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Huntingdonshire Level 2 Strategic Flood Risk Assessment Site Summary

Site CfS:203

Final Report

Prepared for

Huntingdonshire District Council

Date

November 2025

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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. (Jackson Pawley) of JBA Consulting carried out this work.

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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:203. 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:203

- Location: Land West of Little Paxton
- Existing site use: Agricultural
- Existing site use vulnerability: Less vulnerable
- Proposed site use: Mixed Use
- Proposed site use vulnerability: More vulnerable
- Site area (ha): 20.4
- Watercourse: River Kym and Great River Ouse
- Environment Agency (EA) model: Lower Ouse 2015 (River Kym model)
- 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

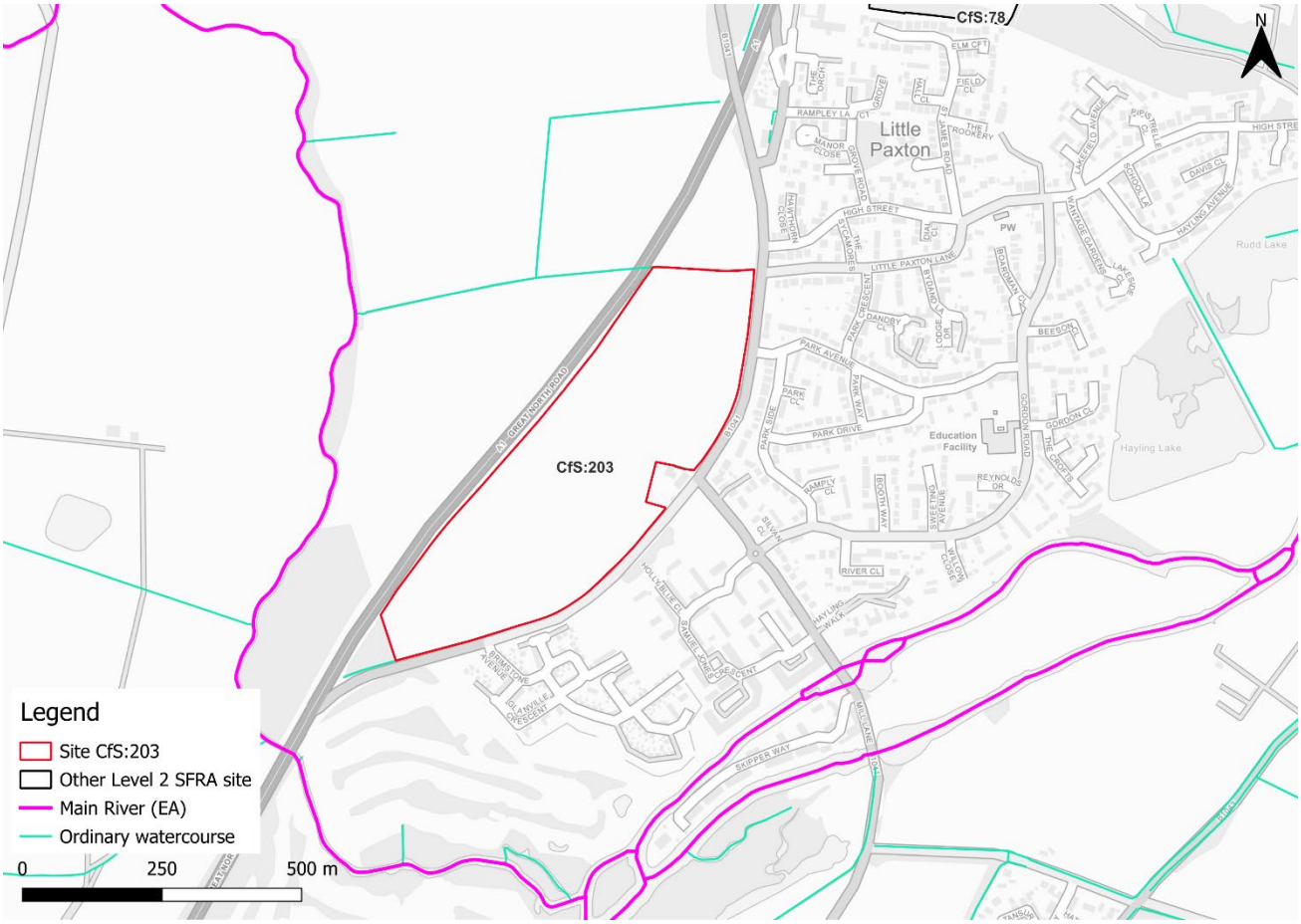

Figure 1-1: Existing site location boundary

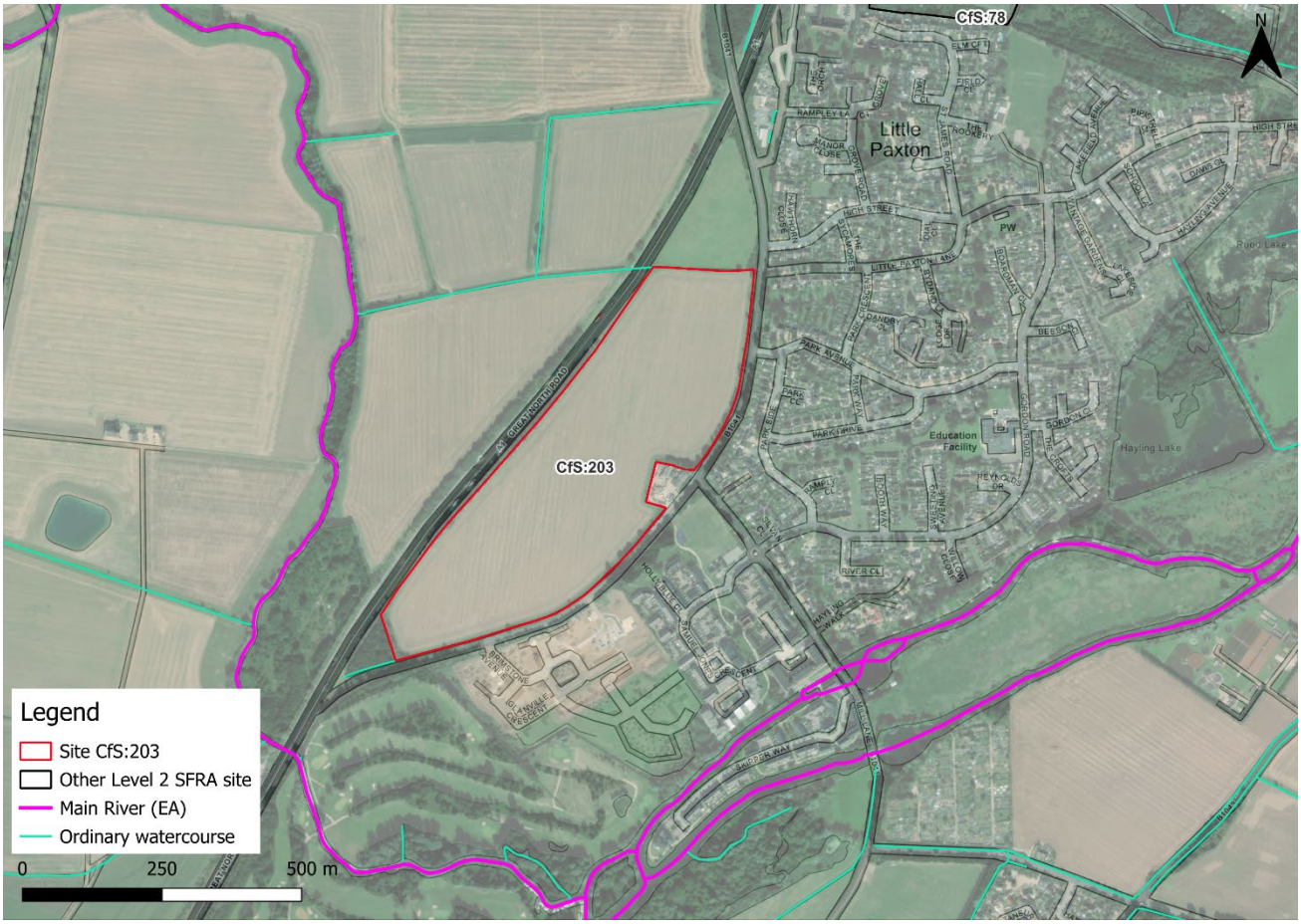

Figure 1-2: Aerial photography

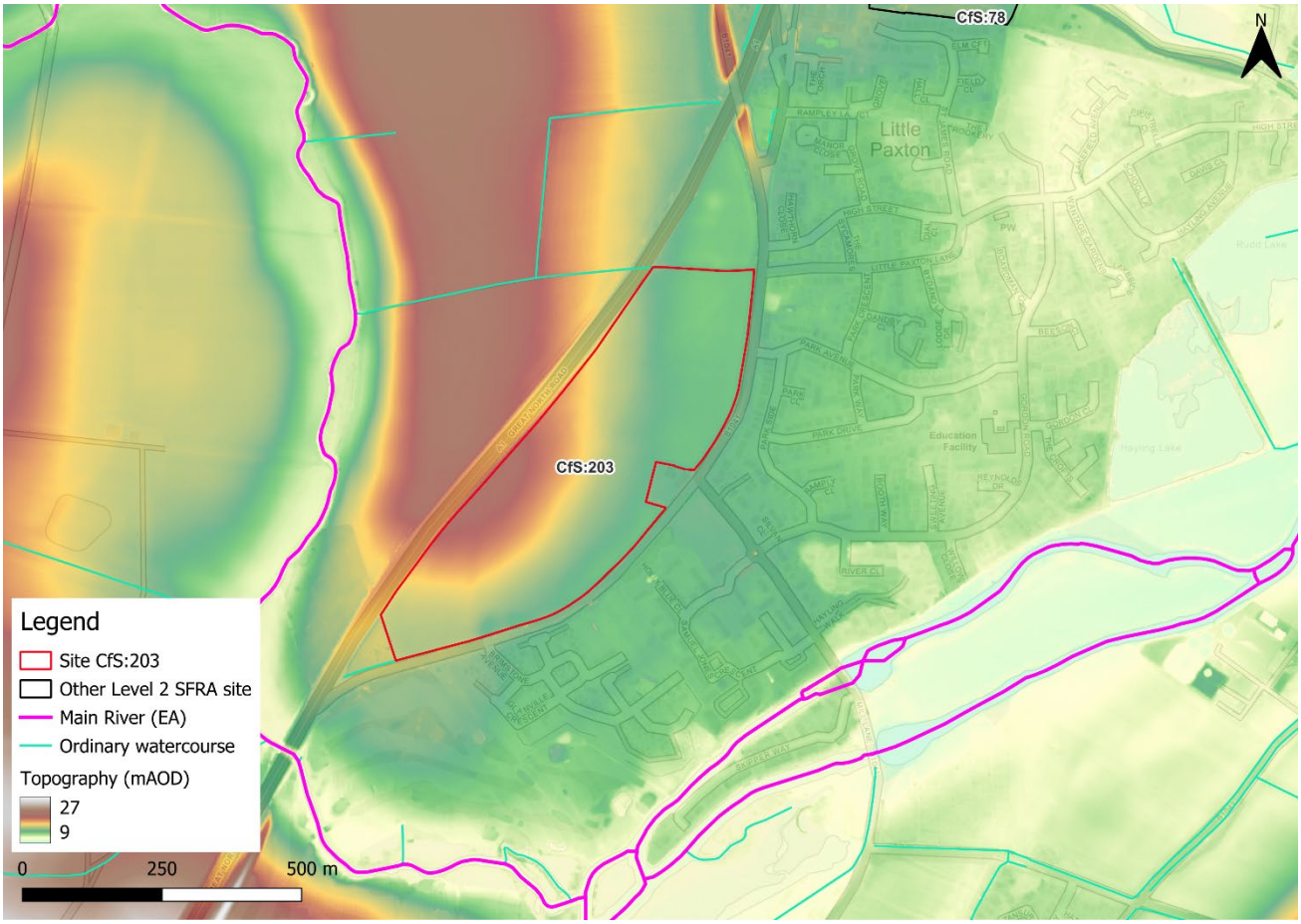

Figure 1-3: Topography

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. The source of the flood zones in this area is fluvial.

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

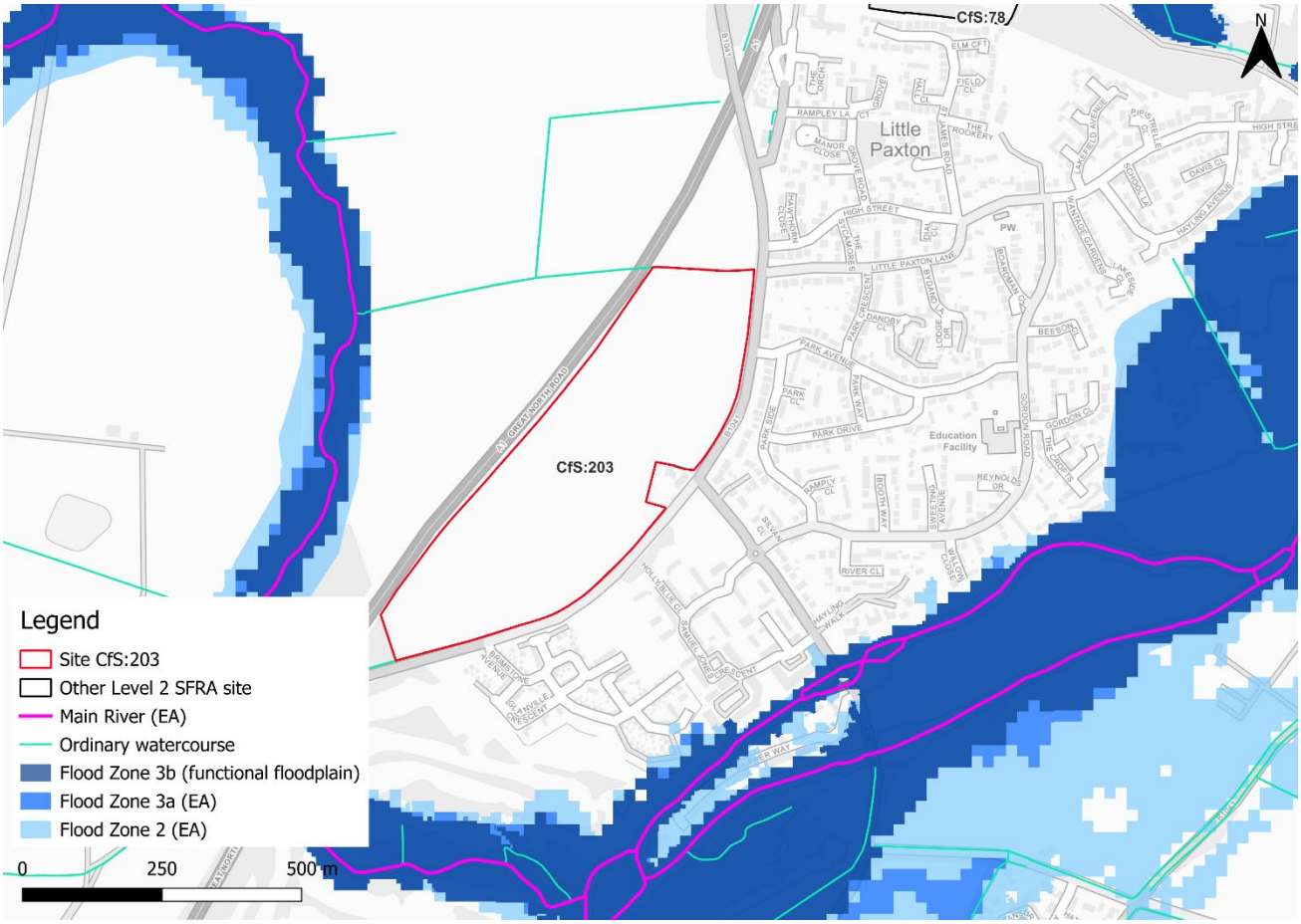

Figure 2-1: Existing risk

2.1.2 Fluvial undefended model outputs (River Kym, 2015)

The Lower Ouse 2015 (River Kym) detailed model shows that the flood risk from the River Kym is not modelled to impact the site.

