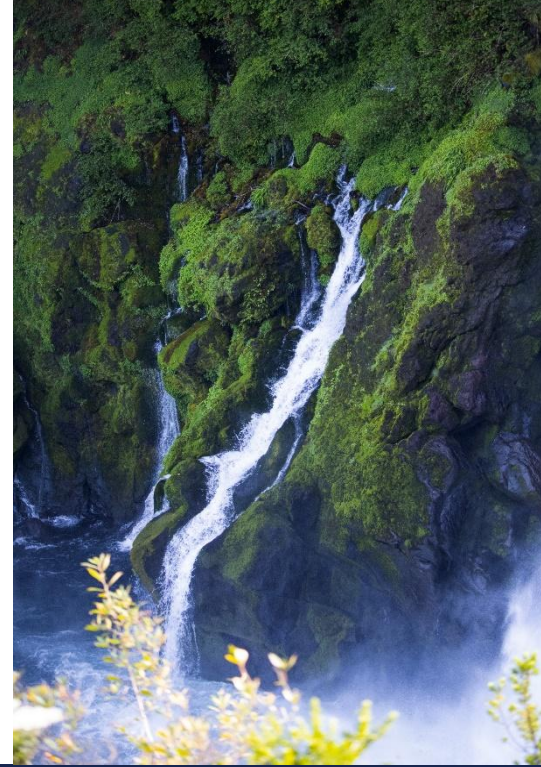




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Flood Risk Assessment AEG7630_GU12_Ash_07

Site Address: Land at Shortland Farm
Guildford Road
Ash
Surrey
GU12 6DF

UK Experts in Flood Modelling, Flood Risk
Assessments, and Surface Water Drainage Strategies

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Document Issue Record

Project: Flood Risk Assessment

Prepared for: Gleeson Land Limited

Reference: AEG7630_GU12_Ash_07

Site Location: Land at Shortland Farm, Guildford Road, Ash, Surrey, GU12 6DF

Issue	Date	Author	Check	Auth.	Comments
1	30/10/2025	Mace Latham/ Daniel Cook	Douglas Swinbanks	Nick Darling- Drewett	Final Plans

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Summary

Development Description	Existing	Proposed
Development Type	Farm with associated buildings	Outline planning application with all matters except for the accesses from Guildford Road and Wyke Lane reserved for subsequent approval for the demolition of the existing buildings and hardstanding and the erection of: • up to 200 residential dwellings including affordable housing and plots of self-build plots (Class C3); • green and blue infrastructure; and • associated service and utility structures.
Vulnerability Classification as per Annex 3 of the NPPF (December 2024)	N/A	More Vulnerable
Ground Floor Level	N/A	All residential dwellings are to be sequentially located to Flood Zone 1 and outside the modelled 1 in 100 year +CC (45%) and 1 in 1000 year pluvial extents.
Level of Sleeping Accommodation	N/A	All residential dwellings are to be sequentially located to Flood Zone 1 and outside the modelled 1 in 100 year +CC (45%) and 1 in 1000 year pluvial extents.
Surface Water Drainage	N/A ¹	See Drainage Strategy (reference: AEG7630_GU12_Ash_07 – Drainage Strategy Issue 3)
Site Size	Approximately 10.18 hectares	No change
Risk to Development	Summary	Comment
EA Flood Zone	Flood Zone 1	
Flood Source	N/A	The site is demonstrated to be affected by surface water flooding. Aegaea have produced a hydraulic model to better understand the risk of flooding from this source, and this is discussed in section 4.
SFRA Available	Strategic Flood Risk Assessment Level 1 - Volume 2 - Technical Report (Guildford Borough Council, 2015)	
Management Measures	Summary	Comment

Ground floor level above extreme flood levels	N/A	All residential dwellings are to be sequentially located to Flood Zone 1 and outside the modelled 1 in 100 year +CC (45%) and 1 in 1000 year pluvial extents.
Safe Access/Egress Route	Existing access associated with the Farm	Primary access could be affected, hazard analysis demonstrates this to be low hazard based on the pluvial models. A secondary emergency is also available and is shown to be in Flood Zone 1 and not affected by surface water flooding.
Flood Resilient Design	N/A	See section 5
Site Drainage Plan	N/A	See Drainage Strategy (reference: AEG7630_GU12_Ash_07 – Drainage Strategy Issue 3)
Flood Warning and Evacuation Plan	N/A	Recommended that occupier monitor Met Office Weather Warnings for extreme weather events.
Offsite Impacts	Summary	Comment
Displacement of floodwater	N/A	All residential development is to be sequentially located to Flood Zone 1 and outside the modelled 1 in 100 year +CC (45%) pluvial extents.
Increase in surface run-off generation	N/A	See Drainage Strategy (reference: AEG7630_GU12_Ash_07 – Drainage Strategy Issue 3)
Impact on hydraulic performance of channels	N/A	No

¹ not required for this assessment ² data not available.

1. Introduction

- 1.1. This Flood Risk Assessment (FRA) has been prepared by Aegaea to accompany an application for outline planning permission for the redevelopment of the Land at Shortland Farm, Guildford Road, Ash, Guildford. The application is submitted on behalf of Gleeson Land Limited. This FRA has been prepared in accordance with the requirements set out in the National Planning Policy Framework (NPPF) last updated in December 2024 and the Planning Practice Guidance last updated in September 2025.
- 1.2. This FRA is intended to support an outline planning application and as such the level of detail included is commensurate and subject to the nature of the proposals.

Site Overview

- 1.3. The site is Land at Shortland Farm, Guildford Road, Ash, Surrey, GU12 6DF (Figure 1). The existing site is predominantly undeveloped, comprising of equestrian facilities featuring varied vegetation cover, ditches and hedgerow boundaries. There are farm buildings in the middle of the site, which are proposed to be removed as part of the development. The site (10.18ha approx.) is bounded by Guildford Road (A323) with existing residential beyond to the north, Wyke Lane to the east, an unnamed watercourse and open agricultural land to the south and existing recreational/sports pitches and residential to the west. The approximate centre of the site is located at Ordnance Survey National Grid Reference SU 90651 50994.
- 1.4. The development is for an outline planning application with all matters except for the accesses from Guildford Road and Wyke Lane reserved for subsequent approval for the demolition of the existing buildings and hardstanding and the erection of:
 - up to 200 residential dwellings including affordable housing and plots of self-build plots (Class C3);
 - green and blue infrastructure; and
 - associated service and utility structures.

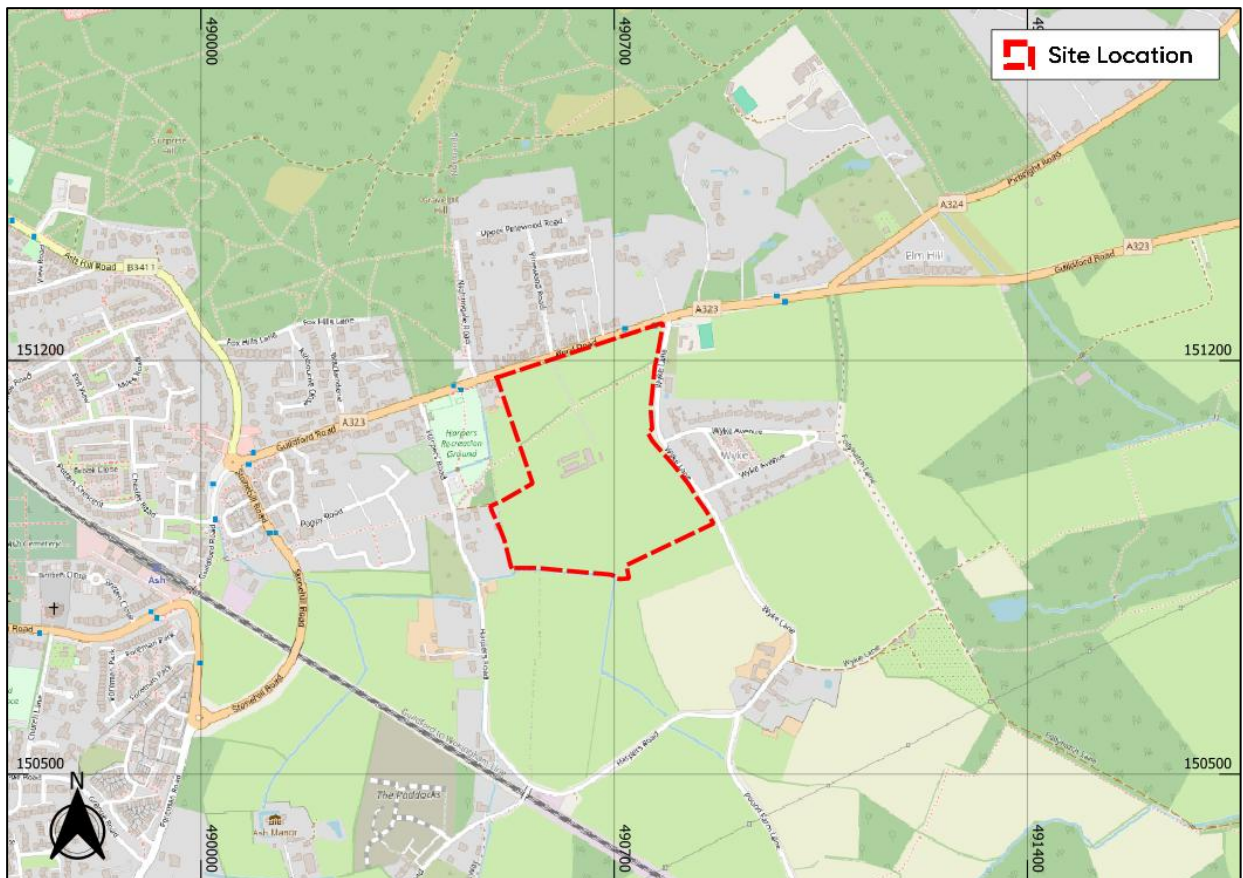


Figure 1: Site Location (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors)

- 1.5. Aegaea have been provided with a topographic survey (dated April 2025), appended to this assessment. Topographic levels across the site range from 75m AOD to 85m AOD falling north to south toward the ordinary watercourse.
- 1.6. Guildford Borough Council is the Local Planning Authority (LPA) for the site and Surrey County Council is the designated Lead Local Flood Authority (LLFA). The site sits within the Environment Agency's Thames region.

