Homes England

The Housing and Regeneration Agency

West of Ifield, Crawley
Flood Risk Assessment

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WEST OF IFIELD
FLOOD RISK ASSESSMENT

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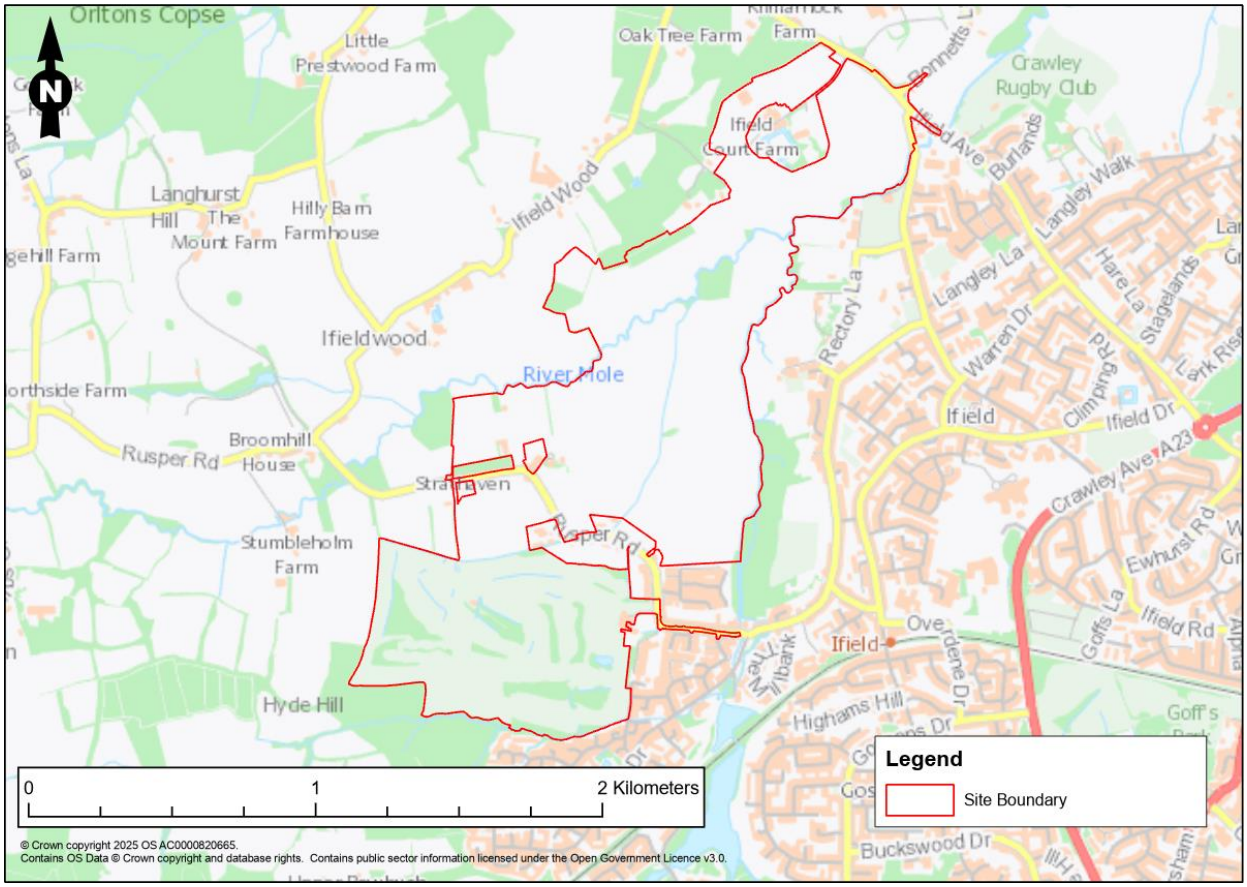
1. INTRODUCTION

1.1 Appointment and Brief

1.1.1 Ramboll UK Limited (Ramboll) have been commissioned by Turner and Townsend Project Management Ltd (the 'Client') on behalf of Homes England (the 'Applicant') to undertake a Flood Risk Assessment (FRA) to support a hybrid planning application (part outline and part full planning application) for a phased, mixed use development (the 'Proposed Development') for the Site at West of Ifield (the 'Site' as illustrated in Figure 1-1). The hybrid planning application is for a phased development intended to be capable of coming forward in distinct and separable phases and/or plots in a severable way.

1.1.2 The West of Ifield Site ('the Site') falls entirely within the administrative area of Horsham District Council (HDC) although to its north it immediately abuts the Crawley Borough Council (CBC) boundary. The Site is located south of Charlwood Road, beyond which in CBC lies Gatwick Airport. The Site lies to the north of the Arun Valley railway line and adjoins the existing neighbourhoods of Ifield and Langley Green in Crawley. To the east, the Site is bounded by trees and Ifield Village. Ifield West and ancient woodland are to the south and ancient woodland to the west. The River Mole passes through the northern part of the Site.

Figure 1-1: Site Location



1.2 Scope and Objectives

1.2.1 This report considers the risks to the Site of various sources of flooding and the consequent risk of flooding to downstream receptors (such as people, property, habitats, infrastructure and statutory sites) from the Proposed Development as a result of surface water runoff. A comparison is made between the current situation and the proposed future development.

1.2.2 This FRA has been carried out in accordance with the National Planning Policy Framework (NPPF)[1] and Government guidance on how to take account of and address the risks associated with flooding and coastal change in the planning process. It is to be used to assist the Local Planning Authority (LPA) and relevant statutory consultees when considering the planning application for the Proposed Development and the potential for flooding issues in respect of the Proposed Development.

1.2.3 This report provides the following information:

1. A review of the flood risk to the Site based upon flood data and the flood maps provided by the Environment Agency (EA) and the relevant Strategic Flood Risk Assessment (SFRA);
2. An assessment of flood risk from all sources including tidal, fluvial, pluvial, groundwater and infrastructure failure to the Proposed Development;
3. An assessment of the compatibility of the Proposed Development for its location based on flood risk and the proposed use of the Site for the Proposed Development;
4. An assessment of the impact of the Proposed Development on receptors down-stream in terms of surface water runoff;
5. Proposals for measures to mitigate the generation of surface water runoff as a result of the Proposed Development; and
6. Proposals to mitigate any residual flood risks to the Proposed Development.

1.3 General Limitations and Reliance

1.3.1 In preparation of the report and performance of any other services, Ramboll has relied upon publicly available information, information provided by the Client and information provided by third parties; all of which were reviewed and remained up to date at the time of publication of the FRA. Accordingly, the conclusions reached in this report are valid only to the extent that the information provided to Ramboll was accurate, complete and available to Ramboll within the reporting schedule.

1.3.2 The information presented in this report is based on a review of information completed by Arcadis on flood risk for the Phase 1 component on Site. No other warranty, whether express or implied is made to third parties in respect of the information presented within this report. The key sources of information used to prepare this report are footnoted within the document. Ramboll cannot accept liability for the accuracy or otherwise of any information derived from third party sources.

1.3.3 Ramboll's services are not intended as legal advice, nor an exhaustive review of Site conditions and/or compliance. This report and accompanying documents are initial and intended solely for the use and benefit of the Client for this purpose only and may not be used by or disclosed to, in whole or in part, any other person without the express written consent of Ramboll. Ramboll neither owes nor accepts any duty to any third party, unless formally agreed by Ramboll through that party entering into, at Ramboll's sole discretion, a written reliance agreement.

1.3.4 Unless otherwise stated in this report, the scope of services, assessment and conclusions made assume that the Site will be used for its proposed purpose without further significant changes either on-Site or off-Site. Unless stated otherwise, the geological information provided is for general environmental interpretation and should not be used for geotechnical and/or design purposes.

[1] HM Government. National Planning Policy Framework. Revised in December 2024, with a minor revision in February 2025. Available online at: https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf

2. POLICY FRAMEWORK

2.1 National Planning Policy Framework, 2025

2.1.1 The NPPF was most recently updated in December 2024, with a subsequent minor revision in February 2025, with flood risk remaining primarily regulated through planning policy[2]. The NPPF advises that an FRA should be submitted with planning applications for all development sites within Flood Zones 2 and 3; and all development sites over 1 hectare (ha) in area to determine the risks of flooding from all sources including rivers, the sea, surface water, sewers, and groundwater. The NPPF sets out that flood risk should be defined according to Flood Zone 3 (High Probability), Flood Zone 2 (Medium Probability) and Flood Zone 1 (Low Probability).

2.1.2 In terms of flood risk, the NPPF classifies land uses according to vulnerability as follows (NPPF Annex 3):

- Essential infrastructure;
- Highly vulnerable;
- More vulnerable;
- Less vulnerable; and
- Water-compatible development.

2.1.3 Many elements of the Proposed Development (e.g. residential type uses) are classified as 'more vulnerable' whereas those associated with transport infrastructure would be classified as 'essential infrastructure'. Landscape and public realm elements would all be classified as 'less vulnerable'.

2.1.4 Planning Practise Guidance (PPG) offers further details and advice on implementing the NPPF policies. Both the NPPF and PPG should be considered in the Flood Risk Assessment. The key categories of PPG guidance relevant to the Flood Risk Assessment are *'Flood Risk and Coastal Change'* and *'Climate Change'*. The Environment Agency standing advice has been updated to reflect changes in the NPPF, including signposting to new flood and coastal erosion risk data, as well as updates in policy on sustainable drainage systems.

2.2 The Town and Country Planning (Development Management Procedure) Order 2015

2.2.1 Decisions about the suitability of sustainable drainage provision are made by the local planning authority (LPA). However, under The Town and Country Planning (Development Management Procedure) Order 2015[3], which came into force from 15 April 2015, Lead Local Flood Authorities (LLFA) are now statutory consultees for all major applications. The LLFA will lead in managing local flood risks (i.e. risks of flooding from surface water, ground water and ordinary (smaller) watercourses). The Site falls within the responsibility of West Sussex County Council as LLFA for the area.

2.3 Environment Agency Flood Risk and Climate Change Guidance

2.3.1 The following Environment Agency published standing advice and guidance has been used to inform this FRA:

- Planning Practise Guidance: Flood Risk and Coastal Change[4]
- HM Government. Flood Risk Assessments: Climate Change Allowances Guidance[5]
- Environment Agency. National flood risk standing advice for local planning authorities[6]
- Environment Agency Guidance on Flood Zones[7]

[2] HM Government. National Planning Policy Framework. Revised in December 2024. Available online at: https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf
[3] Statutory Instruments 2015, No. 596, Town and Country Planning, England, The Town, and Country Planning (General Permitted Development) (England) Order 2015.
[4] PPG:Flood Risk and Coastal Change: https://www.gov.uk/guidance/flood-risk-and-coastal-change
[5] HM Government. Flood Risk Assessments: Climate Change Allowances Guidance. Available online at: https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances
[6] Environment Agency Standing Advice: https://www.gov.uk/guidance/flood-risk-assessment-local-planning-authorities
[7] Environment Agency guidance on Flood Zones: https://www.gov.uk/guidance/flood-risk-assessment-flood-zones-1-2-3-and-3b

Planning Practise Guidance: Flood risk and coastal change

2.3.2 The government guidance on flood risk and coastal change advises practitioners on how to consider flood risk during planning, development, and construction projects. It outlines the necessity of conducting thorough flood risk assessments, implementing sustainable drainage systems, and incorporating resilience measures to mitigate coastal changes and flooding impacts. The guidance emphasises collaboration with relevant authorities, adherence to the latest policies, and integration of climate change projections to ensure both current and future risks are effectively managed. Practitioners are urged to follow best practices to protect communities and infrastructure from flooding and coastal hazards.

Flood risk assessments: climate change allowances

2.3.3 The Environment Agency's current climate change guidance for developers and their agents when they prepare FRAs for planning applications, and development consent orders for nationally significant infrastructure projects, is provided online and seeks to minimise vulnerability and provide resilience to flooding and coastal change. The key climate change factors which are covered with regard to flood risk include:

- Peak river flow allowances which show the anticipated changes to peak flow by river basin district;
- Increased rainfall depths which affect river levels, land and urban drainage systems; and
- A range of allowances for each river basin district and epoch for sea level rise.

2.3.4 This online guidance was originally published in February 2016 and had been updated periodically, most recently in May 2022, to reflect changes in climate science such as updated sea level rise allowances to reflect the latest climate chance projections (UKCP18) which replaced previous projections (UKCP09).

Environment Agency Standing Advice Guidance

2.3.5 The Environment Agency's standing advice for new developments provides essential guidelines for assessing and managing flood risks in the planning process. It highlights the importance of identifying whether a site is located in a flood zone, evaluating vulnerability to flooding, and implementing necessary mitigation strategies. Developers are advised to incorporate flood resilience measures, sustainable drainage systems, and proper land use planning. The advice encourages collaboration with local planning authorities and adherence to regulatory requirements to ensure developments are resilient to flood risks, thereby safeguarding both property and public health.

Environment Agency Guidance on Flood Zones

2.3.6 The Environment Agency guidance on Flood Zones has been updated in March 2025 to signpost new flood and coastal erosion risk data and further updated in April 2025 to provide additional guidance to ensure FRAs appraise the suitability of flood risk datasets before use. The Environment Agency guidance specifies a comprehensive list of elements to include in a flood risk assessment. Key components are summarised below:

A Flood Risk Assessment (FRA) should be scaled to the nature, location, and degree of flood risk of the development. It must include:

- Appraisal of flood risk datasets considering their production date, purpose, and limitations.
- Location and site plans showing street names, water bodies, geographical features, existing site and proposals, flood risk layout, site drainage, and structures affecting water flow.
- Survey detailing existing and proposed site levels, access road levels, lowest floor levels, and estimated flood levels.
- Historical flood data including past flood frequency, severity, and impact, considering changes in flood risk management since then.
- Assessment of all sources of flood risk over the development's lifetime, factoring in climate change and potentially requiring hydraulic modelling for detailed risk evaluation.

- Description of current and future flood risk, including likelihood, extent, onset speed, depth, velocity, hazard, duration, flood warnings, and past floods, considering residual flood risk like flood defence breaches.
- Evaluation of overall safety during floods, structural safety, impact on essential services, and people's safety including vulnerable groups.
- Mitigation measures to address increased flood risk from flood storage loss, flow constriction, or inadequate surface water management.
- Flood risk management addressing all identified risks, following systematic approaches outlined in related guidance.
- Site layout steering vulnerable development aspects to lowest risk areas and considering floor level guidelines.
- Use of flood-resistant and resilient materials and designs up to required heights above estimated flood levels.
- Emergency access and escape plans for areas below estimated flood levels, showing safe routes and refuges, and complying with relevant building regulations.
- Use of Sustainable Drainage Systems (SuDS) for drainage impacts, providing multifunctional benefits like water quantity, quality, biodiversity, and amenity.
- For sites within the functional floodplain, FRA needs to identify floodplain status, ensuring design does not impede water flows, increase flood risk, or reduce floodplain storage.

2.4 Local Policy

2.4.1 The Site lies within the administrative area of HDC in West Sussex. Therefore, the statutory development plan for the Site comprises the following:

- Horsham District Planning Framework (adopted 2015);
- The West Sussex Joint Minerals Local Plan (adopted in July 2018) (Partial Review March 2021);
- West Sussex Waste Local Plan (adopted in April 2014, and confirmed as up to date in 2024); and
- The Rusper Neighbourhood Plan (made 2021).

2.4.2 The policies within these documents of relevance to flood risk and drainage are set out below.

Horsham District Planning Framework (adopted 2015)

2.4.3 Policy 38 (Flooding) of the District Planning Framework seeks to ensure that development adapts to the likely changes in the future climate and flood risk is not increased. The policy largely replicates national policy by requiring that development proposals follow a sequential approach to flood risk management, giving priority to development sites with the lowest risk of flooding and making required development safe without increasing flood risk elsewhere. It is also stated in the policy that "*the impact that development can have on flood risk as a result of increased run-off or changing drainage patterns must also be considered. To ensure development does not increase flood risk, developments will also be required to incorporate measures such as Sustainable Drainage Systems (SuDS) to help manage flood risk*".

The West Sussex Joint Minerals Local Plan (adopted in July 2018) (Partial Review March 2021)

2.4.4 Whilst the Joint Minerals Local Plan includes Policy M19: (Flood Risk Management, as this relates specifically to mineral development, it is not considered of relevance to this FRA.

West Sussex Waste Local Plan (adopted in April 2014, and confirmed as up to date in 2024)

2.4.5 Whilst the West Sussex Waste Local Plan also includes policy relating to flood risk (Specifically Policy W17: (Flooding) of the Waste Local Plan states) , as this relates specifically to waste management, it is not considered of relevance to this FRA.

The Rusper Neighbourhood Plan (made 2021)

2.4.6 Section 2 (The Neighbourhood Area) describes the environmental context, noting that the source of both the River Arun and River Mole are in the Rusper Neighbourhood Plan area. Paragraph 2.10 claims that: *"The River Mole is flooding more frequently, and mitigation works that have been carried out against flooding from Ifield Brook increase the problem upstream."* This confirms that fluvial flood risk associated with the River Mole and the Ifield Brook is a known local concern.

2.5 Strategic Flood Risk Assessment (SFRA)

2.5.1 The revised HDC SFRA[8] was published in January 2020. However, a combined SFRA[9] has subsequently been published in 2023 jointly by HDC and CBC. The study area for the 2023 SFRA is the Crawley Borough Council area and also the section of the Upper Mole Catchment which is situated within Horsham District. The 2023 SFRA is intended to provide comprehensive supporting evidence for the emerging Local Plan Reviews, of the Crawley Borough Local Plan and Horsham District Local Plan. Therefore, the combined 2023 SFRA is considered appropriate to assess flood risk for the Site which is within the section of the Upper Mole Catchment covered by the assessment. The SFRA considers flood risk from fluvial, surface water, groundwater, sewers, reservoirs as well as information on historic flooding. The SFRA also includes an assessment of flood risk with the inclusion of Climate Change impacts.

