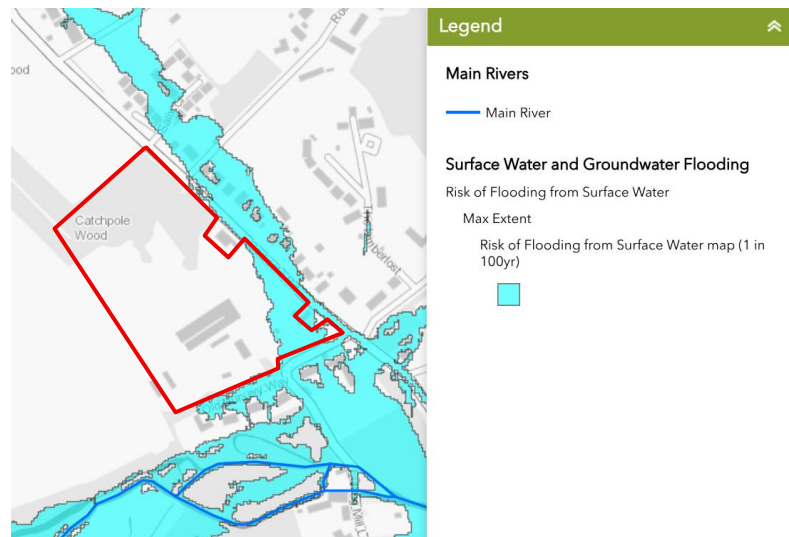


Figure 4-7 – Herts CC web mapping, 1% AEP Surface Water Risk (viewed 04/06/2026)

A surface water flow path is evident in the mapping from Codicote Road from the north, flowing down the road, where it crosses the south east portion of the site, primarily in the path of a listed building (outside the Site boundary).

The Herts CC web mapping SW depth map, reproduced in Figure 4-8, indicates maximum depths in the surface water risk area of between 0.3 and 0.6m above ground. This corroborates the predicted Flood Map for Planning flood depths (noting this takes into account climate change impacts).

The topographical survey provided (Appendix B) provides top of kerb levels along Codicote Road. A Drop Kerb at the main site access confirms the road level is approx. 100mm below top of

kerb level, are approx. 69.72m AOD at the drop kerb. The drop kerb access rises to 69.85m AOD within the site boundary. Flood levels within Codicote road appear to range up to 150-300mm depth, in reality with kerb levels the flood depth is likely to be, conservatively, no deeper than 150mm. With the difference in road level to site level at the back of the footpath at the access approx. 130mm in depth; this would corroborate flow paths entering the site off Codicote Road.

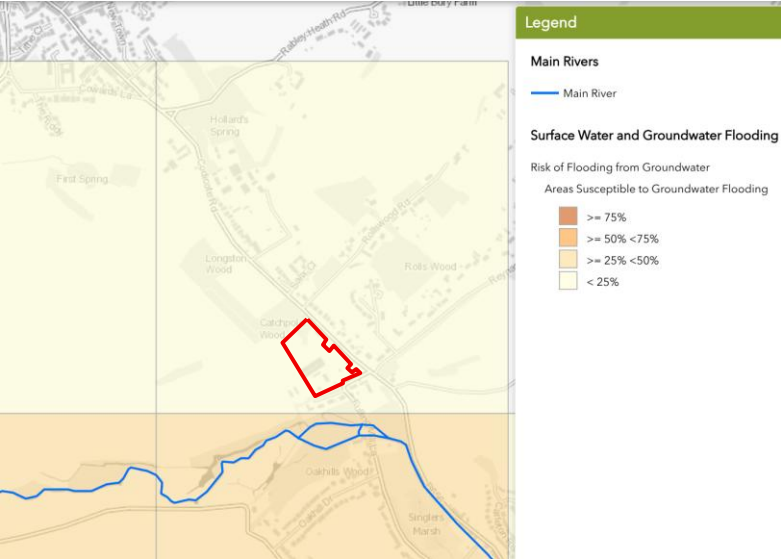
The topographical survey indicates the road level continuously falls southwards into Fulling Mill Lane. The Herts CC mapping appears to indicate this would occur in their mapping (Figure 4-7 and 4-8).

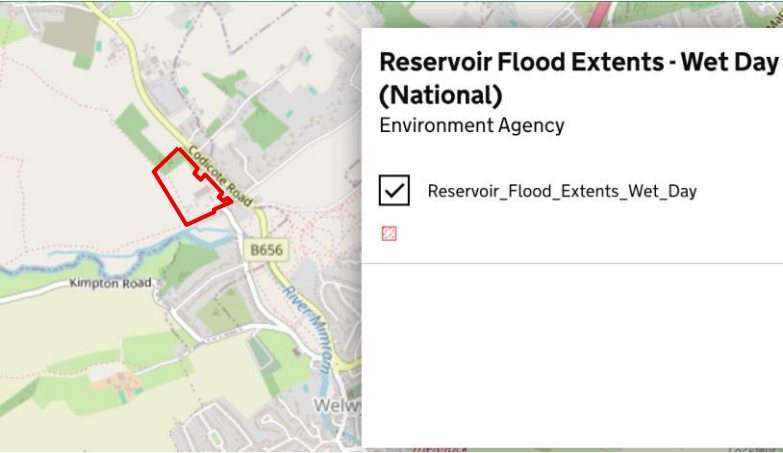


Figure 4-8 – Herts CC web mapping, 1% AEP Surface Water Risk Depths (viewed 04/06/2026)

On site topography indicates the lowest level in the south east part of the site is 68.45m AOD in the meadow area, rising to 68.58 at the southern boundary, where levels fall to approx. 67.98m AOD into Fulling Mill Lane and Old Nursey Way. This would suggest typical flood depths would not be deeper than approx. 100-150mm with surface water exiting the site and flowing south. This seems to contradict the surface water flood mapping depths, but taking a conservative approach, assuming the road levels on the southern side of Fulling Mill lane could feasibly rise to 68.750m AOD (an increase of 0.770m which is very unlikely), a potential maximum flood depth would be 300mm on the site, i.e. 68.750m AOD during the 0.1% AEP event, including climate change. This level tends to corroborate the estimated flood extent compared to site topographical levels for the 0.1% AEP plus CC extent.