Planning Policy and Guidance

- 1.7. The site is greater than 1 hectare (ha) (10.18ha) and therefore an FRA is required to be submitted alongside the outline planning application in line with the National Planning Policy Framework (NPPF) Footnote 63.
- 1.8. The objective of this FRA is to demonstrate that the proposals are acceptable in terms of flood risk. This report summarises the findings of the study and specifically addresses the following issues in the context of the current legislative regime:
 - Fluvial/tidal flood risk
 - Surface water flood risk
 - Risk of flooding from all other sources

2. Planning Policy

- 2.1. The approach taken in the assessment of flood risk at the planning stage is set out in national and local planning policy and associated guidance. This section summarises the key policies and guidance relevant to the proposed development.

National Planning Policy Framework (NPPF)

- 2.2. The National Planning Policy Framework¹ (NPPF) (MHCLG, 2024) states:

170. 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.

173. 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, by following the steps set out below.

174. Within this context the aim of the sequential test is to steer new development to areas with the lowest risk of flooding from any source. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The strategic flood risk assessment will provide the basis for applying this test.

175. 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, including access or escape routes, land raising or other potentially vulnerable elements, 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).

181. 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. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:

- a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;*
- b) the development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment;*

¹ <https://www.gov.uk/guidance/national-planning-policy-framework>, last updated Dec 2024

- c) *it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;*
- d) *any residual risk can be safely managed; and*
- e) *safe access and escape routes are included where appropriate, as part of an agreed emergency plan.*

2.3. Footnote 63 of the NPPF states:

A site-specific flood risk assessment should be provided for all development in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.

2.4. It is further noted that Paragraph 027 of the PPG (September 2025) advises on the application of NPPF Paragraph 175. This is further detailed below.

Planning Practice Guidance - Flood Risk and Coastal Change²

The sequential approach to the location of development

What is the aim of the sequential approach?

The approach is designed to ensure that areas at little or no risk of flooding from any source are developed in preference to areas at higher risk. This means avoiding, so far as possible, development in current and future medium and high flood risk areas considering all sources of flooding including areas at risk of surface water flooding. Avoiding flood risk through the sequential test is the most effective way of addressing flood risk because it places the least reliance on measures like flood defences, flood warnings and property level resilience features. Application of the sequential approach in the plan-making and decision-making process will help to ensure that development is steered to the lowest risk areas, where it is compatible with sustainable development objectives to do so, and developers do not waste resources promoting proposals which would fail to satisfy the test. Other forms of flooding need to be treated consistently with river and tidal flooding in mapping probability and assessing vulnerability, so that the sequential approach can be applied across all areas of flood risk.

Paragraph: 023 Reference ID: 7-023-20220825

² <https://www.gov.uk/guidance/flood-risk-and-coastal-change>

How should the sequential test be applied to planning applications?

The sequential test should be applied to 'Major' and 'Non-major' development proposed in areas at risk of flooding, as set out in paragraphs 173 to 174 of the National Planning Policy Framework. Paragraphs 175, 176 and 180 set out exemptions from the sequential test.

In applying paragraph 175 a proportionate approach should be taken. Where a site-specific flood risk assessment demonstrates clearly that the proposed layout, design, and mitigation measures would ensure that occupiers and users would remain safe from current and future surface water flood risk for the lifetime of the development (therefore addressing the risks identified e.g. by Environment Agency flood risk mapping), without increasing flood risk elsewhere, then the sequential test need not be applied.

The absence of a 5-year housing land supply is not a relevant consideration in applying the sequential test for individual applications. However, housing considerations, including housing land supply, may be relevant in the planning balance, alongside the outcome of the sequential test.

Paragraph: 027 Reference ID: 7-027-20220825

Revision date: 17 09 2025

- 2.5. It is discussed in greater detail within the assessment, that the application site is demonstrated to be in Flood Zone 1, low risk of flooding. Aegaea have reviewed the surface water risk using the EA dataset which shows the site to be at risk of the medium and high-risk events.
- 2.6. Aegaea have produced an independent direct rainfall model. The Aegaea model uses the latest topographic data, when compared to the EA data which uses LiDAR. This is discussed in an accompanying modelling report and within the FRA. The latest model shows that all residential dwellings are outside of the medium and high-risk events. As such the residential dwellings are sequentially located.
- 2.7. In further accordance with the PPG, access and egress has further been reviewed. It is identified that the access could be at risk of flooding however analysis of flood hazard demonstrates that this is of low hazard for all modelled events (3.3%, 3.3% + CC , 1% , 1%+CC and 0.1%) and therefore it is demonstrated that occupiers would remain safe from current and future surface water flood risk in accordance with the latest PPG changes, there would not be an increase to flood risk elsewhere, and therefore a Sequential Test is not required in accordance with the PPG, paragraphs 23, 27 and 27a. This is further evidenced within paragraph 2.15 of this FRA.

- 2.8. Flood Zones in England are defined as follows:

Table 1: Flood Zone Definitions Paragraph: 078 Reference ID: 7-078-20220825

Flood Zone	Definition
Zone 1 Low Probability	Land having less than 1 in 1,000 annual probability of river or sea flooding (all land outside Zones 2 and 3).
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding.
Zone 3b The Functional Floodplain	This zone comprises land where water from rivers or the sea has to flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. Functional floodplain will normally comprise: land having a 3.3% or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively; or land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability of flooding). 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)

- 2.9. An FRA should be appropriate to the scale, nature, and location of the development. It should identify and assess the risk from all sources of flooding to and from the development and demonstrate how any flood risks will be managed over the lifetime of the development.
- 2.10. An assessment of hydrological impacts should be undertaken, including to surface water runoff and impacts to drainage networks in order to demonstrate how flood risk to others will be managed following development and taking climate change into account. The PPG requires that sustainable drainage systems (SuDS) should be considered and included where practicable, in line with Defra Technical Standards³ Drainage matters.

³ Technical Standards Accessed Online

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/415773/sustainable-drainage-technical-standards.pdf

Local Plan

- 2.11. The Guildford Borough Local Plan: Strategy and Sites (2015 – 2034)⁴ and Guildford Borough Local Plan: Development Management Policies⁵ set out the policies for development in the local area.
- 2.12. Policy P4.1 (Strategy and Sites (2019) Local Plan) Flooding, flood risk and groundwater protection zones: Flooding and flood risk outlines the requirements for new development within the area. It states:

(1) Flood zones in the borough of Guildford are defined based on definitions contained within national planning practice guidance and the Council's Strategic Flood Risk Assessment (Level 1).

(2) Development in areas at medium or high risk of flooding, as identified on the latest Environment Agency flood risk maps and the Council's Strategic Flood Risk Assessment, including the 'developed' flood zone 3b (functional floodplain), will be permitted provided that:

a) the vulnerability of the proposed use is appropriate for the level of flood risk on the site

b) the proposal passes the sequential and exception test (where required) as outlined in the NPPF and Government guidance

c) a site-specific flood risk assessment demonstrates that the development, including the access and egress, will be safe for its lifetime, taking into account climate change, without increasing flooding elsewhere, and where possible, will reduce flood risk overall

d) the scheme incorporates flood protection, flood resilience and resistance measures appropriate to the character and biodiversity of the area and the specific requirements of the site

e) when relevant, appropriate flood warning and evacuation plans are in place and approved and

f) site drainage systems are appropriately designed, taking account of storm events and flood risk of up to 1 in 100 year chance with an appropriate allowance for climate change.

(3) Development proposals in the 'developed' flood zone 3b will also only be approved where the footprint of the proposed building(s) is not greater than that of the existing

⁴ [https://www.guildford.gov.uk/newlocalplan/media/29891/The-Guildford-borough-Local-Plan-strategy-and-sites-2015-2034/pdf/Guildford_Borough_Local_Plan_\(2015-2034\)_Web_Version_Reduced1.pdf](https://www.guildford.gov.uk/newlocalplan/media/29891/The-Guildford-borough-Local-Plan-strategy-and-sites-2015-2034/pdf/Guildford_Borough_Local_Plan_(2015-2034)_Web_Version_Reduced1.pdf)

⁵ <https://democracy.guildford.gov.uk/documents/s29143/Item%2008%20Appendix%20Local%20Plan%20Development%20Management%20Policies.pdf>

building(s) and there will be no increase in development vulnerability. Proposals within these areas should facilitate greater floodwater storage.

(4) With the exception of the provision of essential infrastructure, 'undeveloped' flood zone 3b will be safeguarded for flood management purposes.

- 2.13. Policy P4.2 (Strategy and Sites (2019) Local Plan) Flooding, flood risk and groundwater protection zones: SuDS outlines the requirements for new development within the area. It states:

- (5) All development proposals are required to demonstrate that land drainage will be adequate and that they will not result in an increase in surface water run-off. Proposals should have regard to appropriate mitigation measures identified in the Guildford Surface Water Management Plan or Ash Surface Water Study. Priority will be given to incorporating SuDs (Sustainable Drainage Systems) to manage surface water drainage, unless it can be demonstrated that they are not appropriate. Where SuDs are provided, arrangements must be put in place for their management and maintenance over their full lifetime.

- (6) Development within Groundwater Source Protection Zones and Principal Aquifers will only be permitted provided that it has no adverse impact on the quality of the groundwater resource and it does not put at risk the ability to maintain a public water supply.

- 2.14. Policy P11 (Development Management Policies (2023) Local Plan) Sustainable Surface Water Management: Major developments and developments in areas at risk of flooding outlines the requirements for new development within the area. It states:

5) Development proposals are required to follow the discharge hierarchy and prioritise the use of Natural Flood Management (NFM) and Sustainable Drainage Systems (SuDS) for all surface water that is not captured for later use. Alternative drainage systems may be used only if there is clear evidence that SuDS would be inappropriate.

6) SuDS are required to be considered from the earliest stage of site design to ensure they are fully integrated into the development and that the greatest multifunctional benefits are realised.

7) When designing SuDS, development proposals are required to:

a) follow the SuDS sustainability hierarchy;

b) comply with the technical standards and design requirements set out in Defra's nonstatutory technical standards for sustainable drainage systems;

c) comply with guidance produced by the Lead Local Flood Authority;

d) ensure that surface water runoff is managed as close to its source as possible; e) maximise biodiversity and amenity value, taking full advantage of opportunities for habitat creation and enhancement and improvements to water quality;

f) incorporate a management treatment train to minimise risk of pollution to ground and surface waterbodies; and

- g) ensure that runoff from all hard surfaces receives an appropriate level of treatment.*
- 8) Proposals for infiltration SuDS are required to:*
- a) provide evidence showing that there is at least 1 metre of vertical distance between the base of the infiltration system and the maximum likely groundwater level.*
- b) if located within Source Protection Zone 1, an area of known land contamination and/or an area with high seasonal groundwater, undertake a hydrogeological risk assessment where anything other than clean roof drainage is to be received.*

Sequential and Exception Tests

- 2.15. The Sequential and Exception Tests are applied in specific cases defined by UK Government policy. Their purpose is to drive development to areas of low flood risk and to support developments which improve flood risk for developments in areas at risk of flooding.