2.2 Flood risk management

2.2.1 Flood defences

There are no flood defences in the vicinity of the site, 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 2-27. Note, the WwNP mapping is broadscale and indicative, therefore further investigation will be required for any land shown to have potential for WwNP. There is potential for Wider Catchment Woodland over most of the site and Riparian Woodland on the norther, southern, and eastern borders. Tree planting can help to reduce runoff.

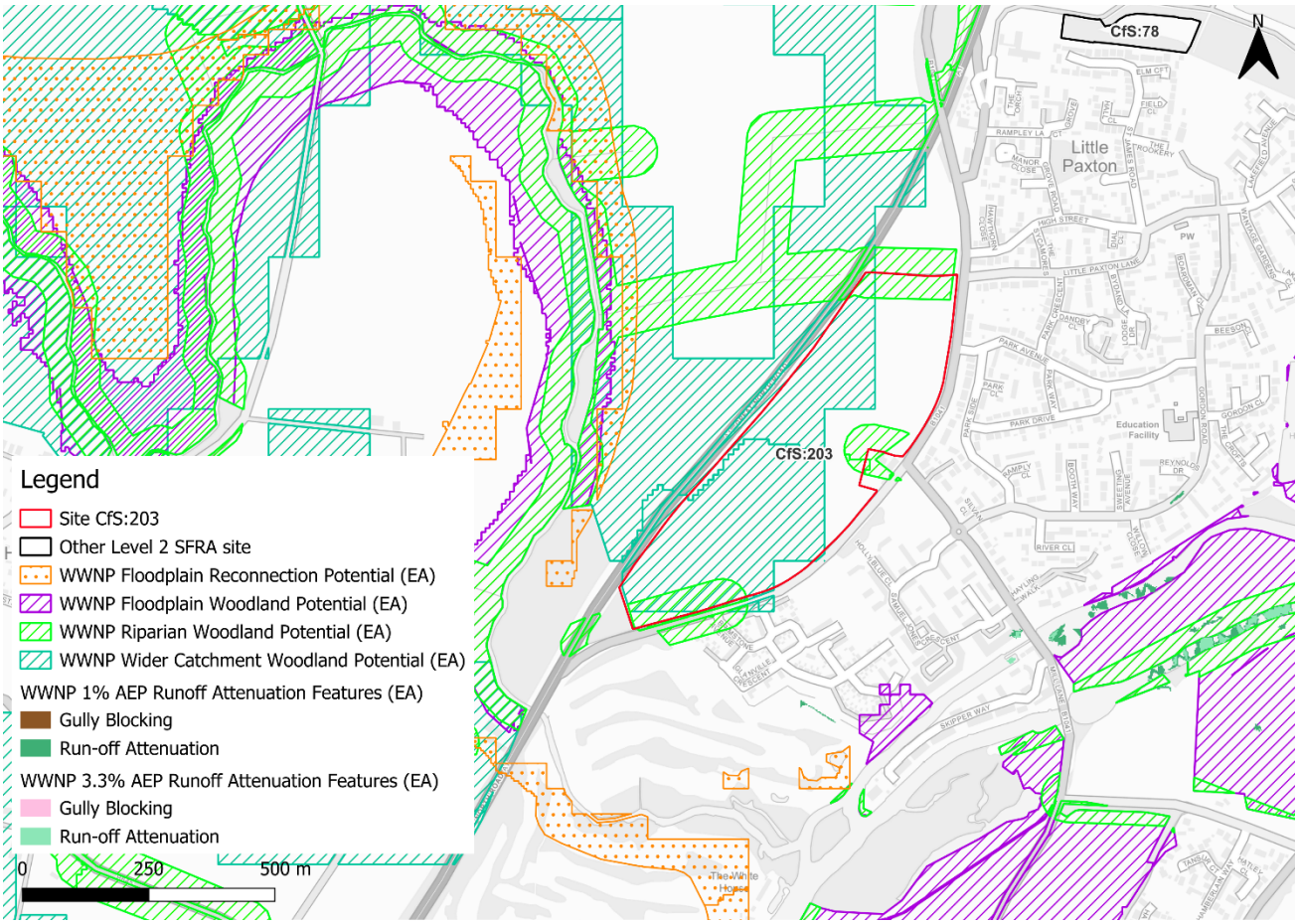

Figure 2-2: Natural Flood Management (NFM) potential mapping

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.

The impacts of climate change on flood risk from the River Kym have been modelled with and without flood defence infrastructure in place, where applicable.

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 Upper and Bedford Ouse management catchment

Return period (AEP event)	Central allowance 2080s (% increase)	Higher central allowance 2080s (% increase)
3.3% (functional floodplain)	19	30
1%	19	30
0.1%	19	30

The Lower Ouse 2015 (River Kym) detailed model shows that the climate change flood risk from the River Kym is not modelled to impact the site.

The Flood Map for Planning - Flood Zones plus Climate Change information also shows the site to not be additional risk from fluvial climate change.

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 and mapped in Figure 2-3 which shows that there have been recorded historic flood incidents from 1947 and 1992 within close proximity to the site. The flood source is unknown in both of these events.

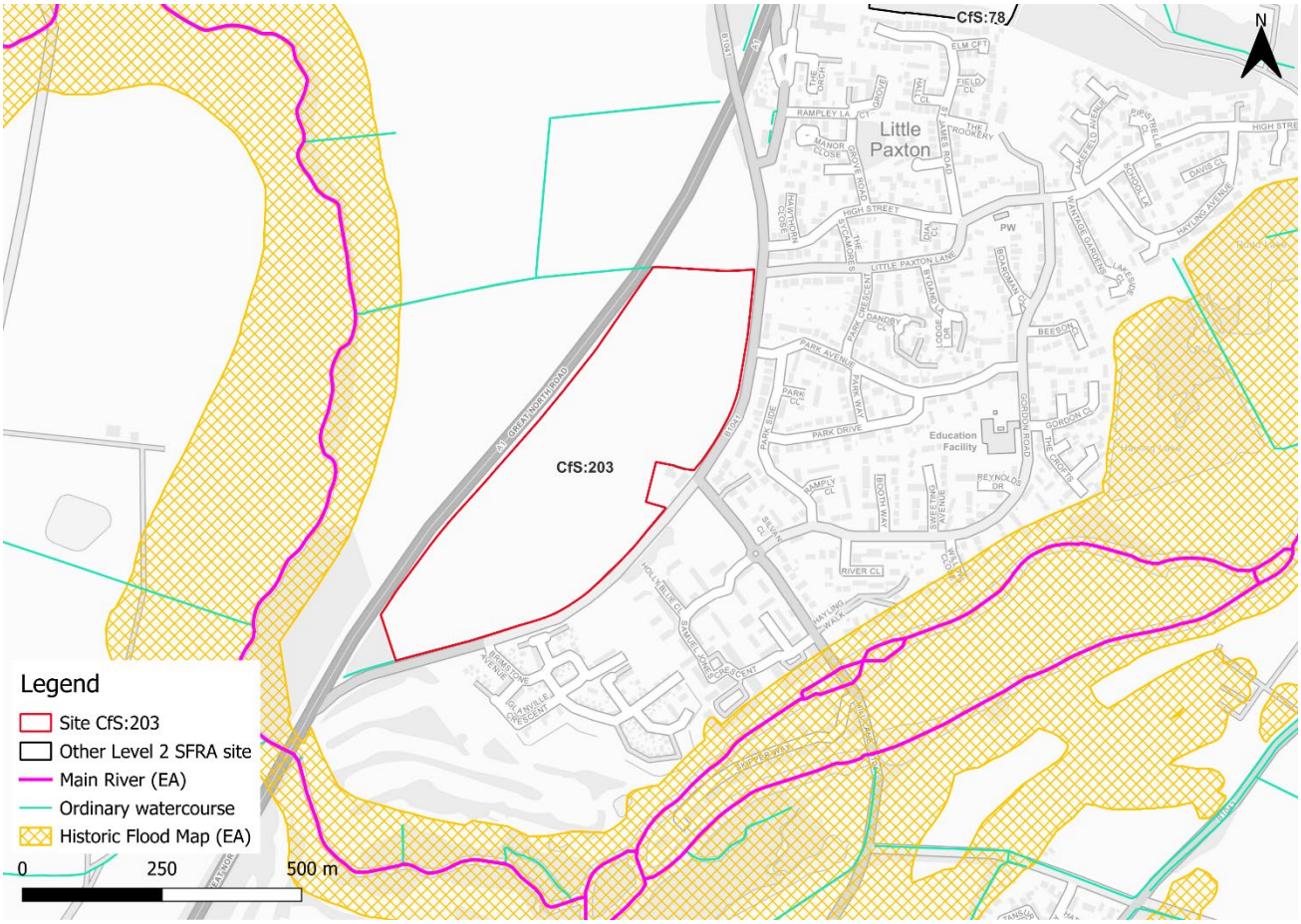

Figure 2-3: Recorded historic flood events onsite and around the site

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 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 the B1041, as shown in Figure 2-4.