2.5.2 The SFRA had identifies there to be areas of fluvial Flood Zone 2 and 3 along the River Mole, Ifield Brook and Hyde Hill Brook. With the majority of the Site is shown in the SFRA to be in Flood Zone 1. It is noted that this differs from the current online flood mapping discussed in Section 4 of this FRA report.

2.5.3 The fluvial flood risk maps show the future climate change flood extents for the 1 in 100 (1%) AEP peak river flow with an additional 25%, 35% and 70% increase in peak river flow. The extents of fluvial flooding in the 70% climate change model extends to approximately the same extents as Flood Zone 2 in the present day. There are no significant new areas of flood risk with climate change beyond the present day fluvial Flood Zone 2 extents.

2.5.4 The SFRA surface water flood risk maps include future climate change flood extents with both a 20% and 40% increase in peak rainfall intensity. Both the 20% and 40% future scenarios do not show flood extents significantly beyond the present day flood extents.

2.5.5 The SFRA identifies areas along the Ifield Brook and River Mole as having 'low risk' of groundwater flooding, derived from 'Geosmart' groundwater flood map products. The SFRA indicates that a portion of the Site is within an area with potential flood risk associated with reservoir failure, however this map has been superseded by the Environment Agency Long Term Flood Risk mapping for Reservoirs.

2.5.6 The baseline flood risk from these sources is assessed in Section 4, with assessment of flood risk for the Proposed Development in Section 5. The SFRA data pre-dates the Environment Agency's latest flood risk data which is the primary source for the baseline assessment.

[8] Scott Wilson, Horsham District Council Strategic Flood Risk Assessment Final Report – Revised April 2010. Available online at: https://www.horsham.gov.uk/planning/planning-policy/evidence-base/strategic-flood-risk-assessment

[9] Crawley Borough and Upper Mole Catchment Level 1 SFRA: https://crawley.gov.uk/sites/default/files/2023-11/PS.ES_.EP_.17%20Strategic%20Flood%20Risk%20Assessment%2C%20November%202023.pdf

3. SITE DESCRIPTION AND SETTING

3.1 Existing Site Description

3.1.1 The Site is located on land to the west of Ifield near Crawley in West Sussex, centred approximately at National Grid Reference TQ 23679 36673. The Site is approximately 171.29 hectares (ha) in size of which:

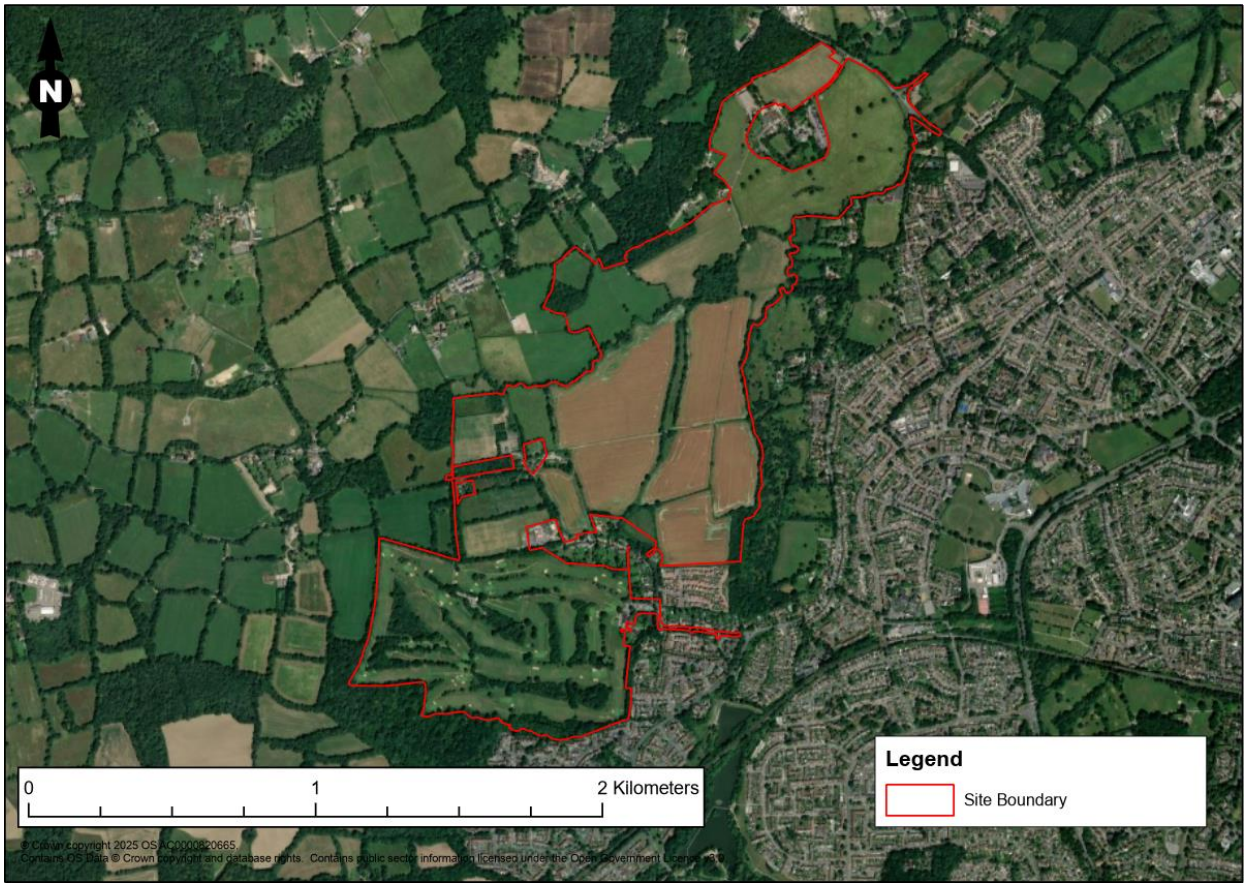
- 29.36ha is to be subject to a full planning application;
- 145.52ha is to be the subject of an outline planning application; and;
- An area of 3.37ha overlap (included within the above figures) between the full and outline elements.

3.1.2 The Site is predominantly occupied by a mixture of arable and pastoral fields and includes the Ifield Golf Course and Country Club (hereafter referred to as the 'golf course') in the south. The River Mole is present across the northern part of the Site and flows from south-west to north-east.

3.1.3 Current access to the Site is via Charlwood Road in the north and Rusper Road to the south.

3.1.4 An area to the east of the Site is occupied by Ifield Meadow, which adjoins a wooded area and extends into an area of ancient woodland. Ifield Brook Wood and Meadows is designated as a Local Wildlife Site (LWS) and a Site of Nature Conservation Importance (SNCI). This area is outside of the Site, but within the control of Homes England and will be retained as part of the proposals.

Figure 3-1: Proposed Development Site Context

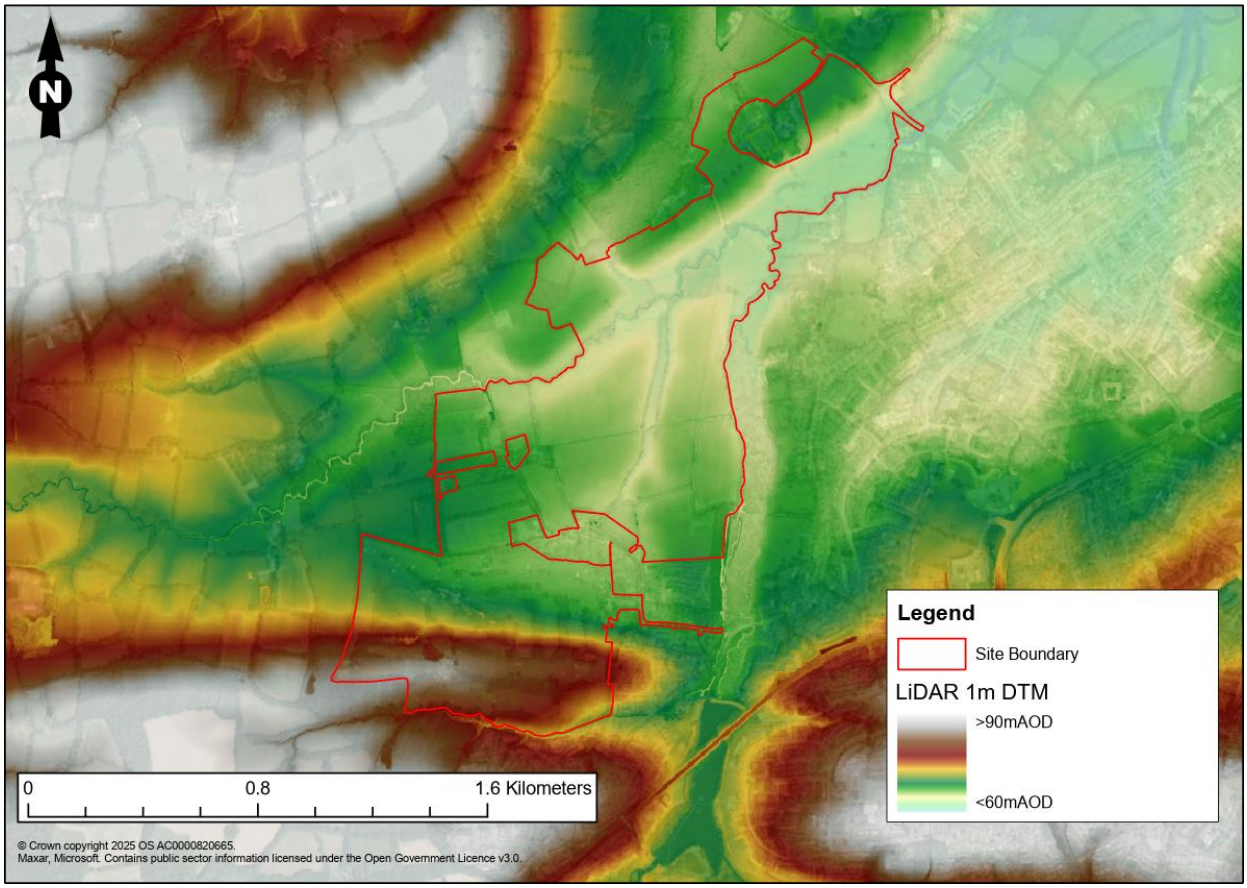


3.2 Existing Topography

3.2.1 The Site topography is generally low-lying, with ridges to the south and west. The first of these ridges passes through the southern part of the Site in an approximate east-west alignment and this rises up from 76m AOD in the south-west to approximately 85m Above Ordnance Datum (AOD) at Hyde Hill. The second ridge is located approximately 1km to the north-west at Russ Hill. It is orientated in an approximate south-west to north-east alignment which rises up from 68m AOD on-site and extends up to 100m AOD at Russ Hill. The low-lying land between these two ridges lies at approximately 60-70m AOD and is dissected by the narrow watercourses of Ifield Brook and the River Mole.

3.2.2 LiDAR (Light Detection and Ranging) composite data, obtained from Defra's online data services platform[10] can be found in Figure 3-2. This has been provided as a 1m resolution DTM (Digital Terrain Model) with a vertical accuracy of +/- 150mm.

Figure 3-2: Site Elevations



3.3 Geological Setting

3.3.1 The British Geological Survey (BGS) map of the area (1:50,000 scale map series), accessed via online digital mapping[11] indicates that the Site is underlain by the Weald Clay Formation, with varying bands of clay, mudstone, and ironstone strata. Superficial deposits of alluvium (clay, silt, sand and gravel) and River Terrace Deposits (sand and gravel) are present alongside the River Mole.

[10] DEFRA Data Services Platform, LiDAR Composite DTM 2020 – 1m. Available online at: https://environment.data.gov.uk/dataset/668881ad-4f8f-42bd-b835-89acf0269496

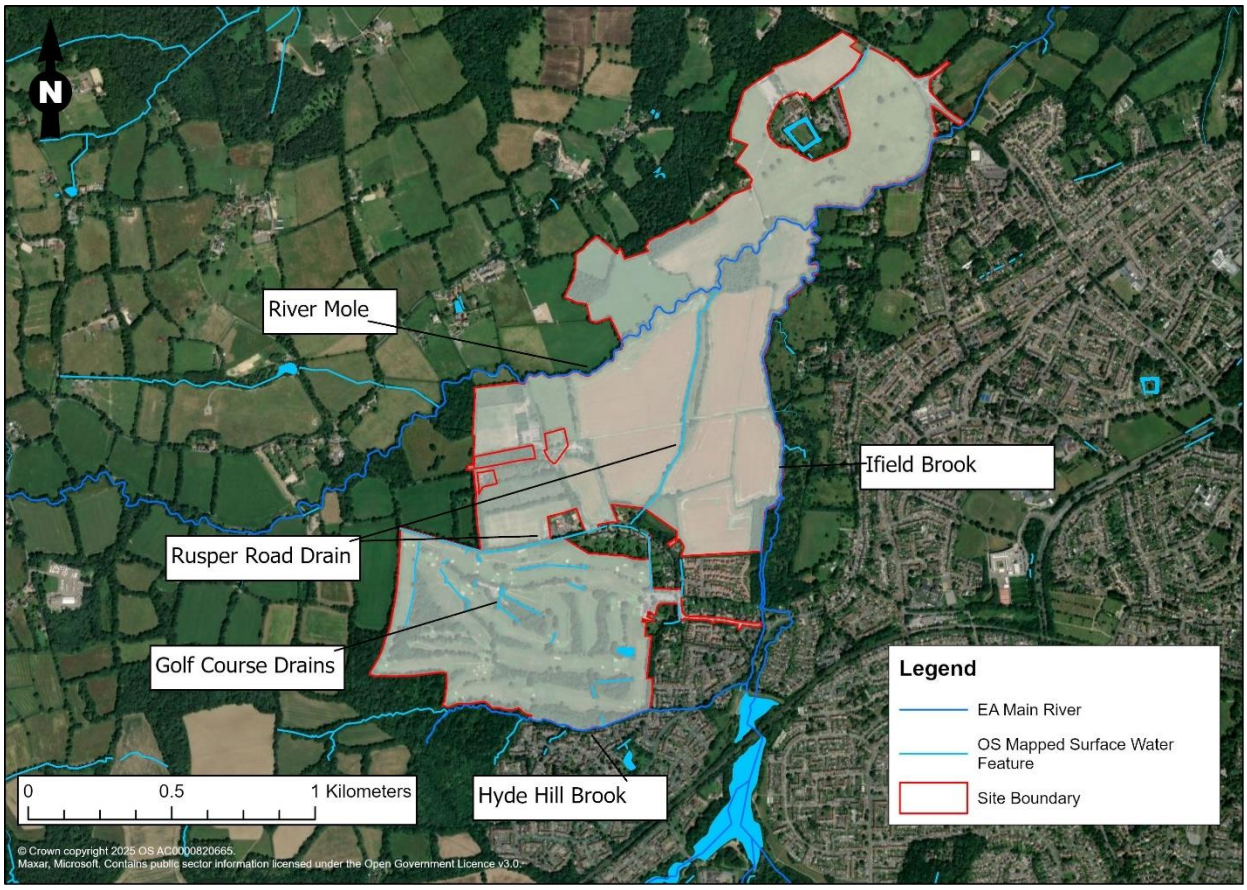
[11] The British Geological Survey (BGS) Geology of Britain Viewer. https://mapapps2.bgs.ac.uk/geoindex/home.html?_ga=2.20478462.751019057.1623140982-555024661.1620222646 (accessed February 2023)

3.3.2 Borehole records obtained from the BGS database (via the Onshore GeoIndex[12]) were examined. BGS record TQ23NW2 (dated 1936), located approximately 220 m west of the Site, in Ifield Wood was examined and the ground conditions were formed of Blue Clay and Rocks to a depth of 35.5m bgl (below ground level). No groundwater levels were recorded during construction of the borehole. However, during exploratory drilling in late 2024/ early 2025 to a depth of just over 200m bgl, groundwater levels were found to be close to ground level within the shallow bedrock; and close to ground level or slightly above ground level (artesian) at depth. All groundwater levels were found to be generally shallower than 4m bgl.

3.4 Hydrological Setting

3.4.1 Both the Ifield Brook and River Mole are present within the Site and are classified by the Environment Agency (EA) as 'Main Rivers'. The Hyde Hill Brook is present along the southern boundary of the Site. In addition, there is a surface water drain along the northern edge of Rusper Road (referred to in this report as the 'Rusper Road Drain'). There are also a network of surface water drains within the golf course, which are partially open channels and partially culverted. These appear to then be partially culverted beneath property towards the Rusper Road Drain. The hydrological setting is presented in Figure 3-3.

Figure 3-3: Hydrological Setting



3.4.2 The River Mole is present across the western part of the Site and flows from south-west to north-east. The River Mole is a tributary of the River Thames, however the confluence between these rivers is located approximately 31.5 km north of the Site and therefore the Thames has no influence on any fluvial processes present.

[12] The BGS Onshore GeoIndex. Available at:https://mapapps2.bgs.ac.uk/geoindex/home.html?layer=BGSBoreholes&_ga=2.232559067.515903859.1677230205-508091144.1677230205 (accessed 03/2023)

3.4.3 The Ifield Brook runs in a northerly direction and is present on the eastern side of the Site. The Ifield Brook drains from the Ifield Mill Pond (approximately 300m south-east of the Site) which is itself fed by smaller streams from the south (the Bewbush Brook, Douster Brook and the Broadfield Brook). The Ifield Brook also received discharge from the Hyde Hill Brook which flows in an easterly direction along the southern boundary of the Site before joining the Ifield Brook immediately north (downstream) of the Ifield Mill Pond.

3.4.4 The Ifield Brook is a tributary of the River Mole, with the confluence of the two rivers being located within the north-west of the Site.

3.4.5 The Rusper Road Drain flows initially in a general easterly direction through the Site on the southern edge of Rusper Road and is culverted beneath several property driveways before being culverted in a northerly direction beneath Rusper Road (grid reference 524060, 137030) and then flowing in a northerly direction, also through the Site.