Sequential Test

- 2.16. In accordance with PPG 027, a flood risk sequential test is not required at the application site. This is because it can be clearly demonstrated that the proposed layout, design and mitigation measures would not increase flood risk elsewhere and would keep occupiers and users safe from current and future surface water flood risk. This is discussed in greater detail within Section 4 and 5 of this assessment.

Exception Test

- 2.17. The Exception Test is applied to sites based on the Flood Zone and the nature of the development. The Flood Risk Vulnerability Classification table⁶ provided below in Table 2 shows which vulnerabilities are appropriate in each Flood Zone.
- 2.18. The site is in Flood Zone 1, according to the EA flood map for planning and as such in accordance with Table 2 the Exception Test is not required.

⁶ <https://www.gov.uk/guidance/flood-risk-and-coastal-change#table2>

Table 2: Flood risk vulnerability and flood zone 'incompatibility'

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

Summary

- 2.19. This flood risk assessment has been prepared with due consideration to the above local and national policy.

3. Document Review

Documents and Online Mapping

- 3.1. Local Governments and Lead Local Flood Authorities provide documents which contain data and policies on flood risk and new development in their areas. These documents are introduced and briefly summarised below. For the purposes of this FRA, these documents have been reviewed for relevant information and any relevant data is discussed within the appropriate sub heading of this report.
- 3.2. The following sources of information have been reviewed for this assessment:
- Flood Map for Planning on the Environment Agency website <https://flood-map-for-planning.service.gov.uk/>
 - Long Term Flood Risk Information on the Environment Agency website <https://www.gov.uk/check-long-term-flood-risk>
 - National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government, 2024)
 - Planning Practice Guidance - Flood Risk and Coastal Change (Ministry of Housing, Communities and Local Government, 2022)
 - Geoindex Onshore (British Geological Survey, 2024)
 - Guildford borough Local Plan (Part 1): strategy and sites 2015 - 2034 (Guildford Borough Council, 2019) and Guildford Borough Local Plan (Part 2) : Development Management Policies (Guildford Borough Council, 2023)
 - Preliminary Flood Risk Assessment Addendum (Surrey County Council, 2017) and Preliminary Flood Risk Assessment (Surrey County Council, 2011)
 - Strategic Flood Risk Assessment Level 1 - Volume 2 - Technical Report (Guildford Borough Council, 2015)
 - Surrey Local Flood Risk Management Strategy 2017-2032 (Surrey County Council, 2017)

Preliminary Flood Risk Assessment (PFRA)

- 3.3. The PFRA, published in 2011 and 2017, is a high-level appraisal of flood risk across Lead Local Flood Authority Surrey County Council. The flood risk from all sources, including fluvial, surface water, groundwater, and surcharged sewers is evaluated. It is the basis upon which the Local Flood Risk Management Strategy is produced.
- 3.4. The PFRA summarises historical flood incidents in Surrey County Council. The site is not recorded as having been affected by any flood event.

Strategic Flood Risk Assessment (SFRA)

- 3.5. The SFRA, published in 2015, provides the evidence base for the Local Planning Authority Guildford Borough Council Local Plan and guidance for consideration when determining

planning applications. The SFRA seeks to place new development into areas of lower flood risk taking into account current flood risk, future flood risk, and the effect a proposed development would have on the risk of flooding.

- 3.6. The SFRA mapping provided by Guildford Borough Council has been used throughout production of this report as a source of information, particularly pertaining to historical flood incidents. It is further noted that the SFRA identifies areas of surface water flood risk situated within the application site boundary.

Local Flood Risk Management Strategy (LFRMS)

- 3.7. The Local Flood Risk Management Strategy sets out roles and responsibilities for flood risk management, assesses the risk of flooding in the area, where funding can be found to manage flood risk, and the policies, objectives, and actions of the Lead Local Flood Authority.
- 3.8. The Surrey County Council LFRMS is used within this report to identify any flood management infrastructure and historical incidences of flooding.

4. Sources of Flood Risk

Fluvial

Main Rivers

- 4.1. There are no main rivers within the application site boundary.

Ordinary Watercourses

- 4.2. Review of the site has demonstrated that an ordinary watercourse is located to the south of the application site boundary.

Historical Fluvial Flooding

- 4.3. There is no record of historical fluvial flooding on the site based on the EA Recorded Flood Outlines dataset.

Assessment of the Flood Risk

- 4.4. The Environment Agency Flood Map for Planning identified that the site is in Flood Zone 1 (Figure 2).

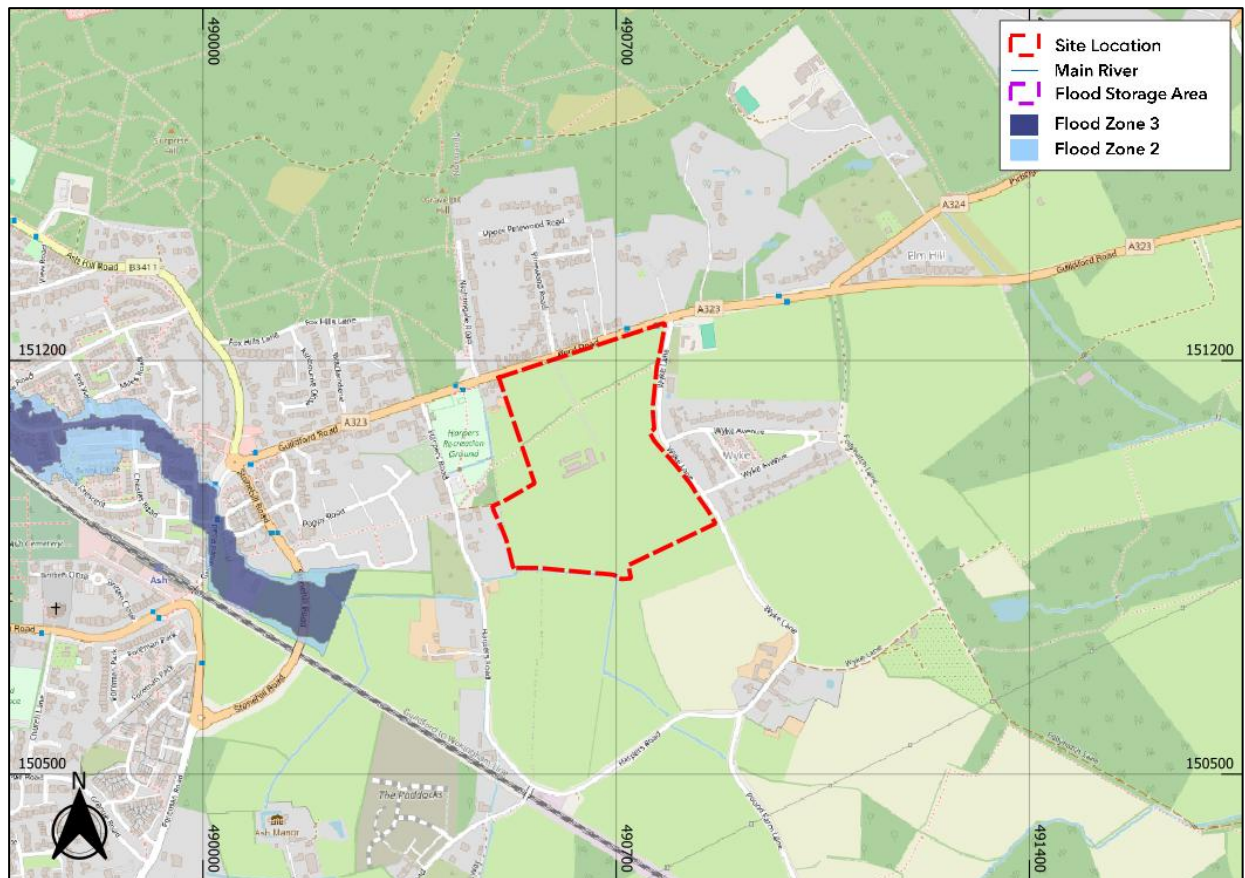


Figure 2: EA Flood Map for Planning (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.5. Flooding from watercourses arises when flows exceed the capacity of the channel, or where a restrictive structure is encountered, resulting in water overtopping the banks into the floodplain.
- 4.6. Aegaea have accessed the Flood Estimation Handbook (FEH) to confirm the catchment associated with this watercourse. The Surface Catchment size used in the model was 2.75km^2 , as demonstrated by Figure 3. EA Government Guidance⁷ states that the peak rainfall allowances map shows anticipated changes in peak rainfall intensity. These are used for site-scale applications (for example, drainage design), and for **surface water flood mapping in small catchments (less than 5 square kilometres)** and urbanised drainage catchments. A drainage catchment is urban if the land use is a town or city.