The topographical survey indicates the majority of ground levels in the south east ground levels in the region rising steeply from an average level of 68.800m AOD to over 70.00m AOD westwards and northwards, above the road level in Codicote Road and potential maximum flood level of 68.750m AOD (based on the anticipated 0.1% AEP extent with climate change). Reviewing online street view imagery, ground levels appear to continually fall away from the site across Fulling Mill Lane and Old Nursery Way, along both these roads and Codicote Road southwards.

Source	Flood Risk Level	Comments
		Taking the above into account, Surface Water Risk is considered Medium in the area of the flowpath and low within the proposed built development areas; however, it is noted that the Medium risk is across a very small portion of the south east corner of the site, with the majority of the risk being Low to Very Low. Taking a conservative approach to the design layout of the proposed development, the 1% AEP flood risk mapping extents (plus climate change) will be used to inform the layout for the built development areas (i.e. dwellings), with flood level above the 0.1% AEP extent, including climate change. Finished floor levels will be set a minimum 600mm above the 68.750m AOD level, at a minimum of 69.350m AOD.
Groundwater	Low	The Herts CC web mapping indicates groundwater flood risk is low, with a <25% chance of groundwater flooding on the Site. Figure 4-9 shows the Herts CC web mapping.  Figure 4-9 – Herts CC web mapping Groundwater flood risk (viewed 04/06/2026) Groundwater flood risk is considered low across the site.

Source	Flood Risk Level	Comments
Sewers	Low	The topographical survey (Appendix B) suggests there is no formal surface water drainage network for the few buildings on the site. The ground is largely loose made ground with little hardstanding. There appear to be manholes that serve one property which is assumed to be foul drainage which drains into Codicote Road (there appears to be no septic tank or cesspit). According to the drainage strategy drawing 225091-HTE-XX-XX-DR-C-0910 Drainage Strategy, a 225mm diameter Thames Water public gravity foul sewer that runs south east along Codicote Road. According to the SFRA there are no reports of sewer flooding on or in the vicinity of the site, with sewer flood risk considered to be Low.
Artificial Sources	Low Residual	The site is at low residual risk of reservoir flooding, according to the online Defra mapping for Reservoir flood map (wet day scenario, for when rivers are in flood as shown in Figure 4-10 below.  Figure 4-10 – Defra mapping – Reservoir Wet Day flood risk (viewed 04/06/2026)

- 4.14 The Herts CC SFRA mapping is from 2008 with updates in 2016 (CHECK). Therefore, it is considered the SFRA mapping is superseded by the Herts CC web mapping and the EA 2019 River Mimram model extents, which include current climate change allowance; this FRA considered flood risk from the most up to date sources and will be assessed on the River Mimram model outputs and the flood risk information provided on the Herts CC web mapping system.

SITE GEOLOGY

- 4.15 The geological setting has been established from both the British Geological Survey (BGS) geological mapping and the intrusive ground investigation undertaken by Aviron Associates in May 2026. The site investigation provides site-specific confirmation of the anticipated geological sequence and supersedes reliance on historic nearby borehole records.
- 4.16 The BGS geological mapping indicates that the site is underlain predominantly by the Lowestoft Formation (chalky till comprising clay, sand and gravel), with a local area of Head Deposits along the north-eastern boundary. These superficial deposits overlie the Lewes Nodular Chalk Formation, which forms the regional Principal Aquifer. The superficial deposits are classified as Secondary (Undifferentiated) Aquifers.
- 4.17 The intrusive ground investigation confirmed this geological sequence across the site. Beneath a thin layer of topsoil and locally reworked topsoil, limited areas of made ground were encountered, generally less than 1.0 m thick. This is underlain by the Lowestoft Formation, comprising firm to very stiff silty sandy gravelly clay, transitioning at depth to medium dense to dense clayey sandy gravel and sand. Weathered chalk of the Lewes Nodular Chalk Formation was encountered across the site, becoming progressively less weathered with depth from Grade Dm and Dc chalk through to competent Grade C and Grade B chalk.
- 4.18 Groundwater was encountered during the site investigation at a minimum depth of approximately 2.6 m below ground level, with subsequent monitoring recording groundwater levels between 3.2 m and 4.61 m below ground level. These monitored groundwater levels are broadly consistent with the historic groundwater records previously identified within the BGS borehole database and confirm that groundwater is relatively deep beneath the site.
- 4.19 Published geology indicates Borehole TL21NW206 was sunk to a depth of 4.57m, just south of borehole TL21NW05 and appears to be an old abstraction borehole. Water levels in the borehole (albeit dated 1955) were at their highest at 3m below ground.
- 4.20 The groundwater depth corroborates the very low risk assessed in the baseline reviewed in Table 6 above.
- 4.21 The groundwater levels recorded during the investigation support the baseline flood risk assessment presented within this FRA, indicating that groundwater is unlikely to influence the proposed development under normal conditions. Whilst groundwater should continue to be considered during detailed design, the recorded levels provide adequate separation from proposed finished ground levels and are not expected to present a constraint to the development.
- 4.22 Soil infiltration testing undertaken as part of the ground investigation demonstrates that infiltration drainage is considered feasible within the soils overlying the site, subject to the final drainage design. Any infiltration SuDS should be founded within suitable permeable strata, maintain the required separation to the recorded groundwater table

and comply with current CIRIA SuDS guidance together with Environment Agency requirements, particularly given the site's location above a Principal Aquifer and within a Source Protection Zone.

- 4.23 According to Magic Maps², the site sits on an area of mostly medium groundwater vulnerability, with the eastern boundary within an area of High vulnerability, i.e. the potential for surface waters to impact groundwater bodies. Figure 4-9 below indicates the groundwater vulnerability.

