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Huntingdonshire Level 2 Strategic Flood Risk Assessment Site Summary

Site CfS:16

Final Draft Report

Prepared for

Huntingdonshire District Council

Date

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Contract

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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. Laura Thompson 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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1 Background

This is a Level 2 Strategic Flood Risk Assessment (SFRA) site screening report for Local Plan Site CfS:16. 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:16

- Location: Land East of Loves Farm (Tithe Farm Extension), St Neots
- Existing site use: Agriculture
- Existing site use vulnerability: Less vulnerable
- Proposed site use: Mixed use
- Proposed site use vulnerability: More vulnerable
- Site area (ha): 100
- Watercourse: Fox Brook (ordinary watercourse)
- Environment Agency (EA) model: Lower Ouse (St Neots) 2015
- Summary of requirements from Level 2 SFRA scoping stage:
    - Assessment of surface water flood extent, depths and hazards
    - Assessment of all other sources of flood risk

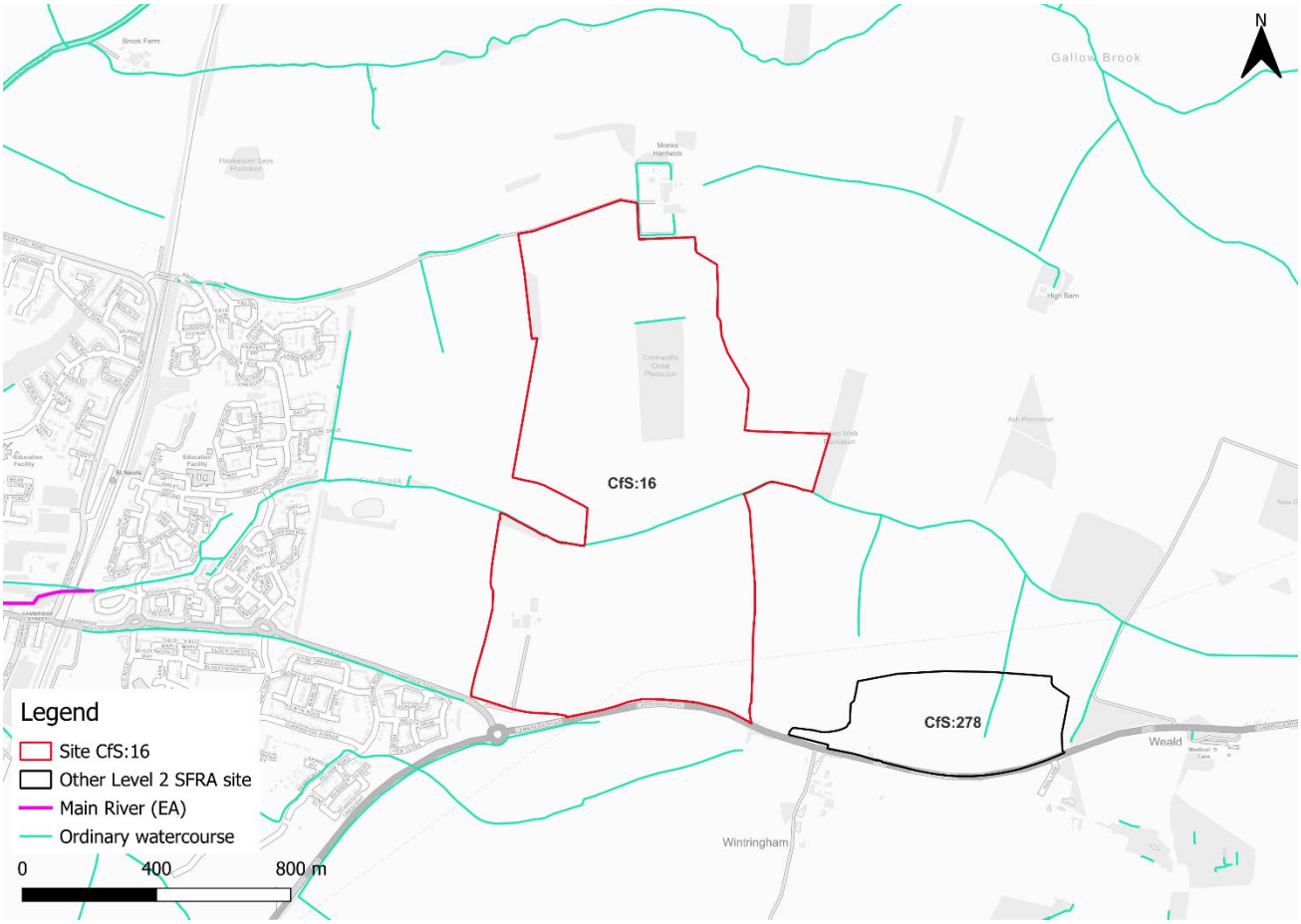

Figure 1-1: Existing site location boundary

Figure 1-2: Aerial photography

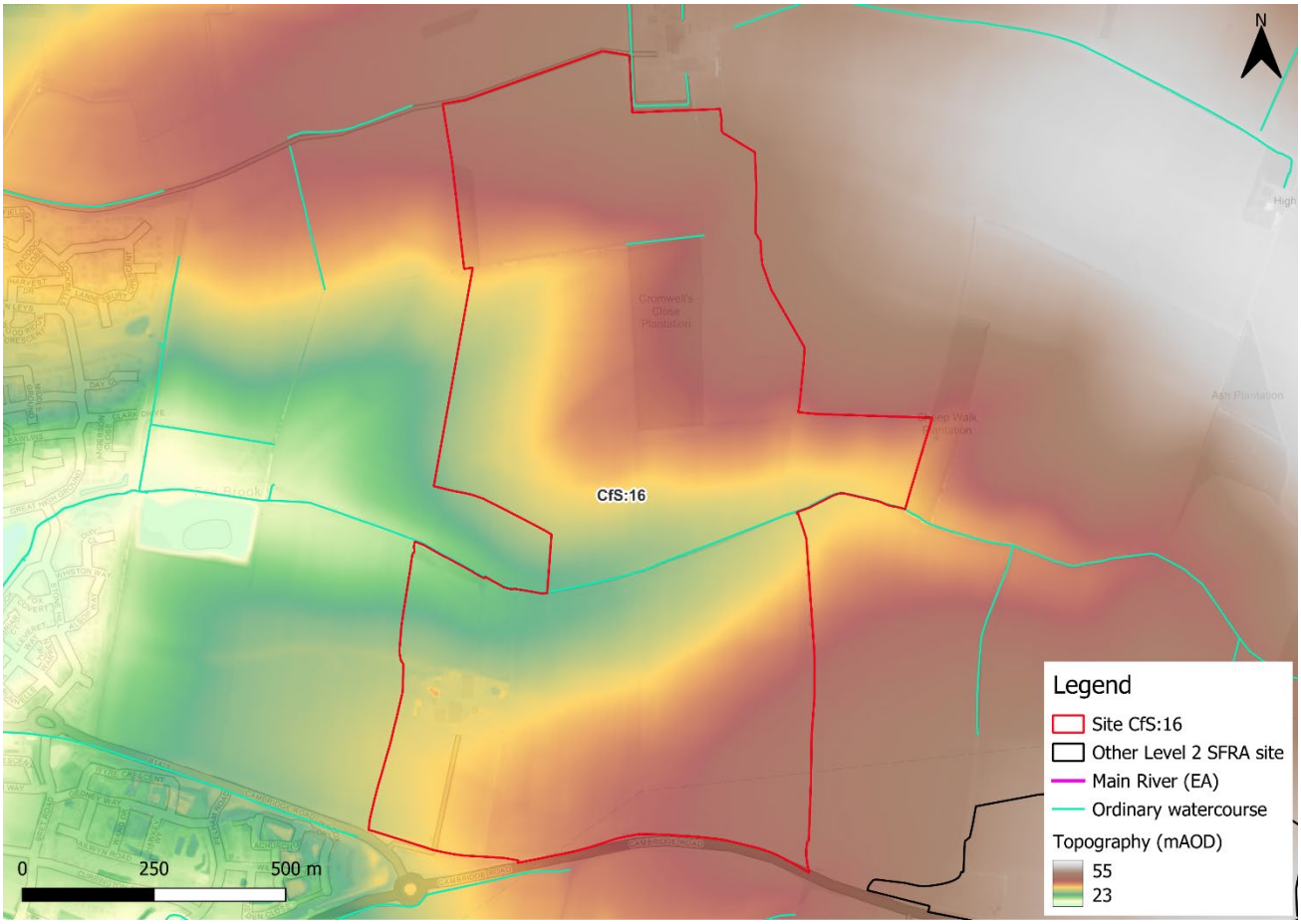

Figure 1-3: Topography

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 site is located wholly within Flood Zone 1 and therefore at low risk from rivers and the sea.

