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Huntingdonshire Level 2 Strategic Flood Risk Assessment Site Summary

Site CfS:11

Final Draft Report

Prepared for

Huntingdonshire District Council

Date

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This report describes work commissioned by Huntingdonshire District Council by an instruction via email dated 21 July 2025. The Client's representative for the contract was Frances Schulz of Huntingdonshire District Council. Kira Khangura of JBA Consulting carried out this work.

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The methodology adopted and the sources of information used by JBA in providing its services are outlined in this Report. The work described in this Report was undertaken between 21 July 2025 and 6 November 2025 and is based on the conditions encountered and the information available during the said period. The scope of this Report and the services are accordingly factually limited by these circumstances.

The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate.

Acknowledgements

We would like to thank the Environment Agency, Cambridgeshire County Council for their assistance with this work.

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Contents

List of Figures

List of Tables

1 Background

This is a Level 2 Strategic Flood Risk Assessment (SFRA) site screening report for Local Plan Site CfS:11. The content of this report assumes the reader has already consulted the 'HDC Level 1 SFRA' (2024) and read the 'HDC Level 2 SFRA Main Report' (2025) and is therefore familiar with the terminology used in this report.

1.1 Site CfS:11

- Location: Green End Field, Sawtry
- Existing site use: Agricultural
- Existing site use vulnerability: Less vulnerable
- Proposed site use: Residential
- Proposed site use vulnerability: More vulnerable
- Site area (ha): 0.6
- Watercourse: Unnamed ordinary watercourse
- Environment Agency (EA) model: N/A
- Summary of requirements:
    - Subject to the Exception Test as more vulnerable development proposed in Flood Zone 3a
    - Assessment of fluvial flood depths, velocities and hazards
    - Assessment of surface water flood extent, depths and hazards
    - Assessment of all other sources of flood risk

Figure 1-1: Existing site location boundary

Figure 1-2: Aerial photography

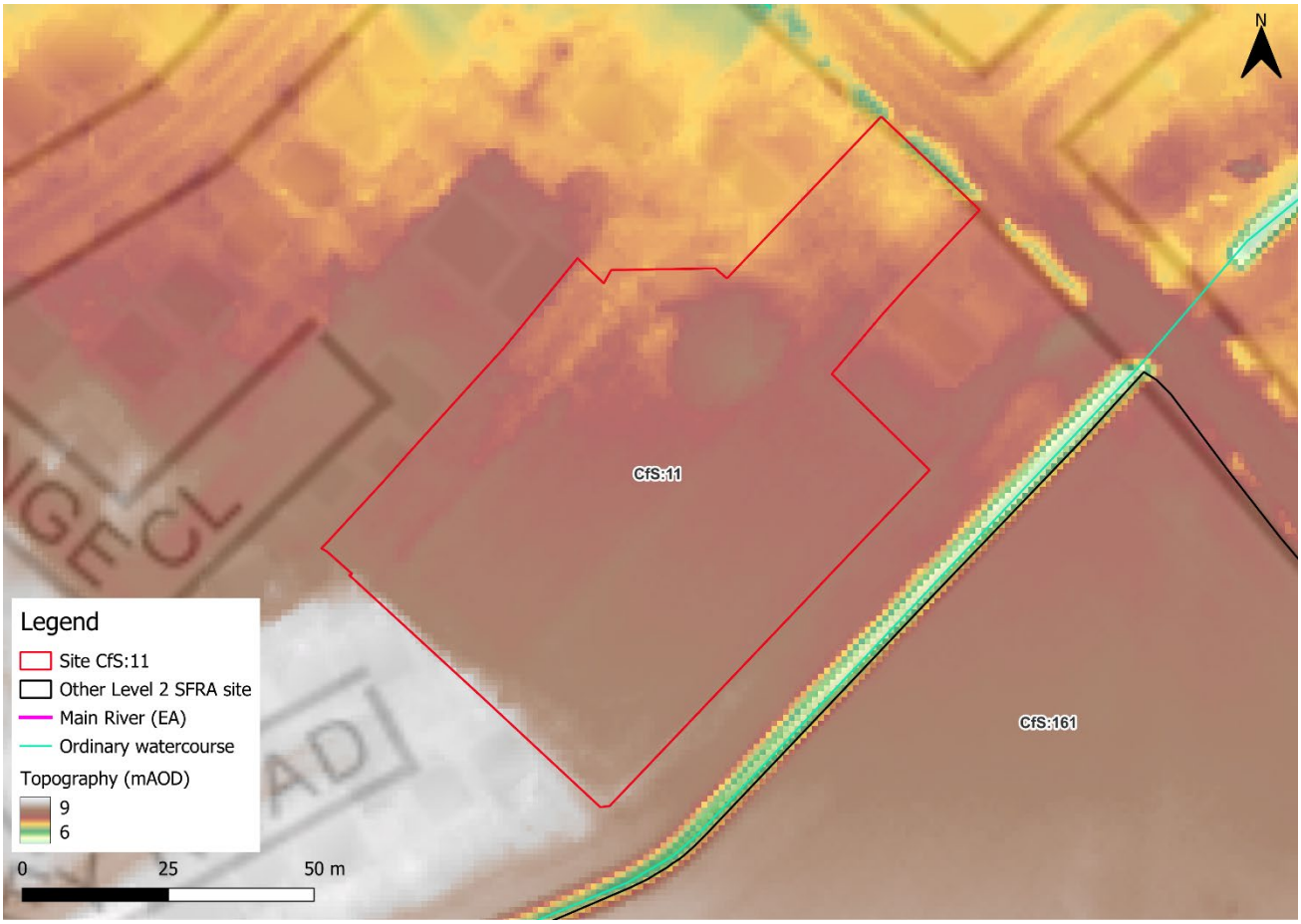

Figure 1-3: Topography

2 Flood risk from rivers and sea

2.1 Existing risk

2.1.1 Flood Map for Planning and functional floodplain

Based on the EA's Flood Map for Planning (accessed July 2025) and Flood Zone 3b (functional floodplain), as updated in this Level 2 SFRA, the percentage areas of the site within each flood zone are stated in Table 2-1 and can be viewed on Figure 2-1. This version of the Flood Map for Planning does not consider flood defence infrastructure (Section 2.2) or the impacts of climate change (Section 2.3).

The majority of the site is within Flood Zone 2, indicating a medium flood risk from rivers and sea. In the northeast corner, 4% of the site is located within Flood Zone 3a. The remaining area of the site is in Flood Zone 1. The source of risk is fluvial from the ordinary watercourses to the south and north of the site. Based on current information, there is no detailed model available for the site. Flood depths, velocities, and hazards cannot therefore be assessed at this stage.