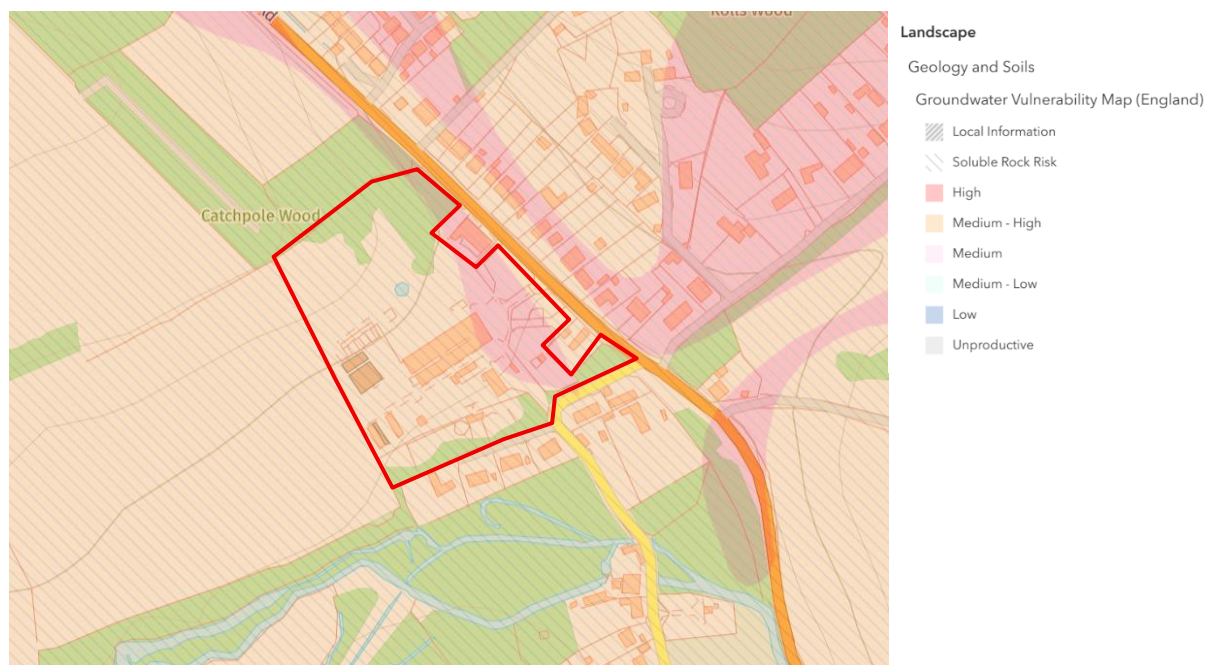


Figure 4-9 – Magic Map Online – Groundwater vulnerability Mapping (June 2026)

- 4.24 Source Protection Zones (SPZ) on Magic maps indicate the site lies in Zone I (SPZ1) (Inner Catchment). A groundwater SPZ1 is the area immediately around an abstraction point for domestic supply or for food production purposes. Groundwater in a SPZ1 is most vulnerable to pollution given the close proximity of the abstraction point and the water's intended use for human consumption. It is defined within the Environmental Permitting (England and Wales) Regulations 2016 as one of the following.
- The area within 50 metres of a point where the groundwater is abstracted for domestic supply or food production purposes.
 - The area where it takes groundwater that is intended to be used to supply water for domestic or food production purposes up to 50 days to travel to the groundwater abstraction point.

² <https://magic.defra.gov.uk/MagicMap.html>

- 4.25 Proposed Site Drainage will need to take this into consideration for pollution control and treatment, to ensure no increase in risk to groundwater. It should be noted that the proposed development is for residential use only, with the Simple Index approach to water quality generally sufficient with 1 or 2 treatment trains to control pollution, should it be discharged to ground.
- 4.26 Figure 4-10 below indicates the SPZ mapping.