3.4.6 Along much of Rusper Road this is shown to be a shallow ditch and during inspection by Homes England on the 29th May 2025 much of this ditch was observed to be dry. However, there are outfalls to the ditch south of Rusper Road which contribute flow from the network of drains within the golf course.

3.4.7 The inlet to the concrete culvert south of Rusper Road has an arched soffit with a height of 900mm at the top of the arch and 750mm at the sides of the arch. The culvert is 1,220 mm in width at the inlet. The outlet from the culvert north of Rusper Road is also 1,220 mm in width but is a rectangular shape with a soffit height of 720 mm. During inspection by Homes England on the 29th May 2025 it was noted that there is some silt present, but this was not noted to be obstructing flow.

3.4.8 Review of the catchment using boundaries delineated in the Flood Estimation Handbook (FEH) web service[13] suggest that the catchment area of the Rusper Road Drain is significantly less than 1km^2 and a significant proportion of the catchment area is likely to be within the Site boundary.

[13] https://fehweb.ceh.ac.uk/

Figure 3-4: Rusper Road Drain Alongside Southern Side of Rusper Road

Figure 3-5: Rusper Road Culvert Inlet

Figure 3-6: Rusper Road Culvert (view to north looking upstream)

Figure 3-7: Rusper Road Drain North of Rusper Road (view to north looking downstream)

4. BASELINE FLOOD RISK DATA REVIEW

4.1 Purpose of Baseline Review

4.1.1 The baseline review describes the flood risk status of the Site as prescribed by available flood risk model data from the EA, as well as published data such as the SFRA. This includes flood risk from fluvial and tidal, surface water, groundwater, reservoirs and other artificial sources. Climate change impacts are also included, for a range of future scenarios for increased peak rainfall intensity and peak river flow. The EA data also includes recorded historic flood outlines.

4.1.2 The EA identify factors to consider before using flood model data to assess flood risk to the Site. Notably the data should: represent current risk, use the latest available datasets, comply with current modelling standards, be at a scale suitable for the assessment, capture the detail required for a site-specific assessment and make use of current climate change allowances.

With this in mind the limitations and suitability of the model data is described below, in relation to fluvial flood risk as well as surface water flood risk. The baseline flood model data does not assess the impact of the Proposed Development on flood risk conditions. However site specific modelling has been carried out to understand the impact on flood risk of the Proposed Development to both the development itself and to third parties, described further in paragraphs 5.2.5 and 5.2.6.

4.2 Fluvial and Tidal Flood Risk Status

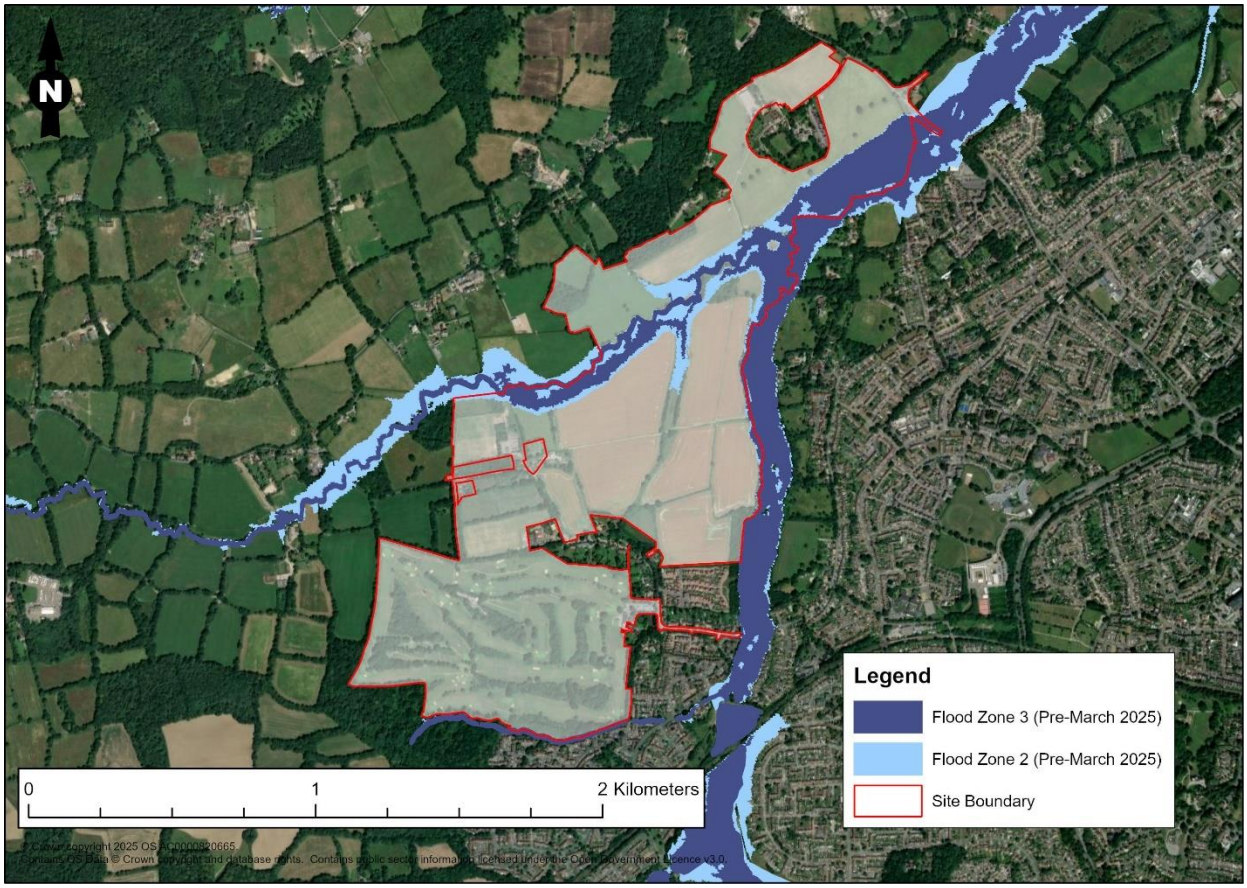
4.2.1 The EA's online flood mapping identifies areas in England and Wales at risk of flooding by allocating them into Flood Zones. The Flood Zones shown on the flood maps are defined in Table 1 (Flood Zones) of the Technical Guidance to the NPPF[14], and at the Site location (where tidal flood risks can be discounted Due to the inland location, distant from the coast) are defined as follows:

- **Zone 1: Low Probability**. Less than 1-in-1,000 annual probability of river flooding.
- **Zone 2: Medium Probability**. Between a 1-in-100 and 1-in-1,000 annual probability of river flooding (between 1% and 0.1%).
- **Zone 3a: High Probability**. A 1-in-100 or greater annual probability of river flooding (>1).
- **Zone 3b: The Functional Floodplain**. Land used for water flow or storage in times of flood. This flood zone should be identified by a Strategic Flood Risk Assessment (SFRA). It is typically considered to have a 1-in-20 (>5%) or greater annual probability of river flooding. Another probability, however, can also be agreed between the LPA and the EA.

4.2.2 The majority of the Site had been designated as being within Flood Zone 1 prior to an update to the mapping in March 2025. Areas of Flood Zone 2 and Flood Zone 3 were also present in the northern, eastern and southern boundaries of the Site, associated with the River Mole, Ifield Brook and the Hyde Hill Brook. Only a limited section at the downstream (northern) limit of the Rusper Road Drain was shown to have a fluvial flood risk.

[14] Communities and Local Government, March 2012, Technical Guidance to the National Planning Policy Framework

Figure 4-1: EA Flood Map for Planning: Flood Zones (prior to 25/03/2025)

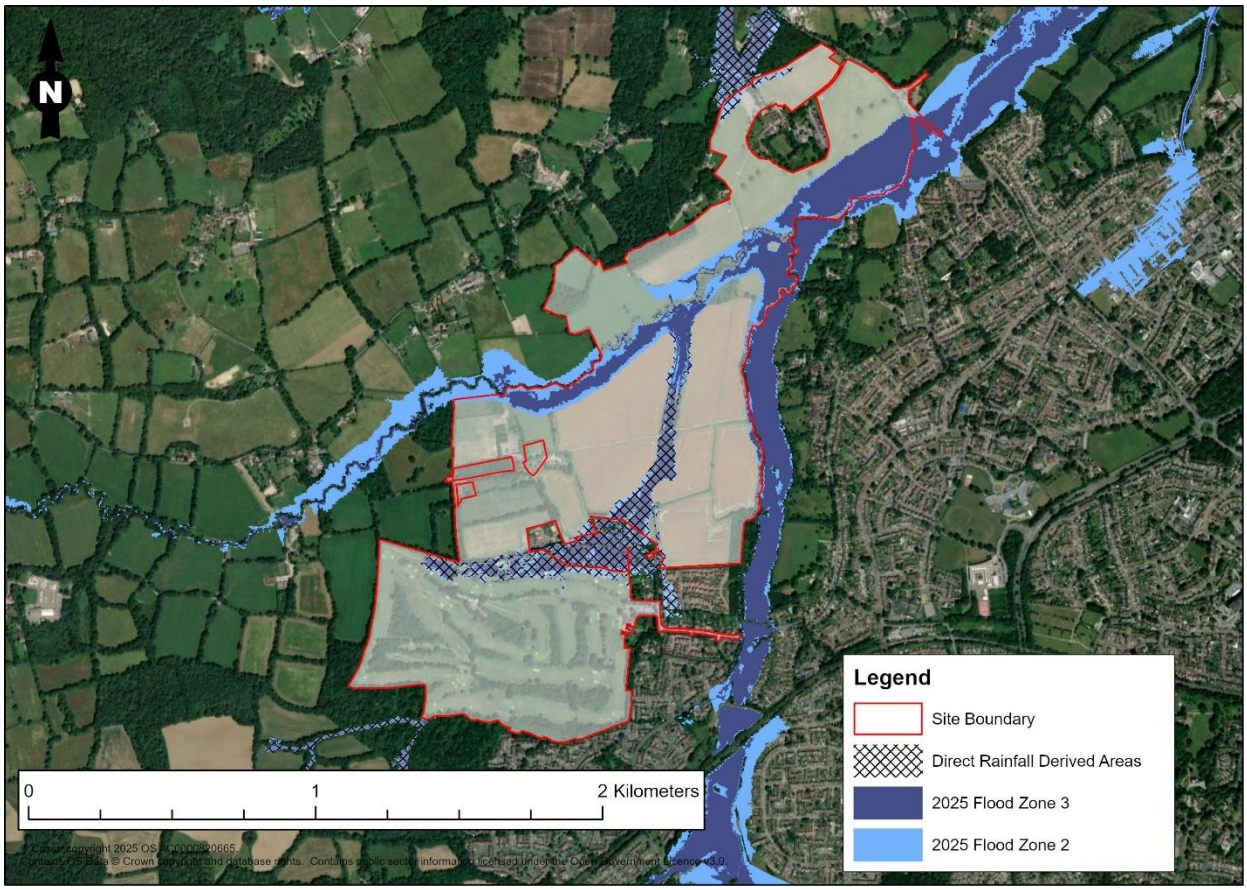


4.2.3 However, on the 25th March 2025, the Flood Map for Planning was updated by the EA (Figure 4-2) following a previous update to the National assessment of flood and coastal erosion risk in England 2024[15]. Whilst the previous iteration of flood mapping had derived the extents of Flood Zones 2 and 3 based on either detailed or national scale fluvial flood risk modelling, or the observed extent of historical fluvial flooding, the March 2025 updated flood mapping presents extents of Flood Zones 2 and 3 derived also from local evidence or from a direct rainfall model. The direct rainfall model has been used to try to present flood risks from small watercourses which exceed 3 km^2 in area but are not considered within detailed or national scale fluvial modelling.

4.2.4 The implication of the update to the Flood Map for Planning at the Site is that a potential area of flooding related to the Rusper Road Drain, crossing the Site from west to east and then to the north, is now defined as a Flood Zone. However, this is considered an erroneous designation; there is evidence that this potential flood risk is associated with overland pluvial flows and not a fluvial risk. Therefore, enquiries have been made to the EA to discuss the approach to assessment of flood risk associated with this ditch and a meeting was held with the Partnership & Strategic Overview Team at the EA on the 29th April 2025. It was confirmed in the meeting that several broader inconsistencies have been noted in the updated 2025 EA's mapping at a national scale, with many areas of pluvial (surface water) flood risk appearing to have been characterised as river flooding. It was stated that the Flood Map for Planning should only be used as an indicator for where further flood risk assessment is required.

15 https://assets.publishing.service.gov.uk/media/6797a4e6e0edc3fbb060633c/E03253099_EA_Flood_Coastal_Erosion_Risk_Assessment_accessible_v2.pdf

Figure 4-2 EA Flood Map for Planning: Flood Zones with Direct Rainfall Component Presented (published 25/03/2025)



4.2.5 Interrogation of the EA's Flood Zone data confirms that this new area of flood zone on the Rusper Road Drain is derived from a direct rainfall model (black hatch on Figure 4-2) and not from fluvial flood modelling or the observed extent of historical flooding. It is understood that the direct rainfall model approach has been used to define Flood Zone for open channel watercourses where the catchment area of the 'watercourse' exceeds 3km^2. However, importantly this does not apply to this location. Review of the catchment using boundaries delineated in the Flood Estimation Handbook web service[16] suggest that the catchment area is significantly less than 1km^2 and a significant proportion of the catchment area is likely to be within the Site boundary. However, as this watercourse is very small in scale, it is not individually delineated within the FEH data. Therefore, further terrain analysis has been undertaken, using LiDAR.

4.2.6 Esri's Arc Hydro tools have been used to assess likely overland flow routes (potential pathways for overland runoff based on terrain data only) and resultant catchment areas. The Arc Hydro tools provide a process for first filtering the terrain data to remove 'sinks' (defined as depressions in the terrain that are lower than all neighbouring terrain data cells). If these sinks are not filtered, water would artificially remain trapped in areas of the terrain within subsequent calculations. The filtered terrain data is then used to calculate the flow direction from each grid cell within the terrain. The flow directions are then calculated into potential overland flow pathways. These pathways do not represent any streams or ditches within the terrain; they only estimate the potential route for overland flow based on terrain data only. No rainfall data is used within this analysis so it is not representative of flow predictions for any specific event but rather is an estimation of the routes where water could preferentially flow. The overland flow routes are used to estimate the zones of contribution or catchment areas upgradient of specified locations; i.e. land which slopes downwards towards points of interest in the terrain.

[16] Flood Estimation Handbook Web Service. Available at: https://fehweb.ceh.ac.uk/ (access 06/2025)