Table 2-1: Existing flood risk based on percentage area of site at risk

Flood Zone 1 (% area)	Flood Zone 2 (% area)	Flood Zone 3a (% area)	Flood Zone 3b (% area)
31	65	4	0

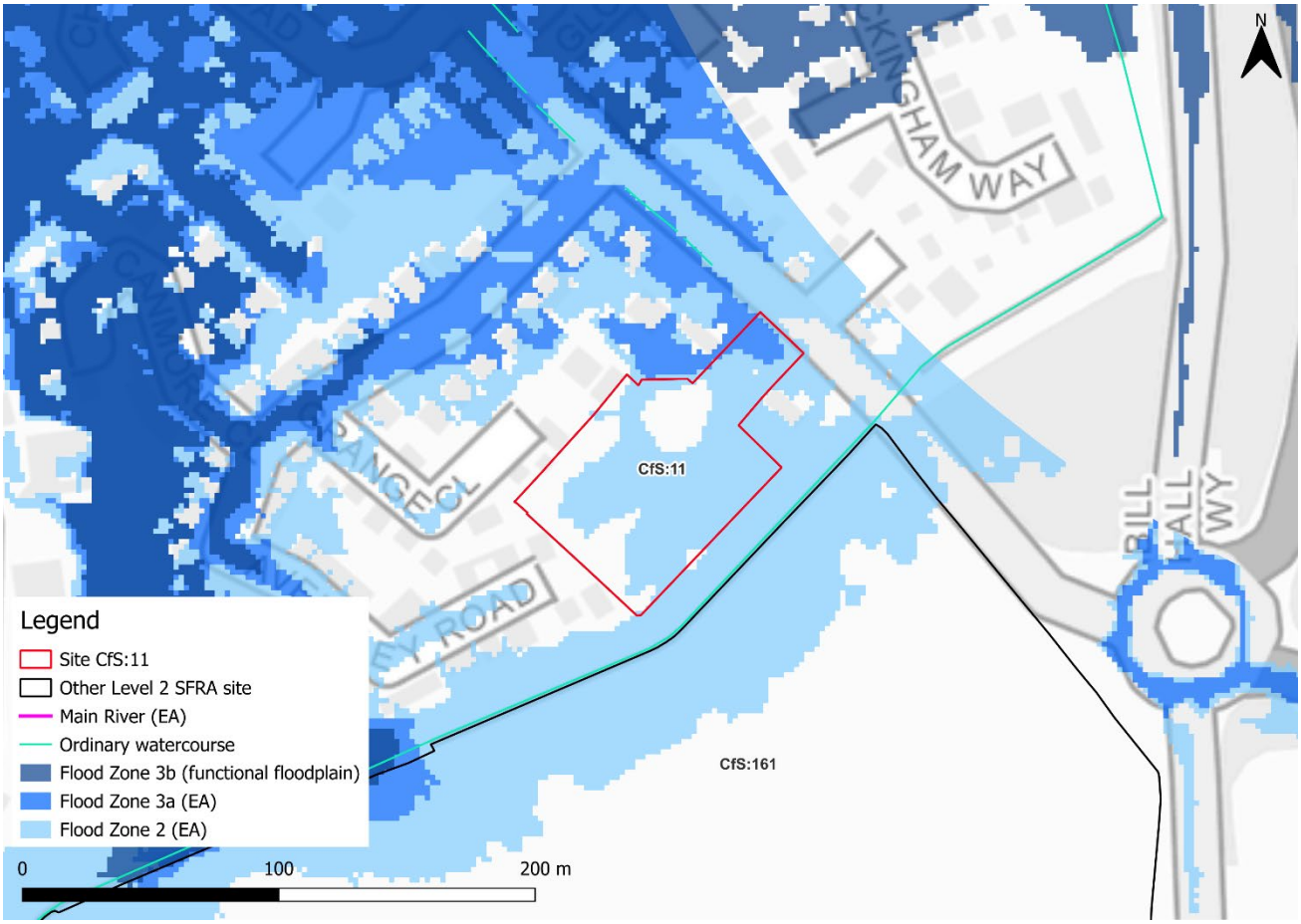

Figure 2-1: Existing risk

2.2 Flood risk management

2.2.1 Flood defences

There are no engineered flood defences within the vicinity of the site that are likely to impact fluvial flood risk.

2.2.2 Working with Natural Processes

The EA's Working with Natural Processes (WwNP) dataset has been interrogated to identify opportunities for Natural Flood Management (NFM) to reduce flood risk to the site and surrounding areas. These areas are shown in Figure 2-2. Note, the WwNP mapping is broadscale and indicative, therefore further investigation will be required for any land shown to have potential for WwNP. Outside of the site, along the ordinary watercourse, there is potential for riparian tree planting which can slow flows, reduce sediment delivery to the watercourse and reduce bankside erosion.