⁷ <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

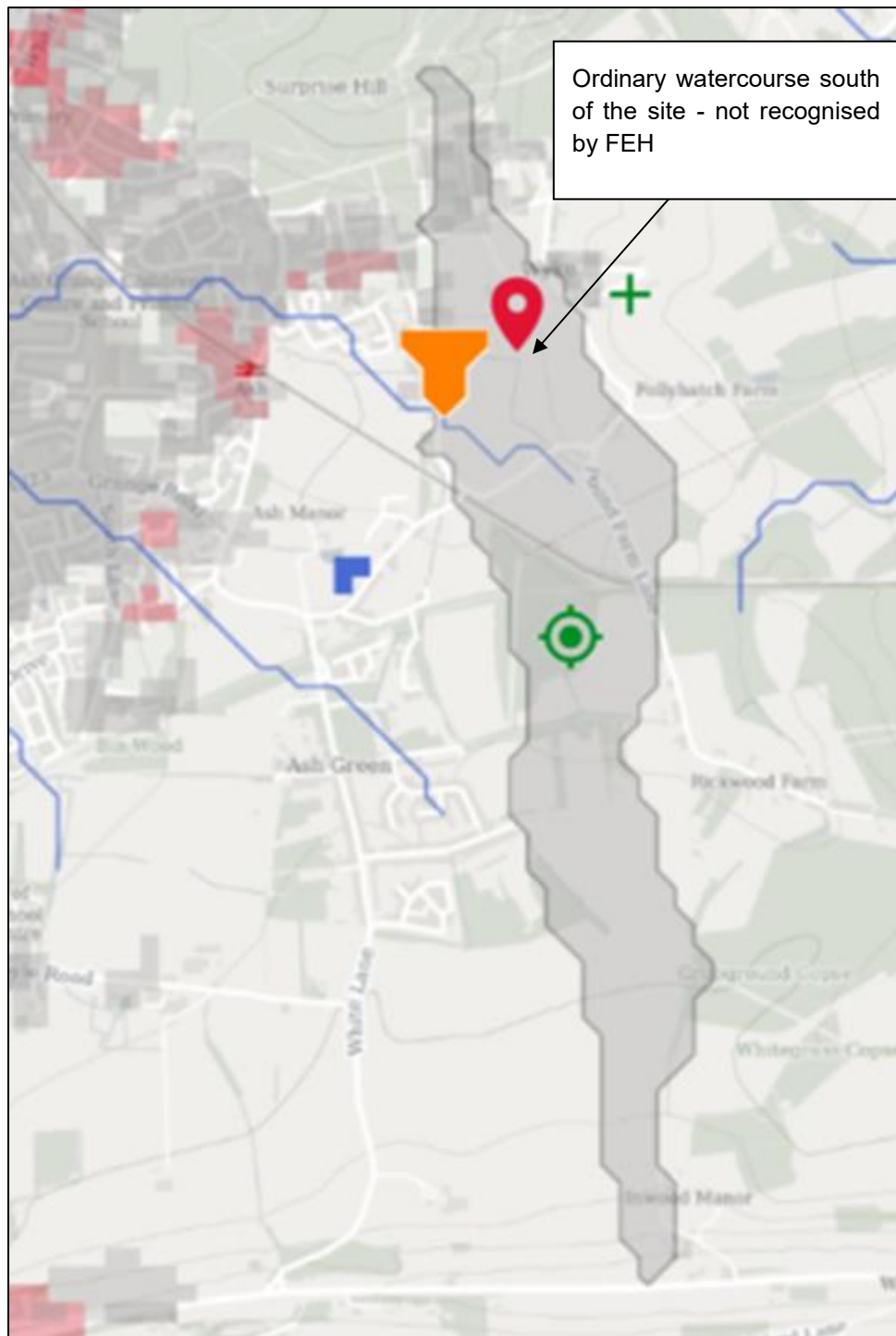


Figure 3: FEH Catchment Explorer. Site is red marker.

- 4.7. Given that the catchment is less than 5km² a direct rainfall model is more suitable. In addition, upon review of FEH the ordinary watercourse is not recognised as per the figure below.
- 4.8. Furthermore, a site walkover by the ecology team **FPCR**, it was observed during the site visit during May 2025, that the watercourse was "completely dry". This further demonstrates that the watercourse is more pluvially influenced and that the risk of fluvial flooding to the site is low.

- 4.9. A supporting detailed model report which details the model build and decision making is submitted with this application.

Tidal

- 4.10. Tidal flooding occurs when a high tide and high winds combine to elevate sea levels. An area behind coastal flood defences can still flood if waves overtop the defences or break through them. Tidal flooding can also occur a long way from the coast by raising river levels. Water may overtop the riverbank or river defences when tide levels are high. The site is a significant distance from any tidal source and above the anticipated extreme tidal levels, even when considering the impacts of climate change.
- 4.11. There is no record of historical tidal or sea flooding on-site.
- 4.12. The risk of flooding from tidal sources is considered low.

Canals

- 4.13. The Canal and River Trust (CRT) generally maintains canal levels using reservoirs, feeders, and boreholes and manages water levels by transferring it within the canal system. The risk of flooding to this site from canals is low.

Pluvial

- 4.14. Pluvial (surface water) flooding can occur during prolonged or intense storm events when the infiltration potential of soils, or the capacity of drainage infrastructure is overwhelmed leading to the accumulation of surface water and the generation of overland flow routes.
- 4.15. Annual surface water flood risk is labelled by the EA as:
- 'High Risk'; >3.3% AEP (annual probability greater than 1 in 30).
 - 'Medium Risk'; 1.1% to 3.3% AEP (annual probability between 1 in 100 and 1 in 30).
 - 'Low Risk'; 0.1% to 1% AEP (annual probability between 1 in 1000 and 1 in 100).
 - 'Very Low Risk'; <0.1% AEP (annual probability less than 1 in 1000).
- 4.16. Examination of the EA's Flood Risk from Surface Water mapping for High Risk, Medium Risk, and Low Risk AEP flood events shows that parts of the site are at risk of flooding in 'High' surface water flood events, Figure 4 and 5.

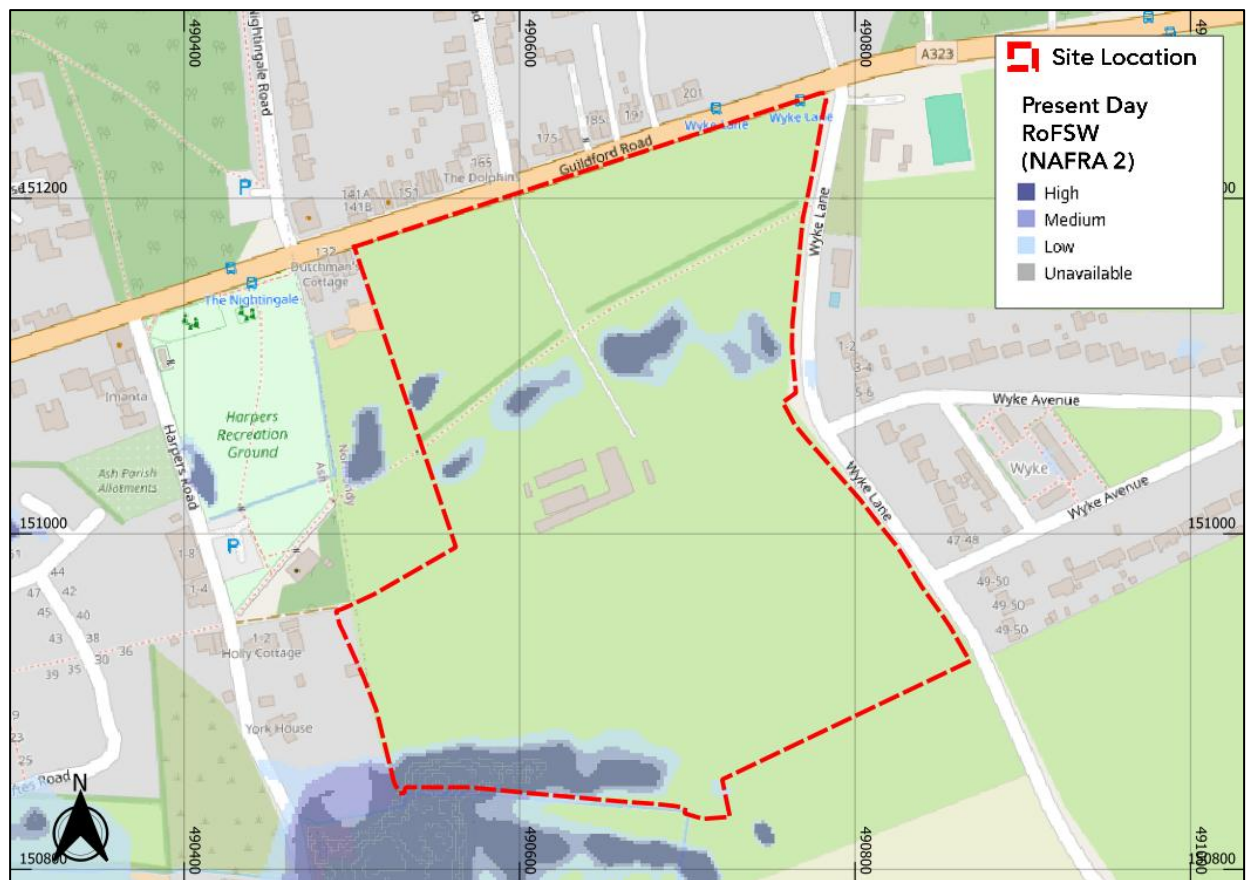


Figure 4: EA Surface Water Flood Risk Mapping - Present Day (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