Figure 4-3: Arc Hydro Overland Flow Pathway Analysis

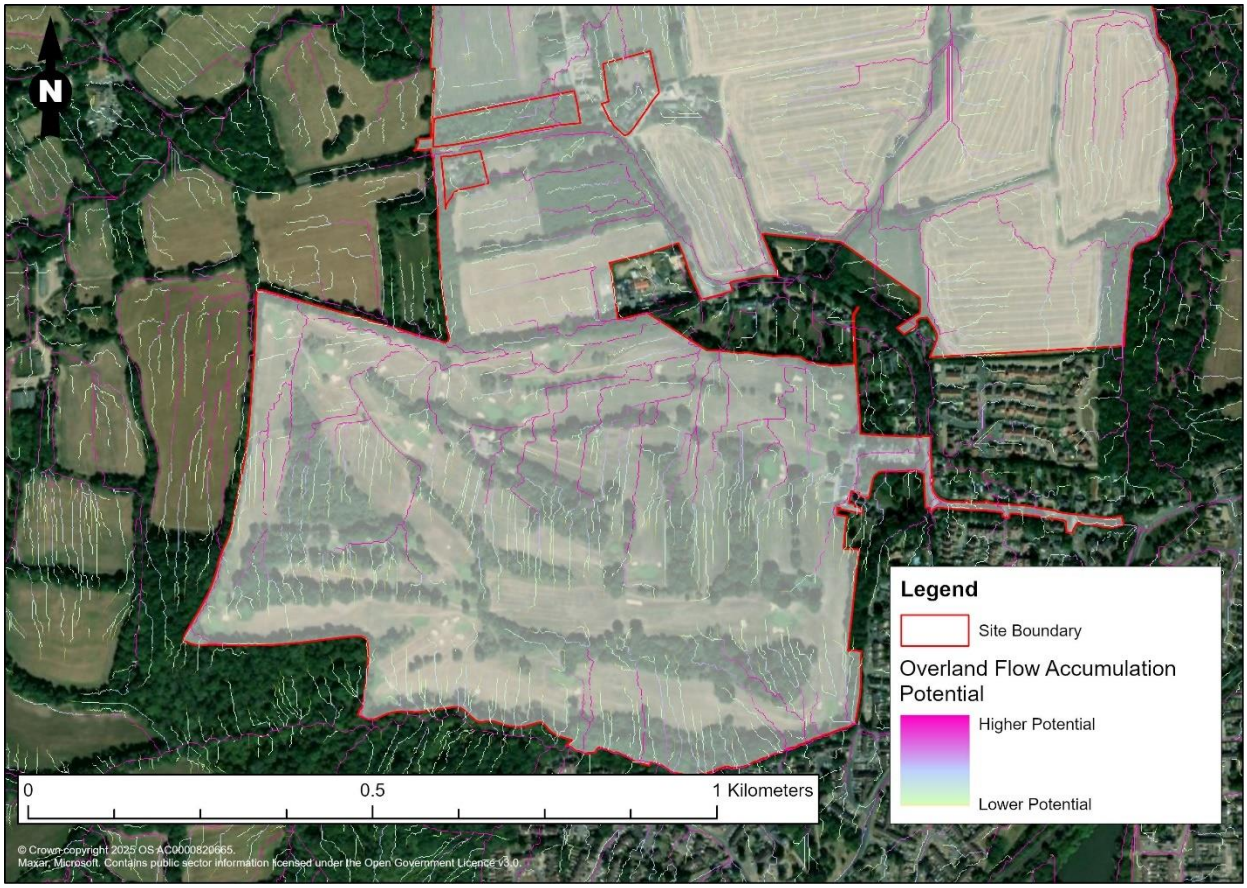
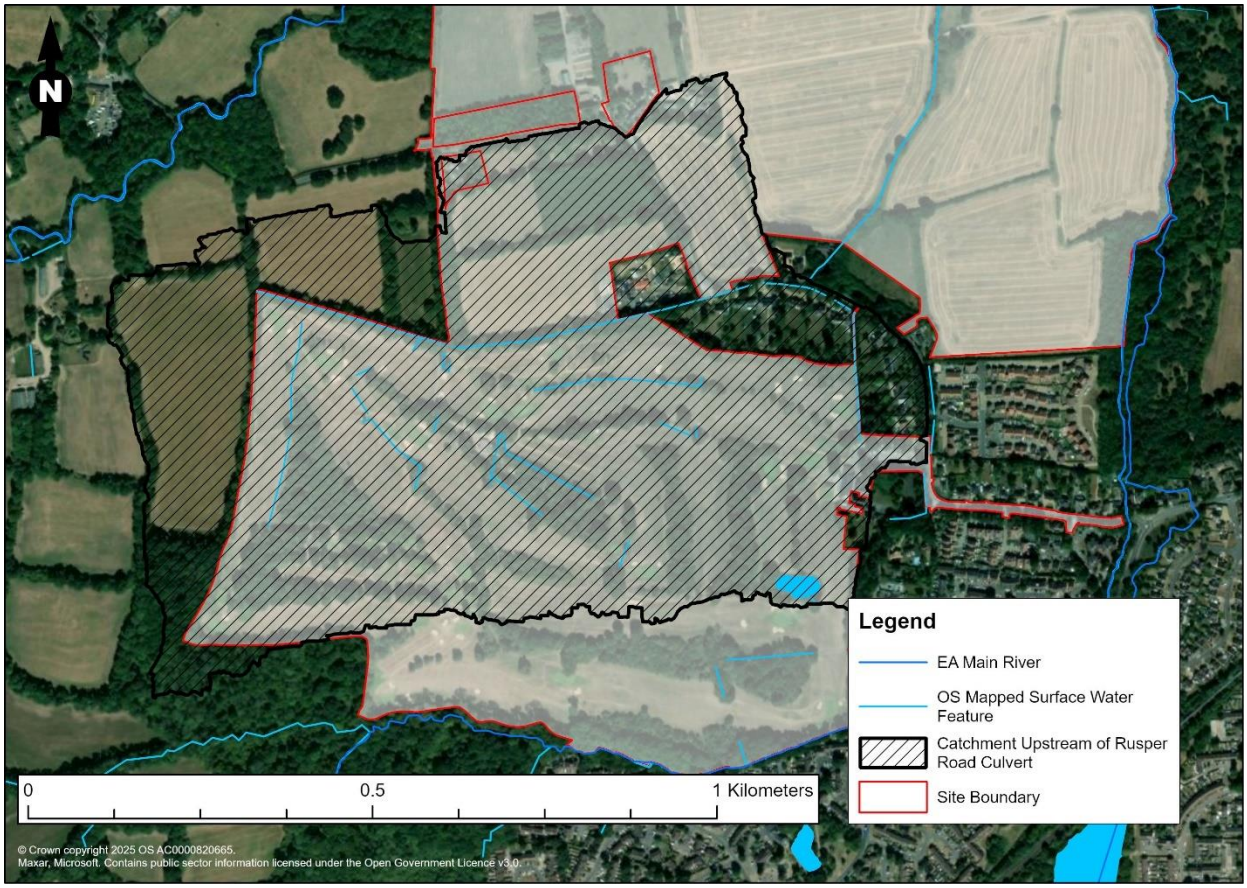


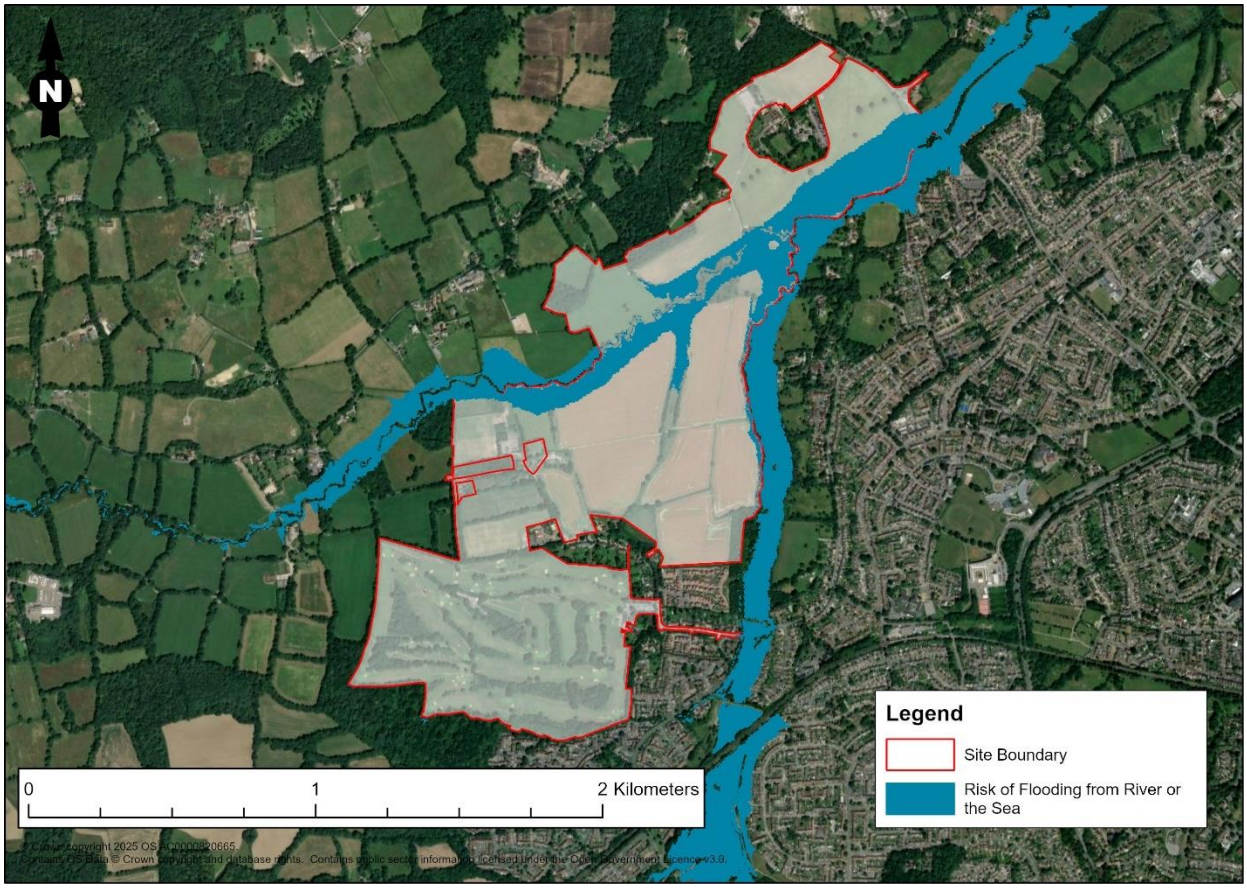
Figure 4-4: Arc Hydro Delineated Catchment Areas Upstream of Rusper Road Culvert



4.2.7 This confirms that the catchment area is significantly lower than the 3km^2 threshold typically used to characterise a fluvial flood risk. It also confirms that the majority of the contributing catchment is formed of land within the Site boundary, such that the Proposed Development offers an opportunity to improve the management of surface water runoff and reduce pluvial flood risk associated with the Rusper Road Drain.

4.2.8 In addition, the EA publishes mapping of the Risk of Flooding from Rivers and the Sea (RoFRS)[17] which shows the chance of flooding from rivers and the sea taking into account the presence and condition of flood defences, see Figure 4-5. This does not show any flood risk from rivers along the majority of the Rusper Road Drain, with only a risk of flooding from rivers shown at the downstream (northern) limit of the drain.

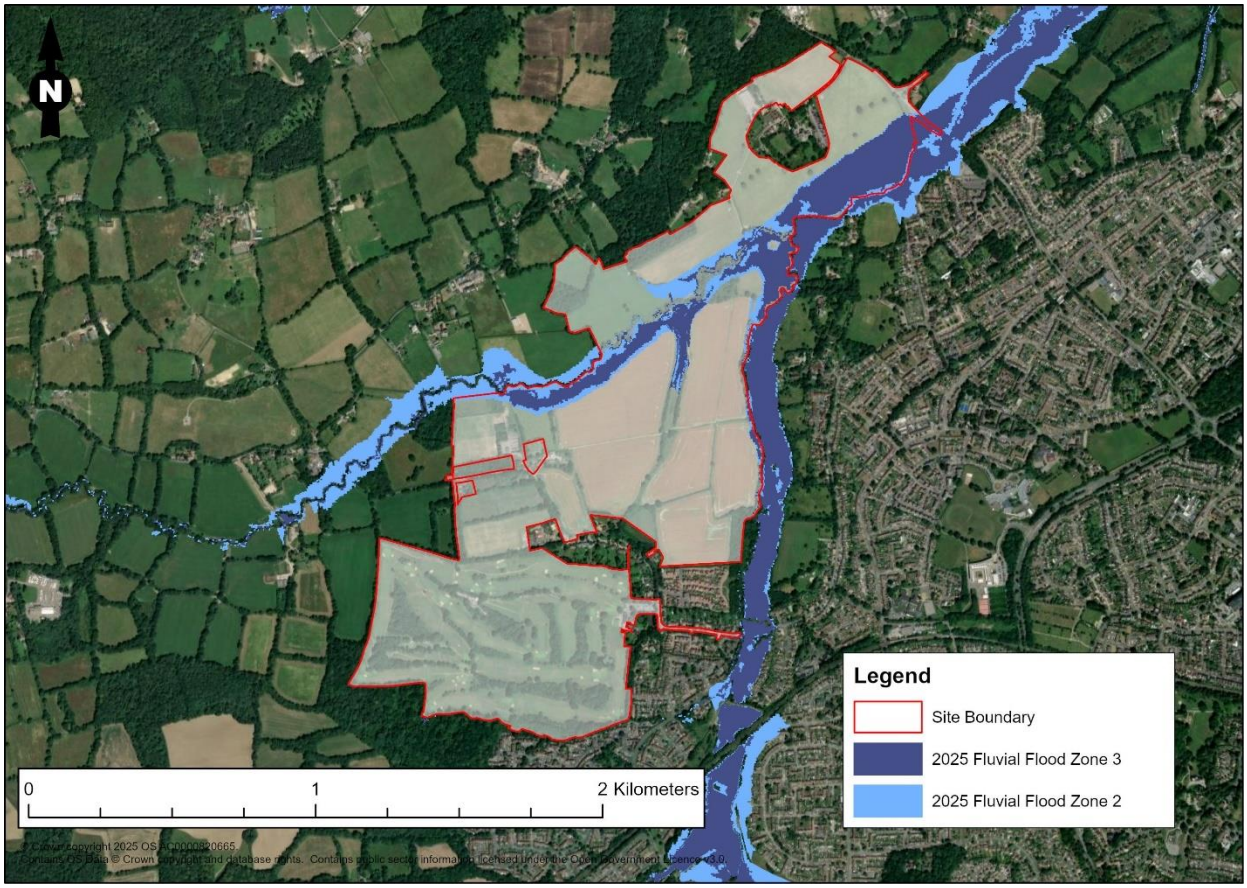
Figure 4-5: EA Risk of Flooding from Rivers or the Sea Mapping



4.2.9 Therefore, whilst potential surface water (pluvial) flood risks associated with the Rusper Road Drain need to be considered, especially as much of the contributing catchment to this drain is formed of land within the Site boundary, this is not considered a fluvial flood risk and has been considered separately in Section 4.2 below. As a result, EA Flood Zone mapping for the remainder of this report shows the Fluvial Flood Zones only, as presented in Figure 4-6.

[17] EA, Risk of Flooding from Rivers and Sea. Available at: https://environment.data.gov.uk/dataset/96ab4342-82c1-4095-87f1-0082e8d84ef1 (accessed 06/2025)

Figure 4-6: EA Flood Map for Planning: Corrected for Fluvial Flood Zones Only



4.2.10 It is also noted that the update to the Flood Map for Planning has resulted in the removal of the small areas of Flood Zone along the Hyde Hill Brook on the southern boundary; although is not considered to be of significant relevance to the Proposed Development, as only land on the Site boundary was previously affected.

Fluvial Flood Defence

4.2.11 The EA's Asset Information Management System (AIMS) dataset[18] shows that there are flood defences present on the eastern and western banks of the River Mole and Ifield Brook respectively. The defences associated with the Ifield Brook have been identified as 'Engineered High Ground', however this defence is privately-owned and therefore no further information is available from the EA. Where the Ifield Brook passes through the Site, the engineered high ground is present throughout.

4.2.12 However, the flood defence associated with the River Mole is identified as 'Natural High Ground' and is owned by the EA. The flood defence is located on the western bank of the River Mole and is approximately 3 km long. Where the River Mole passes through the Site, this natural high ground is present throughout. The natural high ground currently has a condition rating of 2 (on a scale from 1-very good to 5-very poor) which is equivalent to 'Good' under the EA Guidance on Assessing Flood and Coastal Defence Assets[19]. A rating of 2 is considered to be adequate to provide ongoing flood protection.

[18] EA AIMS Asset Bundle, https://environment.data.gov.uk/dataset/019a8eaa-b27f-4ae6-a9fd-e8e27cdd101a (accessed 05/2023).

[19] EA Guidance on Assessing Flood and Coastal Defence Assets, available at: https://www.gov.uk/flood-and-coastal-erosion-risk-management-research-reports/guidance-on-assessing-flood-and-coastal-defence-assets (accessed 05/2023).

4.3 Surface Water Flood Risk Status

4.3.1 The EA's Risk of Flooding from Surface Water (RoFSW) map[20] identifies areas in England and Wales at potential risk of surface water (pluvial) flooding. The surface water flood maps define flood risk as follows:

- **High Risk**. Considered to have a greater than 1-in-30 annual probability of surface water flooding (>3.3%).
- **Medium Risk**. Considered to have between a 1-in-30 and 1-in-100 annual probability of surface water flooding (between 3.3% and 1%).
- **Low Risk**. Considered to have between a 1-in-100 and 1-in-1,000 annual probability of surface water flooding in any year (between 1% and 0.1%).
- **Very Low Risk**. Considered to have a less than 1-in-1,000 annual probability surface water flooding in any year (<0.1%).

4.3.2 The RoFSW mapping of the potential chance of surface water flooding within the Site, to any depth, is presented in Figure 4-7. This shows the chance of surface water ponding at a location even if the depth would be very shallow. The EA also presents the chance of surface water flooding reaching specific depths. The chance of water reaching a depth of 300mm is presented in Figure 4-8. This shows that for much of the area predicted to have a chance of surface water flooding, the chance of such water reaching 300mm would be Very Low or Low. It is the surface water flood risk associated with this drainage ditch that corresponds with the additional new areas of Flood Zones 2 and 3 (derived from direct rainfall modelling) as discussed previously.

4.3.3 However, it must be noted that the RoFSW mapping is only based on the best information held by the EA with regard to ground elevations and drainage. The modelling is completed at a national scale and the EA has stated that there are a number of assumptions in the model used to produce this mapping. Specifically, it is stated by the EA that the model cannot represent every detail of the urban landscape and very local mechanisms of flooding. Drainage capacity is the biggest factor in uncertainty in the modelling. The EA has to make assumptions where no drainage data is available and therefore the outputs of the model may be less accurate. OS MasterMap data on land cover, and data on soil type and land permeability (which would represent the Clay nature of the geology in this location) is used to represent the spatial variation in runoff and infiltration rates.

4.3.4 Of particular relevance to the Site location, there are a network of drains within the golf course which are a combination of open channels and below ground culverts. Whilst the open channels may be reflected in the mapping if larger enough to be reflected in the terrain data, any below ground connectivity between these drains and the downstream Rusper Road Drain is not fully considered in the mapping. The culvert beneath Rusper Road itself is also not considered in the mapping. Buildings are also artificially raised above ground levels data within the model to represent the likely slowing of water flow to internal areas. As a result, external ground areas adjacent to buildings are shown to receive an accumulation of surface water runoff which may not be accurate. This is less of an issue in the Site location due to the predominantly greenfield setting although it may also contribute to the overestimation of risk.

[20] Environment Agency Long-Term Flood Risk Map, available at https://flood-warning-information.service.gov.uk/long-term-flood-risk/map (Accessed 05/2023)

4.3.5 Therefore, whilst there is an overland flow route running from west to east along the north side of the golf course and south of Rusper Road Figure 4-7, this is considered to be in part as the capacity of below ground drains may not be accurately considered. The mapping suggests that water could flow overland in an uncontrolled manner towards Rusper Road and would then back up on the upstream (southern) edge of the road prior to overtopping the road and then continuing to flow to the north. Figure 4-9 shows a focussed map at the location of the Rusper Road culvert. This clearly shows no hydraulic connectivity following the route of the culvert and confirms that the mapping predicts water would back up south of the road until it reaches an elevation at which it would overtop further west and then into the Yew Trees property to the north of the road. It is also noted that there is a raised embankment along the boundary of this property north of Rusper Road which is not reflected in the EA's mapping but would limit the movement of water along the erroneous route shown in the EA's mapping.