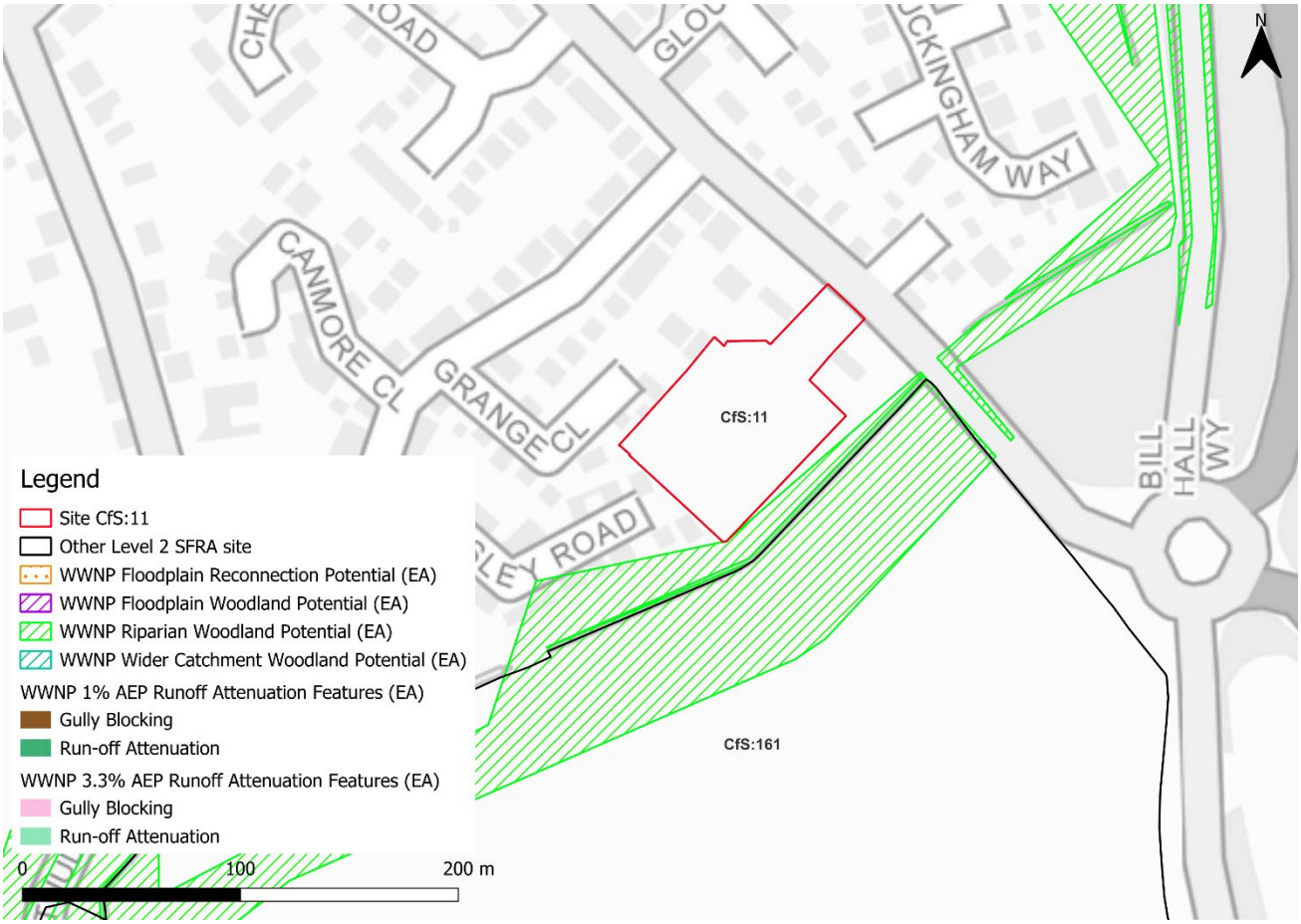

Figure 2-2: Natural Flood Management (NFM) potential mapping

2.3 Impacts from climate change

2.3.1 Fluvial

The EA's SFRA guidance states that SFRAs should assess the central allowance for less, more, highly vulnerable, and water compatible development. The higher central allowance should be assessed for essential infrastructure. However, as there is no existing detailed model of the ordinary watercourses, modelling of climate change has not been possible.

Climate change data in this area is unavailable from the EA's Flood Map for Planning plus climate change (2070-2125) dataset, as shown in Figure 2-3. Therefore, in the absence of modelled climate change information, Flood Zone 2 of the Flood Map for Planning (based on the 0.1% AEP undefended event) can be used as a precautionary proxy for Flood Zone 3 plus climate change. Based on this approach, fluvial risk is modelled to impact the majority of the site in the long term, as shown in Figure 2-1.

The impacts of climate change must be modelled using the EA's latest allowances for peak river flows to inform whether the site can be safe for its lifetime. Any FRA should produce a detailed model of the unnamed watercourses and include for the most up to date climate change allowances (Table 2-2).

Table 2-2: Modelled climate change allowances for peak river flows for the Old Bedford and Middle Level management catchment

Return period (AEP event)	Central allowance 2080s (% increase)	Higher central allowance 2080s (% increase)
3.3% (functional floodplain)	6%	15%
1%	6%	15%
0.1%	6%	15%

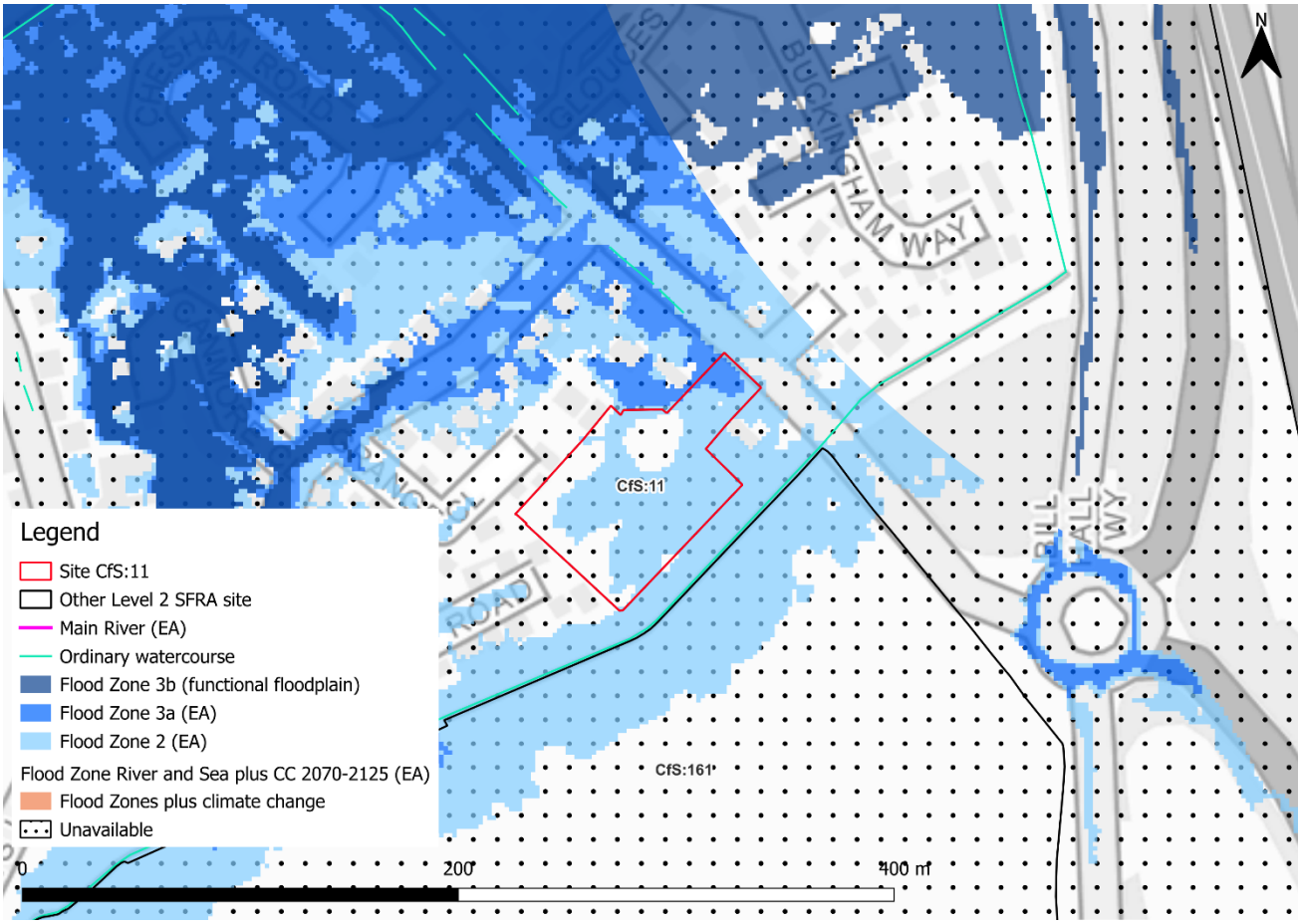

Figure 2-3: Flood Map for Planning - Climate Change 2070-2125 outputs

2.3.2 Tidal

The EA's Flood Map for Planning shows the site is not at risk from tidal climate change.

2.4 Historic flood incidents

The EA's Historic Flood Map (HFM) and Recorded Flood Outlines (RFO) datasets have been considered. No historic events have been recorded on or near the site.

2.5 Emergency planning

2.5.1 Flood warning

The EA operates a Flood Warning Service for properties located within a Flood Warning Area (FWA) for when a flood event is expected to occur. This site is not located within a FWA.