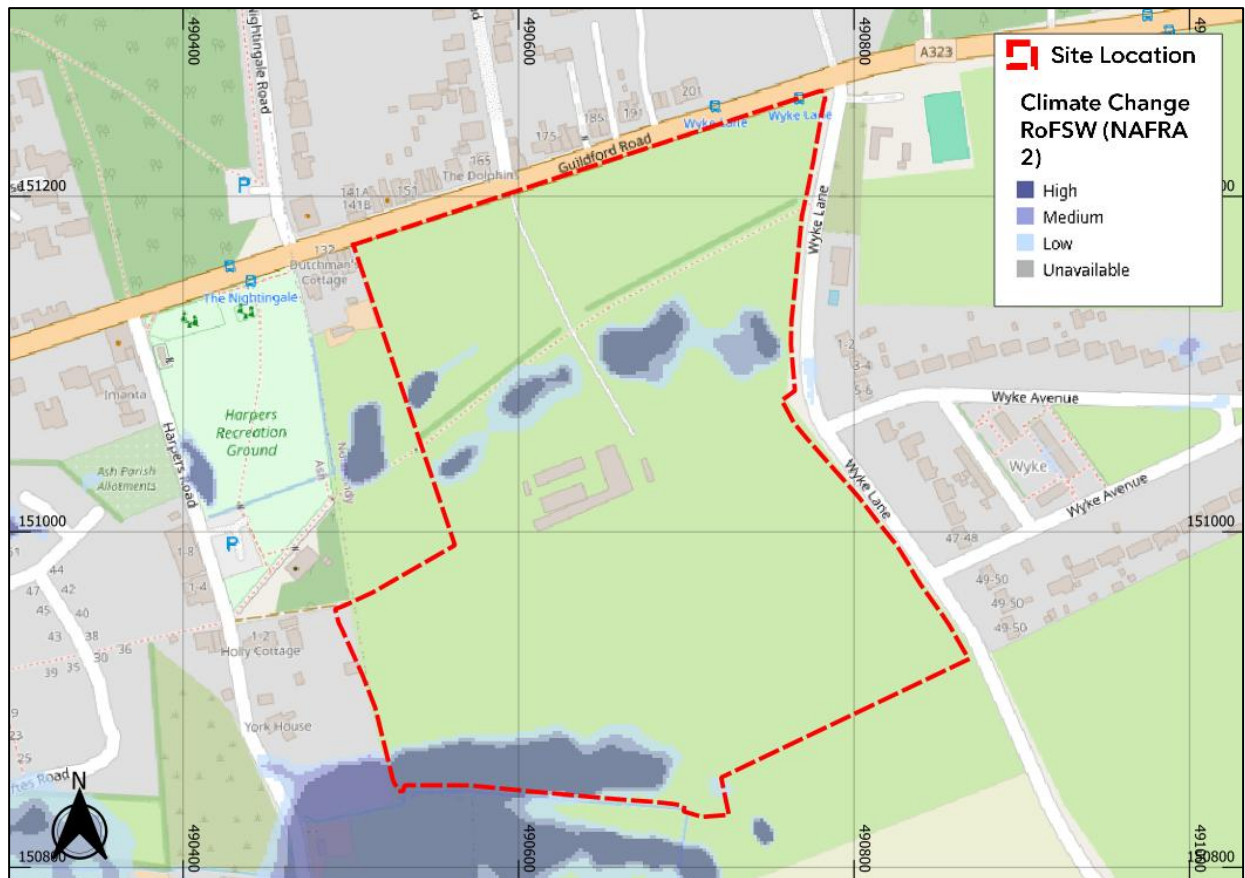


Figure 5: EA Surface Water Flood Risk Mapping with climate change 2040-2060 (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 4.17. The EA maps currently identify areas of surface water flood risk within the application boundary.
- 4.18. A site specific 2D pluvial / direct rainfall modelling exercise has been undertaken to understand the risk of surface water flooding to the site from this source. Upon completion of the modelling, it was observed that the extents were different in comparison to the EA's predictions. This was not due to an erroneous model but owing to the fact that input data has changed compared to those shown by the EA.
- 4.19. Topographic levels used by the EA are depicted by the current state of the land at the time of the capture. Review of the DEFRA data platform shows 1m LiDAR capture dated 2023 "National LiDAR programme".
- 4.20. The Aegaea model utilises a topographic survey dated April 2025. Adoption of the site-specific topographic survey is believed to demonstrate a more accurate representation of levels across the site which better represent the risk of flooding to the site from surface water in comparison to the National LiDAR programme data, dated 2023.
- 4.21. Furthermore, the Aegaea model increases the impact of climate change up to 2125 whereas the current EA outputs only include up to 2040-60. Therefore, for the purposes of this assessment, the Aegaea model outputs are considered to result in a more accurate assessment and overall evolution of the site layout.

4.22. The site is located across two management catchments:

- 1. Loddon and tributaries and
- 2. Wey and tributaries.

4.23. For a residential development, the upper end allowances should be applied as set out by Table 3 below. Adopting a conservative approach, the greater allowance has been assessed across the site.

Table 3: Management Catchment Allowances

Management Catchment	3.3% annual exceedance rainfall event - Upper End - 2070s	1% annual exceedance rainfall event - Upper End - 2070s
Loddon and tributaries	35%	40%
Wey and tributaries	35%	45%

4.24. Aegaea's modelling outputs have observed that the residential dwellings are located outside of all the modelled return periods (1 in 30, 1 in 30 +CC 1 in 100, 1 in 100 +CC and 1 in 1000) – Figures 6 to 10.



Figure 6: Aegaea 1 in 30-year extent and depth map (Base map: Google Hybrid).



Figure 7: Aegaea 1 in 30 year + 35% CC extent and depth map (Base map: Google Hybrid).



Figure 8: Aegaea 1 in 100-year extent and depth map (Base map: Google Hybrid).



Figure 9: Aegaea 1 in 100-year + 45% CC extent and depth map (Base map: Google Hybrid).

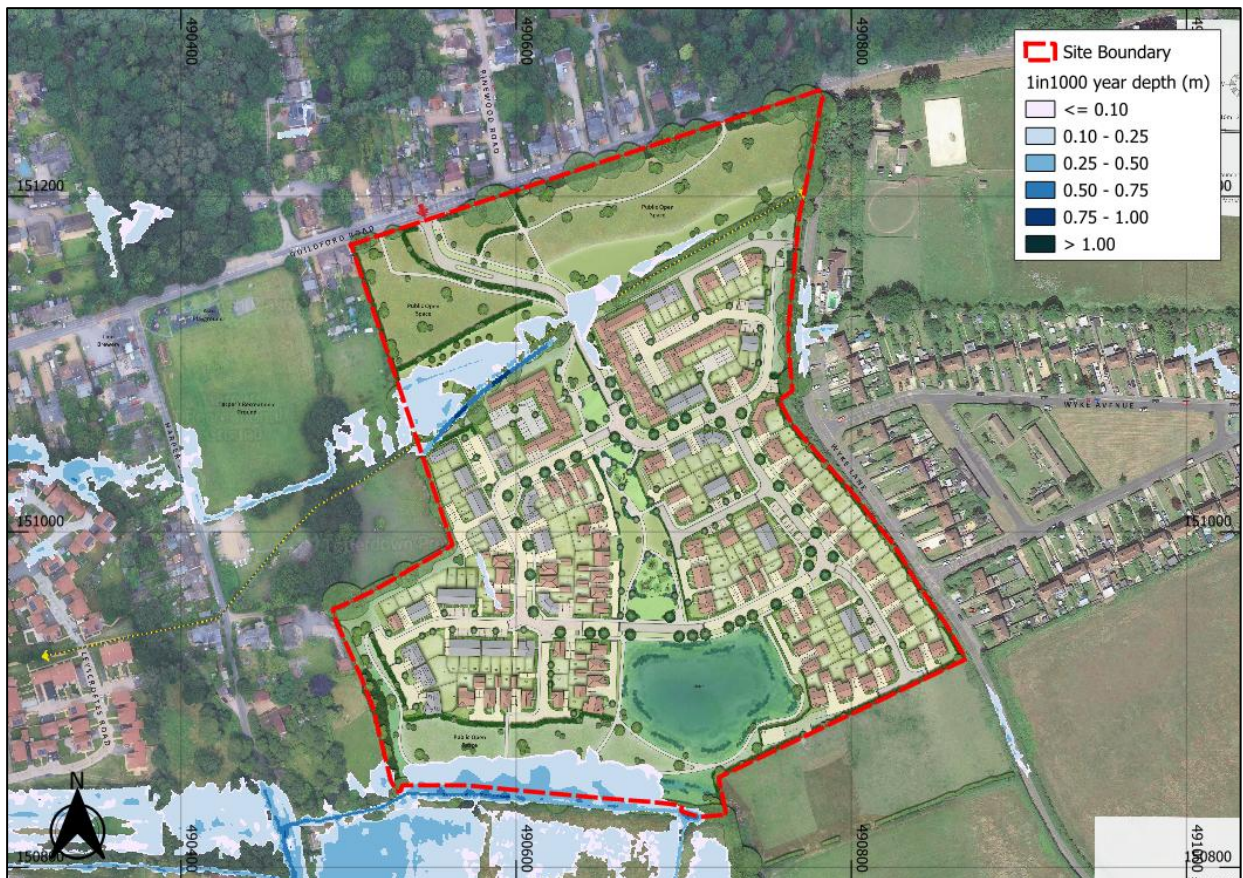


Figure 10: Aegaea 1 in 1000 year extent and depth map (Base map: Google Hybrid).

- 4.25. It is observed that the primary access could be affected by flooding, with maximum depths in brackets, for the 1 in 30 + CC (0.15m), 1 in 100 (0.14m), 1 in 100 + CC (0.23m) and 1 in 1000-year event (0.20m). The hazard is low for all access routes, applying PPG 7-027 along with the analysis in Table 4 and hazard rating mapping in Figure 14 (Section 5).
- 4.26. A secondary emergency access has been provided to the west of the site. This access is not affected by the 1 in 30 + CC, 1 in 100, 1 in 100 + CC and 1 in 1000-year event.
- 4.27. A footway to the south of the site is shown to be affected by all modelled return periods. The footway is illustrative only and is not critical to the function of the site, nor does it provide access to other nearby settlements.
- 4.28. Having regard to the above, PPG Paragraph 027 states that a proportionate approach should be taken to the application of NPPF 175, which states that a flood risk sequential test is required where it is not possible to relocate built development away from areas at risk of flooding from any source. Owing to the very low extent of flooding that would be present on the primary access, this FRA considers that the proposals warrant the application of a proportional approach, and thus a flood risk sequential test is not required.

" In applying paragraph 175 a proportionate approach should be taken. Where a site-specific flood risk assessment demonstrates clearly that the proposed layout, design, and mitigation measures would ensure that occupiers and users would remain safe from current and future surface water flood risk for the lifetime of the development

(therefore addressing the risks identified e.g. by Environment Agency flood risk mapping), without increasing flood risk elsewhere, then the sequential test need not be applied."

4.29. This application proposal complies with the above and therefore a sequential test is not required.

Reservoirs

4.30. Large waterbodies or reservoirs that have walls built above the surrounding ground level pose a risk of flooding. Walls could fail due to old age, accident, or because excess flood water has been added to the reservoir. Although a breach is unlikely the consequences would be significant, leading to rapid inundation of the downstream floodplain.

4.31. According to the EA's Flood Risk from Reservoirs mapping the site is outside modelled flood extents in the event of reservoir flooding.