Figure 4-7: EA RoFSW Mapping – Chance of Flooding to Any Depth (Present Day)

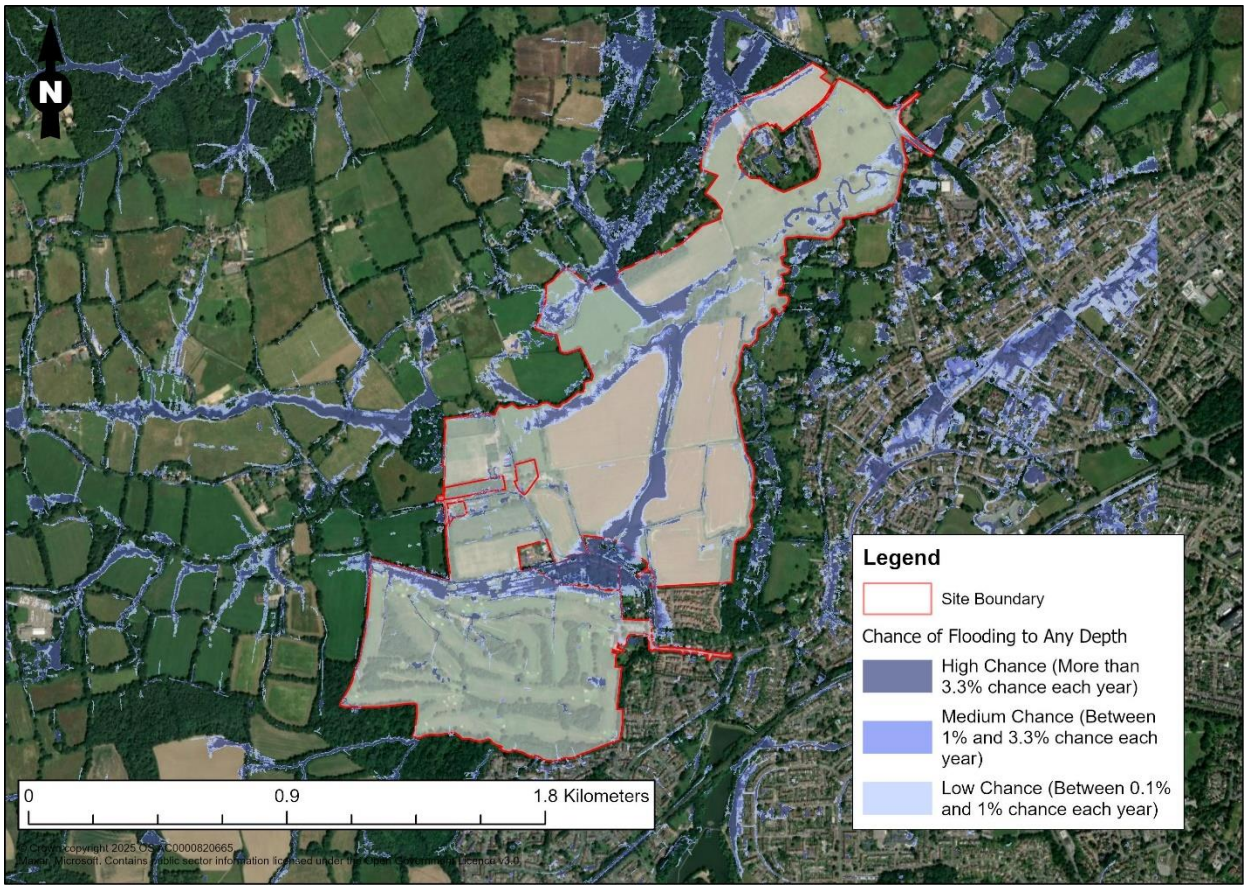


Figure 4-8: EA RoFSW Mapping - Chance of Flooding to 0.3m (Present Day)

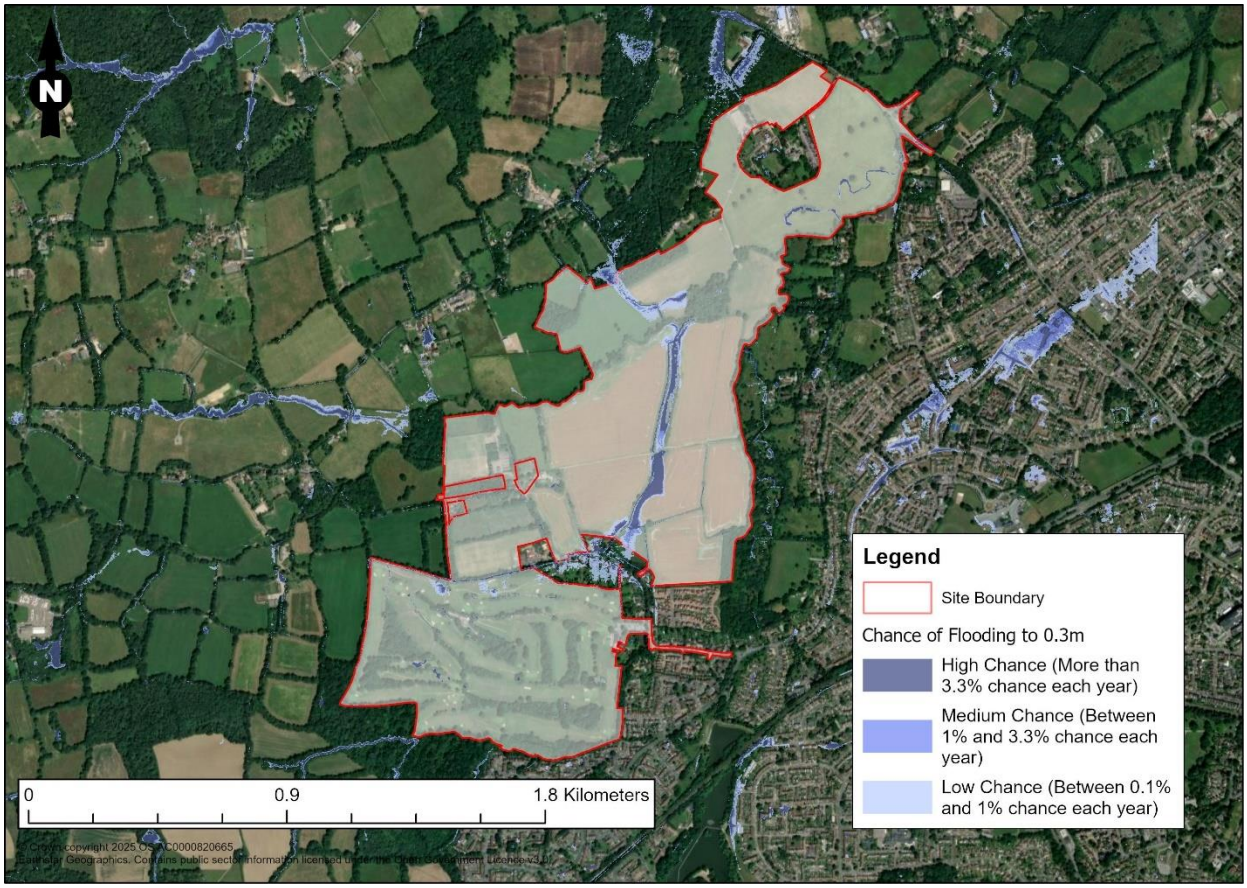
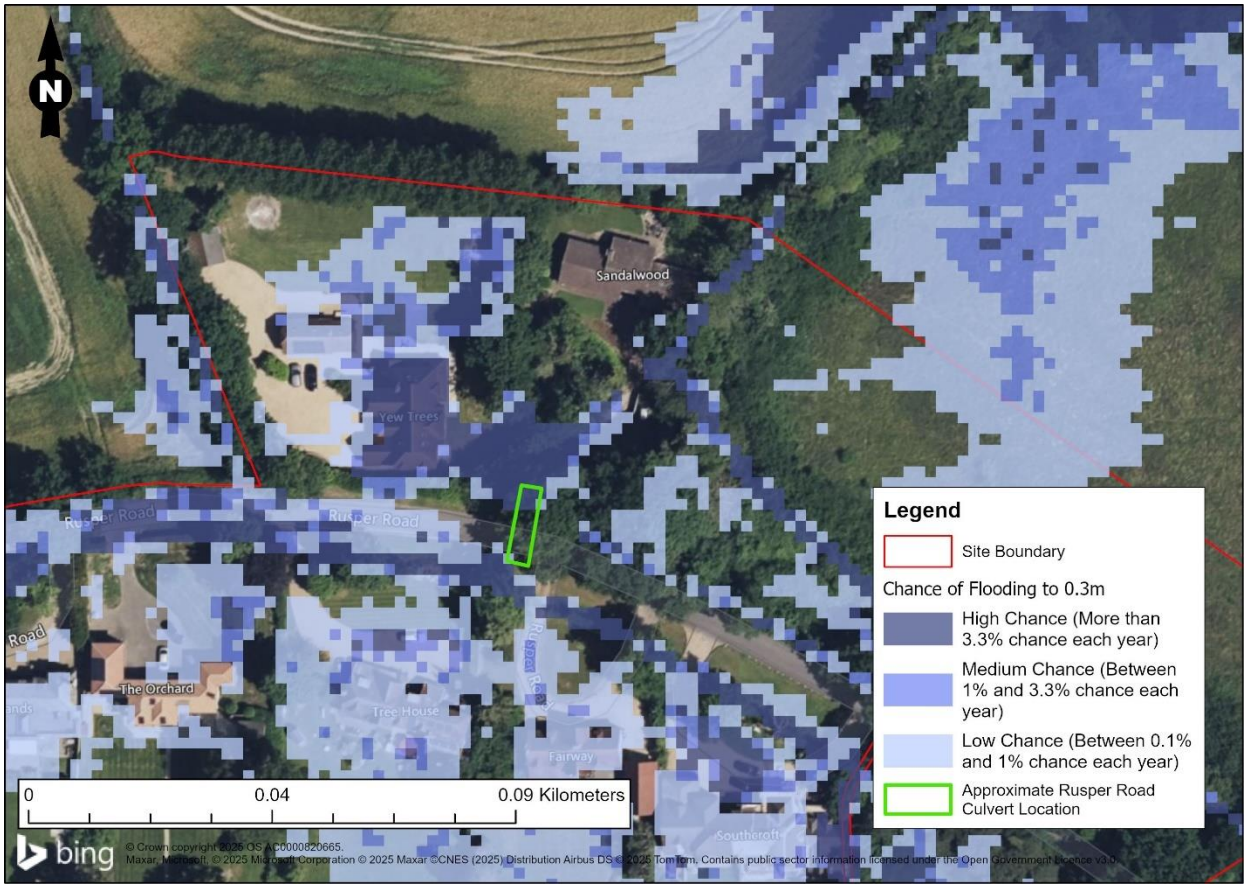


Figure 4-9: EA RoFSW Mapping - Chance of Flooding to 0.3m (Present Day) AT Rusper Road Culvert



4.3.6 The EA has also recently released an updated Surface Water flood risk map (January 2025) which now includes a future scenario with Climate Change allowance for 2040 to 2060. The future scenario surface water flood risk to any depth is shown in Figure 4-10 and chance of water reaching a depth of 300mm is presented in Figure 4-11. The future (2040-2060) scenario shows only a minor increase in flood extents compared to the present day. However, the future scenario does not show any significant change in the general flow regime and no additional overland flow routes are shown.

Figure 4-10: EA RoFSW Mapping – Chance of Flooding to Any Depth (With Climate Change from 2040 to 2060)

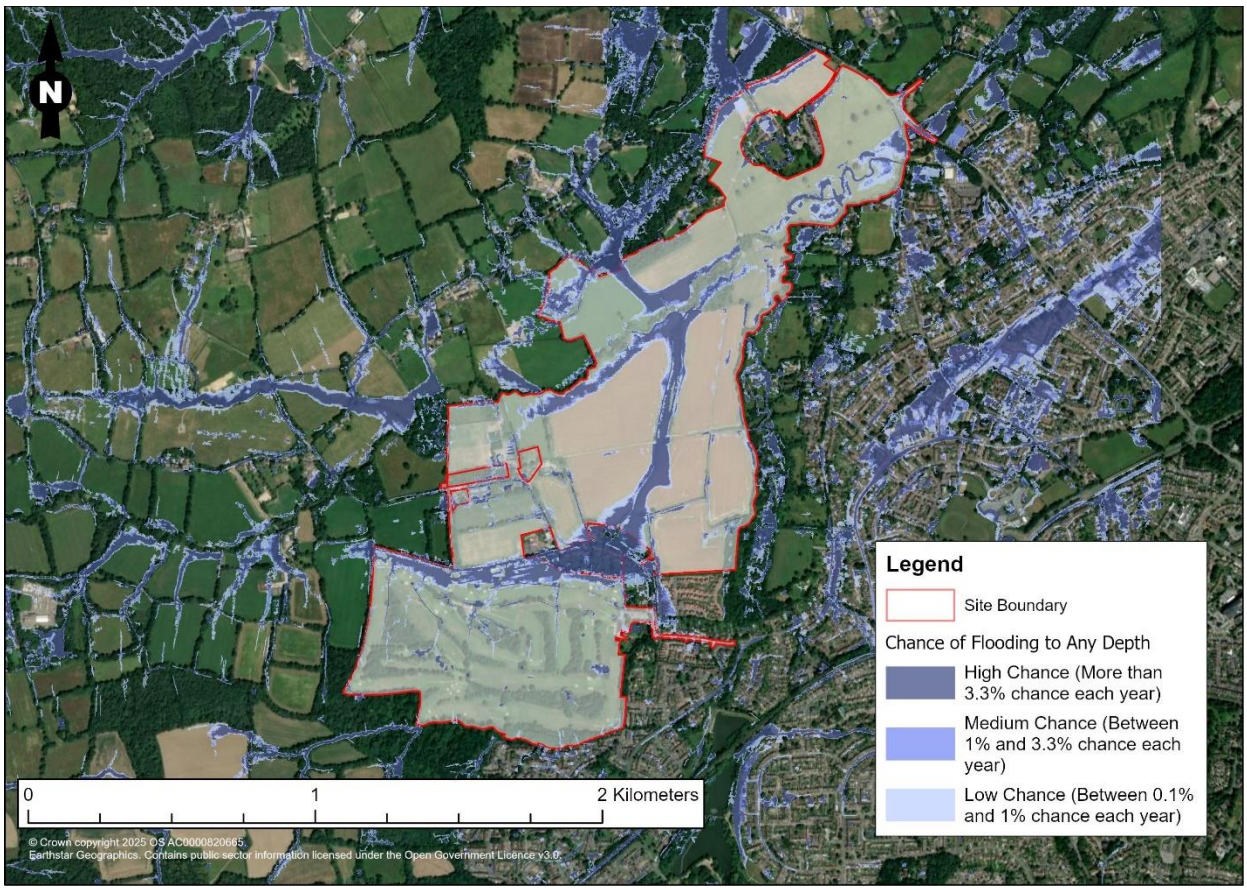
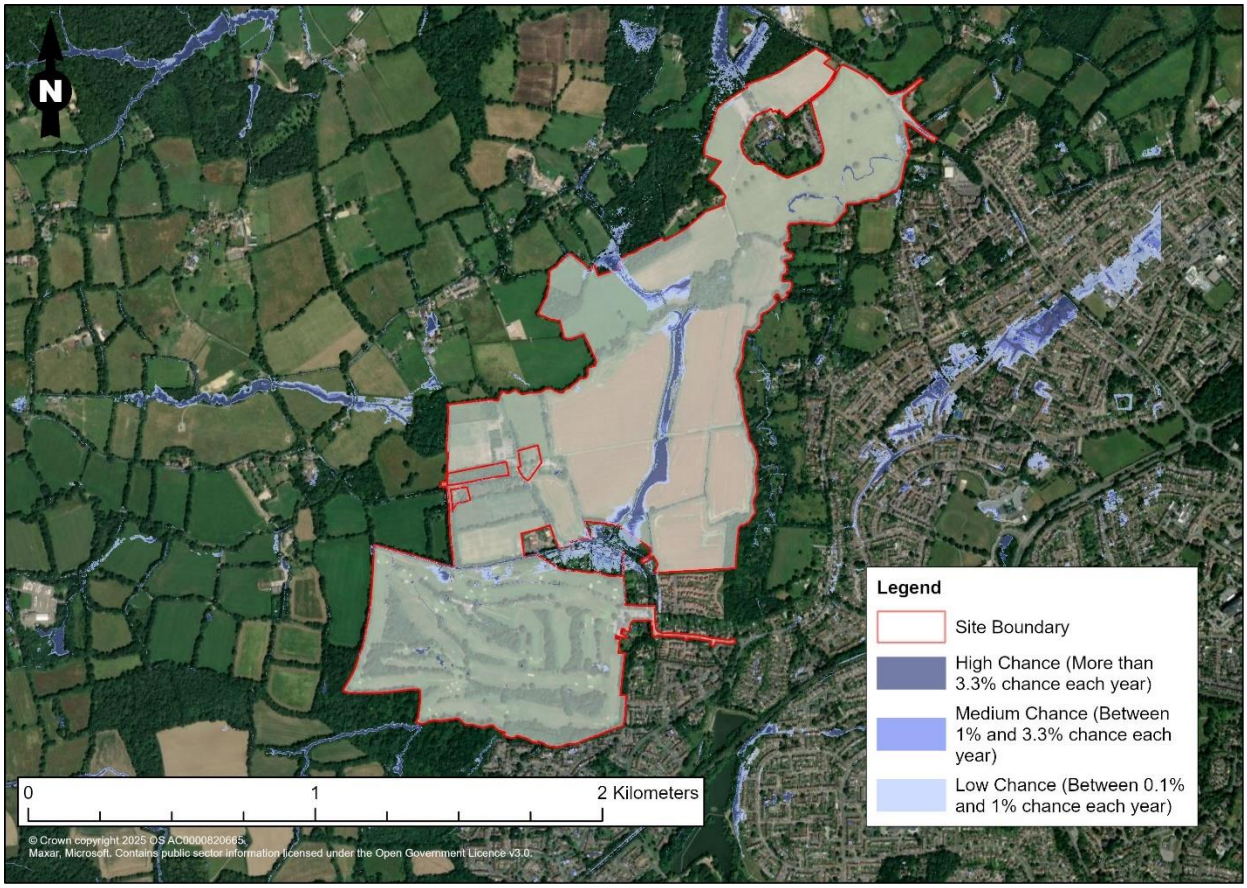


Figure 4-11: EA RoFSW Mapping – Chance of Flooding to 0.3m (With Climate Change from 2040 to 2060)



4.4 Groundwater Flood Risk

4.4.1 The Crawley Borough and Upper Mole Catchment SFRA[21] shows the groundwater flood risk of the local area. The Site is indicated to be within an area shown to be at low risk of experiencing any groundwater emergence events.