Flood alerts may be issued before a flood warning for properties located within a Flood Alert Area (FAA) to provide advance notice of the possibility of flooding. A flood alert may be issued when there is less confidence that flooding will occur in a FWA. This site is not located within a FAA.

2.5.2 Access and escape routes

Based on available information, safe access and escape routes could likely be achieved during a flood event via Green End Road to the northeast, as shown in Figure 2-4. However, where the ordinary watercourse is culverted under Green End Road, flooding is modelled to the road. This risk should be investigated at the FRA stage where it must be proven that safe access to and escape from the site can be achieved at times of flood.

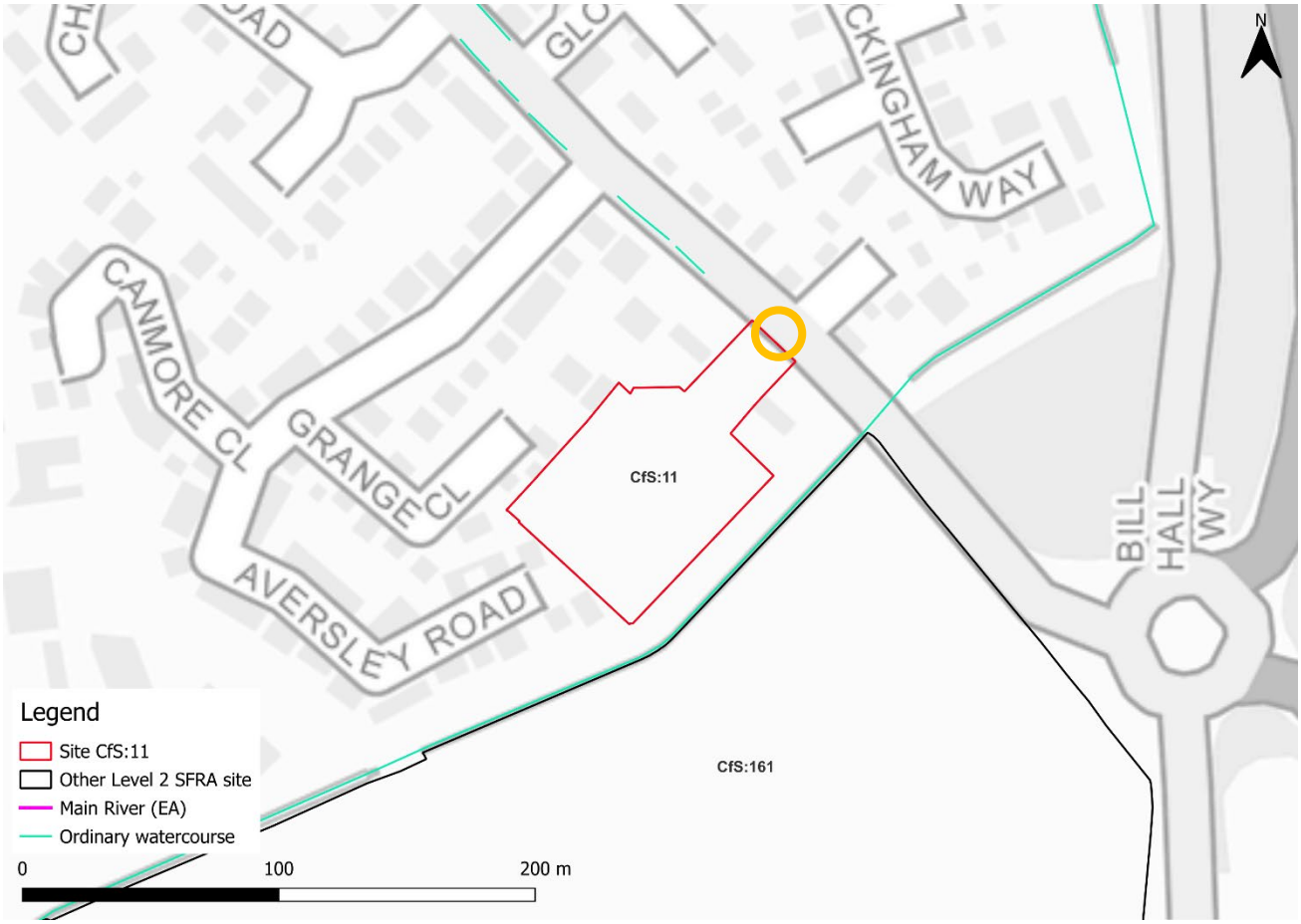

Figure 2-4: Potential access and escape routes

2.6 Observations, mitigation options, site suitability, sequential approach to development management - fluvial

- Observations:
  - The proposed development of the site would see a change in the risk classification from less vulnerable to more vulnerable, according to the NPPF.
  - The site is partially located within fluvial Flood Zone 3a and therefore must be subject to the exception test. The majority of the site is located within Flood Zone 2 and at risk from the impacts of climate change when using Flood Zone 2 as a proxy.
- Defences:
  - There are no engineered flood defences within the vicinity of the site that are likely to impact fluvial flood risk

- Mitigation:
  - The risk areas should not be developed for more vulnerable purposes and be left for agricultural use or as open green space.
  - There may be an option for ground floor parking or other less vulnerable uses (i.e. non-residential such as shops, restaurants, offices) and for habitable dwellings, sleeping areas, to be situated on the first floor and upwards. However, safe access and escape routes must be available at times of flood, even for above ground floor accommodation.
  - The site-specific FRA should confirm the risk to the site, accounting for climate change.
  - The site-specific FRA should develop a model of the unnamed ordinary watercourses to fully understand the onsite fluvial risk.
  - Were development of this site to proceed, given the proximity of this site to neighbouring site CfS:161, it would be prudent to formulate a strategy to develop these sites in tandem and for consultation between each developer to take place to ensure a joined-up approach for sustainable development is in place.
- Access and escape:
  - Safe access and escape routes must be available at times of flood and appear to be available from the east of the site, via Green End Road. However, risk along this road should be investigated at the FRA stage.

3 Flood risk from surface water

3.1 Existing risk

The NaFRA2 Risk of Flooding from Surface Water (RoFSW) mapping received a significant update and was published January 2025, including for surface water flood extents and depths. However, at the time of writing, the EA has confirmed that the depth information available is not structured in a way that is suitable for planning purposes. Therefore, this Level 2 SFRA considers the third generation RoFSW depth and hazard mapping in addition to the NaFRA2 extents, as agreed with the EA. Surface water depth and hazard should be modelled at the site-specific FRA stage.

3.1.1 Risk of Flooding from Surface Water - NaFRA2 extents

Based on the EA's national scale RoFSW map, as updated in January 2025, surface water risk to the site is significant. Approximately 25% of the site is at very low surface water risk. 44% of the site is at low risk. A further 26% is at medium risk and a further 5% is at high surface water risk, as shown in Table 3-1. Surface water risk is widespread throughout the site. The highest risk is in the northeast of the site, coincident with fluvial risk.