4.32. The site has not been flagged as being at risk of flooding following a reservoir failure.

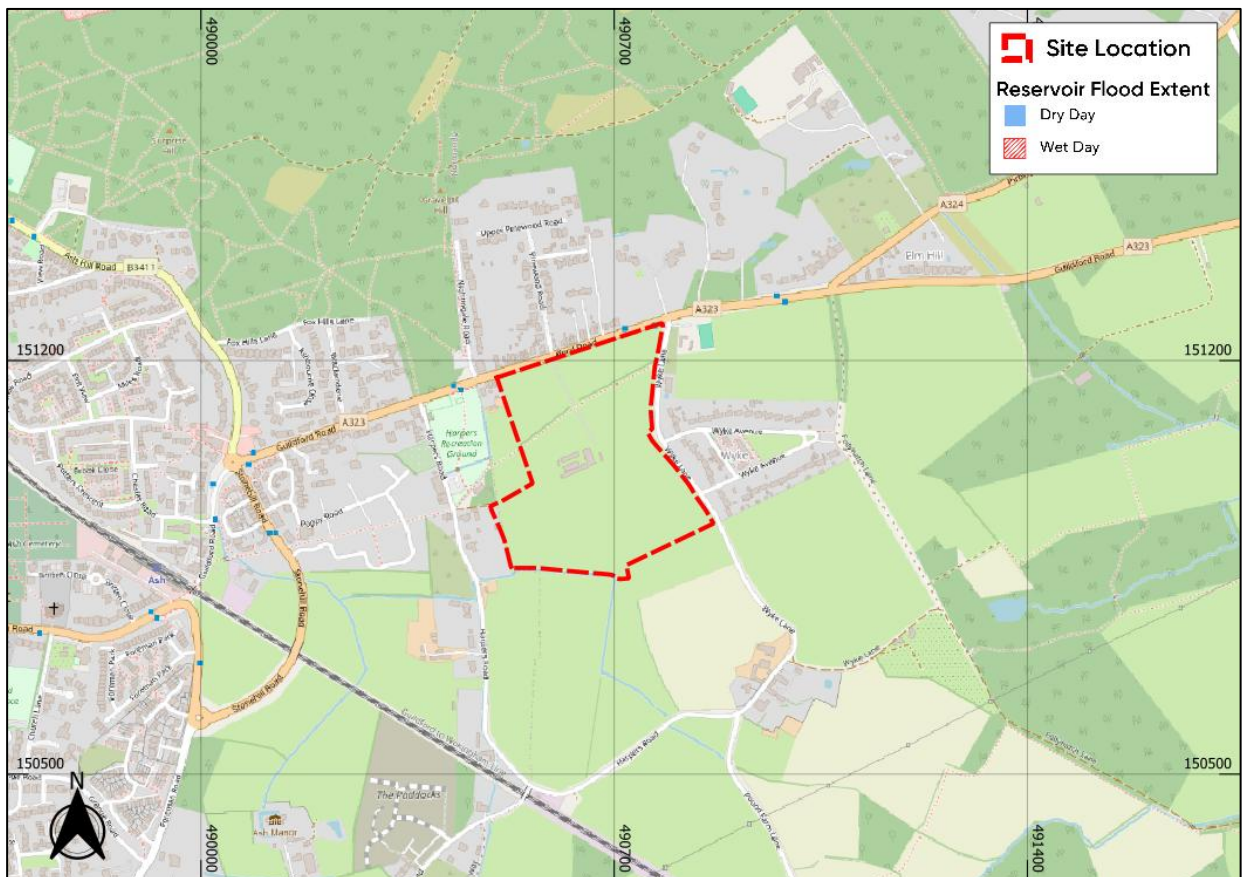


Figure 11: EA Reservoir Flood Risk Mapping (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). ©<https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

Groundwater

- 4.33. Geological maps⁸ published by British Geological Survey's (BGS) indicate that the site is underlain by Bagshot Formation - Sand.
- 4.34. Soilscape⁹ mapping provided by Cranfield University on behalf of DEFRA shows that the site is underlain by Loamy soils with naturally high groundwater.
- 4.35. The SFRA presents the EA's Areas Susceptible to Groundwater Flooding mapping. The mapping shows that most of the site area is of limited potential.

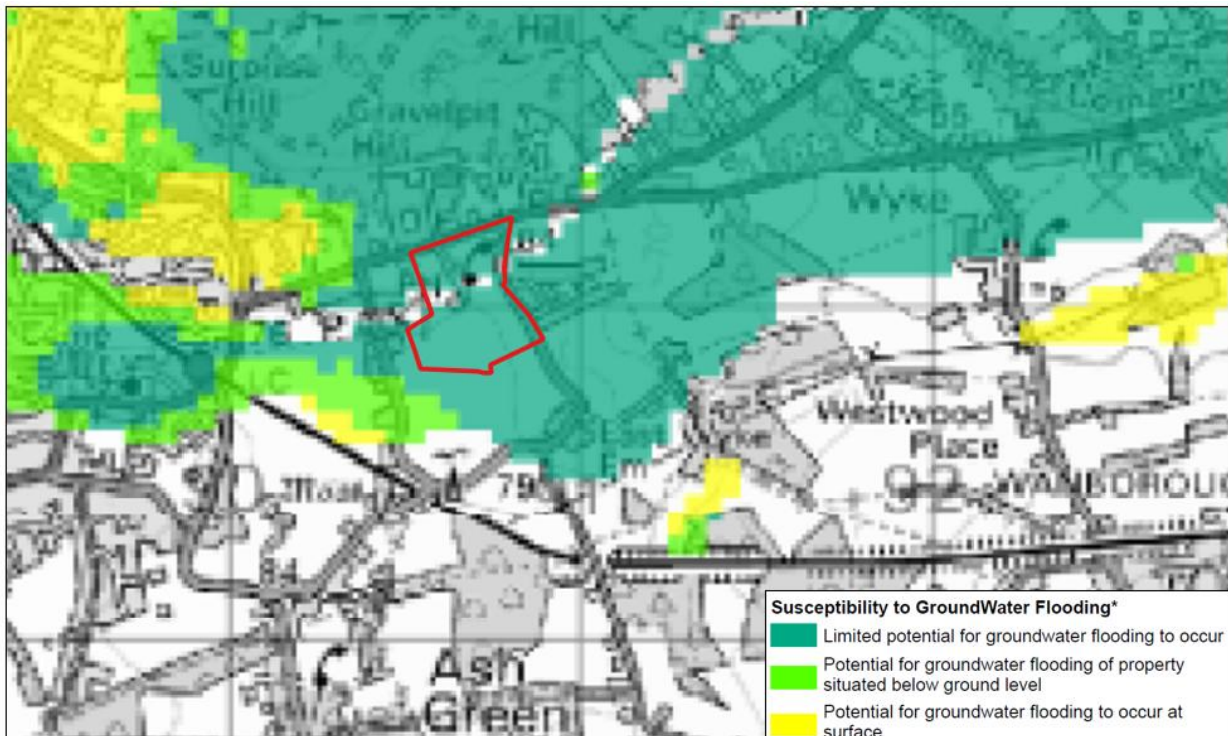


Figure 12: Susceptibility to groundwater flooding - Guildford SFRA (2015)

- 4.36. Additional investigations have been conducted by RSK Geosciences who have carried out intrusive ground investigations as part of the Phase 1 and 2 geo-environmental and geotechnical report accompanying the planning application. Infiltration tests were carried out in accordance with BRE365 across six trial pit locations within the site. Three of the six trial pits produced infiltration rates between circa 1.07×10^{-5} m/s and 2.95×10^{-5} m/s, the remaining three trial pits failed to produce a sufficient infiltration rate. The infiltration rate encountered is considered low and may result in difficulty achieving half drain time design criterion required in design of infiltration

⁸ The British Geological Survey (BGS) Geology Map Available online: BGS (www.geologyviewer.bgs.ac.uk)

⁹ Soilscape mapping: Hallett, S.H., Sakrabani, R., Keay, C.A. and Hannam, J.A. (2017) *Developments in Land Information Systems: Case studies in land resource management capabilities and options. Soil Use and Management*. doi: 10.1111/sum.12380. <http://onlinelibrary.wiley.com/doi/10.1111/sum.12380/full>

features. A copy of an extract from the site investigation containing the soakage tests can be located in Appendix B of the accompanying Drainage Strategy (referenced: AEG7630_GU12_Ash_07 – Drainage Strategy Issue 3).

- 4.37. The infiltration test results show varied rates encountered within the Bagshot Formation within the site. Unfortunately, the successful trial pits with infiltration rates were located in areas where parts of the site would be unable to drain to via gravity due to the successful tests being located at higher points of the site.
- 4.38. Groundwater was encountered in window samples at varying depths between 2-4mbgl. Neighbouring developments infiltration testing recorded water seepage within trial pits at 0.8m (BGL) and no significant soakage within infiltration test pits (to BRE 365). It is recommended that groundwater monitoring is undertaken to establish the highest annual groundwater level to inform the detailed drainage design and assessment of suitability of infiltration drainage. Any proposed infiltration features will need to ensure sufficient separation (>1m) is provided between the base of the feature and seasonal high groundwater level.
- 4.39. Based on the above it is anticipated that some parts of the site could be suitable for infiltration features to be implemented however due to varying low rates and site levels constraints it is considered that only partial infiltration would be suitable for disposing surface water runoff arising from the proposed development. It is therefore considered that the risk of groundwater flooding is low.

Sewers

- 4.40. Foul or surface water sewers can be a cause of flooding if the drainage network becomes overwhelmed, either by blockage or due to local development beyond the designed capabilities of the drainage system.
- 4.41. The SFRA provides mapping of historical sewer flood incident records kept by the local authority. the posit code of GU12 has had 37 sewer flood records (SFRA 2015) as well as historic flooded roads (public sewer).
- 4.42. No incidents have been recorded in the vicinity of the site. The development is therefore considered to be at low risk of flooding from sewers.

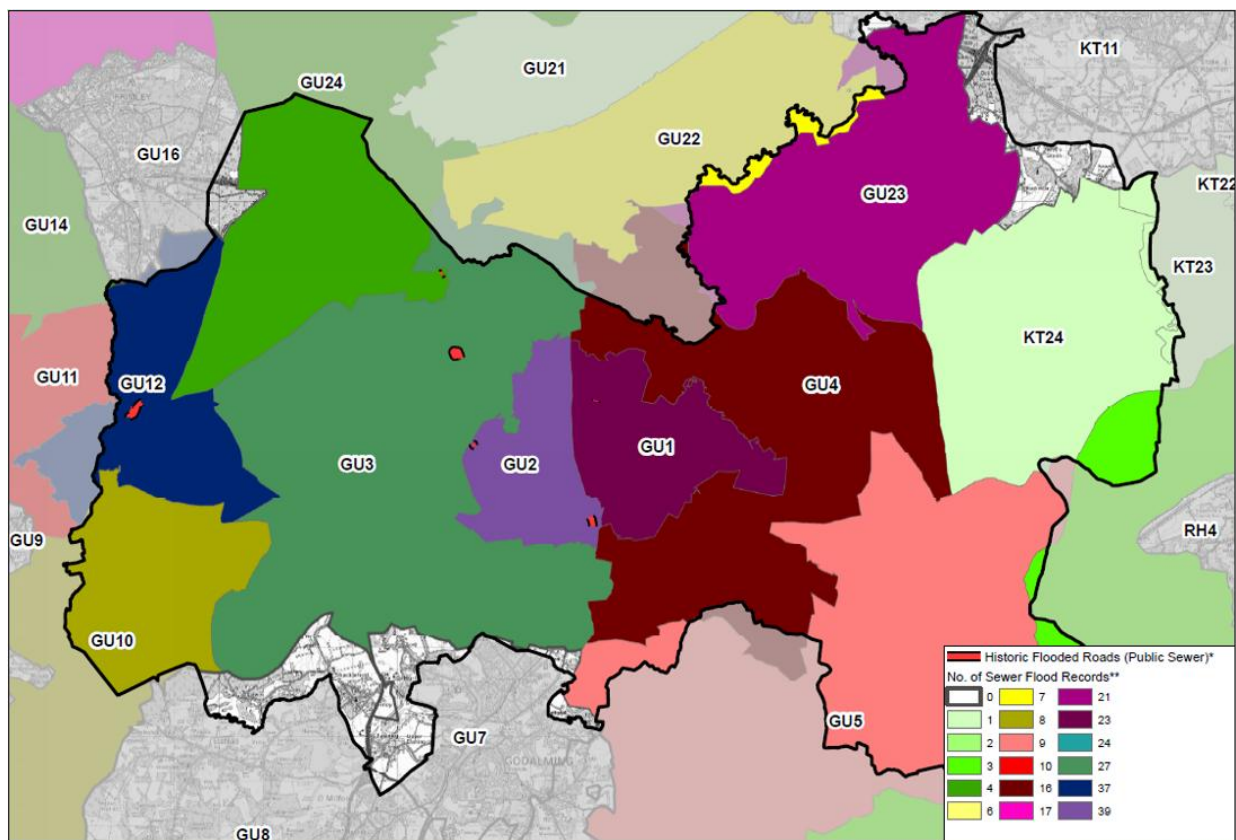


Figure 13: Historic records of Sewer Flood - Guildford SFRA (2015)

5. Flood Risk Mitigation

Fluvial

- 5.1. The site is in Flood Zone 1 according to the EA flood map for planning. As such the risk of fluvial flooding is low.