4.4.2 As stated previously, during exploratory drilling in late 2024/ early 2025, groundwater levels were found to be below ground level within the shallow subsurface, i.e. within the Wealden Clay Formation, and therefore there is no immediate risk of groundwater flooding for the area where the borehole was located.

4.5 Risk from Reservoirs and Other Artificial Sources

4.5.1 The EA Long Term Flood Risk map indicates that the Site is within an area with a potential flood risk associated with reservoir failure, as shown in Figure 4-12. The specific bodies of water that are of concern are Ifield Mill Pond (grid reference TQ2450036400), owned by Crawley Borough Council under the control of the West Sussex LLFA, and Douster Pond (grid reference TQ2444934329), owned by West Sussex County Council and also under the control of the West Sussex LLFA.

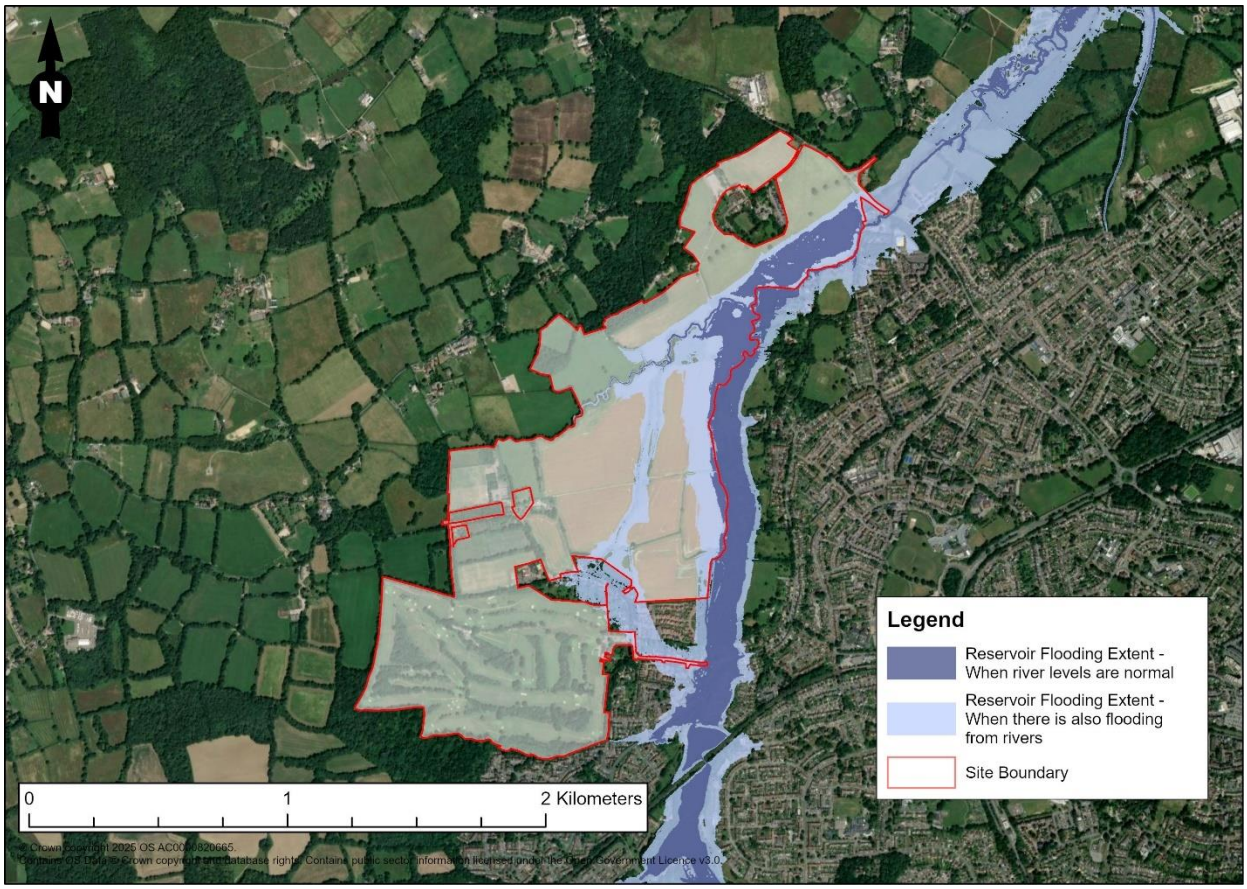
4.5.2 This mapping represents the potential consequence of a catastrophic failure of a reservoir and the resultant release of the water retained within the reservoir. The mapping does not indicate the likelihood of such an event.

[21] Crawley Borough Council. SEFRA: Appendix G Geosmart Groundwater Map. Available online at: https://crawley.gov.uk/sites/default/files/2021-03/Appendix_G_groundwater.pdf

4.5.3 All large reservoirs must be inspected and supervised by reservoir panel engineers. As the enforcement authority for the Reservoirs Act 1975 in England, the EA ensures that reservoirs are inspected regularly, and essential safety work is carried out. As a result, the government states that *"Flooding from reservoirs is extremely unlikely"*[22].

4.5.4 Risk is determined on the basis of likelihood multiplied by consequence. In view of the extremely low likelihood of reservoir failure and extremely low incidence of catastrophic consequences associated with such events due to the maintenance regime in the UK, the overall risk of reservoir failure is considered to be low.

Figure 4-12: Reservoir Flood Risk of the Site



4.6 Historic Flooding

4.6.1 The EA publishes geo-spatial data[23] to indicate where historical flooding has occurred. This data (presented in Figure 4-13) shows the only area of the Site to have previously experienced flooding is in the north-east of the Site. The area is approximately 210 m north-east of the confluence of the River Mole and Ifield Brook. Three separate fluvial flooding events are shown to have occurred historically, dated 1947, 1968 and most recently in 2014. In all instances, the channel capacity of the river was exceeded, and fluvial flooding occurred.

[22] https://www.gov.uk/flood-and-coastal-erosion-risk-management-research-reports/lessons-learnt-from-historical-dam-incidents#:~:text=Few%20catastrophic%20dam%20failures%20have,misses%20and%20other%20serious%20incidents.
[23] Environment Agency Geo-Spatial Data Records, available at: https://environment.data.gov.uk/

4.6.2 It is important to note that the absence of coverage by recorded flood outlines by the EA for a specific area does not mean that the area has never flooded, only that there are currently no records of flooding in that area. It is also possible that the pattern of flooding in a specified area has changed, and the area would now flood or not flood under different circumstances. It is understood that land owners have reports that fields north of Rusper Road have previously experienced flooding when waters have backed up the Rusper Road Drain. This has occurred downstream of the culvert beneath Rusper Road and it has been suggested that such flooding has not affected property or Rusper Road itself, suggesting that the culvert was not surcharged to the extent that the road was overtopped.

4.6.3 It has also been reported by the public (through public exhibition feedback) that areas within the golf course in the south of the Site also experience periods of saturation or standing water following heavy rain, due to the clay nature of soils in these areas. Whilst this suggests that some of the existing drains may not have capacity to accommodate extreme rainfall events, there was observed to be flow into the downstream Rusper Road Drain such that there is active functioning drainage connectivity. It is noted that surface water ponding within the golf course does not necessarily present a flood risk to the Proposed Development as these drains are to be replaced by new surface water drainage infrastructure; the design of which offers an opportunity to reduce such flood risks.

Figure 4-13: Historical Flood Risk

5. FLOOD RISK MITIGATION AND ASSESSMENT OF FLOOD RISKS

5.1 Proposed Development

5.1.1 Homes England intends to submit a hybrid planning application (part outline and part full planning application) for a phased, mixed use development at Land West of Ifield (See Figure 5-1 and Figure 5-2). The Proposed Development involves a change of use from predominantly agricultural and a golf course to a mixed use as described below:

5.1.2 The full (Phase 1) element will include:

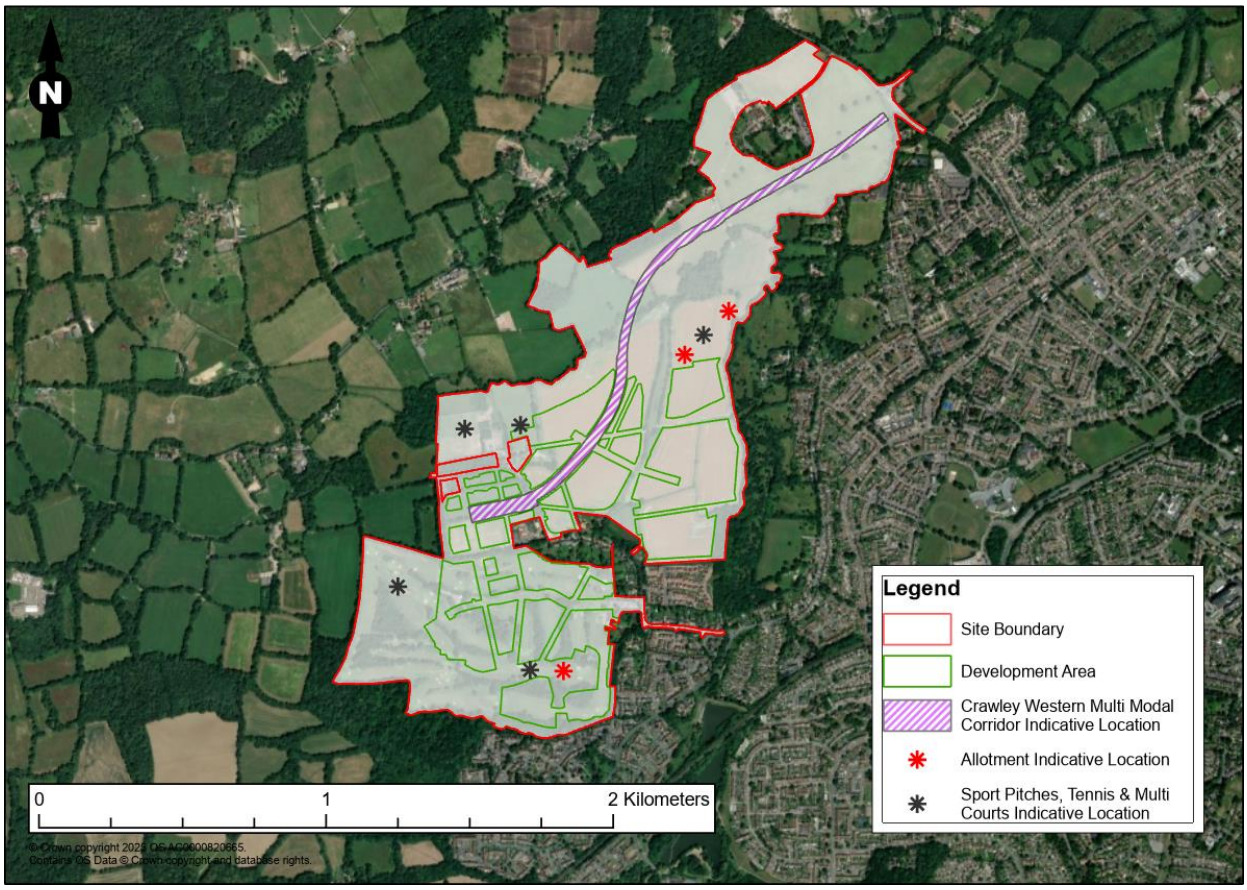
- Delivery of the first phase of the Crawley Western Multi-Modal Corridor, a new road with a dedicated bus lane and regular traffic lane in each direction, to form a connection from Charlwood Road to the east and the primary access route to the development.
- A primary street forming a spine road incorporating primary and secondary street connections, together with parking and loading bays, street lighting and fixtures.
- Active travel provision with dedicated cycle ways and footways within the primary street.
- Mobility Hubs and provision for bus transport with bus stops, car club bays, and bus priority through a bus-only connection to Rusper Road in the east.
- Bridge crossing of the River Mole.
- Site clearance and enabling works, including utilities diversions.
- Utilities, surface and foul drainage infrastructure to service the planned development plots.
- Landscape works incorporating sustainable urban drainage system (SuDS) corridors, flood mitigation features, ecological mitigation and enhancement, noise mitigation (including noise bund) and soft landscaping.
- Local amendments to existing public rights of way.

5.1.3 The outline element will include:

- Phased mixed use development of up to 3,000 homes, including a range of flats and houses, of which 35% will be affordable.
- Neighbourhood centre and associated community facilities, including a primary and secondary school, and minimum commitments to health centre, community centre, early ear nursery and Local Leisure facility, alongside small scale centre uses including retail and potential hotel.
- Employment uses including flexible office and innovation space, alongside general industrial and logistics space across the neighbourhood centre and in the River Valley character area.
- Allowances for the potential delivery of specialist accommodation to suit older persons, as well as up to 15 gypsy and traveller pitches and commitments to Custom and Self build housing.
- Public open space and multifunctional green space with allotments, sports pitches, including a new sports hub, recreation, amenity green space play and ancillary facilities, retained landscape features, a minimum of 10% net gain in biodiversity, and strategic green space commitments.
- Allowances for key infrastructure and utilities, notably to achieve water neutrality including water treatment works and abstraction boreholes.
- The prioritisation of more sustainable travel modes and facilitated active mode connections, including an off-site pedestrian and cycle link across Ifield Meadows, off-site improvements to connect to Ifield station via public transport and cycle links, and through safeguarded expansion to multi-modal corridor provided under the detailed element.

5.1.4 Subject to the approval and any conditions placed on the grant of permission for the Hybrid Planning Application (HPA), construction is estimated to commence in 2027, with initial occupation of the secondary school anticipated in 2028, and the homes in 2029 and continuing until 2041. An outline of indicative phasing across the Site is set out the Design and Access Statement (DAS) (WOI-HPA-DOC-DAS-01). The PPG guidance Flood Risk and Coastal Change (paragraph 6) advises that residential developments can be assumed to have a lifetime of at least 100 years, whilst non-residential development suggests at least 75 years is likely to form a starting point for assessment, depending on the characteristics of the development.

Figure 5-1: Hybrid Planning Application Context



5.2 Proposed Flood Risk Mitigation

5.2.1 A range of mitigation measures are proposed to both manage the flood risk to the Proposed Development, and also to ensure no increase in flood risk off-site as a result of the Proposed Development. This has included application of the sequential approach to site layout, designation of an appropriate ground level strategy, design of Flood Compensation Areas (FCAs) and a surface water management strategy. Further site specific fluvial modelling has been carried by Arcadis to understand the impact on flood risk of the Proposed Development to both the development itself and to third parties.

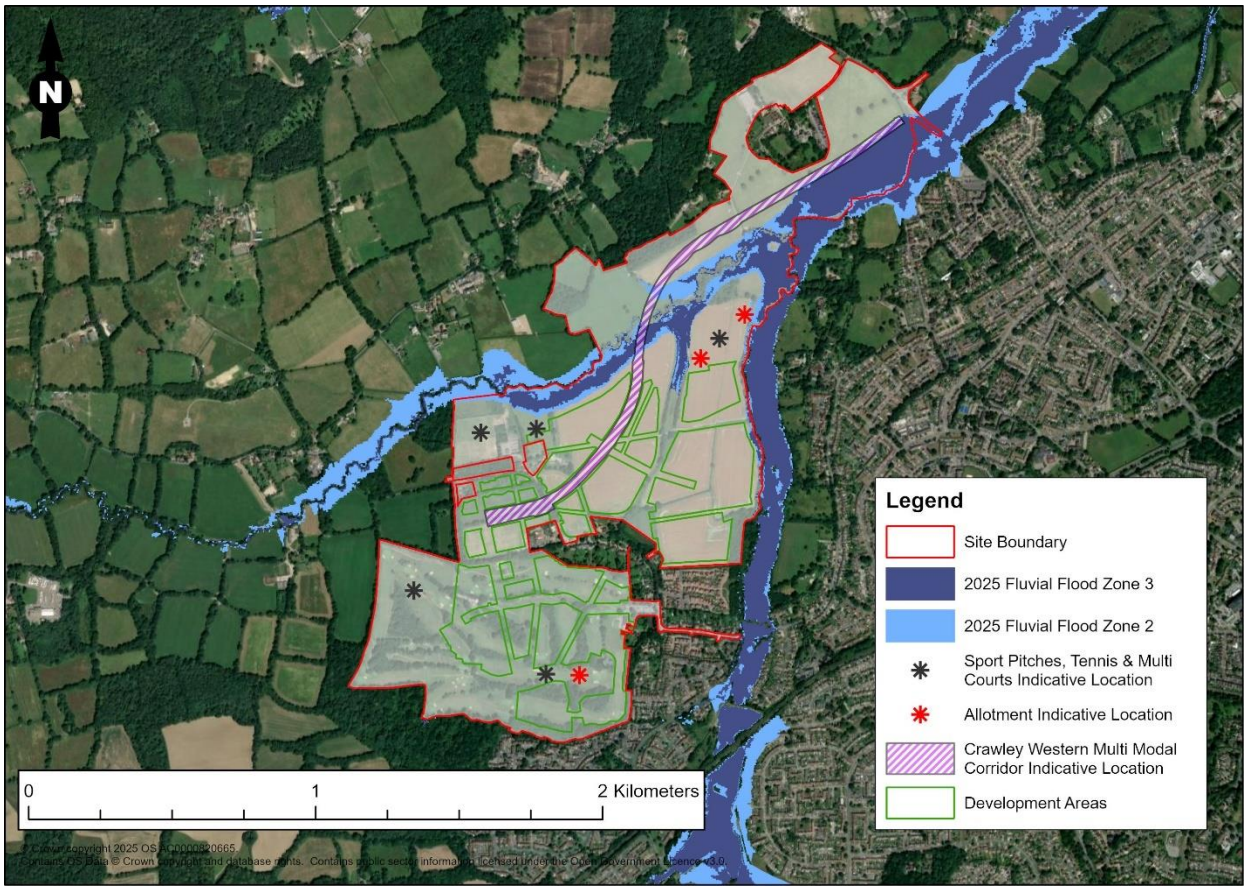
Sequential Site Layout

5.2.2 The residential, employment and school elements of the Proposed Development, as well as the locations of allotments and sports pitches, are proposed to be located on land, shown in the 2025 updated EA Flood Map for Planning, to be outside of the extent of fluvial (river) flooding during a future climate change adjusted 1 in 1,000 annual probability event, even in the absence of any catchment scale flood defence; i.e. within a fluvial Flood Zone 1. This means that the probability of fluvial (river) flooding to these parts of the Site should be considered to be low.