Table 3-1: Existing surface water flood risk based on percentage area at risk using the NaFRA2 RoFSW map

Very low risk (% area)	Low risk (% area)	Medium risk (% area)	High risk (% area)
25	44	26	5

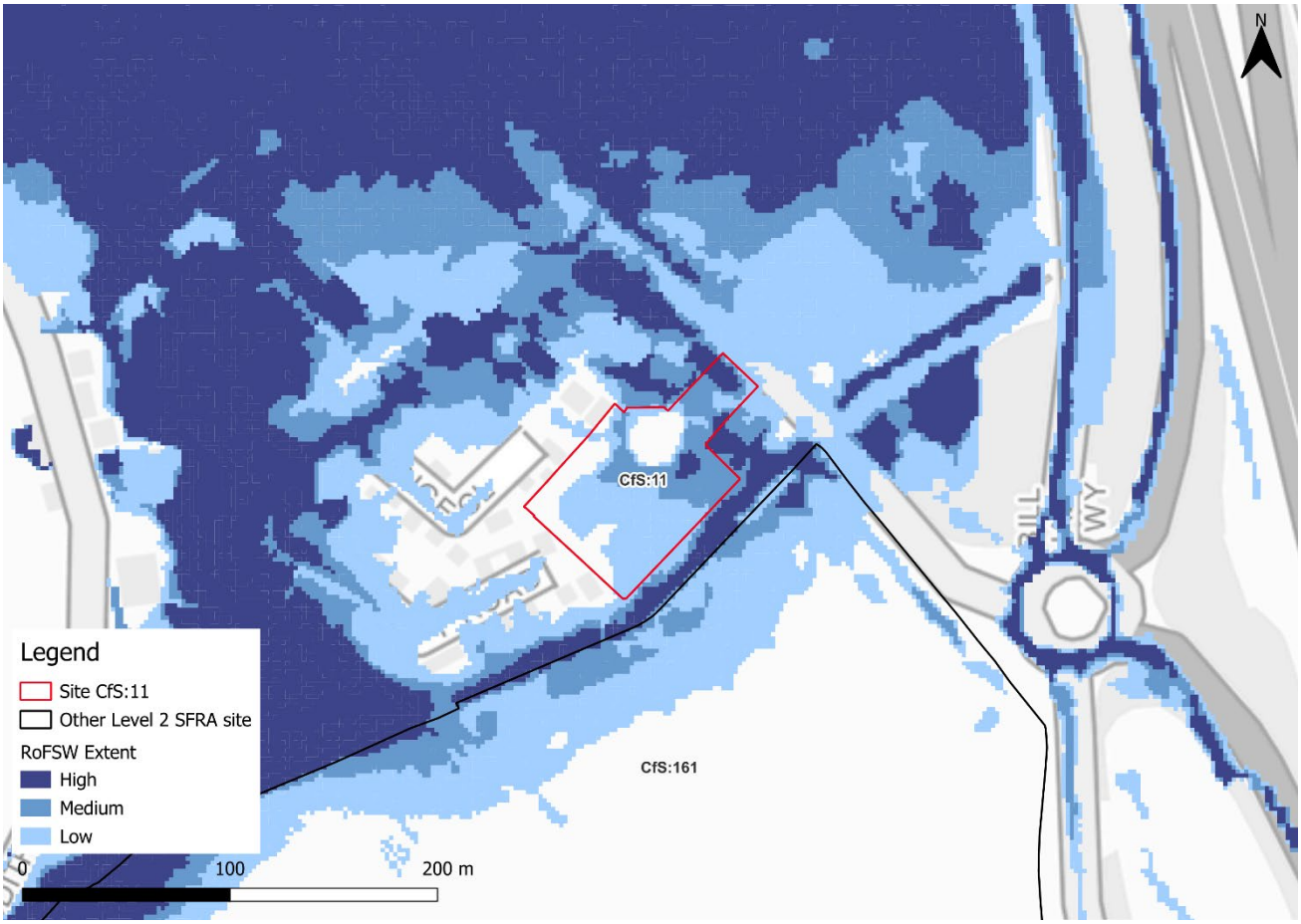

Figure 3-1: Surface water flood extents (NaFRA2 - Risk of Flooding from Surface Water map)

3.1.2 Risk of Flooding from Surface Water - third generation depths and hazard

Based on the EA's national scale third generation RoFSW map, greatest flood depths within the site in the medium risk event are between 0.15 and 0.30m and confined to the east of the site. Hazard is categorised as low and is confined to the same area.

There are differences in the extent of surface water flooding between the NaFRA2 RoFSW map and the third-generation depths and hazard mapping, with the NaFRA2 extents appearing more widespread throughout the site, whereas the third-generation mapping confines risk to the east only. This reinforces the requirement for detailed assessment of surface water at the FRA stage to establish surface water flood risk conditions.

Figure 3-2: Medium risk event surface water flood depths (Third generation - Risk of Flooding from Surface Water map)

Figure 3-3: Medium risk event surface water flood hazard[1] (Third generation - Risk of Flooding from Surface Water map)

3.2 Impacts from climate change

The NaFRA2 RoFSW mapping now includes one modelled climate change scenario, the 2050s central allowance for the high, medium and low risk events. However, the upper end allowance on peak rainfall for the 2070s should be assessed in SFRAs. Therefore, at the time of writing, the available national surface water climate change mapping is unsuitable for consideration in development planning. This Level 2 SFRA considers the low risk surface water event as a conservative proxy for the medium risk event plus climate change, as agreed with the EA. The impact of climate change on surface water flood risk should be fully accounted for at the site-specific FRA stage.

Using the low risk event as a proxy, the medium risk surface water event is likely to increase in extent slightly when accounting for climate change as shown in the NaFRA2 map (Figure 3-4). However, the third-generation surface water mapping shows flood risk increasing to include the whole site, with maximum flood depths increasing to between 0.30 and 0.60m and hazard in the northeast of the site categorised as significant.

1 Based on Section 7.5 Hazard rating. What is the Risk of Flooding from Surface Water map? Report version 2.0. April 2019. Environment Agency

There are therefore clear differences between the NaFRA2 RoFSW map and the third-generation depths and hazard mapping. This reinforces the requirement for detailed assessment of surface water at the FRA stage to establish surface water flood risk conditions.