Pluvial

- 5.2. Based on the Aegaea direct rainfall model outputs it is observed that the residential dwellings are located outside of flood extents for all the modelled return periods - 1 in 30, 1 in 100, 1 in 100 +CC and 1 in 1000.

Reservoirs, Groundwater and Sewers

- 5.3. Flood risk from other sources is considered to be low, therefore mitigation is not required. Where possible it is recommended to incorporate non-return valves on all foul / waste drainage.

Access / Egress Flood Warnings

- 5.4. The site is not in an area where the EA provide specific flood alerts and warnings. The occupants of the dwellings should monitor Met Office Weather Warnings to be prepared for extreme weather events.
- 5.5. Flood warnings/alerts can be enforced at any time of the day or night. Signing up for this service provides site owners some notice before a flood event. The amount of time afforded before a flood occurs depends on the site-specific location (e.g. proximity to the source of flooding, topography of the surrounding area) and the flood mechanism (e.g. bank over topping versus a breach event). Flood alerts and warnings provide site managers with time to take necessary action, e.g. communication of the risk of flooding to occupants/employees etc, evacuation of occupants offsite or to a safe level, removal of valuable items out of reach of flooding and the mounting of site-specific flood defences.
- 5.6. The proposed layout promotes the sequential approach for all dwellings. The primary access road is partially affected by surface water flooding. The depth and hazard rating have been provided below in Table 4 and the hazard is visualised in the mapping below.

Table 4: Depth and Flood Hazard Analysis of the Primary Access.

Return Period	Maximum Depth	Hazard Rating
1 in 30	No flooding	No hazard
1 in 30 + 35% CC	0.15m	Low
1 in 100	0.14m	Low
1 in 100 + 45 % CC	0.23m	Low
1 in 1000	0.20m	Low

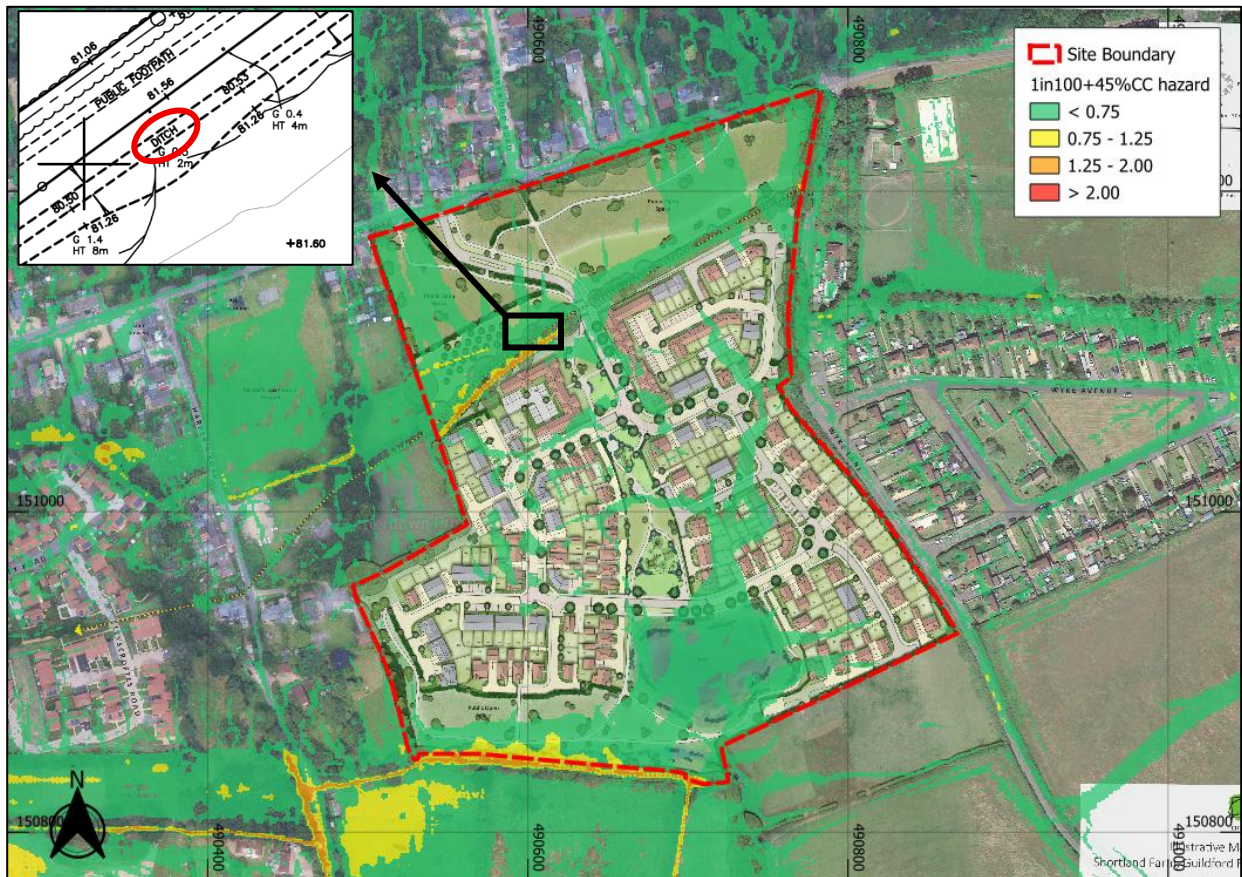


Figure 14: Aegaea 1 in 100-year + 45% CC hazard map (unfiltered) (Base map: Google Hybrid)

- 5.7. As observed in Table 4 and the 1 in 100 year + 45%CC hazard rating mapping above, there is a clear ditch that is represented in the model and in the topographic survey (overlay). Given flood depths are greater in this area, this increases the hazard rating to what is shown to be 'Danger to Most' visualised through a hazard rating of between 1.25 and 2.00. Due to the ditch showing areas of increased hazard, this affects the Public Right of Way as some isolated areas are to be between 0.75 and 1.25 (Danger to Some). However, it is important to note that the majority of the Public Right of Way remains at a 'Low' hazard with ratings less than 0.75.

- 5.8. Based on the above, it is considered that the Public Right of Way remains accessible up to and including the 1 in 100 year + 45%CC scenario as the hazard is considered to be associated to the ditch rather than the Public Right of Way footpath, which would have hazard ratings matching that of the adjacent land at the same level.
- 5.9. It is further noted that this hazard extent is based on the existing situation and thus the risk would not be increased based on the proposed development. In addition, the scheme also proposes to add a layer of gravel to the Public Right of Way as a betterment over the existing scenario.
- 5.10. Although the primary access has been demonstrated that it could be affected by flooding from surface water, it is important to note that there is a secondary emergency access onto Wyke Lane to the west of the site. The emergency access route entirely avoids the primary access providing safe and dry access/egress.

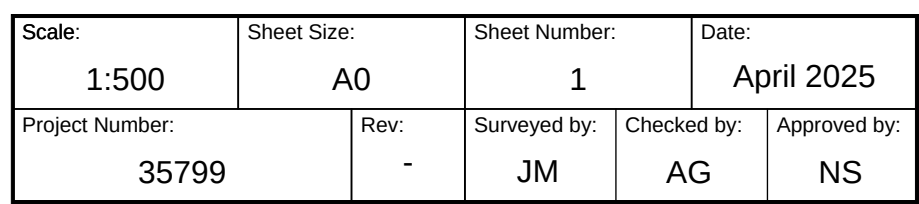
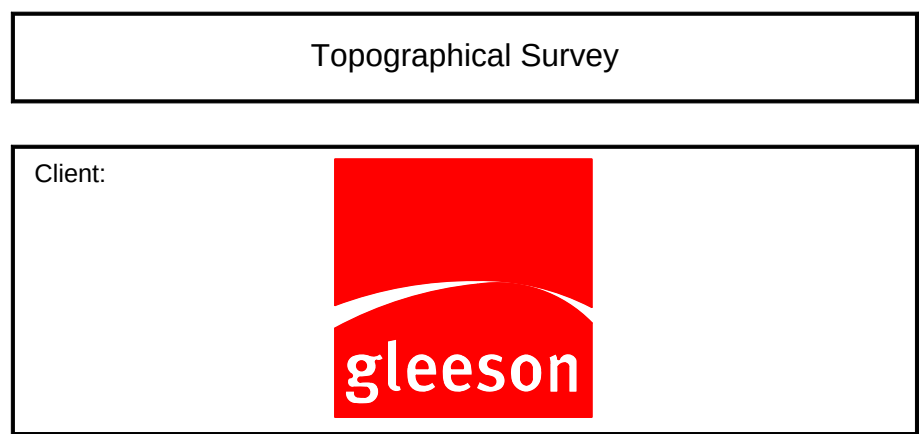
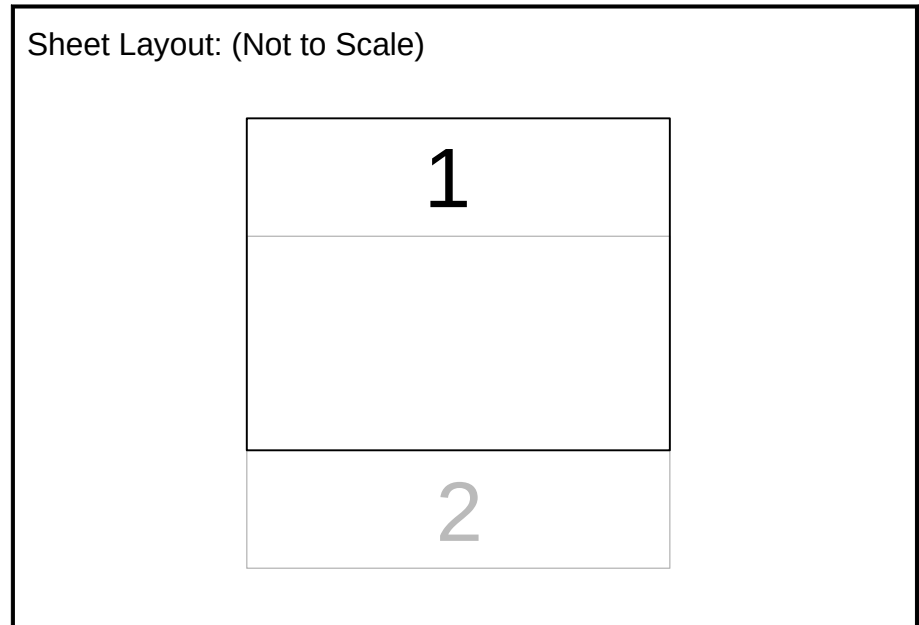
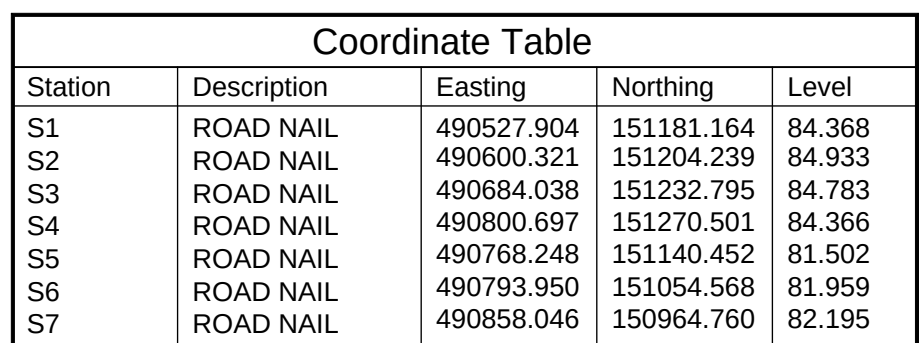
6. Conclusions