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)
100	0	0	0

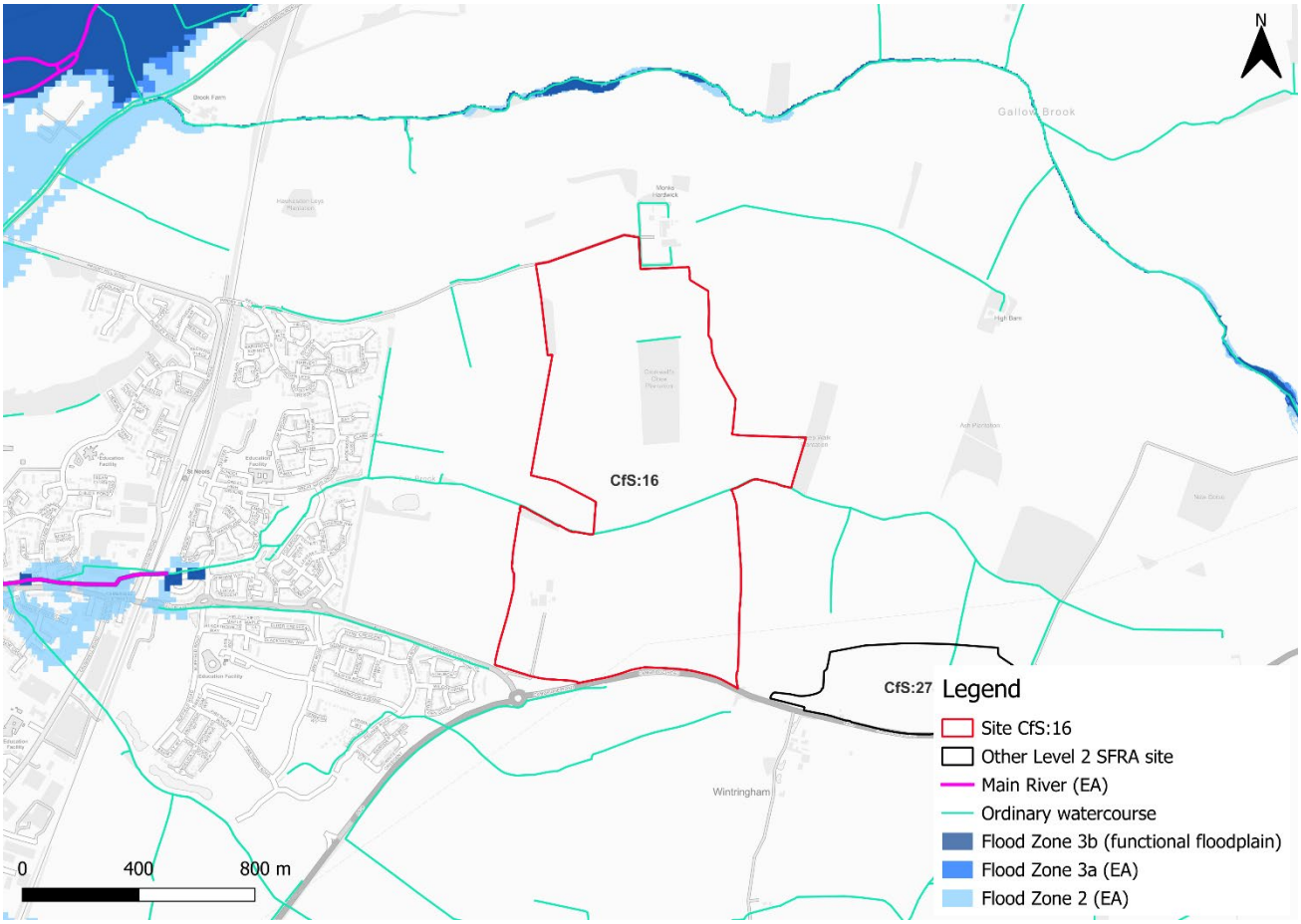

Figure 2-1: Existing risk

2.1.2 Fluvial undefended model outputs (Lower Ouse (St Neots) 2015)

Modelled risk to the site is fluvial. There is no tidal risk. Figure 2-2 shows the modelled flood depths for the 1% AEP undefended event. Risk is modelled to be confined to the channel of Fox Brook through the centre of the site.

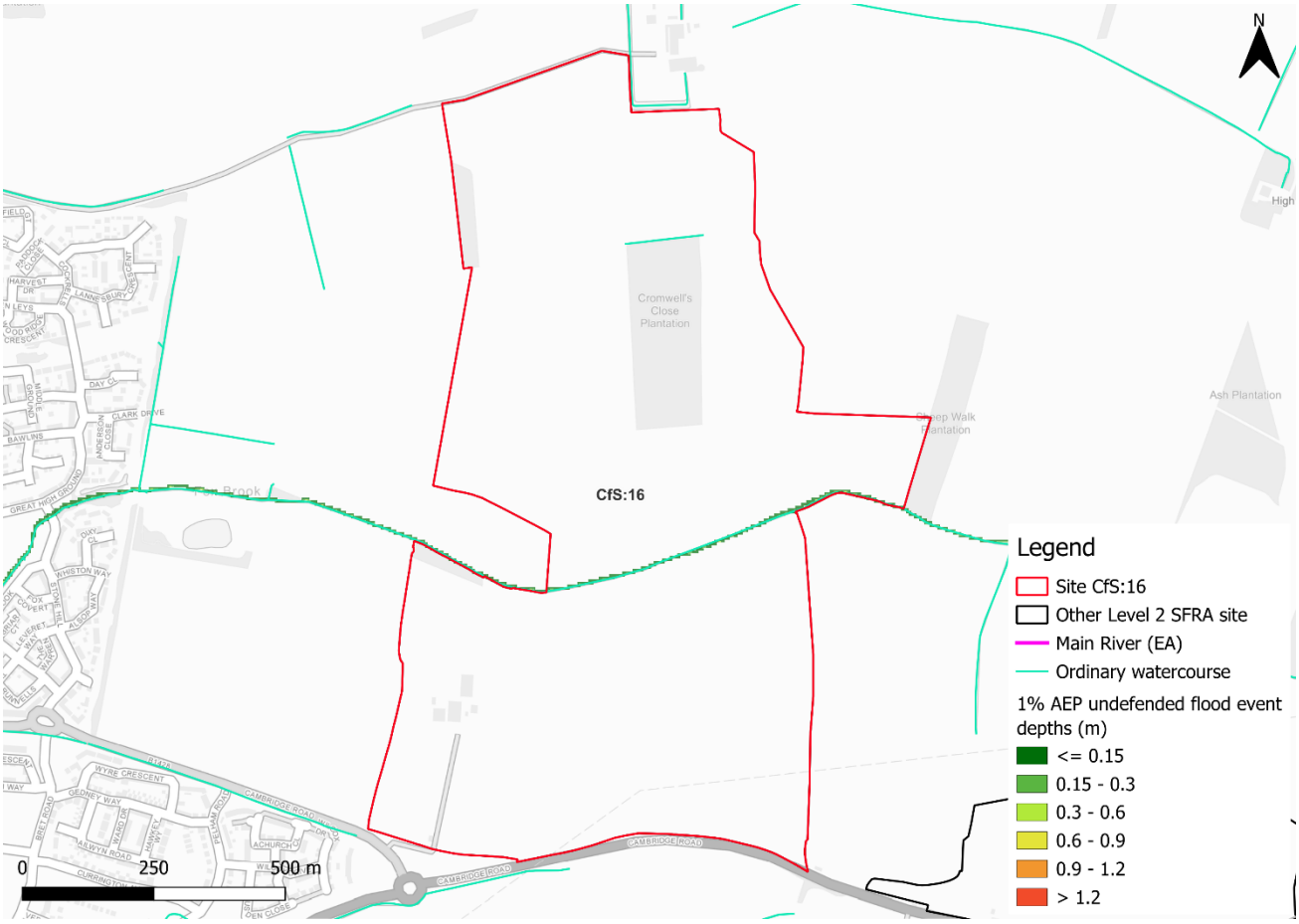

Figure 2-2: Flood depths for 1% AEP undefended flood event

2.2 Flood risk management

2.2.1 Flood defences

The site does not benefit from any formal engineered flood defences, according to the EA's spatial flood defences dataset.

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 2-3. Note, the WwNP mapping is broadscale and indicative, therefore further investigation will be required for any land shown to have potential for WwNP. Across the majority of the site, there is potential for wider catchment woodland planting to increase infiltration. Within the north and south of the site, there is potential for riparian woodland planting to attenuate flooding.