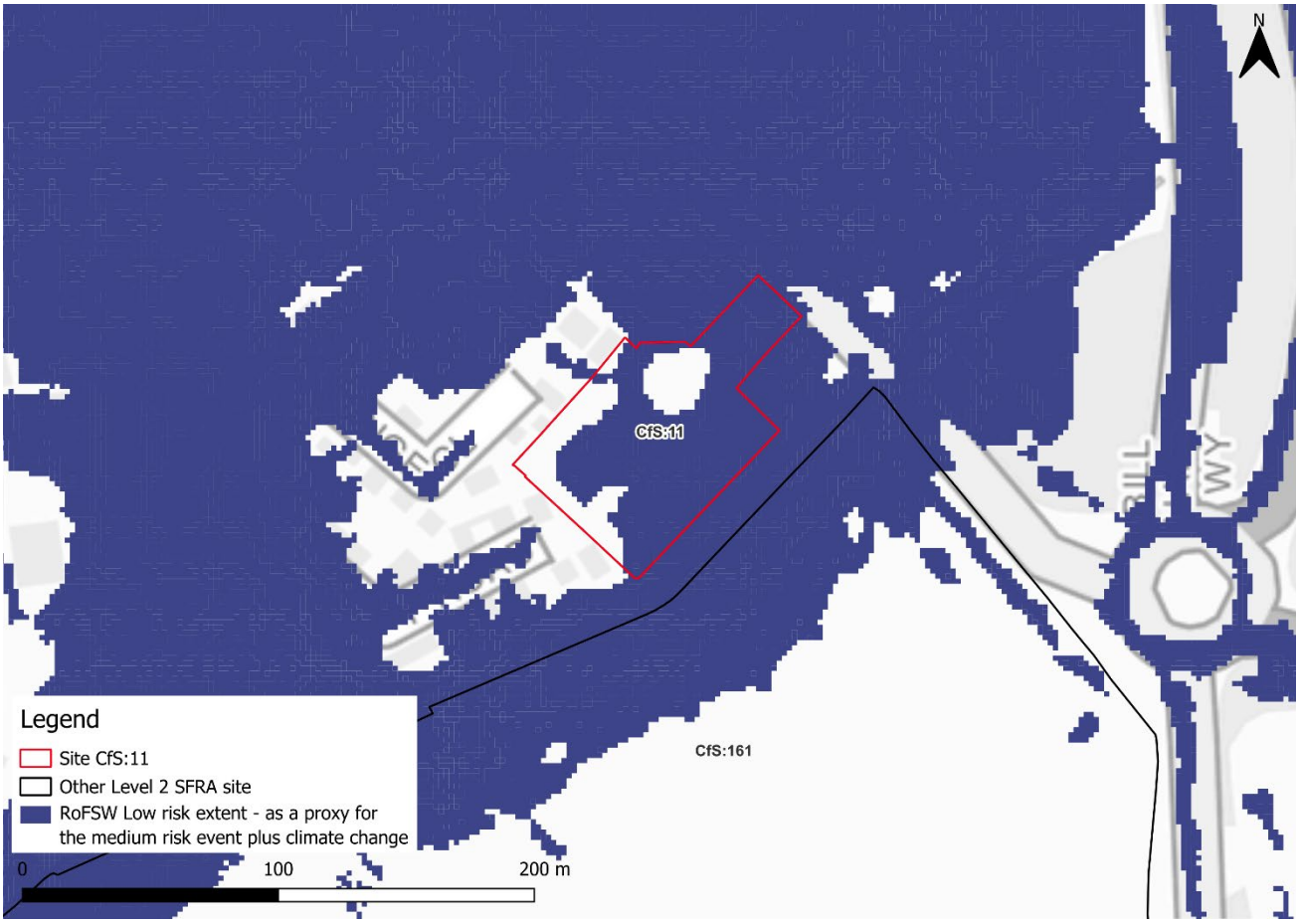

Figure 3-4: Low risk event surface water flood extent, as a proxy for the medium risk event plus climate change (NaFRA2 - Risk of Flooding from Surface Water map)

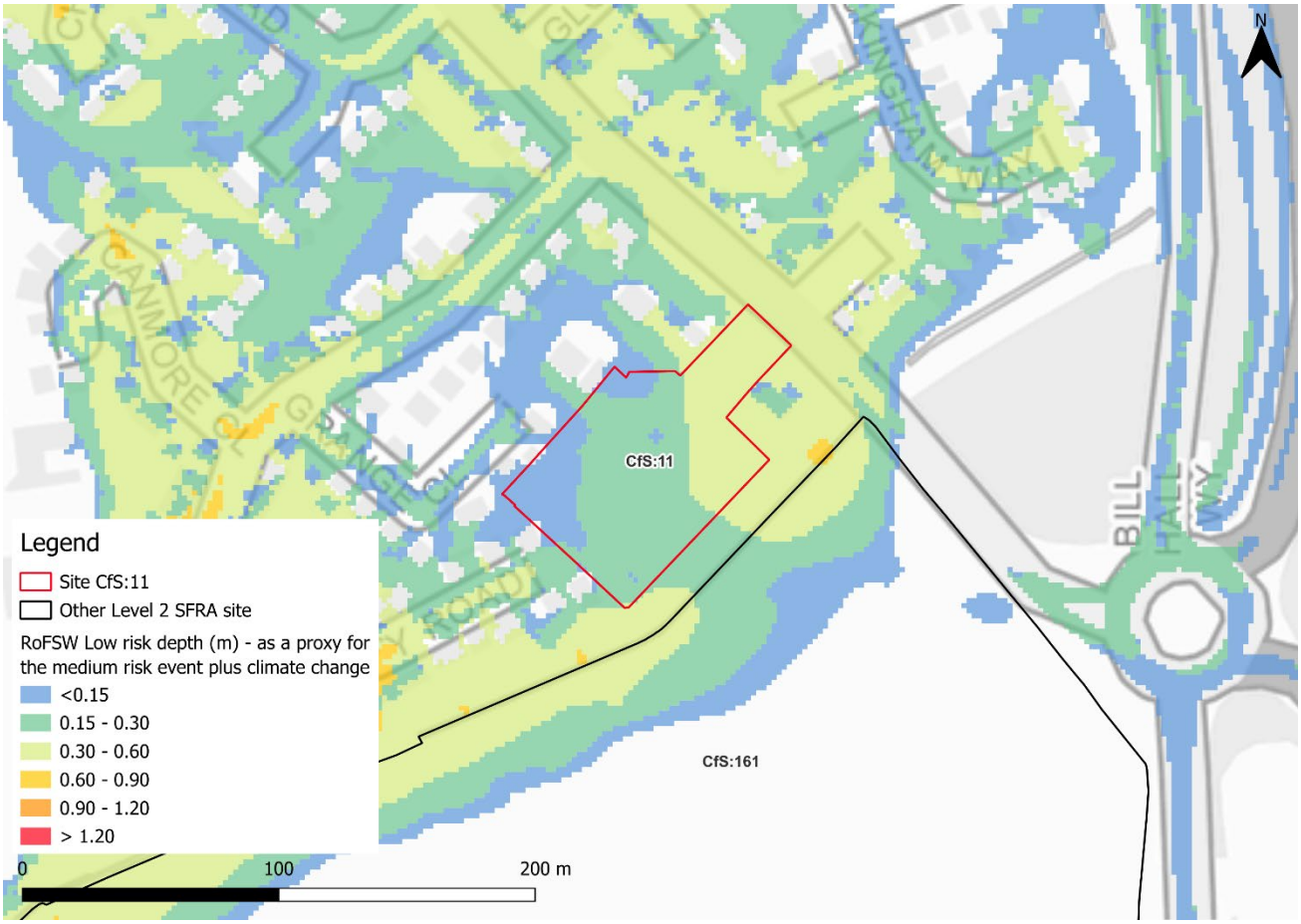

Figure 3-5: Low risk event surface water flood depths, as a proxy for the medium risk event plus climate change (Third generation - Risk of Flooding from Surface Water map)