5.2.3 Whilst it is acknowledged that there are some of these aspects of the Proposed Development which overlap with the direct rainfall- surface water component of the new (March 2025) Flood Zones 2 and 3 areas, it has previously been demonstrated (Section 4.1) that these areas have erroneously been defined as a flood zone and that they should be considered as land with a potential for surface water (pluvial) flooding and not fluvial flood risk. It has also been demonstrated that the extent of such surface water risks has been overestimated due to simplifications made in the mapping approach which are described in Section 4.2.

5.2.4 Figure 5-2 presents the hybrid planning application context plan with fluvial flood zones overlaid. The CWMMC crosses over fluvial Flood Zones 2 and 3 via a bridge. Embankments would be built that are located within Flood Zones 2 and 3 to raise the road out of the floodplain. Works within the floodplain, whilst these would be designed to ensure that during times of flood the road and embankments remain safe and operational, could lead to a reduction in floodplain storage if not mitigated. However, this has been considered further through the design of flood compensation as described below.

Figure 5-2: Hybrid Planning Application Context and Fluvial Flood Zones



<u>Impact of the Proposed CWMMC on Fluvial Flood Risks</u>

5.2.5 The proposed CWMMC development impact on flood risk and flood alleviation measures are described in the Arcadis Flood Risk Assessment Addendum and associated Arcadis Hydraulic Modelling Report.

5.2.6 Hydraulic Modelling of the Upper Mole, which includes both the River Mole and Ifield Brook, was completed by Arcadis to understand the impact on flood risk of the Proposed Development to both the development itself and to third parties. A summary of this work is provided in the FRA Addendum completed by Arcadis (10051123-ARC-260-ZZ-TR-ZZ-002-P02, December 2024). Appendix B of the Arcadis FRA Addendum includes the detailed Hydraulic Modelling report (P03, December 2024).

5.2.7 The Arcadis Phase 1B Highways General Arrangement drawing sheet 5 (10051123-ARC-010-1B-DR-HE-00005), indicates the provision of culverts under the proposed CWMMC. Based on the provision of suitably sized culverts specified by Arcadis, the overland flow routes along surface water flow pathways originating off-Site may be maintained in their natural flow paths without impeding flow and exacerbating flood risk elsewhere.

5.2.8 The CWMMC is considered to be 'Essential Infrastructure' but this would only cross the river and the road itself would not be impacted by flooding despite bridge supports potentially being located within Flood Zone 3. The bridge supports would be designed and constructed to remain operational and safe in times of flood.

5.2.9 The vertical alignment of the CWMMC was designed using data from the flood modelling with the road surface level defined by the highest modelled flood level. The soffit of the structure crossing the River Mole has been set at 66.48mAOD which is 2.3m above the 1 in 100 annual chance plus 40% allowance for climate change event.

5.2.10 As a result of the construction of the CWMMC above peak modelled flood levels it is considered that the road would remain safe of its lifespan. However, it is acknowledged that flood compensation would be needed to manage risk to other land; the CWMMC embankments would be within a fluvial flood zone and would act to displace floodwater.

5.2.11 A series of Flood Compensation Areas (FCAs) have been proposed to act to compensate for these impacts. The proposed FCAs are located either side of the proposed CWMMC alignment and detailed in the Arcadis FRA Addendum and Hydraulic Modelling report referenced above. The FCAs provide a combined volume of 4,568m^3 of additional (new) flood storage within the floodplain, and this compensates for the volume lost due to the CWMMC earthworks.

5.2.12 Arcadis have assessed the post development scenario to demonstrate the effectiveness of the proposed Flood Compensations Areas (FCAs). The post-development scenarios modelled included the 1 in 30, 1 in 100 (with and without climate change) and 1 in 1,000 annual probability events. The Arcadis modelling demonstrates that the enabling infrastructure (Phase 1 element) is not predicted to flood in all events up to and including the 1 in 1,000 annual probability events.

5.2.13 Whilst the modelled peak depths are predicted to increase as a result of the proposed enabling infrastructure, the FCAs provide a benefit in reducing the volume of flow which passes downstream of Ifield Avenue. The Arcadis Flood Risk Assessment Addendum (P02, December 2024) and associated Hydraulic Modelling Report (P03, December 2024) provide more detail about the proposed FCAs and are included as part of the hybrid planning application evidence base.

5.2.14 Although the extent of downstream flooding is not predicted to increase, the development of the CWMMC could lead to increased flood depths in areas already predicted to flood. The increased flood depths of up to 10cm difference would cover a small area within the Site boundary downstream of the confluence of the River Mole and Ifield Brook in the north of the Site. The total area where flood depths are increased, compared to the baseline, represents a small percentage of the area that already floods during the baseline situation.

5.2.15 The hydraulic model results show that the FCAs provide an effective flood alleviation method for the CWMCC embankment, with the 1 in 30-year, 1 in 100-year, 1 in 1,000-year and 1 in 100-year with Climate Change (Upper 2080). The changes reported in peak flows and volumes passing downstream of Ifield Avenue are negligible with no change in peak flow predicted and the total volume to reduce by 0.03%.

5.2.16 The CWMMC embankment crossing acts to significantly reduce the flood risk simulated east of the River Mole crossing during the 1 in 100-year with Climate Change (Upper 2080) event but increases flood levels to the west. The flood risk increases by up to 0.10 m however, this increase is limited to the floodplain immediately west of the CWMMC embankment crossing and is well within the Site boundary. The design of the CWMMC embankment, at the River Mole crossing location, factors in the 0.10 m increase in flood risk at the floodplain to the west. It should also be noted that those areas potentially affected would be used as recreational space (in excess of the minimum policy requirements). If affected by infrequent flooding, this would not be detrimental to the Proposed Development overall.

5.2.17 It is also noted that Gatwick Airport requires specific mitigation for mitigation against the risk of bird strikes. Permanent water bodies represent a potential habitat which could attract avian and therefore, introduce an increased risk of bird strikes for aircraft. the Arcadis FRA Addendum reports that '*the proposed floodplain compensation areas are hydraulically connected to the River Mole and are designed to fill and empty passively. They are operational in the smallest design flood event modelled, the 1 in 5 annual chance; inundation is predicted to last for up to four hours in FCA A and three hours in FCA B'*. Therefore, the FCAs are not designed to retain water and will have a three to four hour drain down time in the typical 1 in 5 year scenarios.

Overland (Pluvial) Flow Pathways

5.2.18 The Arcadis Phase 1B Highways General Arrangement drawing set, indicates the provision of culverts to maintain the flow route and connectivity of existing watercourses and drains. The Arcadis Drainage Strategy Report (Ref: 10051123-ARC-050-ZZ-TR-CE-00002) states that culverts have been sized *'based on the size properties and design flows of the existing ditches, the proposed culverts have been sized to ensure adequate flow capacity'.* The natural flow path of existing watercourses will be maintained, with the provision of culverts where necessary under proposed new highways. Suitable green corridors have been allocated in the masterplan with consideration of existing topography and natural flow paths, this enables flow routing of small watercourses as well as providing space for sustainable drainage systems (SuDS).

5.2.19 With regard to the potential surface water flood risks through the centre and south of the Site (along the Rusper Road Drain), the majority of the catchment contributing to this area falls within the Site boundary. Therefore, flows to this area would be managed by the proposed surface water management strategy to a greenfield rate as described below. This would be expected to greatly reduce the potential flood risks associated with this catchment.

Surface Water Runoff Management

5.2.20 The planning application is accompanied by surface water drainage strategies which address potential issues associated with Site-derived rainfall runoff and run-on from outside the Site, unrelated to rivers and streams. The '*West of Ifield Drainage Strategy'* (1620007949-RAM-ZZ-XX-RP-D-0001) accompanies the hybrid planning application. The drainage strategy for the Phase 1 design (full application element) including the CWMMC is included within the Arcadis report: *'Surface Water SuDS and Foul Drainage Design Report'* (10051123-ARC-050-ZZ-TR-CE-00002) which accompanies the full planning application.

5.2.21 In combination, the drainage strategies for the detailed element of the hybrid planning application (the CWMMC/ full -Phase 1 element) and the elements of the Proposed Development, for which reserved matters approvals will be submitted in due course (outline element), will seek to discharge at equivalent greenfield rates into existing surface water features, with allowances made for future increases in rainfall due to climate change. This would ensure the watercourses (the River Mole, Ifield Brook and Hyde Hill Brook) would receive water from the Proposed Development areas at a restricted Qbar rate. The rates of discharge would be limited to existing greenfield rates for all rainfall events up to and including the climate change-corrected 100 year storm. Therefore, the Proposed Development would ensure that there is no increase in downstream flood risks and would, in fact, greatly reduce the rate of discharge during extreme rainfall events such that there would be reduction in downstream flood risk.

5.2.22 The reduced discharge rates, and therefore, reduced downstream flood risks, would be managed through the inclusion of SuDS features within the proposed network, predominantly comprising swales and detention basins with a drain down time less than 24 hours to comply with Gatwick Airport's requirements to mitigate the risk of bird strike as described previously. The Surface Water strategy for the hybrid planning application (the CWMCC) and for both the outline element and full element of the Hybrid Application are summarised below:

Outline element of Hybrid Application

5.2.23 As the Proposed Development would result in a significant quantum of impermeable area being installed in place of the predominantly greenfield setting, this will see an increase in the runoff from Site as 100% of the surface water will need to be suitably captured from these areas. The means of discharging the drainage through infiltration has been determined, from Ground Investigations, to be unsuitable for the use of soakaways on-site. The proposed drainage for the Site will utilise as close as possible the existing drainage regime where the overland flow conveys towards the watercourses that bound the Site. The Site would achieve a proposed drainage arrangement on a like-for-like basis with a consideration of 40% climate change factor for all storm events up to and including the 1 in 100-year storm event.

5.2.24 A series of swales, detention basins, manholes and pipes will direct surface water to a discharge location for the catchment areas to the north and south of the Site. Flow control devices will be used to manage surface water flow across the Site ensuring that the attenuation tanks/ basins are fully utilised.

5.2.25 The main on plot drainage will utilise a drainage system which will capture roof drainage from all buildings and may choose traditional gutter systems to achieve this, whilst the majority of external hardstanding drainage will be collected via gullies and drainage channels. However, individual plots within the masterplan (residential, commercial and schools) are allocated a specific role in managing their catchment attenuation.

Full element of Hybrid Application

5.2.26 The Arcadis Report describes the surface water drainage strategy for the full application area and is paraphrased below:

"The surface water drainage design for the full application area includes four networks, created considering the vertical profile of the highway corridor along with the existing surface water drainage channels which cross the route. To the eastern end of the Crawley Western Multi-modal Corridor, the Surface water falling on the carriageway will drain directly to the adjacent SuDS strips which are prepared in the form of a bioretention system. Within these Bioretention systems, water will percolate through the plant and filter material at the surface, to an open graded granular material and eventually to a perforated pipe which will convey flows downstream. A number of check dams with drain down holes will store water during flood events to contain flood waters from the more typical storm events.
During larger storm events up to and including the 100-year event with an allowance of 40% of additional flows for climate change, there is insufficient capacity within the road network SuDS system alone and the water will be stored within regional detention basins adjacent to the eventual outfalls to the existing land drainage network in the area. The peak discharge into the land drainage network is restricted to the Qbar greenfield rate for all scenarios up to and including the 100-year event with an allowance of 40% of additional flows for climate change.
The proposed highway crosses over existing ditches in a number of locations. Culverts and concrete pipes have been proposed under the highway to convey the water within the existing ditches. Based on the size properties and design flows of the existing ditches, the proposed culverts have been sized to ensure adequate flow capacity."

5.3 Flood Risk Vulnerability

5.3.1 According to Table 2 (Flood Risk Vulnerability Classification) in the National Planning Practice Guidance and Annex 3 of the NPPF[24], a range of land use classifications would apply to the proposed Development. Table 3 (Flood Risk Vulnerability and Flood Zone Compatibility) in the Planning Practice Guidance to the NPPF, states the flood risk policy implications in terms of the appropriateness of specific land uses within fluvial flood zone and where an Exception Test would be required to be passed.

Element of the Proposed Development	**Land Use Vulnerability**	**Flood Risk Policy Implications**
CWMMC and associated utilities connections	Essential Infrastructure	Appropriate to locate in Flood Zone 1 but requires an Exception Test for Flood Zone 2 or 3
Residential Land Uses	More Vulnerable	Appropriate to locate in Flood Zone 1 or 2 but requires an Exception Test for Flood Zone 3
Commercial	Less Vulnerable	Appropriate to locate in Flood Zones 1, 2 or 3
School	More Vulnerable	Appropriate to locate in Flood Zone 1 or 2 but requires an Exception Test for Flood Zone 3
Neighbourhood Centre and Leisure Centre	Less Vulnerable	Appropriate to locate in Flood Zones 1, 2 or 3
Sports and Recreation, Neighbourhood Parks and Allotments	Water-compatible development	Appropriate to locate in Flood Zones 1, 2 or 3
Pedestrian + Cycleway	Water-compatible development	Appropriate to locate in Flood Zones 1, 2 or 3

[24] GOV.uk (2014) Planning Practice guidance: Flood Risk and Coastal Change https://www.gov.uk/guidance/flood-risk-and-coastal-change

5.4 Sequential Test

5.4.1 The sequential test steers development to areas with the lowest flood risk. The NPPF states that a sequential test is required '*for major and non-major development if any proposed building, access and escape route, land-raising or other vulnerable element'* in area at risk of flooding from any source, now and in the future.

5.4.2 Whilst the vast majority of the Site is within category of Flood Zone 1 (82.3%), there are areas located in Flood Zone 2 (5.7%) and Flood Zone 3 (12.0%) as well as some areas with a surface water flood risk. The surface water flood risks have been demonstrated to be overly conservative and present an overestimation of the likely risk (which would also be reduced through proposed drainage infrastructure). There are elements of the proposed development including the CWMCC that are located in areas of flood risk and it is acknowledged that the Sequential Test needs to be passed.

5.4.3 Where it is not possible to locate development in low risk areas, the Sequential Test compares reasonably available sites within the study area. This ensures compliance with NPPF Section 14, paragraph 174 that states: *'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'*. Paragraph 028 (Reference ID: 7-028-20220825) of the Government's Flood risk and coastal change guidance[25] states that "*Reasonably Available Sites are those in a suitable location for the type of development with a reasonable prospect that the site is available to be developed at the point in time envisaged for the development*". No further definition of reasonably available sites is made within the Crawley Borough and Upper Mole Catchment Level 1 SFRA.

5.4.4 Where the Sequential Test has been applied in a development plan, and a site is allocated for development, the Sequential Test does not need to be applied again on an individual planning application. Although the Site was proposed as a draft allocation in the emerging Horsham District Local Plan 2023 – 2040, this has now been recommended for withdrawal by the Inspector. At the point of submission, it is anticipated that the Horsham District Local Plan 2023 – 2040 will be withdrawn before the determination of this HPA. Whilst HDC has stated (see HDC's Inspector's Letter: Frequently Asked Questions (April 2025)) that their view is that the evidence base remains valid, the Strategic Flood Risk Assessment (2020, updated 2024), which was prepared to support the emerging Local Plan, is considered to no longer outweigh the need for a site-specific Sequential Test assessment, as well as demonstrating that the Exception Test is passed, at West of Ifield.

5.4.5 On this basis, in line with paragraphs 173 to 179 of the NPPF (2024) and the PPG 'Flood Risk and Coastal Change', the Applicant considers a robust approach is to prepare a site-specific sequential test / exception test. The scope has been agreed with HDC.

5.5 Exception Test

5.5.1 The Exception Test takes into account the vulnerability of proposed land uses as described in Table 5-1. The Proposed Development includes land uses with vulnerability classifications ranging from Water Compatible to More Vulnerable, with the proposed CWMCC considered Essential Infrastructure as it is required to cross the flood zone areas associated with the River Mole. The Exception Test has been carried out by assessing the Proposed Development against the Part 1 and Part 2 criteria as required by the NPPF guidance.

5.5.2 For the Exception Test to be passed, it should be demonstrated that:

- Part 1: The Proposed Development would provide wider sustainability benefits to the community that outweigh the flood risk; and

[25] Ministry of Housing, Communities and Local Government, Ministry of Housing, Communities & Local Government (2018 to 2021) and Department for Levelling Up, Housing and Communities, Flood risk and coastal change Guidance (Paragraph 28). Available at: https://www.gov.uk/guidance/flood-risk-and-coastal-change#para28 (accessed July 2025)

- Part 2: The Proposed Development would be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, would reduce flood risk overall.

Part 1 – Wider Sustainability Benefit

5.5.3 To pass Part 1 of the Exception Test it must be demonstrated that the Proposed Development provides wider sustainability benefits to the community that outweigh flood risk.