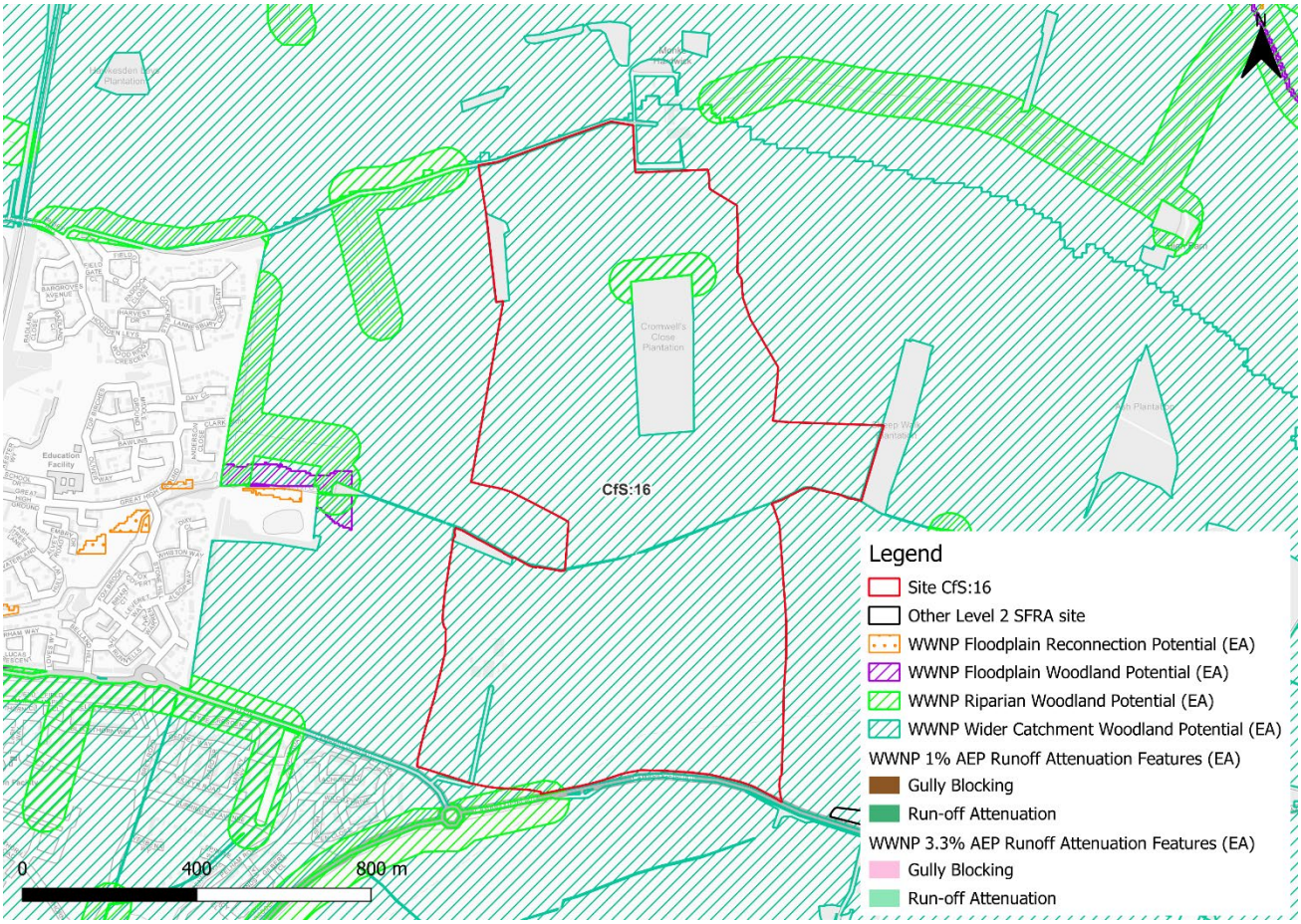

Figure 2-3: Natural Flood Management (NFM) potential mapping

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. The impacts of climate change on flood risk from Fox Brook have been modelled using the Lower Ouse 2015 (St Neots) model.

With consideration of the EA's SFRA guidance, the latest central and higher central climate change allowances have been modelled as shown in Table 2-2.

Table 2-2: Modelled climate change allowances for peak river flows for the Ouse Upper and Bedford management catchment

Return period (AEP event)	Central allowance 2080s (% increase)	Higher central allowance 2080s (% increase)
3.3% (functional floodplain)	No suitable hydrology available	
1%	19%	30%
0.1%	19%	30%

Figure 2-4 shows the modelled flood depths for the 1% AEP undefended event plus the central climate change allowance (+19%). Risk is modelled to be confined to the channel of Fox Brook through the centre of the site.

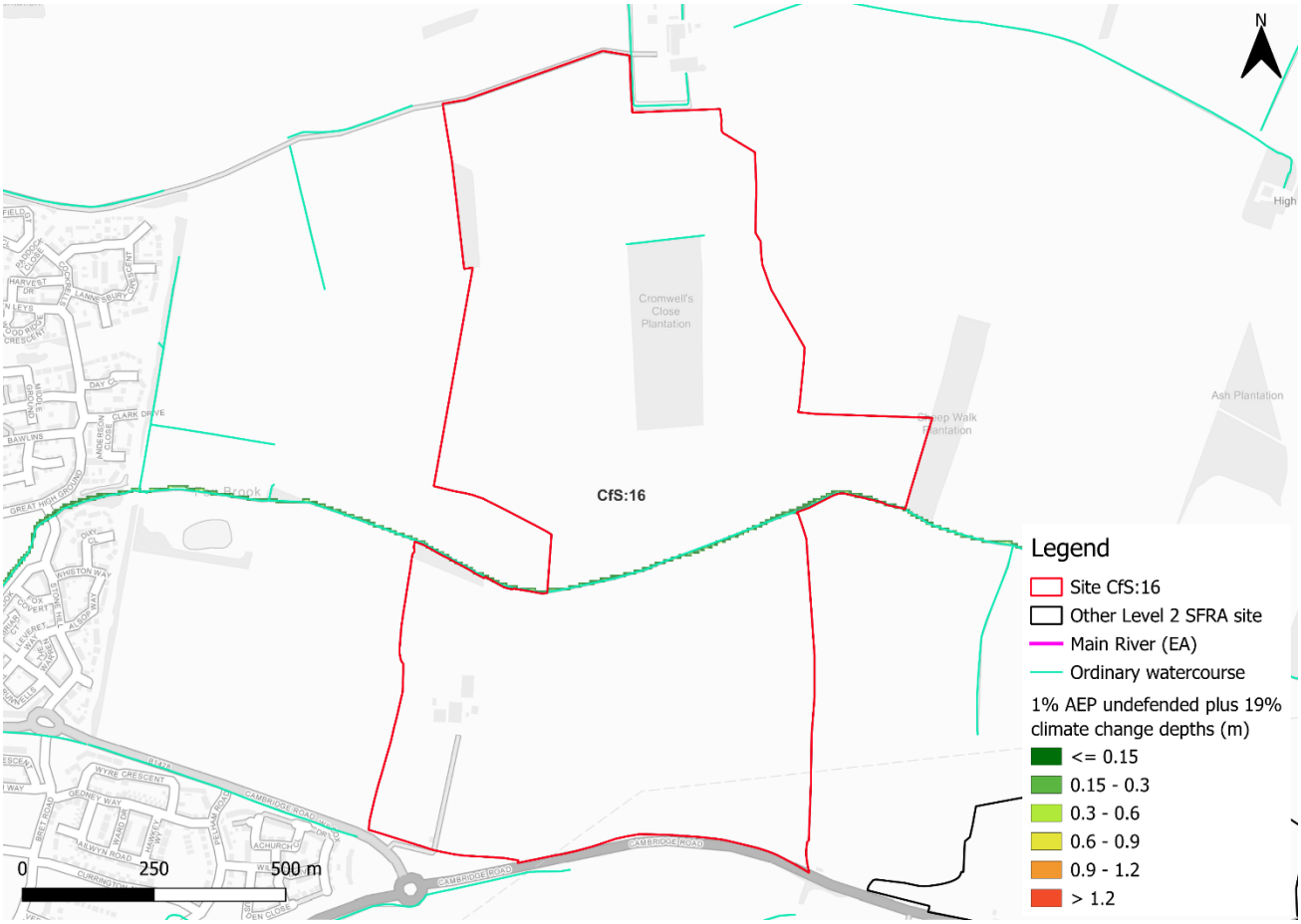

Figure 2-4: Flood depths for 1% AEP undefended flood event +19% (central climate change allowance)

2.4 Historic flood incidents

The EA's Historic Flood Map (HFM) and Recorded Flood Outlines (RFO) datasets have been considered. There are no recorded historic flood events within the vicinity of 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. The 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. The site is also 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 Cambridge Road to the south of the site and Priory Hill to the north.