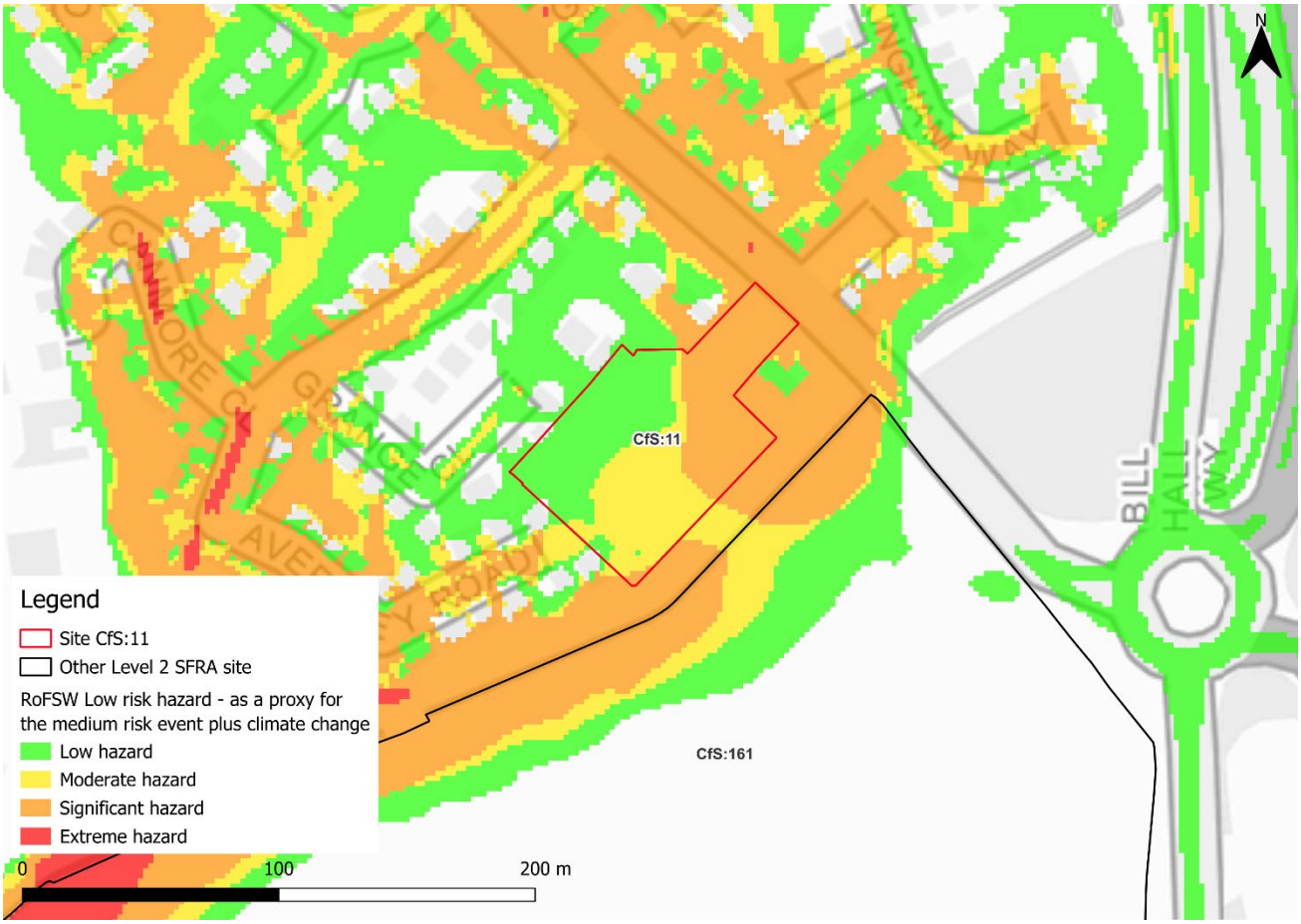

Figure 3-6: Low risk event surface water flood hazard, as a proxy for the medium risk event plus climate change (Third generation - Risk of Flooding from Surface Water map)

3.3 Observations, mitigation options, site suitability, sequential approach to development management - surface water

- Risk to the site is significant.
- The effects of climate change on surface water have not been modelled for this SFRA, however the low risk surface water event has been used as a proxy for the medium risk event plus climate change. Risk is estimated to increase in the low risk event, potentially making any development plans challenging.
- Surface water flood depths, hazards, including for the impact of climate change should be considered further through the site-specific FRA and drainage strategy. Any surface water modelling at the FRA stage should consider flood depths and hazards.
- Given the present day and future risk, this site should remain undeveloped and used for agriculture or open greenspace.
- There are clear differences between the NaFRA2 RoFSW map and the third-generation depths and hazard mapping. This reinforces the requirement for detailed assessment of surface water at the FRA stage to establish surface water flood risk conditions.

- The RoFSW map is not suitable for identifying whether an individual property will flood and is therefore indicative. The RoFSW map is not appropriate to act as the sole evidence for any specific planning or regulatory decision or assessment of risk in relation to flooding at any scale without further supporting studies, modelling, or evidence.

4 Cumulative impacts assessment and high risk catchments

4.1 Level 1 cumulative impacts assessment

A cumulative impact assessment was completed through the Huntingdonshire Level 1 SFRA (2024), which aimed to identify catchments sensitive to the cumulative impact of new development. This site is located within one catchment, namely the Middle Level catchment. This catchment is ranked as a medium sensitivity catchment. Planning considerations for sites at medium sensitivity to the cumulative impacts of development can be found in Appendix G of the Level 1 SFRA. Cumulative impacts of development should also be considered as part of a site-specific FRA.

5 Groundwater, geology, soils, SuDS suitability

Risk of groundwater emergence is assessed in this SFRA using JBA's 5m Groundwater Emergence Map. This dataset is recommended for use by the EA in the SFRA Good Practice Guide[2]. Figure 5-1 shows the map covering this site and the surrounding areas. Table 5-1 explains the risk classifications.

Figure 5-1: JBA 5m Groundwater Emergence Map

The entirety of the site is classified as no risk. infiltration SuDS should therefore be suitable at this site. However, the underlying bedrock within the site is a combination of mudstone, siltstone and sandstone (Figure 5-2). Mudstone and siltstone generally have low permeability.

2 Strategic flood risk assessment good practice guide. ADEPT. December 2021.

Table 5-1: Groundwater Hazard Classification

Groundwater head difference (m)*	Class label
0 to 0.025	Groundwater levels are either at very near (within 0.025m of) the ground surface in the 100-year return period flood event. Within this zone there is a risk of groundwater flooding to both surface and subsurface assets. Groundwater may emerge at significant rates and has the capacity to flow overland and/or pond within any topographic low spots.
0.025 to 0.5	Groundwater levels are between 0.025m and 0.5m below the ground surface in the 100-year return period flood event. Within this zone there is a risk of groundwater flooding to surface and subsurface assets. There is the possibility of groundwater emerging at the surface locally.
0.5 to 5	Groundwater levels are between 0.5m and 5m below the ground surface in the 100-year return period flood event There is a risk of flooding to subsurface assets, but surface manifestation of groundwater is unlikely.
>5	Groundwater levels are at least 5m below the ground surface in the 100-year return period flood event. Flooding from groundwater is not likely.
N/A	No risk. This zone is deemed as having a negligible risk from groundwater flooding due to the nature of the local geological deposits.
*Difference is defined as ground surface in mAOD minus modelled groundwater table in mAOD.	