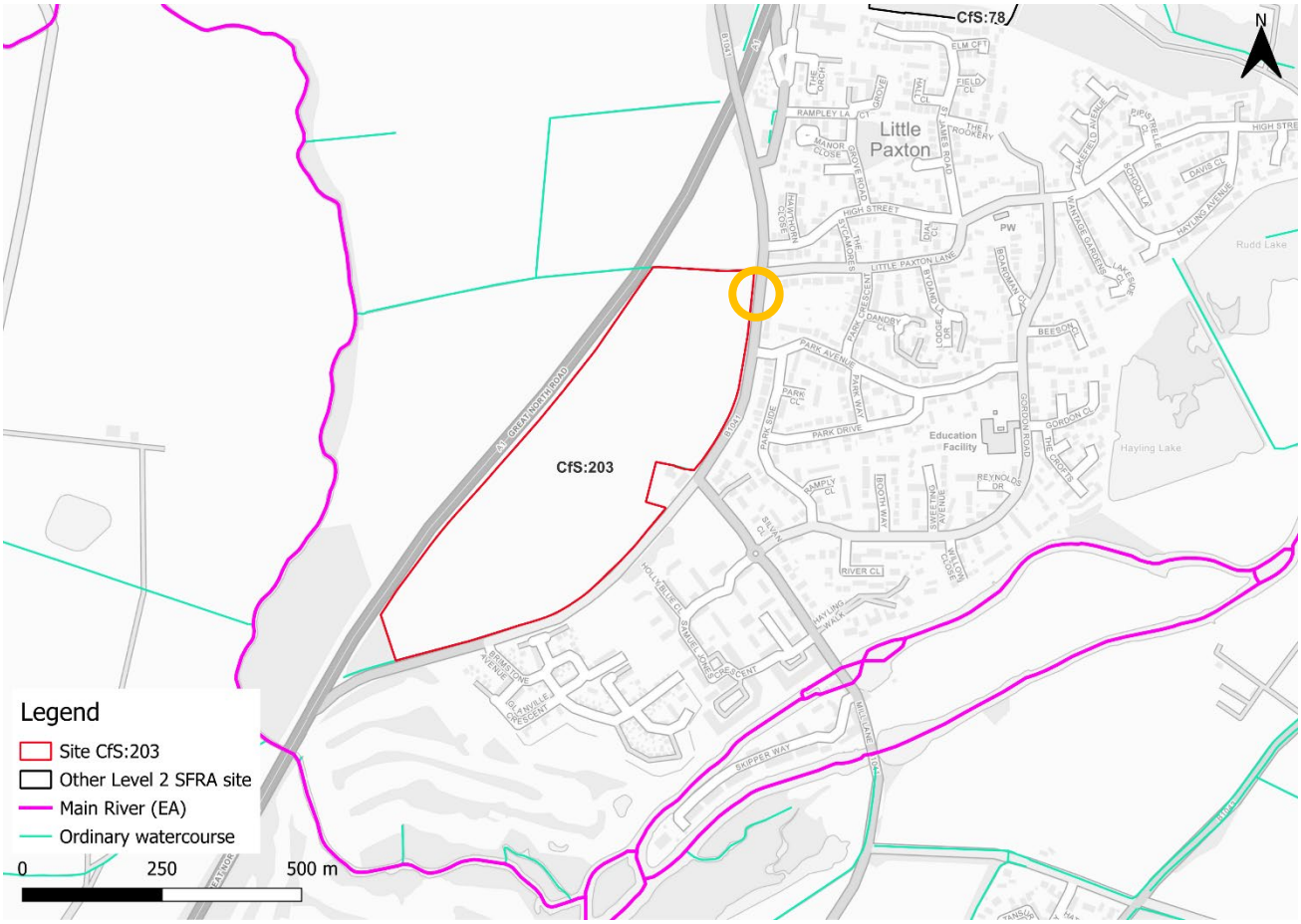

Figure 2-4: Potential access and escape routes

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.
  - The whole of the site is within Flood Zone 1 and therefore at low risk of flooding from rivers and sea. There is no modelled additional fluvial risk from climate change.
  - The extent of fluvial risk from the unmodelled watercourse is currently unknown. Using the 0.1% AEP surface water event as a proxy, risk is modelled to the eastern boundary of the site, stretching to the northeastern and southern corners.
- Defences:
  - There are no defences protecting the site, according to the EA's Spatial Flood Defences dataset.
- Mitigation:
  - The site-specific FRA should investigate risk from the ordinary watercourses to fully understand potential onsite fluvial risk.

- Given the proximity of the site to the River Kym and Great River Ouse and other ordinary watercourses, a flood risk activity permit for development may be required. The type of permission required must be sought from the Environment Agency, Lead Local Flood Authority or Internal Drainage Board.

- Access and escape:
  - Safe access and escape routes must be available at times of flood and appear to be available from the northeast of the site, via the B1041.

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, flood risk across the site is minimal. 3% of the site is modelled to be at risk during the high risk event, 6% is at risk in the medium risk event and 13% is at risk during the low risk event. 87% of the site is at very low risk of flooding from surface water, as shown in Table 3-1. Flood risk is predicted in the east of the site parallel to the B1041. Flooding is more severe in the northeast and southeastern corners of the site, as shown in Figure 3-1.

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)
87	13	6	3

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, during the medium risk event, flood depths in the affected areas range between 0.15 and 0.6m. The hazard is largely a low hazard with a small patch with a moderate hazard classification.

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.