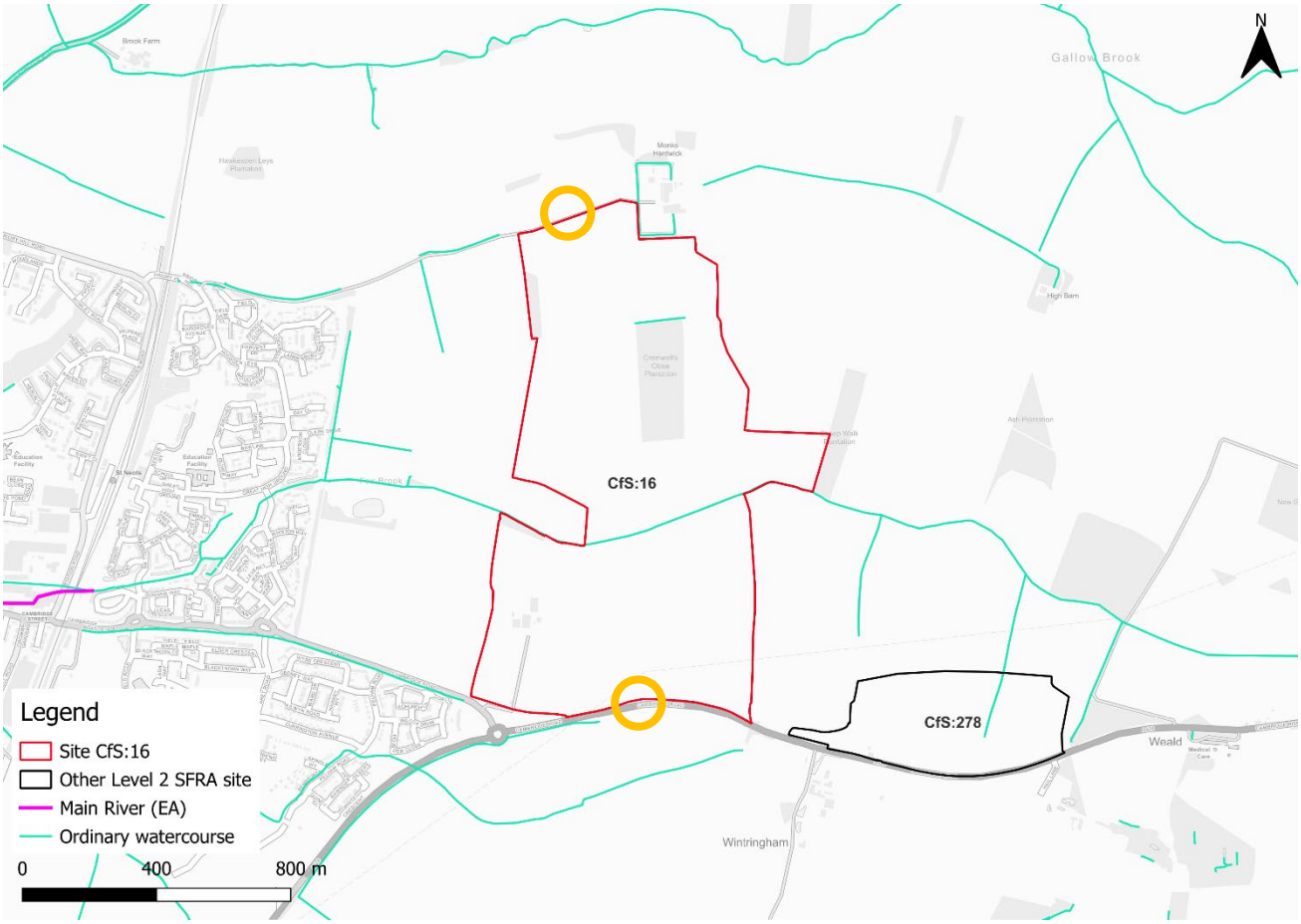

Figure 2-5: Potential access and escape routes

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

- 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.
  - Local detailed modelling of Fox Brook shows fluvial flood risk in the 1% AEP event remains in channel.
- Defences:
  - There are no engineered flood defences within the vicinity of the site that are likely to impact fluvial flood risk.
- Mitigation:
  - The Fox Brook and the other ordinary watercourses should be included within the site design and layout. Infilling of drainage ditches should be avoided.

- If works are proposed on or near a river or flood defence, a separate permission may be required. The type of permission needed and whether it must be sought from the Environment Agency, Lead Local Flood Authority or Internal Drainage Board will depend on the activity and location proposed. The developer should check if they need permission to do work on a river or flood defence.

- Access and escape:
  - Safe access and escape routes must be available at times of flood and appear to be available from the south of the site, via Cambridge Road and the north via Priory Hill. There may be a requirement for a pedestrian and / or vehicular access crossing of Fox Brook. Any crossing must not restrict flows in Fox Brook.

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 predominantly very low. Approximately 4% of the site is at high surface water risk. A further 3% is at medium risk and a further 2% is at low surface water risk, as shown in Table 3-1.

In all events, surface water risk is confined to the areas immediately adjacent to Fox Brook and along flow paths through the north of the site and along the southern site boundary (Figure 3-1). There are some areas of scattered surface water ponding within topographic low spots across the site.

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)
89	5	2	4

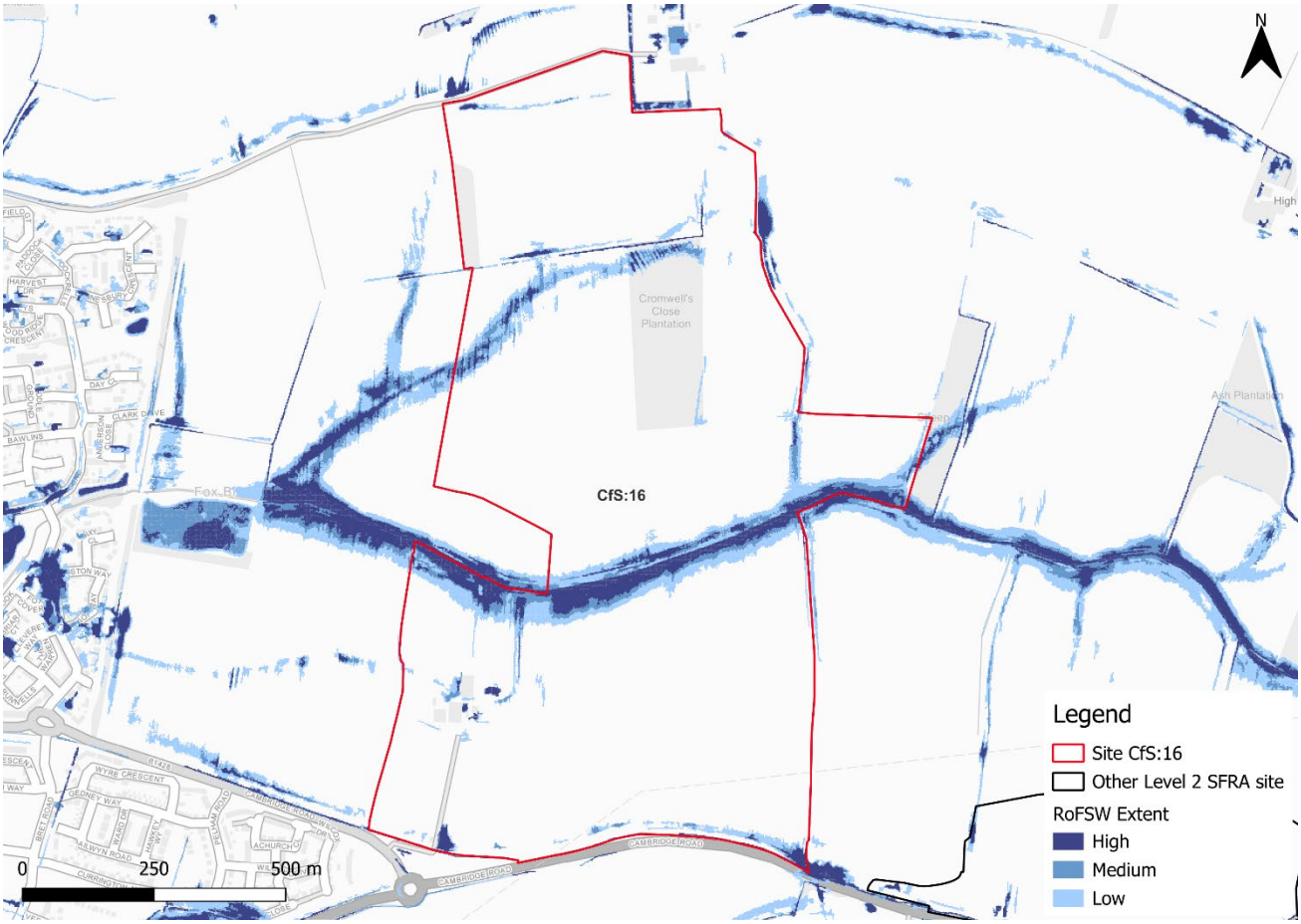

Figure 3-1: Surface water flood extents (NaFRA2 - Risk of Flooding from Surface Water map)

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, flood depths within the site in the medium risk event are mainly shallow (Figure 3-2), and hazards are mainly low (Figure 3-3).