Figure 5-2: Soils and geology

6 Residual risk

Although a site may be afforded some protection from defences and / or drainage infrastructure, there is always a residual risk of flooding from asset failure i.e. breaching / overtopping of flood defences, blockages of culverts or drainage assets.

Residual risk at this site comes from the potential blockage of the culvert beneath Green End Road.

6.1 Potential blockage

A blockage of the culvert beneath Hall Farm Lane (Figure 6-1) may cause flooding to the site, depending on the severity of the blockage and the magnitude of the flood event. Such a scenario should be investigated at the FRA stage. Culvert course and condition surveys may be required, including for consultation with the culvert owner.

Figure 6-1: Potential blockage / breach locations

6.2 Flood risk from reservoirs

The EA's Reservoir Flood Maps (RFM) (2021) show where water may go in the unlikely event of a reservoir or dam failure. A 'dry day' scenario assumes that the water level in the reservoir is the same as the spillway level or the underside of the roof for a service reservoir

and the watercourses upstream and downstream of the reservoir are at a normal level. A 'wet day' scenario assumes a worst-case scenario where a reservoir releases water held on a 'wet day' when local rivers have already overflowed their banks.

The site is not modelled to be at risk from reservoir flooding.

7 Overall site assessment

7.1 Can part b) of the exception test be passed?

This site is required to pass part b) of the exception test as it is proposed for more vulnerable development and is located within Flood Zone 3a. Based on the information presented in this Level 2 SFRA, the exception test cannot be passed, and the site should not be allocated. However, the test could be reapplied at the application stage as detailed flood risk information has not been available for consideration in this Level 2 SFRA, as outlined below. The test should also be reapplied if more recent information about existing or potential flood risk becomes available at application stage.

7.2 Recommendations summary

Based on the evidence presented in the Level 1 SFRA (2024) and this Level 2 SFRA:

- This site should not be developed for more vulnerable purposes and be left for agricultural use or as open green space.
- Were this site to be allocated based on current information, the LPA must make it clear that this site cannot be developed until the required information detailed in this SFRA on existing and future flood risk from the unnamed ordinary watercourses is fully ascertained.
- Risk from the ordinary watercourse should be investigated at the FRA stage. Fluvial depths and hazards should be modelled and assessed to understand current and future risk from climate change.
- There is potential residual risk to the site from a blockage of the culvert beneath Green End Road
- Opportunities for NFM features to reduce flood risk to the site and surrounding areas should be explored at the site-specific FRA stage.
- Safe access and escape routes should be considered further to ensure safe evacuation of site users during the low risk surface water flood event.
- Were development of this site to proceed, given the proximity of this site to neighbouring site CfS:161, it would be prudent to formulate a strategy to develop these sites in tandem and for consultation between each developer to take place to ensure a joined-up approach for sustainable development is in place.

7.3 Site-specific FRA requirements and further work

At the planning application stage, the following should be considered:

- Full detailed flood modelling of the unnamed ordinary watercourses.
- A condition assessment of the drain adjacent to the western site boundary and investigate the impact of a potential blockage of the structures.

- FRA should be carried out in line with the latest versions of the NPPF; FRCC-PPG; EA online guidance; the HDC Local Plan, and national and local SuDS policy and guidelines.
- Throughout the FRA process, consultation should be carried out with, where applicable, the local planning authority; the lead local flood authority; emergency planning officers; the Environment Agency; Anglian Water; the highways authorities; and the emergency services.

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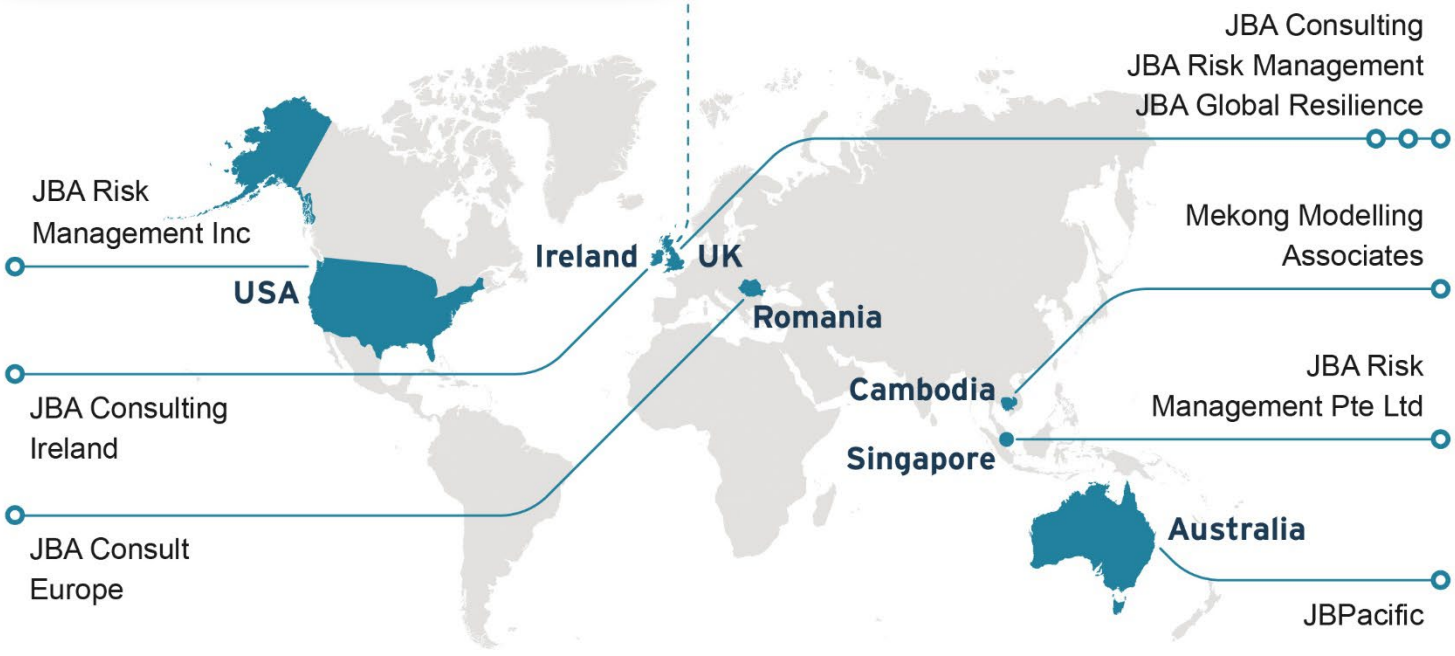

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