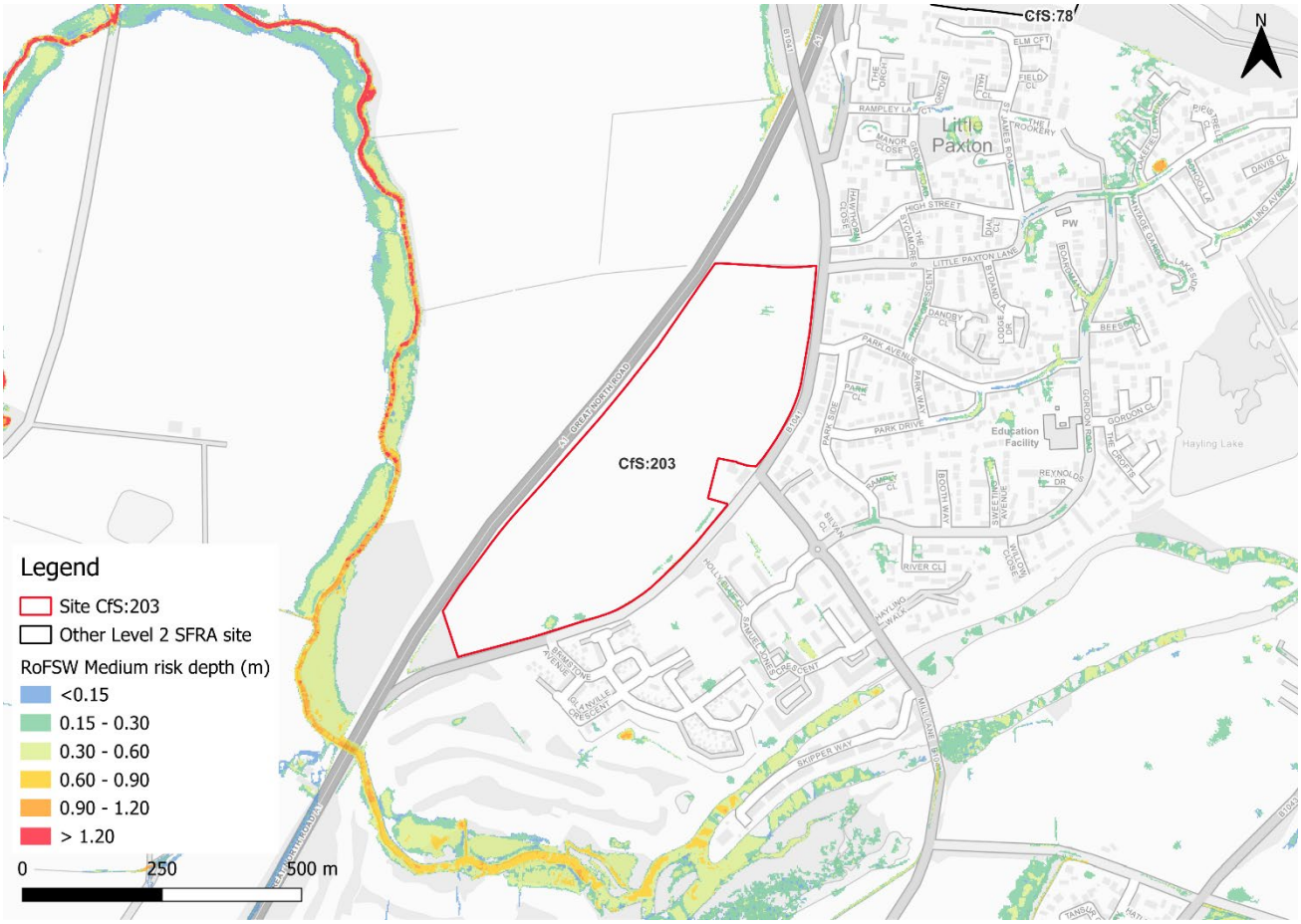

Figure 3-2: Medium risk event surface water flood depths (Third generation - Risk of Flooding from Surface Water map)

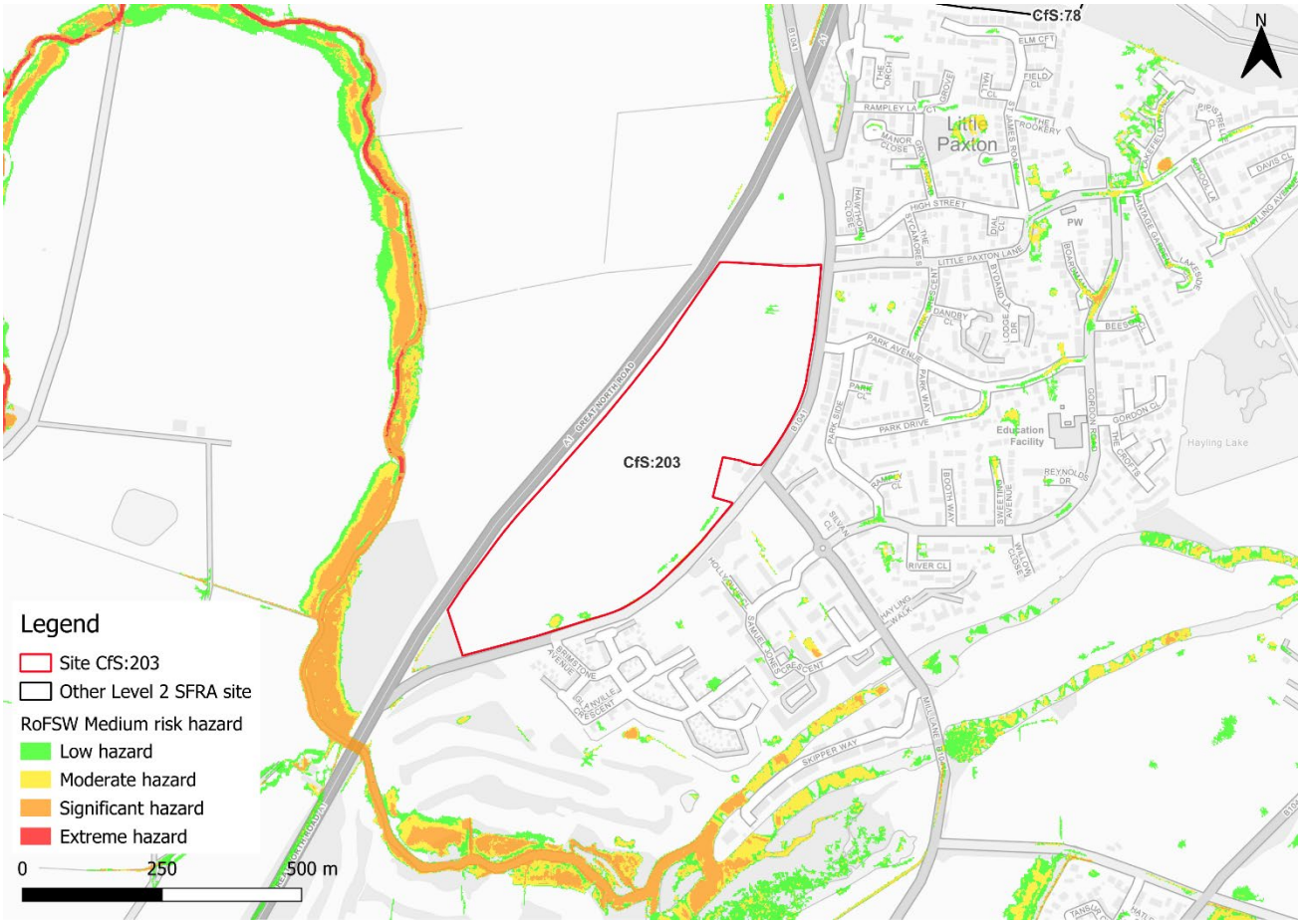

Figure 3-3: Medium risk event surface water flood hazard[1] (Third generation - Risk of Flooding from Surface Water map)

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.

Based on the information available, surface water flood risk to the site may increase with climate change. The extents in the northeast, east and south may expand in size. Flood depths are modelled to remain between 0.15 and 0.6m but there is a larger extent with a moderate hazard classification predicted in the southeast as well as a small extent with a significant hazard.