The extent of surface water flooding is largely similar between the between the NaFRA2 RoFSW map and the third-generation depths and hazard mapping. However, detailed assessment of surface water at the FRA stage is required to establish surface water flood risk conditions as depths and hazards may vary from the third generation mapping.

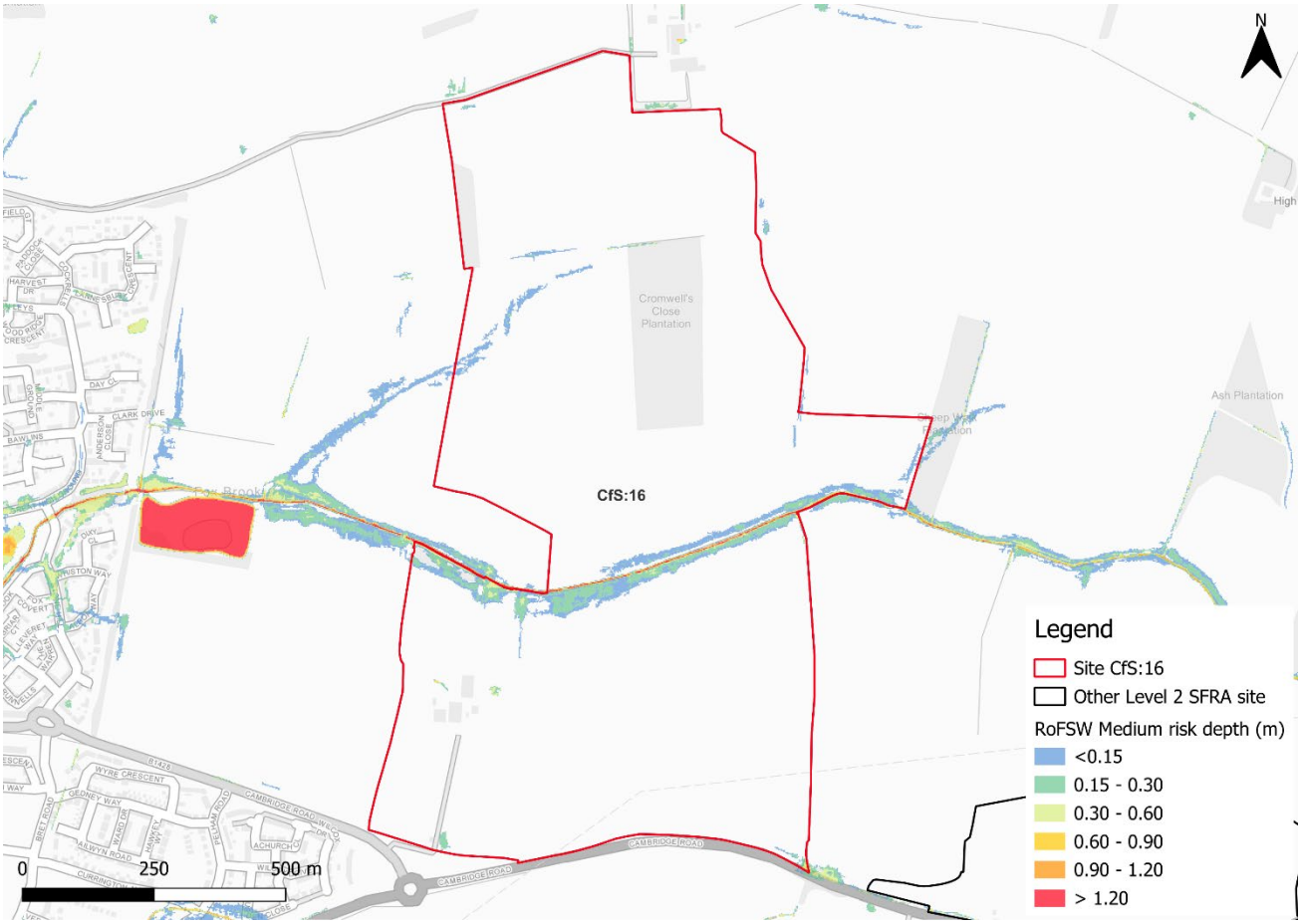

Figure 3-2: Medium risk event surface water flood depths (Third generation - Risk of Flooding from Surface Water map)

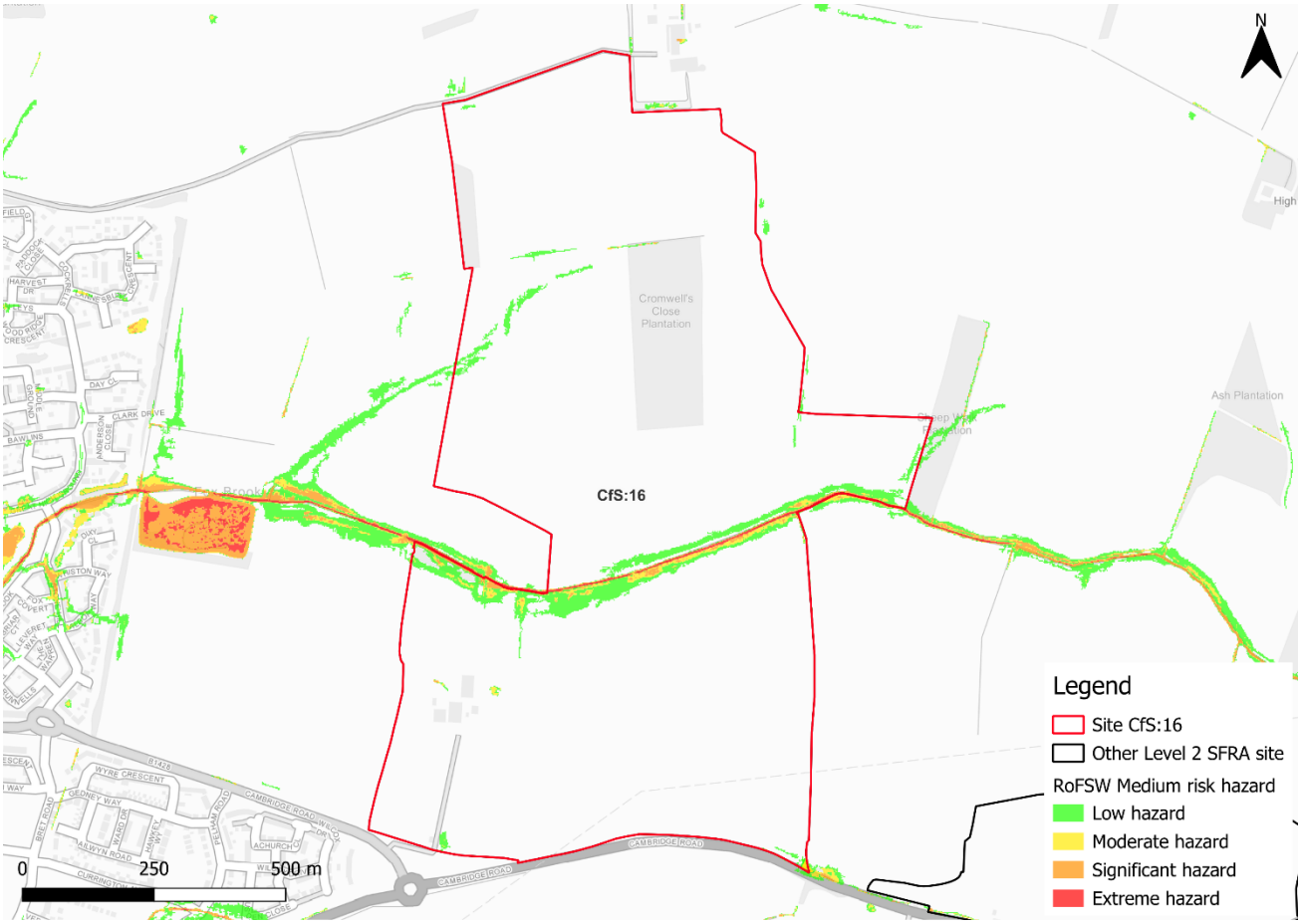

Figure 3-3: Medium risk event surface water flood hazard[1] (Third generation - Risk of Flooding from Surface Water map)

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 most notably in extent along Fox Brook and the flow paths through the centre and north of the site (Figure 3-4). The third generation surface water map indicates flood depths are likely to increase to between 0.6 and 0.9 m (Figure 3-5), with areas of significant and extreme hazard (Figure 3-6). However, as noted in Section 3.1.2, modelled depths and

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

hazards may vary from the third generation mapping, reinforcing the requirement for detailed assessment of surface water at the FRA stage to establish surface water flood risk conditions.