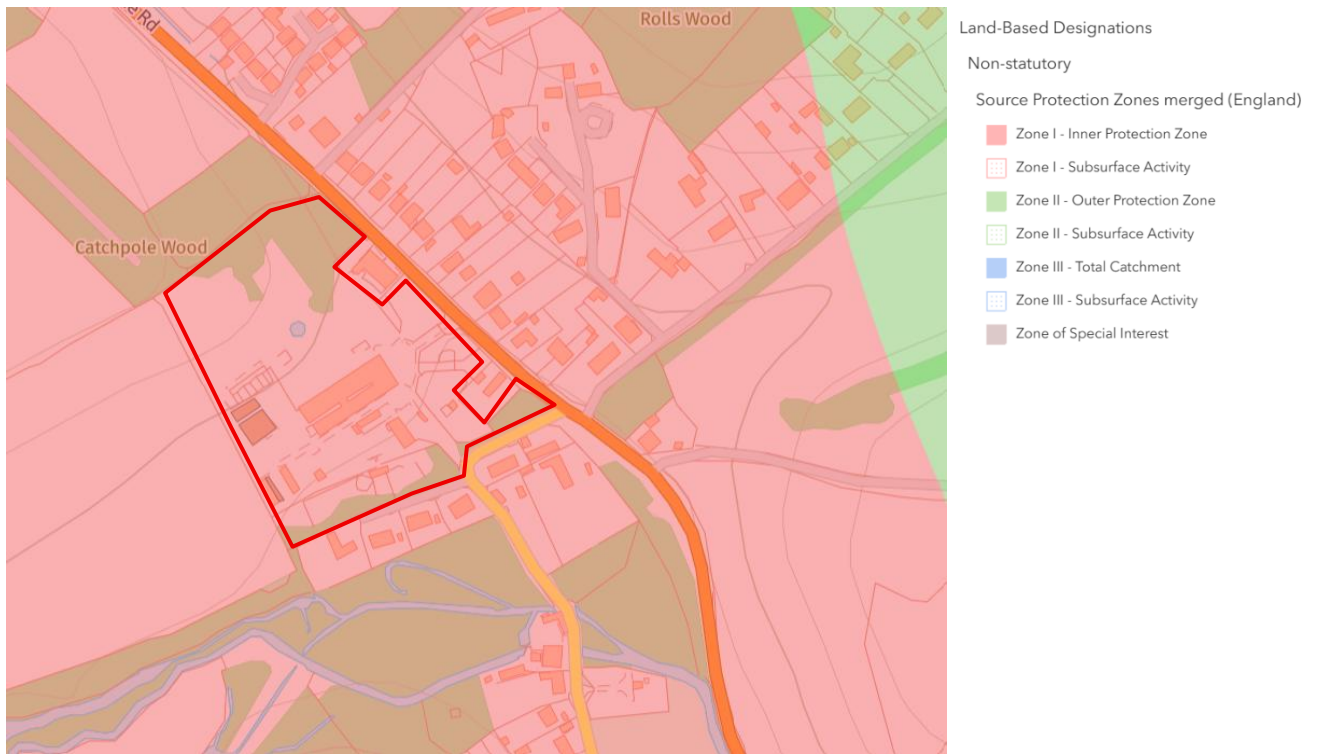


Figure 4-10 – Magic Map Online – Source Protection Zones (June 2026)

EXISTING SITE DRAINAGE

- 4.27 The existing site consists of private surface water and foul water drainage.

Surface Water

- 4.28 The topographical survey indicates several manholes on the site; however, most are sealed and it has not been confirmed where they drain to, or whether they serve surface water or foul drainage. Based on the apparent age of the structures on site, together with anecdotal information, it is understood most roof runoff discharges directly to ground. In general, the existing on-site drainage arrangement appears to be informal, with much of the site draining by overland flow and possibly localised infiltration to ground rather than via a clearly defined piped surface water network. This is consistent with the predominantly permeable nature of the site and the apparent lack of formalised collection systems across the majority of the site area.

Foul Water

- 4.29 There appears to be one building that is served by foul drainage via private drains. Possibly to a septic tank. Proposed development foul drainage will be formalised into a public sewer off site.

5. FLOOD RISK ASSESSMENT

FUTURE FLOOD RISK

- 5.1 The proposed development is considered “major development” as the proposed development exceeds 10 dwellings. The
- 5.2 This section assesses the flood risk from potential sources of flooding associated with a development of this nature, and include:
- Flood Risk from Rivers and the Sea (Fluvial and Tidal)
 - Surface water runoff
 - Groundwater
 - Sewerage
- 5.3 Other Artificial Sources

FLUVIAL FLOOD RISK

- 5.4 According to the current climate change allowances advice, residential (More Vulnerable) development should use the Higher allowance for design of the scheme and for mitigation / compensation, for the 2080s Epoch (assuming min 100-year design life). For the Upper Lee Management Catchment these are 22% (Higher) and 59% (Upper), as annotated in Figure 5-1 below follows:

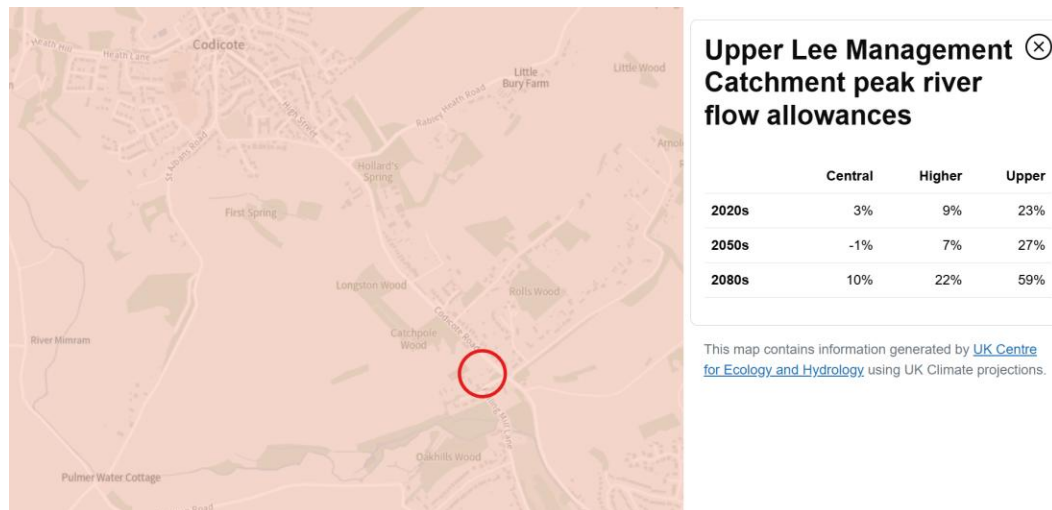


Figure 5-1 – Upper Lee Management Catchment Peak River Flow CC Allowances

- 5.5 Although the Flood Map for Planning indicates the Site lies within areas of Flood Zone 2, the baseline assessment in Table 6 above indicates modelled flood levels of the River Mimram do not reach the Site at any point along the boundary, with flood extents not reaching Old Nursery Way along the southern boundary of the Site.
- 5.6 Review of Product 6 data is set out in Table 7 below, comparing the topographical survey to the 1% AEP plus CC (Higher and Upper Allowance) and 0.1% AEP fluvial extents:

TABLE 7: FLUVIAL RISK: RIVER MIMRAM LEVELS (2019)

Return Period AEP	Highest Modelled Flood Level (m AOD)	Lowest Site Level at Boundary (m AOD)	Site Level Difference (m) to Flood Level
1% AEP +22% CC	67.38	68.20	+ 0.82
1% AEP +59% CC	67.41	68.20	+ 0.79
0.1% AEP	67.39	68.20	+ 0.81

- 5.7 As can be seen in Table 7 above, the site levels are in excess of 0.79 m above the maximum flood level from the Mimram; therefore, the fluvial risk to the Site is Low. No mitigation for proposed site level is required for fluvial flood risk.
- 5.8 It is noted the 0.33% AEP (1in in 30 year) extent do not reach the site, as the site is well above the 1% AEP extents.
- 5.9 **Fluvial Flood Risk remains Low.**

FLOODPLAIN COMPENSATION

- 5.10 Due to the modelled levels presented Table 7 above and the minimum site levels, flood compensation is not required as part of the Proposed Development.