5.5.4 The scale, function and land uses of the Proposed Development has been discussed extensively with HDC, CBC and West Sussex County Council officers and has been subject to extensive public consultation. The Site will provide strategic-scale development in a sustainable location that is appropriate for the settlement type and purpose. Further details of the wider sustainability benefits to the community are provided in the Planning Statement (WOI-HPA-DOC-PS-01) and are summarised below.

5.5.5 The NPPF (2024) sets out the Government's objective of significantly boosting the supply of homes, stating that it is important that a sufficient amount and variety of land can come forward where it is needed, and that the needs of groups with specific housing requirements are addressed. Increasing the District's housing stock is, therefore, a key strategic objective of HDC and Adopted Policy 15 'Housing Provision' of the Horsham District Planning Framework (HDPF, 2015) seeks to deliver at least 16,000 homes and associated infrastructure within the period 2011 to 2031, at an average of 800 homes per annum. However, it is noted that the District has a poor rate of housing delivery and the Council's latest Authority Monitoring Report (April 2025) states that the Council can only demonstrate a 1-year housing supply (this does not take into account the emerging site allocations in the draft Local Plan). In addition, Horsham scored 62% in the latest Housing Delivery Test (December 2024). As such, it is considered that HDC is unable to demonstrate a 5-year housing supply and there is a presumption in favour of sustainable residential development.

5.5.6 The Proposed Development seeks to deliver 3,000 new homes across the Site, which will be a significant contribution to HDC’s housing supply, which there is significant need. On this basis, the Proposed Development will make a valuable contribution to the housing target.

5.5.7 There is a strong regional, sub-regional and local-level aspiration for delivering a new strategic transport corridor to the west of Crawley, comprising an integrated, multi-modal corridor between the A2643 and the A23. This is captured in the Crawley Borough local Plan (2024) which considers it appropriate to identify an area of search within Crawley for a potential full Western Multi-Modal Transport Link, in partnership with WSCC, as a result of the potential levels of development, which will need to connect to a route corridor in HDC.

5.5.8 The proposed CWMMC focuses on an integrated transport provision offer which supports a shift towards active and sustainable travel, in line with Policy 40 of the HDPF (2015), as well as better placemaking. The CWMMC accounts for bus priority, future proofing for traffic growth and provides connectivity for non-vehicular modes of transport.

5.5.9 The CWMMC has been designed as a multi-modal route with the following principles:

- Single carriageway with a continuous bus lane in each direction
- Segregated cycleways separate from footways with priority at junctions.
- Segregated footways, with widened area in the neighbourhood centre.
- Varying speeds, including 20mph through the neighbourhood centre and 30mph elsewhere were appropriate.
- Bus priority measures at junctions, to be explored further alongside highway modelling.

5.5.10 The delivery of the first phase of the CWMMC is also considered necessary to form part of Phase 1 of the Proposed Development to facilitate the construction of a new secondary school, for which there is also an immediate need for, according to WSCC. Therefore, this hybrid planning application seeks detailed planning permission for the necessary infrastructure required to facilitate the prompt delivery of the secondary school, ahead of the wider scheme.

5.5.11 The new community will be supported by a new Neighbourhood Centre and an employment area, along with public open space and multi-functional green space, with sports and recreation provision. The Neighbourhood Centre is proposed centrally within the built development and includes minimum commitments to a health centre, community centre, early year nursery and a local leisure facility, alongside smaller scale centre uses such as retail, and potentially a hotel. Community facilities are also proposed, including a Primary School and Secondary School (including Sixth Form). In addition, employment uses are proposed, including flexible office and innovation space, across the Neighbourhood Centre and the River Valley character areas alongside general industrial and logistics space in the latter.

5.5.12 Homes England supports the development of local services and community facilities to meet local needs and to promote social wellbeing, interests, interaction and healthy inclusive communities. As a result, the HPA has sufficient flexibility to meet these aspirations and beyond, and the applied for floor space could be split into a number of community facilities, depending on their final proposed use and the management arrangement associated with them is appropriate. The intention is that any form of provision should focus on being multi-functional community facilities which serve a variety of community members and uses.

5.5.13 Throughout the discussions with the NHS Integrated Care Board (ICB), a series of options were formulated to provide adequate mitigation for the size of the Proposed Development. This included the opening of a new facility to meet the needs of the Proposed Development; a much larger facility to meet more strategic needs; or a payment to reinforce existing provision off-site to improve services provided such that they could cater for the increased need as a result of the Proposed Development.

5.5.14 The Proposed Development has been designed with sufficient flexibility to provide a facility on-site by allowing for a health facility and committing to a minimum on-site size. The floorspace, in excess of identified demand, is intended to allow the ICB to have the option to commission a bigger facility than is required simply to meet the healthcare requirements arising from the Development. The nature of this health facility, should it be pursued, is expected to be outlined and delivered in the Neighbourhood Centre or River Valley Character area, as illustrated in the Land Use Parameter Plan with the location, size and form of provision to be determined at Reserved Matters Application stage

5.5.15 Given the above, it is considered that the Proposed Development will result in significant community benefits, and responds to the NPPF's guidance to create integrated, healthy and sustainable communities.

5.5.16 It is considered that there is sufficient evidence provided to demonstrate that the benefits identified outweigh the flood risk to and from the proposed development and. that Part 1 of the Exception Test is passed.

Part 2 – Site Safety and Off-Site Flood Risks

5.5.17 To satisfy Part 2 of the Exception Test, an FRA is required to demonstrate the Proposed Development remains operational and safe for users in times of flood, results in no net loss of floodplain storage and does not impede water flows or increase flood risk elsewhere. This is considered to be achieved through the mitigation described previously and summarised below, which it is considered will ensure that the Proposed Development will remain safe over its lifetime, taking account of the vulnerability of its users, without increasing flood risk elsewhere.

Table 5-1: Summary of Assessment of Flood Risks

Source of Flood Risk	Summary of Mitigation and Assessment of Residual Flood Risk
Fluvial	Areas of Flood Zone 2 and Flood Zone 3 are also present in the northern, eastern and southern boundaries of the Site, associated with the River Mole, Ifield Brook and the Hyde Hill Brook. Only a limited area

	at the downstream (northern) limit of the Rusper Road Drain was shown to have a fluvial flood risk. Whilst three separate historical fluvial flooding events are shown to have affected land in the northeast of the Site, none of the proposed residential, employment, school areas nor the CWMMC nor the playing pitches and allotments are shown to have been affected during these events. With the exception of the CWMMC, the Proposed Development layout seeks to ensure that no built infrastructure (buildings, roads, sub-stations etc.) nor allotments or playing fields would overlap with areas of fluvial Flood Zone 2 or 3 (including an allowance for future climate change). This would ensure that built development would not need to be constructed using raised finished floor levels (FFLs) nor flood resilience measures beyond building regulations. Within the Site boundary, the development of the CWMMC crosses within areas of fluvial Flood Zones 2 and 3. It is acknowledged that, in the absence of mitigation, this could lead to an impact on flood depths and extents. A series of Flood Compensation Areas (FCAs) are to be provided to compensate for the volume lost due to the CWMMC earthworks. The Arcadis hydraulic modelling suggests that the impacts on flood depths would be limited to land within the Site boundary (within the ownership of Homes England) such that there would be no increase in off-site flood risks. The hydraulic modelling has predicted that, although the extent of flooding would not increase, the development of the CWMMC would lead to a shallow increase in flood depths across areas already predicted to flood. The increased flood depths (of up to 10cm difference) are predicted to cover a small area entirely within the Site boundary downstream. The total area where flood depths are increased compared to the baseline represents a small percentage of the area that already floods during the baseline situation. Therefore, the Proposed Development would be safe from fluvial flood risk for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere and would reduce fluvial flood risk.
Overland (Pluvial) Flow Pathways	Overland pluvial flows originating from off-Site in the north of the Site would not impact on the Proposed Development with the exception of the CWMMC. There is no other development proposed in the north of the Site except for the CWMMC. Based on the provision of suitably sized culverts specified by Arcadis, the overland flow routes originating off-Site would be maintained in their natural flow paths without impeding flow and exacerbating flood risk elsewhere. In the south of the Site overland surface water flows are predominantly originated from catchments within the Site. The natural flow path of existing watercourses will be maintained, with the provision of culverts where necessary under proposed new highways. Suitable green corridors have been allocated in the masterplan with consideration of existing topography and natural flow paths. This enables flow routing of small watercourses as well as providing space for sustainable drainage systems (SuDS). However, as the Proposed Development would include new surface water drainage management (designed to accommodate a climate change adjusted 1 in 100 annual probability event) which would discharge at a greenfield rate, much of the overland flow potential in the south of the Site would be mitigated and avoided post-development. Therefore, the Proposed Development would be safe from flood risk resulting from overland flow for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere.

Surface Water Drainage	As a result of the proposed drainage infrastructure which would form part of the Proposed Development, surface water would discharge at equivalent greenfield rates into existing surface water features (the River Mole, Ifield Brook, Rusper Road Drain and Hyde Hill Brook), with allowances made for future increases in rainfall due to climate change. This would ensure the watercourses would receive water at the restricted Qbar rate for all rainfall events up to and including the climate change-corrected 1 in 100 (1%) annual probability storm. This would provide significant betterment on the existing situation as the extreme 1% annual probability event would currently be expected to discharge from the pre-development Site at rates which greater exceed the greenfield QBar event. In addition, the pre-development Site does not offer any potential for future increases in rainfall depths due to climate change to be mitigated; i.e. in the absence of development the Site would be expected to exceed the proposed discharge rates from the Proposed Development during extreme events and, if unmitigated (i.e. in the absence of the proposed surface water drainage network) the rates of discharge would be expected to increase further due to climate change in the future, leading to increased flood risk from surface water. Therefore, the Proposed Development would be safe from surface water flood risk for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere and would reduce surface water flood risk.
Tidal	No tidal flood risk is present
Groundwater	The Crawley Borough and Upper Mole Catchment SFRA shows the groundwater flood risk of the local area. The Site is indicated to be within an area shown to be at low risk of experiencing any groundwater emergence events. Whilst the clay geology may be such that shallow sub-surface strata can become saturated, this is considered representative of surface water or pluvial sources of potential flood risk and not groundwater emergence. Therefore, the Proposed Development would be safe from groundwater flood risk for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere.
Artificial Sources	Whilst The EA Long Term Flood Risk map indicates that the Site is within an area with a potential flood risk associated with reservoir failure, this mapping represents only the potential consequence of a catastrophic failure of a reservoir and does not indicate the likelihood of such an event. All large reservoirs must be inspected and supervised by reservoir panel engineers. As the enforcement authority for the Reservoirs Act 1975 in England, the EA ensures that reservoirs are inspected regularly, and essential safety work is carried out. As a result, the government states that "Flooding from reservoirs is extremely unlikely'. Risk is determined on the basis of likelihood multiplied by consequence. In view of the extremely low likelihood of reservoir failure and extremely low incidence of catastrophic consequences associated with such events due to the maintenance regime in the UK, the overall risk of reservoir failure is considered to be low. Therefore, the Proposed Development would be safe from artificial sources of flood risk for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere.

5.5.18 The summary above sets out that the Proposed Development would remain operational in times of fluvial flood during the 1 in 100-year, 1 in 100-year plus climate change and 1 in 1,000-year annual probability events. Flood risks from reservoirs and groundwater have been assessed to be Low.

5.5.19 The NPPF defines flood risk as the product of the likelihood or chance of a flood occurring (flood frequency) and the consequence or impact of the flooding (flood consequence) such as potential damages, danger and disruption.

5.5.20 The hydraulic modelling assessment shows that:

- Within the Site, no built development including allotments and playing fields would be affected by river flooding. This includes the CWMMC, which would be raised above the floodplain on embankments and via a bridge crossing of the River Mole;
- Also, within the Site boundary, although changes to flood depths may occur over a small portion of the existing floodplain (compared to the baseline situation), the maximum increased depth would be less than 10 cm (after consideration of proposed FCAs). There are no significant changes predicted to flood extents; i.e. depth changes are predicted only in greenfield areas adjacent to the River Mole already predicted to flood that would not be developed or would be developed only with the FCAs themselves;
- It should be noted that changes to flood risk within the Site boundary are within land owned by Homes England therefore no third parties would be impacted.

5.5.21 In addition, there would be a reduction in downstream flood risks in combination the drainage strategies for both the outline element and the full element of the hybrid application seek to discharge at equivalent greenfield rates into existing surface water features, with allowances made for future increases in rainfall due to climate change. This would ensure the watercourses (the River Mole, Ifield Brook and Hyde Hill Brook) would receive water from the Proposed Development areas at a restricted Qbar rate. The rates of discharge would be limited to existing greenfield rates for all rainfall events up to and including the climate change-corrected 100 year storm. Therefore, the Proposed Development would ensure that there is no increase in downstream flood risks and would, in fact, greatly reduce the rate of discharge during extreme rainfall events such that there would be reduction in downstream flood risk.

It is therefore considered that the Proposed Development would be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and reduces flood risk overall. On the basis of change to flood risk as defined in the NPPF, it is concluded that the Proposed Development satisfies the second half of Part 2 of the Exception Test.

5.5.22 Evidence has been provided previously that Part 1 of the Exception Test has been passed as the Proposed Development would provide a range of wider sustainability benefits to the community.

6. CONCLUSIONS

6.1.1 Homes England intends to redevelop the Site, which has an area of approximately 171.29 ha of land located west of Ifield, for a residential-led, phased mixed use development for which planning permission in full and outline (as appropriate for different components) is being sought through a hybrid planning application.

6.1.2 Both the Ifield Brook and River Mole are present within the Site in the north and east respectively. The Hyde Hill Brook is present along the southern boundary of the Site. In addition, there is a surface water drain along the northern edge of Rusper Road (referred to in this report as the 'Rusper Road Drain') through the centre of the Site and a network of surface water drains within the golf course in the south. The drains in the golf course are partially open channels and partially culverted. These appear to then be partially culverted beneath property towards the Rusper Road Drain

6.1.3 Areas of fluvial Flood Zone 2 and fluvial Flood Zone 3 are present in the northern and eastern boundaries and a limited section at the downstream (northern) limit of the Rusper Road Drain is shown to have a fluvial flood risk. Land on the southern boundary was formerly shown to have a fluvial flood risk, although this has been removed in the latest update to the EA's fluvial Flood Zone mapping. Whilst three separate historical fluvial flooding events are shown to have affected land in the northeast of the Site, none of the proposed residential, employment, school areas nor the CWMCC nor the playing pitches and allotments are shown to have been affected during these events. Therefore, fluvial flood risk is not considered to affect the majority of the development.

6.1.4 The CWMMC would cross the River Mole and an area of fluvial Flood Zone 2 and 3. This part of the Proposed Development has been subject to Site-specific flood modelling carried out by Arcadis. The CWMMC is to be raised sufficiently to be above predicted flood levels and FCAs are proposed in response to the construction in a fluvial flood zone.

6.1.5 The Arcadis hydraulic modelling assessment shows that, with the implementation of the FCAs:

- Within the Site, all built development plus allotments and playing fields would not be affected by river flooding;
- Changes to flood depths may occur over a small portion of the existing floodplain (compared to the baseline situation) also within the Site boundary, but the maximum increased depth would be less than 0.1 m and only in areas already predicted to flood that would not be developed or would be developed only with the construction of FCAs;
- It should be noted that changes to flood risk within the Site boundary are within land owned by Homes England therefore no third parties would be impacted; and
- There would be no impact on flood risk downstream of the Site.

6.1.6 Whilst the updated Flood Map for Planning shows that a potential area of flooding related to the Rusper Road Drain, crossing the Site from west to east and then to the north, is now defined as a Flood Zone, this is considered an erroneous designation and evidence has been provided that this potential flood risk is associated with overland pluvial (surface water) flows and not a fluvial risk.

6.1.7 When considered correctly as a pluvial flood risk, for much of the area in proximity to the Rusper Road Drain the EA present chance of such water reaching 300mm to be Very Low or Low. This is also considered to be conservative as connectivity between the drains in the golf course and the downstream Rusper Road Drain is not fully considered in the EA mapping, nor is the culvert beneath Rusper Road itself. This results in a potential over-estimation of potential surface water flood risks upstream (south) of Rusper Road.

6.1.8 It is understood that land owners have reports that fields north of Rusper Road have previously experienced flooding when waters have backed up the Rusper Road Drain. This has occurred downstream of the culvert beneath Rusper Road and it has been suggested that such flooding has not affected property or Rusper Road itself, suggesting that the culvert was not surcharged to the extent that the road was overtopped.

6.1.9 In addition, the majority of the contributing catchment to the Rusper Road Drain is formed of land within the Site boundary, such that the Proposed Development offers an opportunity to improve the management of surface water runoff and reduce pluvial flood risk associated with the Rusper Road Drain. Flows to this watercourse would be managed by the proposed surface water management strategy which aims to ensure post-development discharges would be limited to existing greenfield rates for all rainfall events up to and including the climate change-corrected 100-year storm through the use of Sustainable Drainage Systems including swales and detention basins.

6.1.10 Whilst the natural alignment of the Rusper Road Drain at this location would be maintained within the Proposed Development, the provision of culverts under the proposed new road network and reduction in contributing flows from the drainage network would reduce associated surface water flood risks to the Site and to downstream off-site receptors.

6.1.11 There is a low risk of groundwater flooding and, although the Site is within an area shown to have a potential flood risk associated with reservoir failure, the likelihood of such a flood is considered to be low.

6.1.12 Based on the findings of this FRA and in consideration of the recommendations made, it is concluded that the change in fluvial flood risk would be appropriately managed by the design of the Proposed Development, which has included a sequential approach, seeking to locate vulnerable land uses in areas of lowest flood risk within the Site.

6.1.13 Evidence has been provided that the Proposed Development would provide wider sustainability benefits to the community and the design and mitigation strategy described in the FRA demonstrate that the Proposed Development would be safe for its lifetime and would reduce flood risk overall, such that the Exception Test is considered to be passed