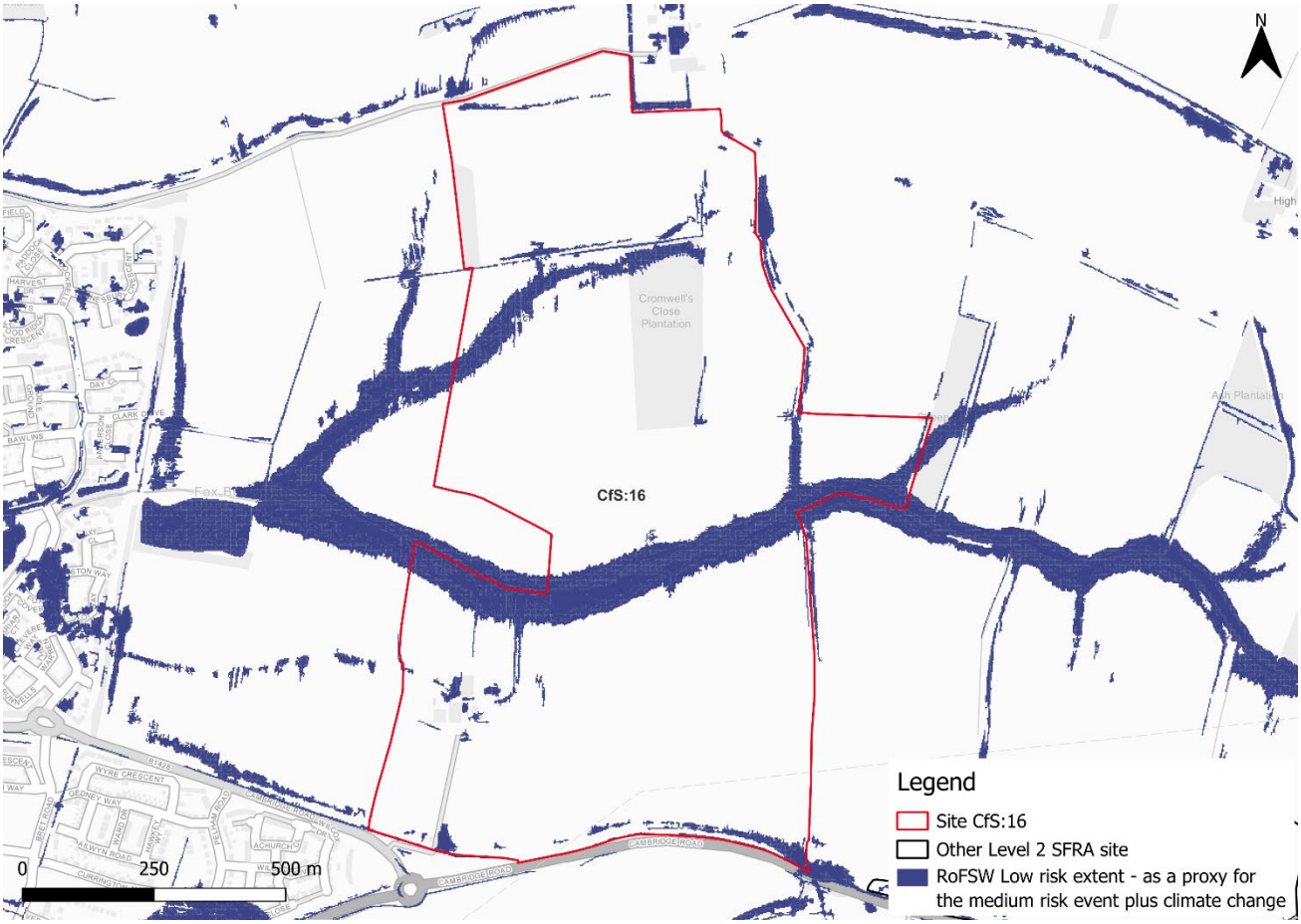

Figure 3-4: Low risk event surface water flood extent, as a proxy for the medium risk event plus climate change (NaFRA2 - Risk of Flooding from Surface Water map)

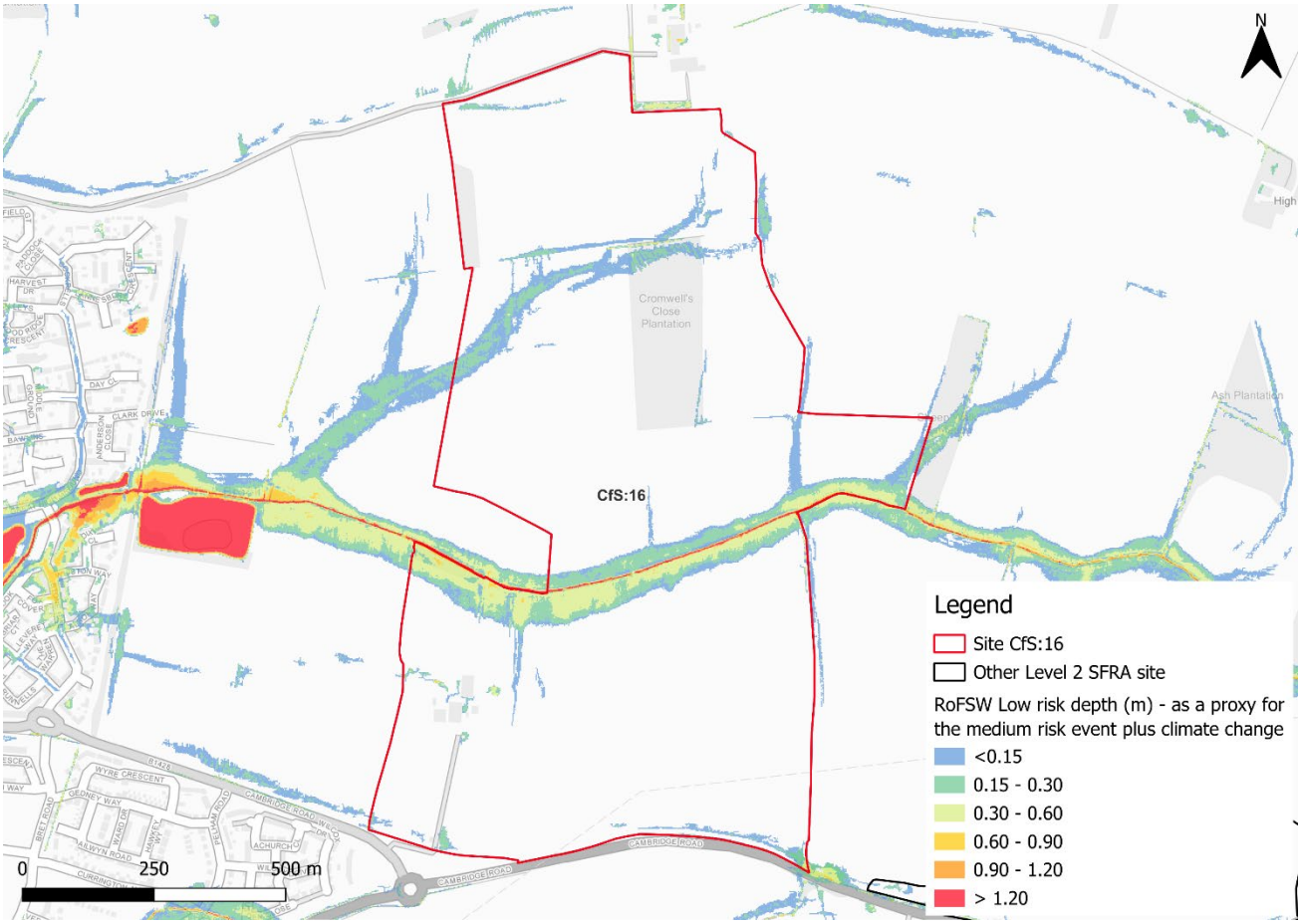

Figure 3-5: Low risk event surface water flood depths, as a proxy for the medium risk event plus climate change (Third generation - Risk of Flooding from Surface Water map)