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

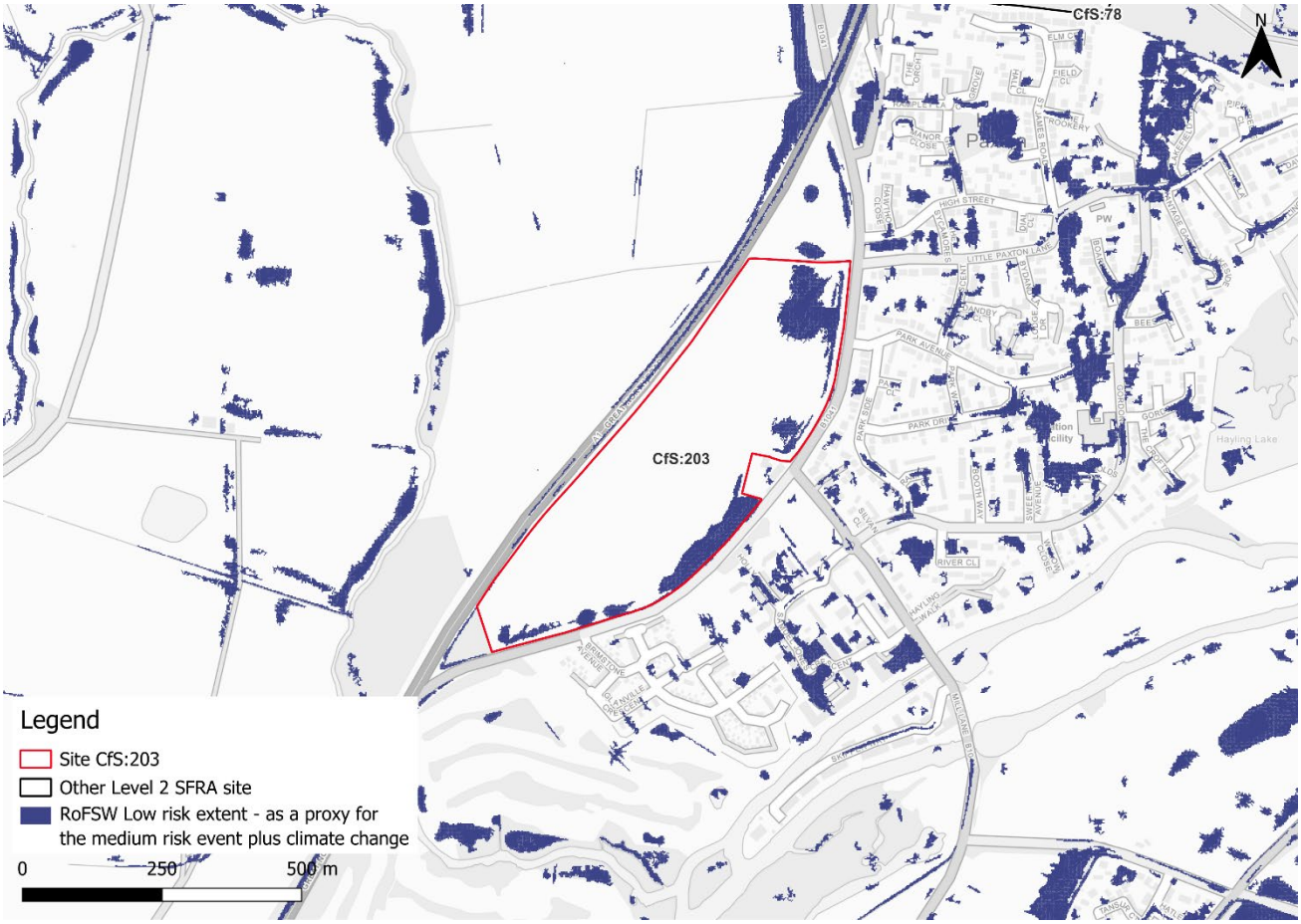

Figure 3-4: Low risk event surface water flood extent, as a proxy for the medium risk event plus climate change (NaFRA2 - Risk of Flooding from Surface Water map)

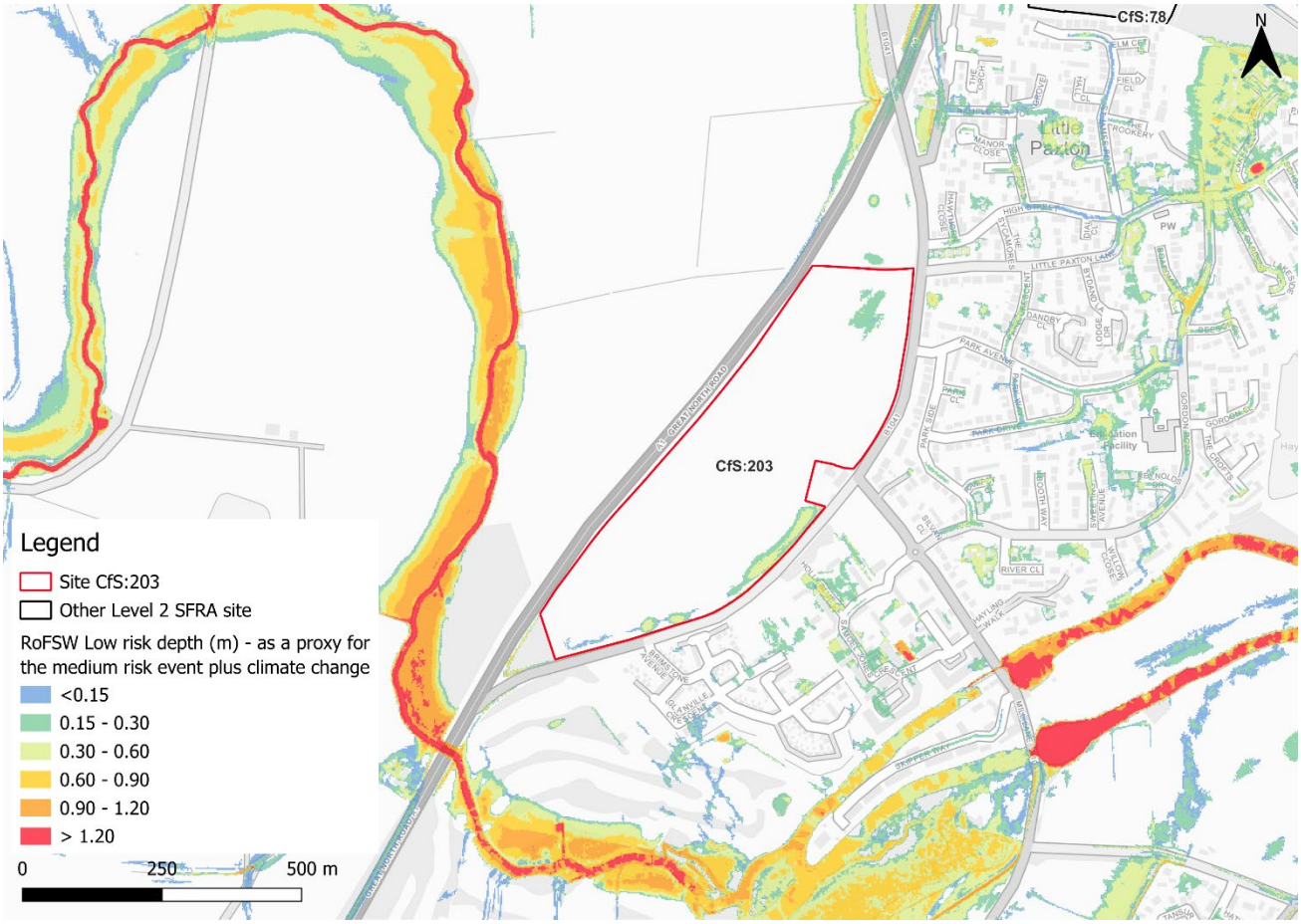

Figure 3-5: Low risk event surface water flood depths, as a proxy for the medium risk event plus climate change (Third generation - Risk of Flooding from Surface Water map)