SURFACE WATER FLOOD RISK

- 5.11 Flood Risk mapping on the Gov.uk website indicated the majority of the site is at very low risk of surface water flooding. An area of flood risk exists in the south west of the site, away from the proposed built residential development, where overland flows run from Codicote Road, through the site and into Old Nursery Way.
- 5.12 Proposed development site levels indicate all levels grade downward away from the residential development. and proposed extension to the perimeter boundaries of the site, to the east west and south.

- 5.13 Herts CC web mapping and online surface water mapping indicates generally very low risk of surface water flooding, apart from the south eastern corner of the Site. The online long term flood risk service indicates the Site is at very low risk of surface water flooding now and in the future risk information, extracted below in Figure 5-2 below.

Surface water [More about your surface water flood risk](#)

Yearly chance of flooding

Very low Low Medium High

Yearly chance of flooding between 2040 and 2060

Very low Low Medium High

What surface water is
Surface water flooding is sometimes known as flash flooding. It happens when rainwater cannot drain away through normal drainage systems.
[► Why surface water flooding is a problem](#)

Figure 5-2: Long Term Surface Water Flood Risk Table (Viewed 29 April 2026)

- 5.14 Figure 5-3 provides the extent up to the 1 in 1000 year (0.1% AEP) surface water mapping extent including climate change. The overall risk category of High to Low ranges from 3.3% AEP (1 in 30) to less than 0.1% AEP of surface water flooding.

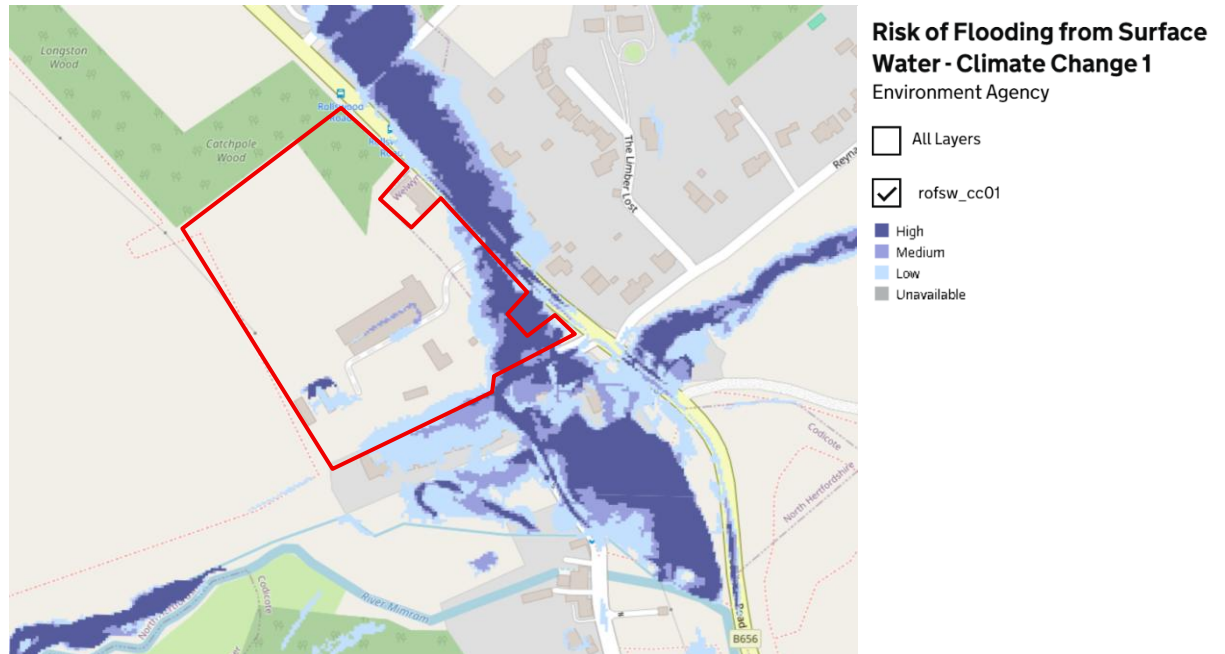


Figure 5-3: Long Term Surface Water Flood Risk Mapping + Climate Change (Viewed 04/06/26)

- 5.15 Figure 5-4 is taken from the Hertfordshire County Council flood risk mapping and corroborates the flood risk mapping above. The mapping also notes no historic flooding on the site or adjacent to it.



Figure 5-4: Hertfordshire County Council Flood Risk Management Map – SW Risk (Viewed 29 April 2026)

- 5.16 The North Herts SFRA updated mapping (2016) indicates similar flood risk patterns from surface water across the site, as shown in Figure 5-5 below:

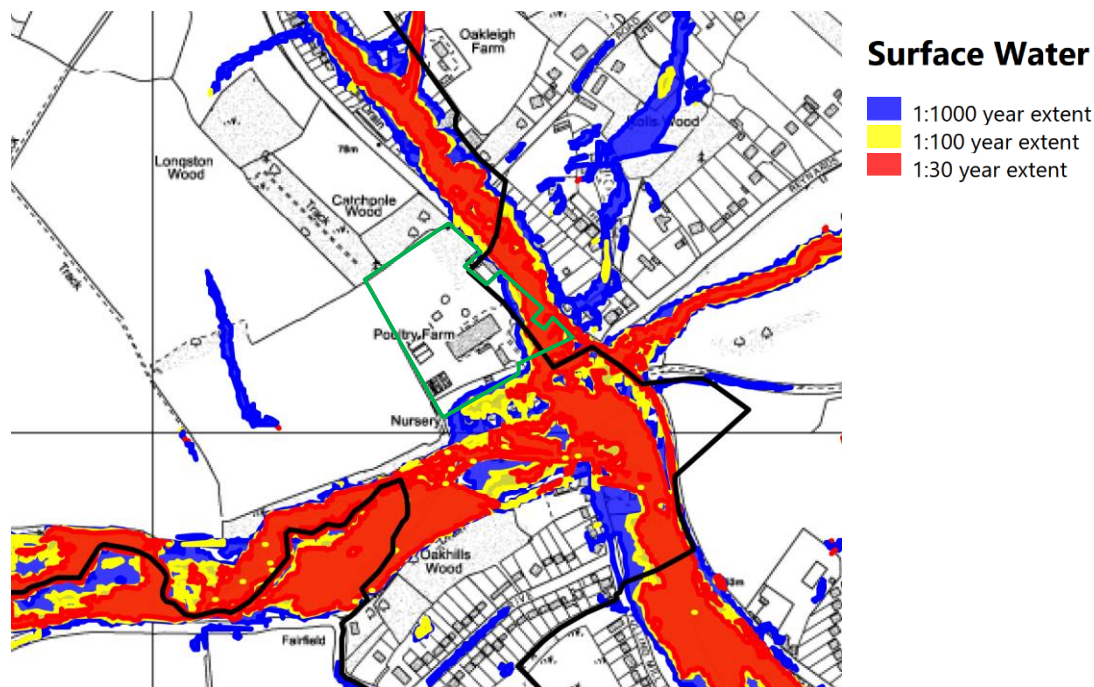


Figure 5-5: North Herts District Council SFRA Surface Water Risk mapping - Update, 2016.

- 5.17 Figure 5-6 below indicates the development proposals with the surface water risk mapping overlaid. No built development is located within the 0.33% or 1% AEP extents, including the impacts of climate change.



Figure 5-6: Development Proposals showing SW Risk Mapping – Long Term Flood Risk with Climate Change 1

- 5.18 The lightest blue hatching represents the 1% AEP to 0.1% AEP extent (low risk), including the impacts of climate change. As discussed in section 4, the predicted maximum flood level on the site is 68.750m AOD. Finished floor levels will be set 600mm above this level, at 69.350m AOD (0.1% AEP level including climate change). As indicated on drawing 225091-HTE-XX-ZZ-DR-C-0200 (P01), the lowest proposed finished floor level has been set at 69.350m AOD, 600mm above the predicted maximum flood level.
- 5.19 Access to the site will be via the existing access from Codicote Road. Road levels have been designed to ensure the flow path is not altered and ground raising within the high-risk surface water risk area is kept to a minimum. With the estimated maximum flood depth on the site at 68.750m AOD, the minimum ground level along the access is 69.450m AOD. Surface water may flow across this extent into the site from Codicote Road, however, depths are expected to be less than 100mm. Where the ground is raised 630mm (from the levels strategy drawing 225091-HTE-XX-ZZ-DR-C-0200 (P01) in Appendix A), the minimum ground level is 69.510m AOD, outside the predicted flood level. Therefore, the access roads will not give rise to a loss in available space for the volume of surface water runoff.
- 5.20 On the eastern extent of the proposed dwellings, as seen in Figure 5-6 above, the 0.1% AEP extent encroaches towards dwellings. Appendix A provides the proposed level strategy for the development. The minimum ground level at plots 46-47 and 85-87 is 70.59m AOD, significantly over 600mm above the predicted maximum flood level on the site.

- 5.21 The surface water risk extent for the 0.1% AEP extent runs along the southern boundary, which encroaches into the gardens of the southern development plots. Ground raising is proposed along the southern boundary, at the extent of the 0.1% AEP extent. The minimum proposed floor level of the southern most plots is set at 69.350m AOD. This is 600mm higher than the minimum finished level of 69.350m AOD. These plots represent the lowest ground levels of proposed dwellings across the site.
- 5.22 The assessment concludes that no built development finished level will be less than 600mm above the predicted maximum flood extent.
- 5.23 The proposed ground raising is limited to a relatively small area of approximately 210m² along the southern boundary of the site and is required to provide appropriate garden levels and safe residential amenity space. Based on a highly conservative assessment using the maximum estimated 0.1% AEP plus climate change flood level, the resulting floodplain displacement is approximately 147m³.
- 5.24 When considered against the wider flood extent of approximately 19.9 hectares, this displacement equates to an average increase in flood depth of only around 7.4mm. Such a minor change is negligible in the context of the wider floodplain, would not materially alter flood behaviour or mapped flood extents, and is unlikely to be discernible within hydraulic modelling outputs. Furthermore, as the assessment is based on a very conservative worst-case flood level, actual floodplain displacement and associated depth increases are expected to be significantly less in practice.
- 5.25 Overall, the proposed level changes are considered to result in a negligible and non-material impact on flood storage and flood risk both on-site and elsewhere.
- 5.26 Overall, the proposed level changes are considered to result in a negligible and non-material impact on flood storage and flood risk both on-site and elsewhere. The estimated increase in flood depth is minimal, would not materially alter floodplain behaviour or flood extents, and is unlikely to be discernible within hydraulic modelling outputs. It is, therefore, concluded that the development proposals will not materially affect flood risk, either within the site or to surrounding land and property.
- 5.27 **The development proposals remain at medium to low risk of surface water (pluvial) flooding (with finished floor levels at least 600mm above the conservatively assessed maximum flood level).**

SEWERAGE

- 5.28 There are no recorded sewer flooding events at the site. The North Herts Level 1 and Level 2 Strategic Flood Risk Assessment, 2008 does not indicate any history of sewer flooding in the vicinity of the site, with no recorded events noted in the DG5 sewer register in or around Codicote or Welwyn. The SFRA is from 2008, and the 2016 update does not include sewer, only updates to mapping for fluvial and surface water risk.
- 5.29 However, given the site's informal drainage and lack of apparent drainage within the highway, it is unlikely sewer flood has occurred or been reported. Proposed foul water

drainage will be fully designed to DCG requirements, with full approval from Thames Water prior to any construction and connection to the public sewer in Codicote Road. This will ensure foul drainage does not increase in risk on site or elsewhere in the public network.