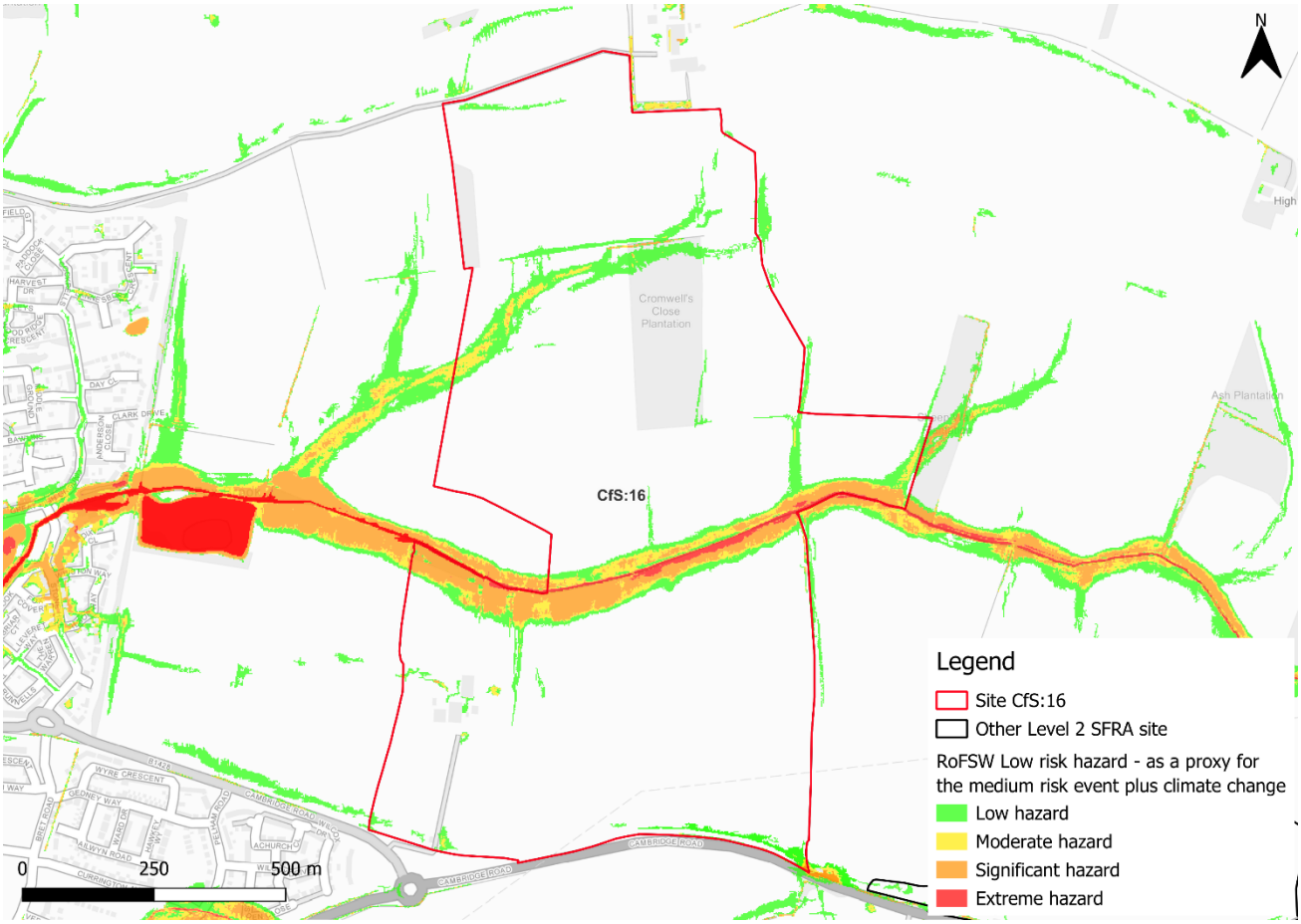

Figure 3-6: Low risk event surface water flood hazard, as a proxy for the medium risk event plus climate change (Third generation - Risk of Flooding from Surface Water map)

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

- Current risk to the site is predominantly very low, with 89% of the site being at very low surface water flood risk. Surface water risk in all events is largely confined to the areas immediately adjacent to Fox Brook, and within a surface water flow path in the north of the site.
- 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 modelled to increase most notably in extent in the areas immediately adjacent to Fox Brook.
- 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.
- The drainage strategy must ensure there is no increase in surface water flood risk elsewhere as a result of new development. Greenfield rates will apply, and the developer should follow the National SuDS guidance and any local guidance available from the LLFA.

- The main area of risk along Fox Brook and along the northern flow path should be left free of development and used as blue green corridors which can provide multiple benefits alongside flood risk, including ecological, social and amenity benefits.
- Topographic low spots and flow paths should be incorporated into site design and layout. Any infilling of ditches or ponds should be avoided.
- 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 Abbotsley and Hen Brooks catchment. This catchment is ranked as a high sensitivity catchment. Planning considerations for sites at high 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.

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

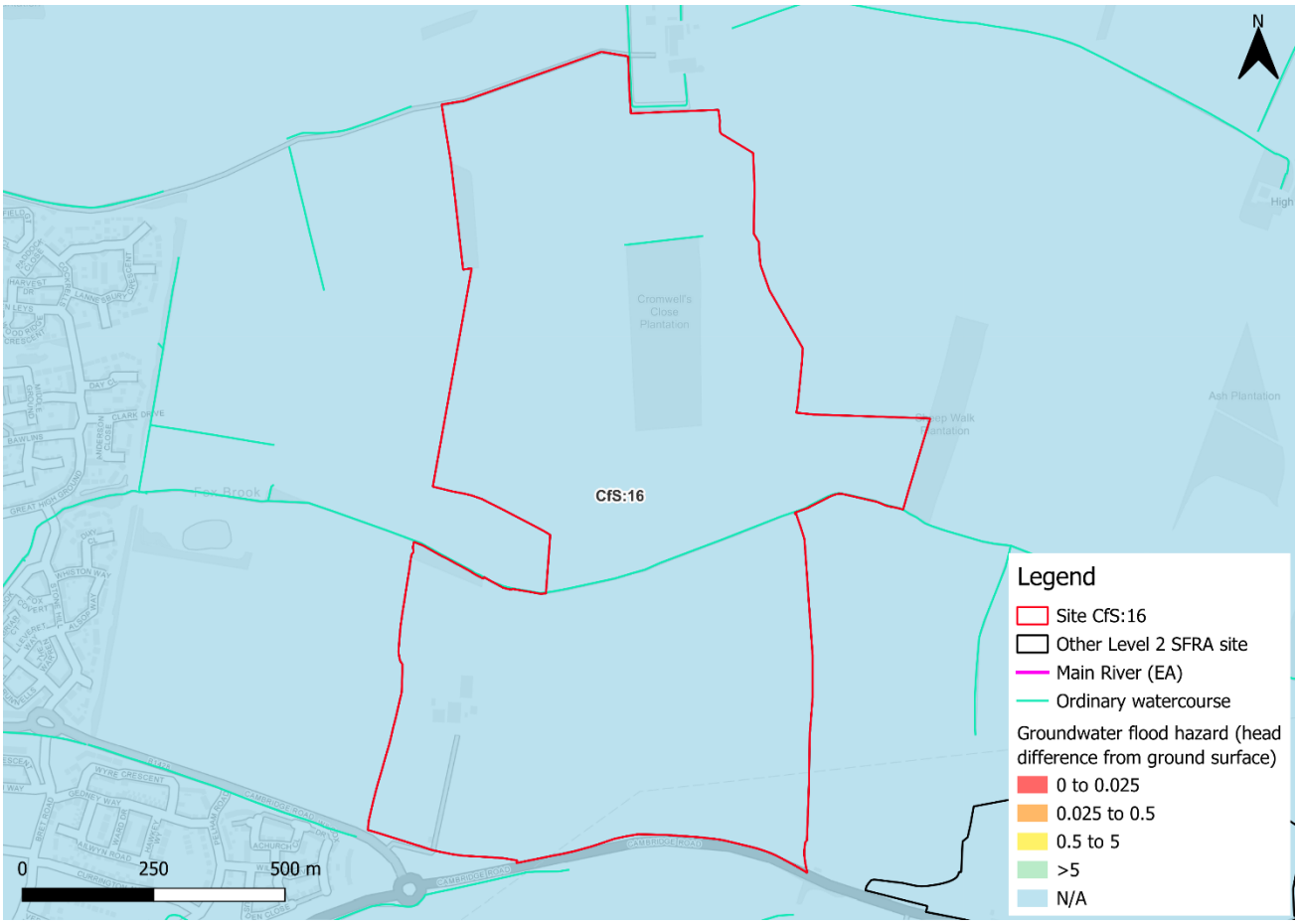

Figure 5-1: JBA 5m Groundwater Emergence Map

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.	