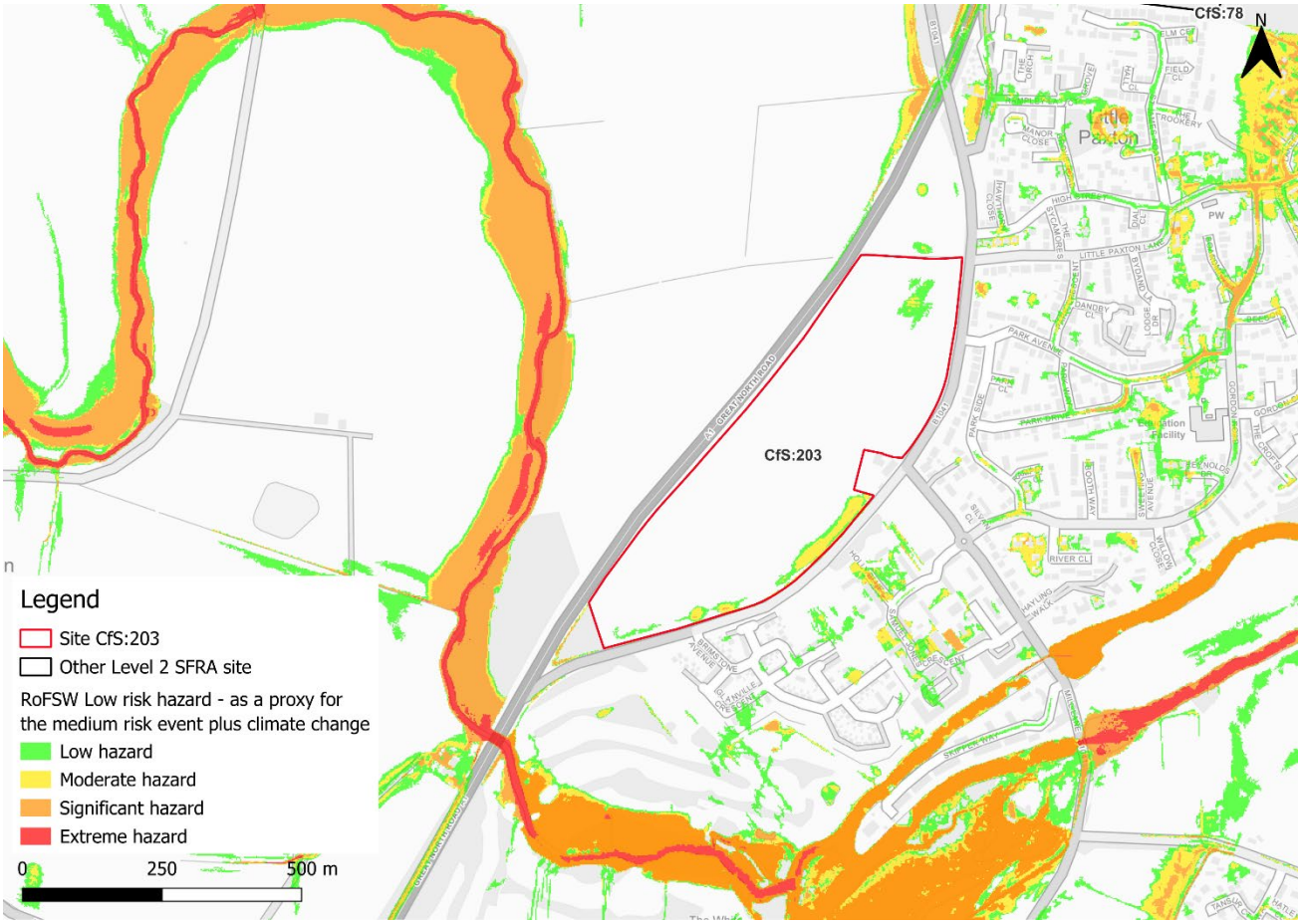

Figure 3-6: Low risk event surface water flood hazard, as a proxy for the medium risk event plus climate change (Third generation - Risk of Flooding from Surface Water map)

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

- Current risk to the site is predominantly very low, with 88% of the site being at very low surface water flood risk. Surface water risk in the high and medium risk events is confined to areas of ponding within topographic low spots in the east 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 largely similar to the medium risk event, with a greater extent parallel to the B1041 on the eastern boundary, in the northeast and south.
- 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.
- 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 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.
- Topographic low spots and flow paths should be incorporated into site design and layout.
- 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.
- The LLFA agree with the recommendation for this site and would add that safe access and escape should be considered carefully given the higher risk of surface water flooding on the eastern/B2041 boundary of the site.

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 two catchments, namely, the Kym catchment which covers the northern half of the site and the Ouse (Roxton to Earith) catchment which covers the southern half of the site. The catchments are ranked as a low and high sensitivity catchments respectively. Planning considerations for sites at low and 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.

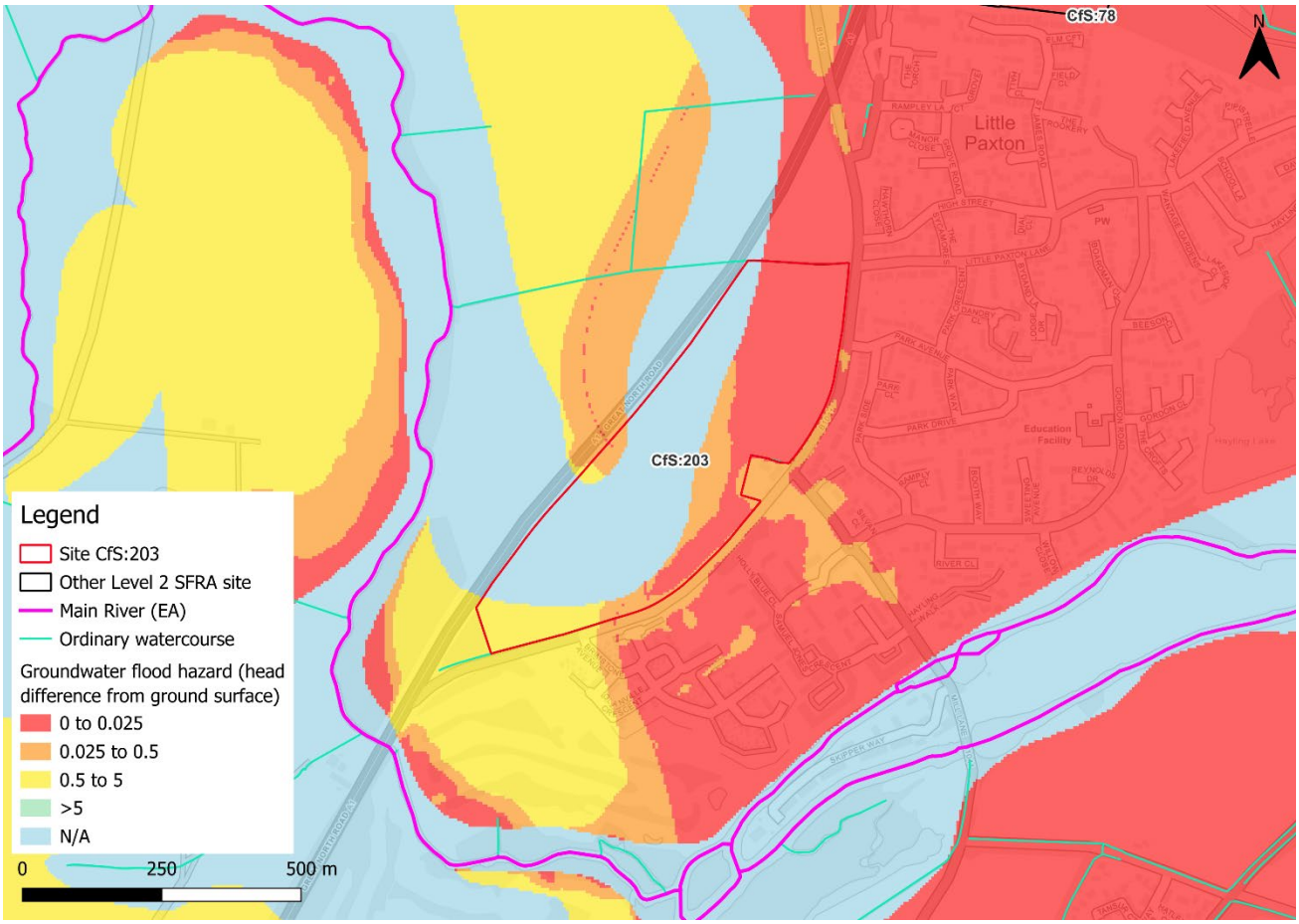

Figure 5-1: JBA 5m Groundwater Emergence Map

Groundwater emergence risk is variable across the site. The northeast of the site is shown to have groundwater levels at or very near (within 0.025m of) the ground surface in the 100-year return period flood event. While the east and south have groundwater levels between 0.025 and 0.5m and 0.5 to 5m respectively. The western area of the site has no risk. Infiltration SuDS are therefore unlikely to be appropriate at this site. The site-specific FRA should further investigate groundwater levels through percolation testing in both wet and dry weather conditions across the site.

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.	