- 6.1. This FRA has been undertaken with reference to the requirements of NPPF and PPG with respect to the application site. It has been written to accompany the planning application and prepared with due consideration to the nature of the proposed development to provide the appropriate level of detail.
- 6.2. An assessment of the risk of flooding from all sources has been undertaken and is summarised in the table below:

Source of Flooding	Flood Risk Summary
Fluvial	The fluvial risk to the site is low. The site is in Flood Zone 1.
Pluvial	The Aegaea direct rainfall model outputs observe that the residential dwellings are located outside of all the modelled return periods 1 in 30, 1 in 30 + CC, 1 in 100, 1 in 100 +CC and 1 in 1000. Although the primary access has been demonstrated that it could be affected by flooding from surface water, it is important to note that there is a secondary emergency access onto Wyke Lane to the west of the site. The emergency access route entirely avoids the primary access providing safe access/egress. It is considered that the Public Right of Way remains accessible up to and including the 1 in 100 year + 45%CC scenario as the hazard is considered to be associated to the ditch rather than the Public Right of Way footpath, which would have hazard ratings matching that of the adjacent land at the same level. An accompanying drainage strategy has been designed in order to manage surface water rainfall events in accordance with the NPPF (see AEG7630_GU12_Ash_07 – Drainage Strategy Issue 3).
Tidal Reservoirs Groundwater Sewers Canals	The site is of low risk from other sources.

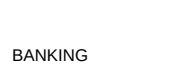
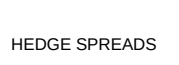
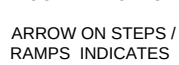
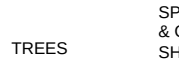
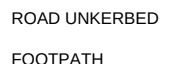
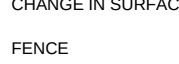
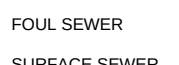
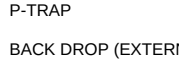
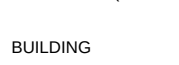
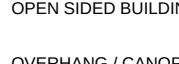
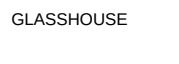
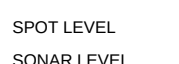
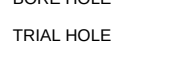
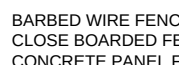
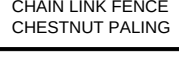
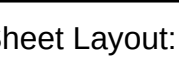
- 6.3. The FRA demonstrates that there is an acceptable level of flood risk to the site if the mitigation strategies recommended are implemented in the scheme.
- 6.4. The sequential test is not required due to the proposed development being in accordance with the latest PPG updates Paragraph 23, 27 and 27a.
- 6.5. The following conclusions can be drawn from this FRA. This report demonstrates, along with the Drainage Strategy submitted by this application, that the proposed layout, design, and mitigation measures would ensure that occupiers and users would remain safe from current and future surface water flood risk for the lifetime of the development, without increasing flood risk elsewhere. On this basis, with regard to PPG 7-027, it is not considered that a flood risk sequential test is required at the site.

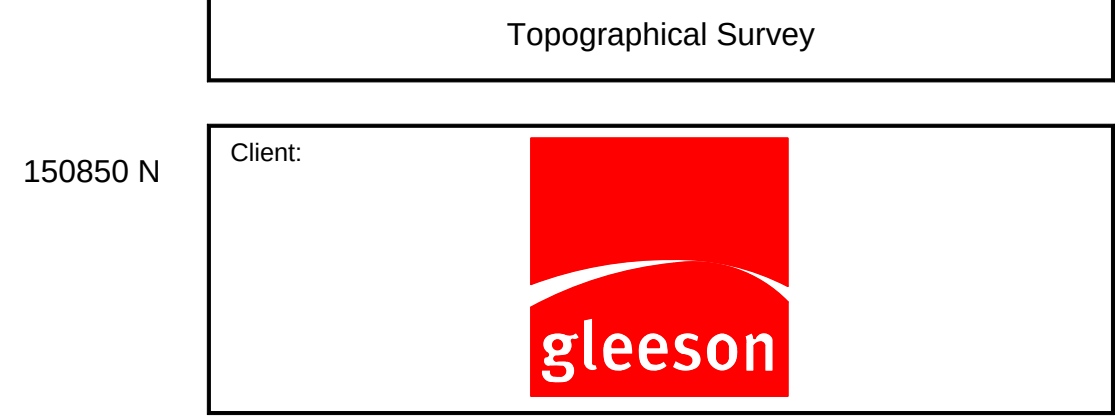
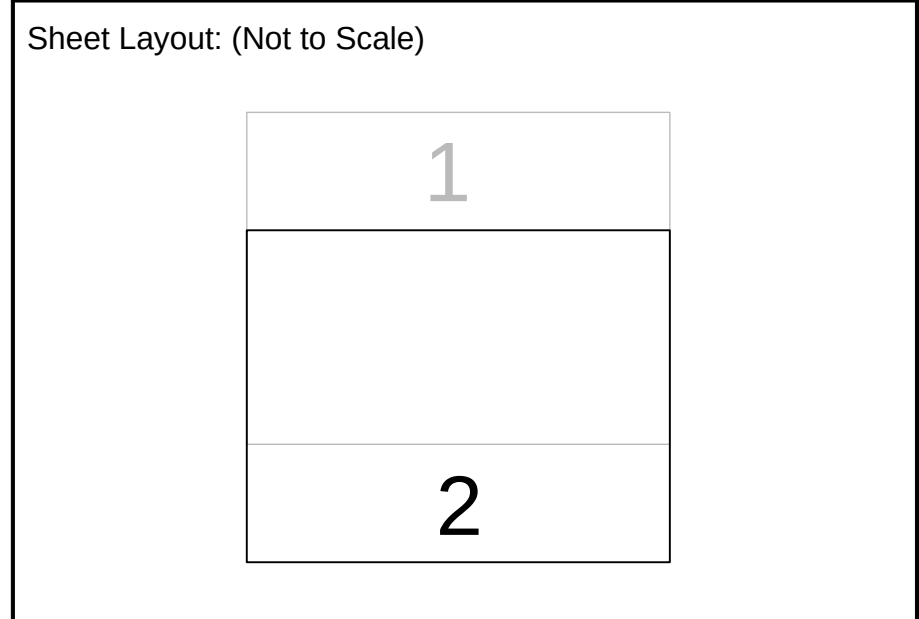
Appendix A - Topographic Survey



Notes:
1. GRID AND LEVELS BASED ON ORDNANCE DATUM, DERIVED FROM THE NATIONAL GRID NETWORK. LOCAL SCALE FACTOR APPLIED (0.99970).
2. DRAINAGE INFORMATION HAS BEEN DETERMINED WITHOUT MAN ENTRY INTO CHAMBERS AND WHIST EVERY EFFORT HAS BEEN MADE TO CORRECTLY IDENTIFY THIS INFORMATION. IT SHOULD ALWAYS BE CHECKED IN AREAS THAT ARE CRITICAL TO THE FUTURE PROPOSAL.
3. ALL SEWERS ARE PRESUMED TO BE STRAIGHT BETWEEN CHAMBERS, WITH ROUTES / CONNECTIVITY OBTAINED USING ACUSTIC METHODS ONLY. THESE ARE TO BE CONSIDERED ASSUMED AND SHOULD BE INVESTIGATED FURTHER IN CRITICAL AREAS.
4. TREE AND HEDGE SPECIES HAVE BEEN IDENTIFIED AS ACCURATELY AS POSSIBLE BUT SHOULD BE CROSS CHECKED IN CRITICAL AREAS.

Coordinate Table				
Station	Description	Easting	Northing	Level
S1	ROAD NAIL	490527.904	151181.164	84.368
S2	ROAD NAIL	490600.321	151204.239	84.933
S3	ROAD NAIL	490684.038	151232.795	84.783
S4	ROAD NAIL	490800.697	151270.501	84.366
S5	ROAD NAIL	490768.248	151140.452	81.502
S6	ROAD NAIL	490793.350	151054.568	81.959
S7	ROAD NAIL	490858.046	150964.760	82.195

TOPOGRAPHICAL KEY	
	GENERAL ABBREVIATIONS
	ACU
	AV
	BL
	BS
	BSL
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Guildford Road
Shortland Farm
Ash
Surrey

Scale:	Sheet Size:	Sheet Number:	Date:
1:500	A0	2	April 2025
Project Number:	Rev:	Surveyed by:	Checked by:
35799	-	JM	AG
Approved by:	Approved by:	Approved by:	Approved by:
NS	NS	NS	NS



Head Office: Milton Keynes T: 01908 555561 E: mail@mk-surveys.co.uk

Appendix B - Site Layout



KEY

- Site boundary
- Development areas
- Open space areas
- Primary access route
- Existing Public Right of Way
- Pedestrian access to existing bus stops
- Emergency access zone



Land Use Parameter Plan
Shortland Farm, Guildford Road, Ash
25019 / C102

Scale 1:1000 @ A1 October 2025