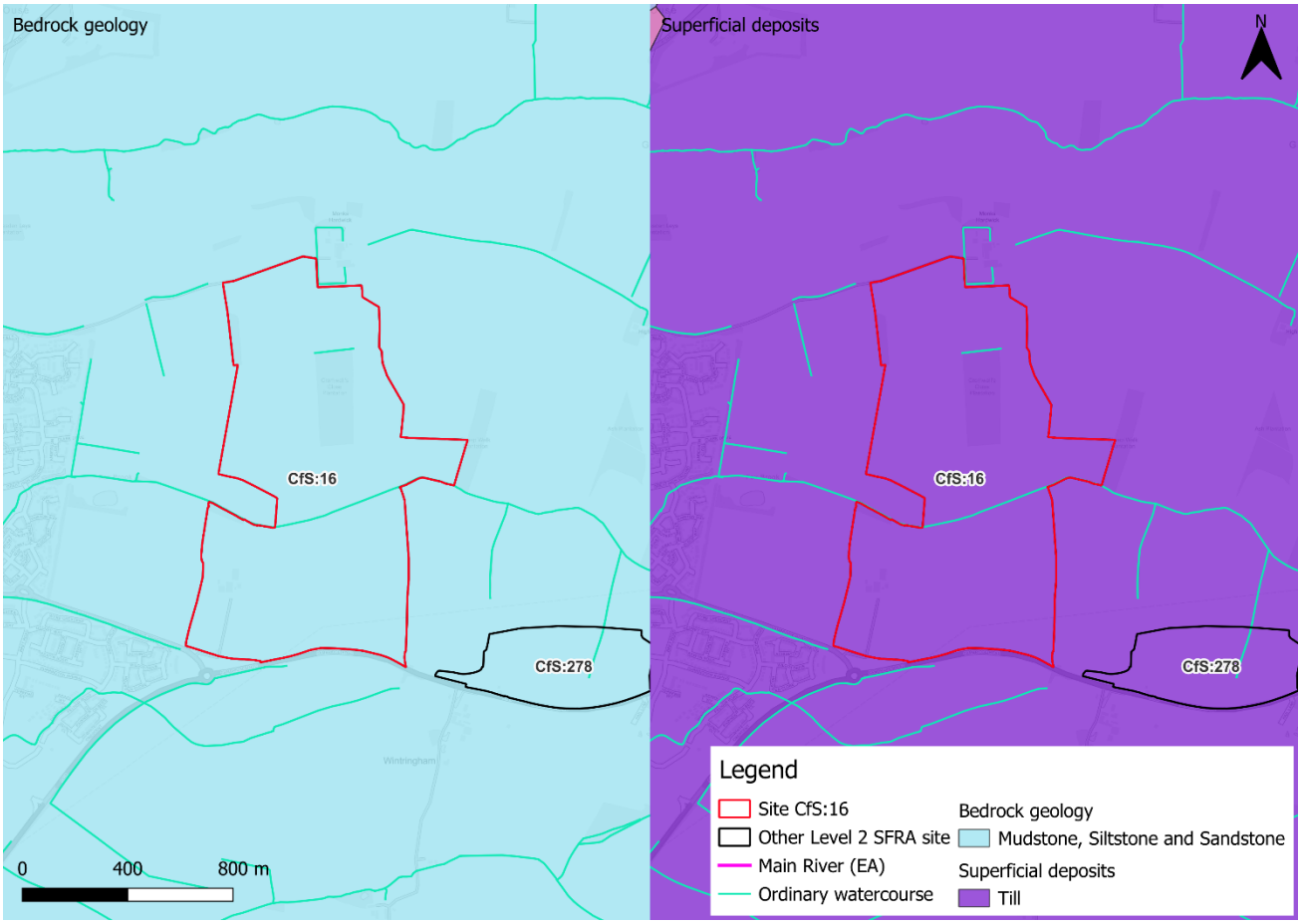

Figure 5-2: Soils and geology

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.

There does not appear to be any residual risk to the site.

6.1 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?

Although the site is not within Flood Zone 3a, the site is required to pass part b) of the exception test as it is proposed for more vulnerable development and is located within the modelled 1% AEP undefended extent. Based on the information presented in this Level 2 SFRA, the exception test could be passed and the site allocated.

7.2 Recommendations summary

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

- It should be appropriate to develop this site for more vulnerable purposes given its location within Flood Zone 1 and surface water flood risk being confined to flow paths and along Fox Brook.
- The main area of risk along Fox Brook and the flow path in the north should be left free of development and used as blue green corridors.
- Fox Brook should be kept in place and remain unobstructed. The channel should be maintained and included within the landscaping design of the development. The surface water flow path within the north of the site should also be considered within site design. This should be reviewed as part of a detailed drainage strategy for the site.
- A detailed drainage strategy will be required for any new development, given the large area of the site and the fact it is currently greenfield. Discharge rates should remain at greenfield rates at a minimum in consultation with the LLFA.
- Opportunities for NFM features to reduce flood risk to the site and surrounding areas should be explored at the site-specific FRA stage.
- Any access crossing of Fox Brook must not restrict flows.

7.3 Site-specific FRA requirements and further work

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

- Further modelling to understand the impacts of climate change on surface water flood risk to the site.
- Further consideration of surface water flood risk, including a drainage strategy. Discharge rates should remain at greenfield rates at a minimum in consultation with the LLFA.
- 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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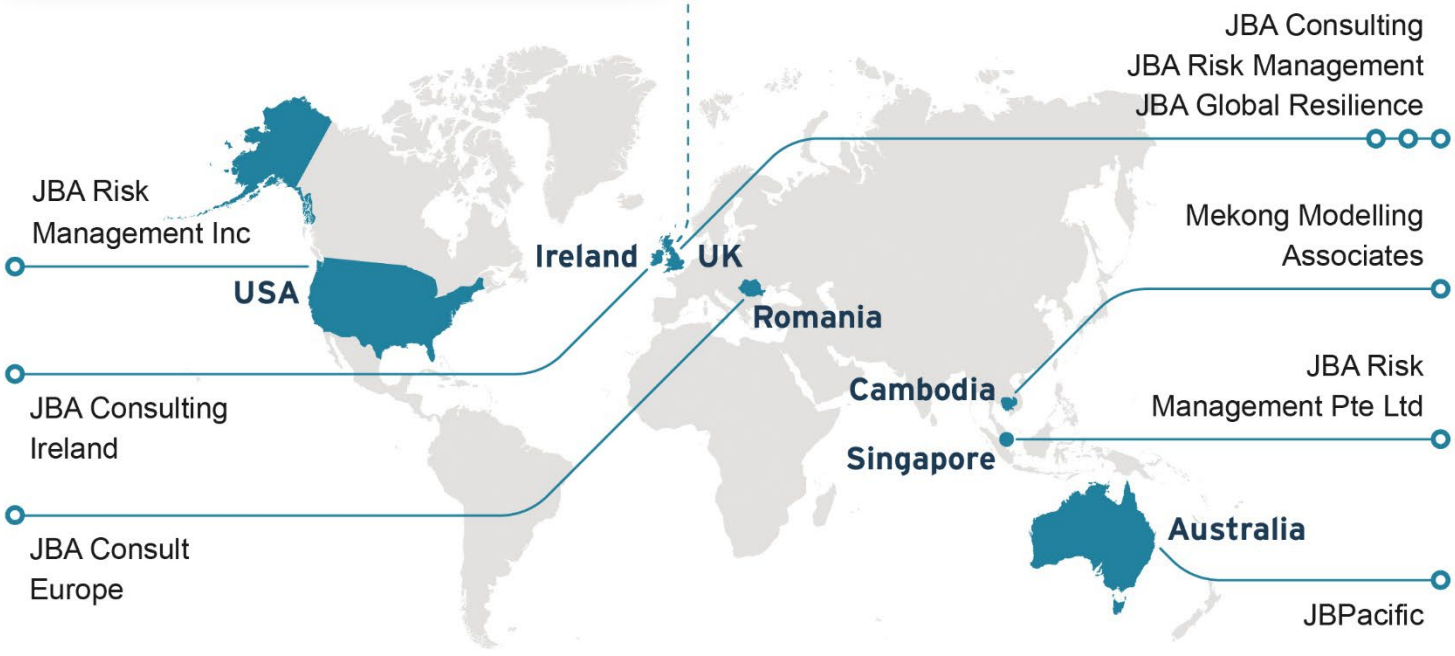

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