- 5.30 **With no published evidence of flooding at this location and with a formally designed network subject to sewer authority approvals, the risk of sewerage flooding on the site remains very low, and the risk to sites downstream is also considered to be low.**

GROUNDWATER FLOOD RISK

- 5.31 Figure 4-8 in Table 6 above indicates the Site has a very low chance of groundwater flood risk (<25% chance). The majority of the Site is permeable, likely draining to ground into the chalk bedrock below. The drainage strategy will ensure the risk is not increased; the approach to drainage is described below, with a stand-alone Drainage Strategy provided separately to this FRA for the planning application.
- 5.32 The online long term flood risk map also indicates the Site is not in a groundwater risk area:

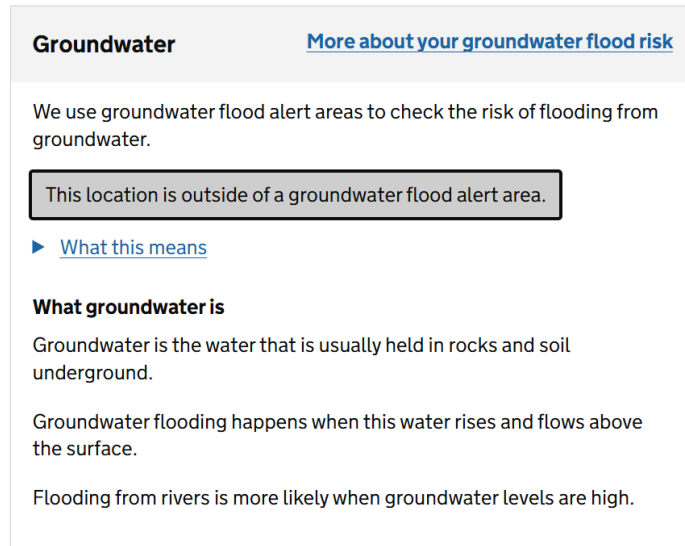


Figure 5-3: Long Term Surface Water Flood Risk (Viewed 29 April 2026)

- 5.33 **Drainage to ground will be mimicked with no increase in risk of groundwater flooding; therefore, groundwater flood risk remains low.**

ARTIFICIAL SOURCES

- 5.34 As noted in Section 3, the site is at residual risk of reservoir flooding when rivers are in flood (Wet conditions), according to the long-term flood risk map. It is considered the risk is from large, raised reservoirs to the east of Preston.
- 5.35 There are no other artificial sources of flood risk in the area as the 2024 SFRA confirms no Canal and River Trust flood history near the site.
- 5.36 Large, raised reservoirs are monitored under the Reservoirs Act 1975. It is considered embankments on large, raised reservoirs are maintained in good order with a low risk of failure.
- 5.37 As the risk is a low residual risk, only when rivers are in flood, and the site is Less Vulnerable, it is considered no additional mitigation is necessary. Refer to Appendix C for flood risk mapping and EA Product Data.

5.38 **The development proposals remain at low residual risk**

APPLICATION OF SEQUENTIAL AND EXCEPTION TEST

- 5.39 The proposed change of use to the site falls within the More Vulnerable category, for residential dwellings. The existing dwelling on site would be classified as More Vulnerable; therefore, there is no increase in development vulnerability classification.
- 5.40 The site lies within Flood Zone 2 and 3 according to the flood map for planning and low risk from all other sources, except for an area of surface water risk in the south east of the site (See Section 4 above). Under climate change scenarios, as noted in the Product 4 and 6 data, the development effectively sits entirely within Flood Zone 1. Development proposals, specifically dwellings, do not encroach on the areas of surface water risk in the south east of the site. The access into the site will remain at existing ground levels.
- 5.41 Following the assessment of flood risk in this section, with all built development outside the 1% AEP fluvial flood extent, taking into account climate change, and the built development has been located outside of the surface water flood risk area, it is considered Paragraph 175 of the NPPF is satisfied, whereby the FRA has considered all forms of flood risk and the proposed built development is outside areas at risk from all sources of flooding, for the design flood event. Furthermore, finished floor levels are set at least 600mm above the predicted maximum flood extent. Therefore, the Sequential Test is effectively not triggered, and with no requirement for the Exception Test to be undertaken.

ACCESS AND ESCAPE

- 5.42 The Site is not at fluvial risk of flooding, along with generally low flood risk from all other sources. Access and Escape to and from the site does not require mitigation or a formal route of escape and access; dwellings on the site will not be impacted by flooding, with surface water flood risk shallow enough at the access from Codicote Road into the Site at <300mm flood depth.

FLOOD RISK SUMMARY

5.43 Subject to further detailed analyses and based on existing available data, it is considered the development has appropriately assessed flood risk from fluvial and surface water sources as low, and suitable for planning approval.

TABLE 8: FLOOD RISK SUMMARY

Source	Pre-Development Risk	Post Development Risk	Comments
Fluvial	Medium to High	Low	Flood model data provided in the Product 4 and 6 data from the EA, confirms no part of the site is at risk of fluvial flooding, with ground levels assessed to be at least 0.79m above the maximum flood level (1% AEP plus climate change).
Tidal	Low	Low	The site is at low risk of tidal flooding, taking into account climate change.
Surface Water (Pluvial)	Medium to Low	Medium to Low	Focussing on the proposed built development area, the site is generally at very low risk of surface water flooding. The proposed dwelling plots to the south east will be raised at least 600mm above the 0.1% AEP plus climate change surface water flood level. A non-significant increase in flood depth across the 0.1% AEP surface water catchment will have no material impact on existing flood extents.
Groundwater	Low	Low	Groundwater flood risk is considered very low across the site. Development proposals do not increase groundwater risk to the site or surrounding areas and ground raising will be undertaken on site, remains Low.
Sewer	Low	Low	No change to sewer flood risk, remains Low
Artificial Sources	Low	Low	The site at not at risk of flooding from artificial sources, remains Low

6. FLOOD RESILIENCE AND RESISTANCE MEASURES

RESISTANCE AND RESILIENCE

- 6.1 The key residual risk to the site is from surface water entering buildings. To mitigate the impact of the residual flood risks to the Site, the following resilience and resistance measures should be considered:
- The predicted maximum surface water flood level on the site is 68.750 AOD. Minimum finished floor levels will be set 600mm above this level, at 69.350m AOD (0.1% AEP level including climate change).

7. SURFACE WATER DRAINAGE STRATEGY

EXISTING SURFACE WATER DRAINAGE

- 7.1 From the existing topographical survey and anecdotal evidence, the site has no formal surface water drainage network. It is understood existing drainage conveys roof runoff to ground with foul Water drained to the public sewer in Codicote Road.

PROPOSED SURFACE WATER DRAINAGE

- 7.2 The greenfield runoff rates for the site are provided in Appendix D, as reproduced in Figure 7-1 below, with Qbar shown as 6.8l/s.

Method	IH124	
Flow rate 1 year (l/s)	5.8	l/s
Flow rate 2 year (l/s)	6.0	l/s
Flow rate 10 years (l/s)	11.0	l/s
Flow rate 30 years (l/s)	15.6	l/s
Flow rate 100 years (l/s)	21.6	l/s
Flow rate 200 years (l/s)	25.4	l/s
QBar (IH124) (l/s)	6.8	l/s

Figure 7-1: Greenfield Runoff Rates

- 7.3 Due to the site levels, it is proposed to drain the northern portion of the site It is proposed.
- 7.4 Refer to Drainage Strategy drawing 225091-HTE-XX-XX-DR-C-0910 in Appendix F for the drainage proposals.
- 7.5 It is proposed to limit surface water runoff to the Qbar rate of 6.8l/s, and peak foul flows will be 5.56l/s (based on Flows and Loads 4, calculations in Appendix F). However, the agreed rate off site will be agreed with the sewerage undertaker at detailed design.
- 7.6 Surface water runoff rates represent a reduction of extreme rainfall during a 1 in 100-year event of 18.6l/s (approx. 64% reduction).
- 7.7 Calculations are also provided in Appendix E to demonstrate the Site can accommodate the 1 in 100-year event including 40% Climate Change. The calculations show that for the 1 in 100-year event, no flooding occurs. Therefore, although separate calculations are not provided for the 1 in 30-year event, as there is no flooding during the 1 in 100 years plus CC event, there will be no flooding during the 1 in 30 plus 35% CC event.

- 7.8 There is no public surface water sewer in the vicinity; therefore, the drainage strategy proposes to combine both foul and surface water flows into the foul sewer in Codicote Roa, based upon the following reasons to an alternative:
- Due to the nature of the existing use and the made ground and a contaminated ground risk from the previous site operations as a farm shop/ stables and vast areas of made ground and various cages for storage of materials, a conservative design is proposed to discharge surface water runoff to the public sewer.
 - There is no open watercourse in the vicinity of the site, without crossing through existing dwellings downstream, to form a connection to the River Mimram to the south of Old Nursery Way.
 - The geology beneath the site ranges from silty clays, sand and gravels above chalk. With infiltration testing being carried out, it has been advised the site can effectively drain to ground. However below ground storage units are within 5m of Dwelling footprints; therefore, it is unlikely suitable to accommodate infiltration systems based on building regulations advice to place below ground infiltration system at least 5m from buildings when in chalk geology.
 - Additionally, the steep site does not lend itself to infiltration with potential flows downstream, impacting buildings downhill (downstream).
- 7.9 Therefore, the only remaining feasible option available is to combine the drainage to the public network in Codicote Road.
- 7.10 The on-site surface and foul drainage are entirely separated, to be combined where the drainage discharges from the site. Connection and discharge rates are subject to Thames Water agreement.
- 7.11 With limited discharge rates to Qbar and appropriate attenuation provided, there will be no increase in peak runoff from the site as there is no change to the impermeable area or direction of runoff. The proposed development will not increase flood risk elsewhere from surface water runoff.

EXCEEDANCE FLOWS

- 7.12 Although ground levels are being raised to accommodate the development, the overall direction of flows south and south east is not changing. Exceedance flows will mimic existing and will run of to where existing surface water runoff accumulates off site into Codicote Road and Old Nursery Way.

8. CONCLUSION

- 8.1 The Site is shown within Flood Zone 2 according to the flood map for planning.
- 8.2 The FRA has concluded, with the use of EA modelling outputs, the Site is not within the modelled fluvial flood extents (Flood Zone 2) of the River Mimram, with the Flood Map for Planning within this reach of the Mimram being inconsistent with current mapping, taking into account current climate change, i.e. the Site is effectively in Flood zone 1.
- 8.3 The Product 6 modelling data is considered to supersede the Flood Map for Planning boundary.
- 8.4 The risk of flooding from rivers, seas, groundwater, sewers, and reservoirs is considered to remain as existing, with no increase in flood risk to the site or elsewhere.
- 8.5 However, as the site is still within an area of surface water flood risk, finished floor levels in this area should be set at least 600mm above existing ground level.
- 8.6 Surface water flood risk to the site and elsewhere will not be increased beyond existing.
- 8.7 Capacity for Exceedance flows exist within the system, with residual overland flows directed to Codicote Road and south into Old Nursery way, as it drains currently. There is no change to flow paths.
- 8.8 The site layout has been assessed applying the Sequential Test approach, locating more vulnerable development to areas of the lowest flood risk from all sources. With all built development outside of flood risk from all sources, the Sequential Test is not triggered.
- 8.9 The Flood Risk Assessment has been successfully prepared in line with the NPPF and the Planning Policy Guidance, and to LLFA and local planning policy and flood risk management strategies.