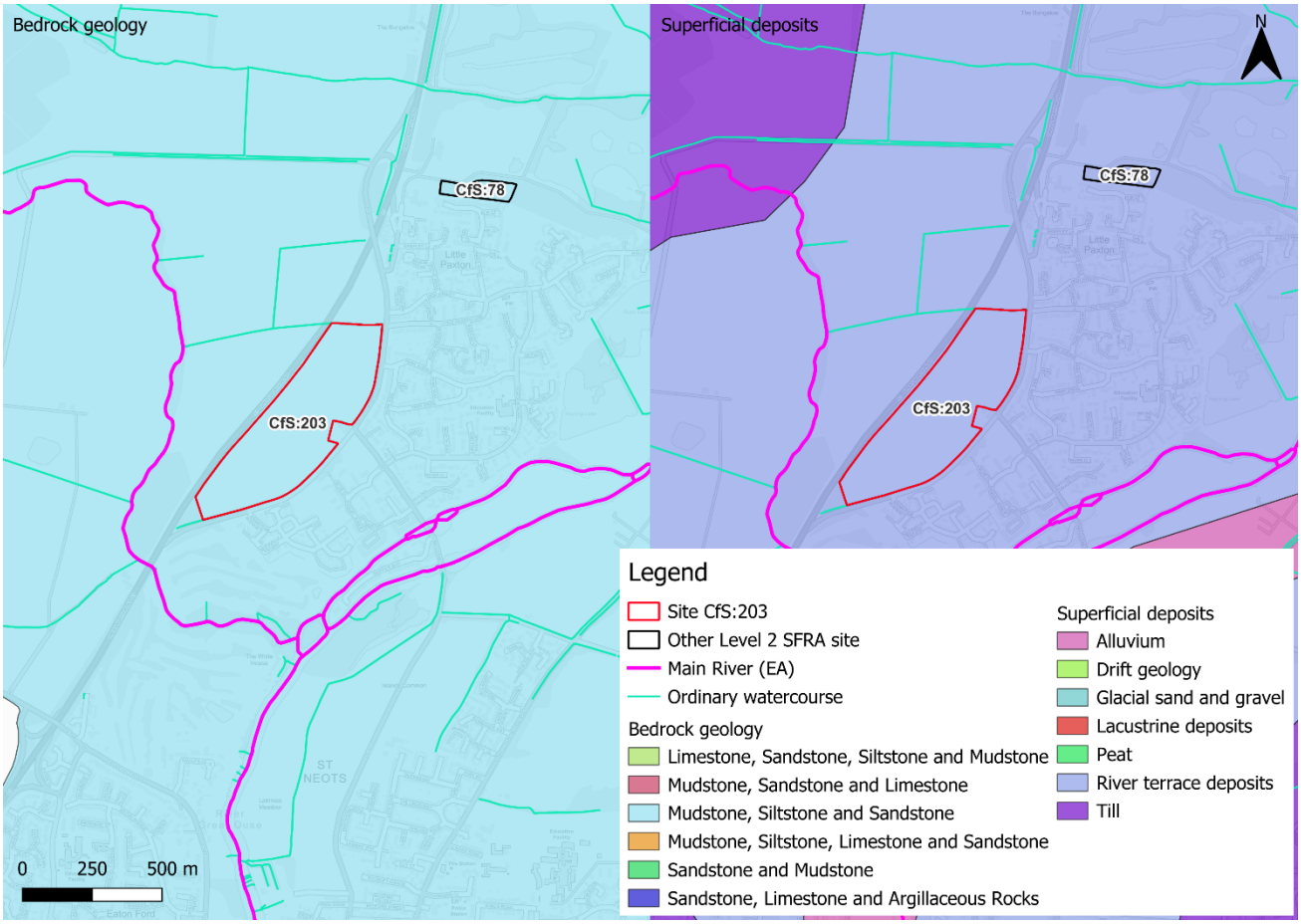

Figure 5-2: Soils and geology

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 culverts beneath the A1 northwest and southwest of the site.

6.1 Potential blockage

A blockage of the culverts 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.

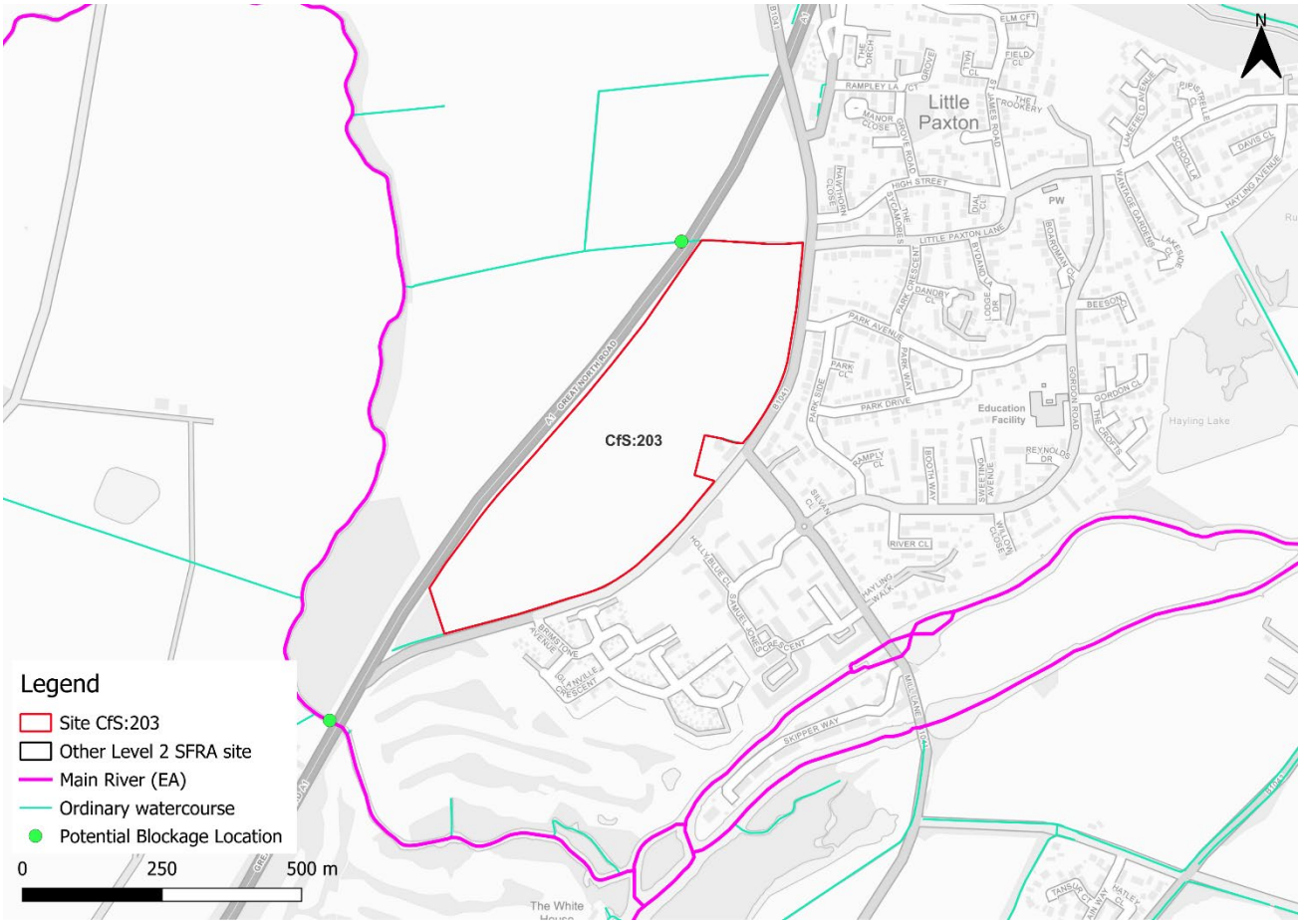

Figure 6-1: Potential blockage locations

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. 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 not required to pass part b) of the exception test as it is not located within Flood Zone 3a, however it must still be proven that the development can be safe for its lifetime, which is 100 years for residential development.

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 nominal surface water flood risk.
- Risk from the ordinary watercourses should be investigated at the FRA stage. Modelling may be required.
- 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.
- There is potential residual risk to the site from a blockage of the culvert beneath the A1.
- Groundwater conditions must be investigated further through the site-specific FRA. The potential use of infiltration SuDS should be investigated.
- 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.

7.3 Site-specific FRA requirements and further work

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

- Investigation into potential risk from the ordinary watercourses.
- Investigation into groundwater conditions and the production of a detailed drainage strategy.
- 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.
- The requirement of a permit for developing near an ordinary watercourse should be investigated.
- 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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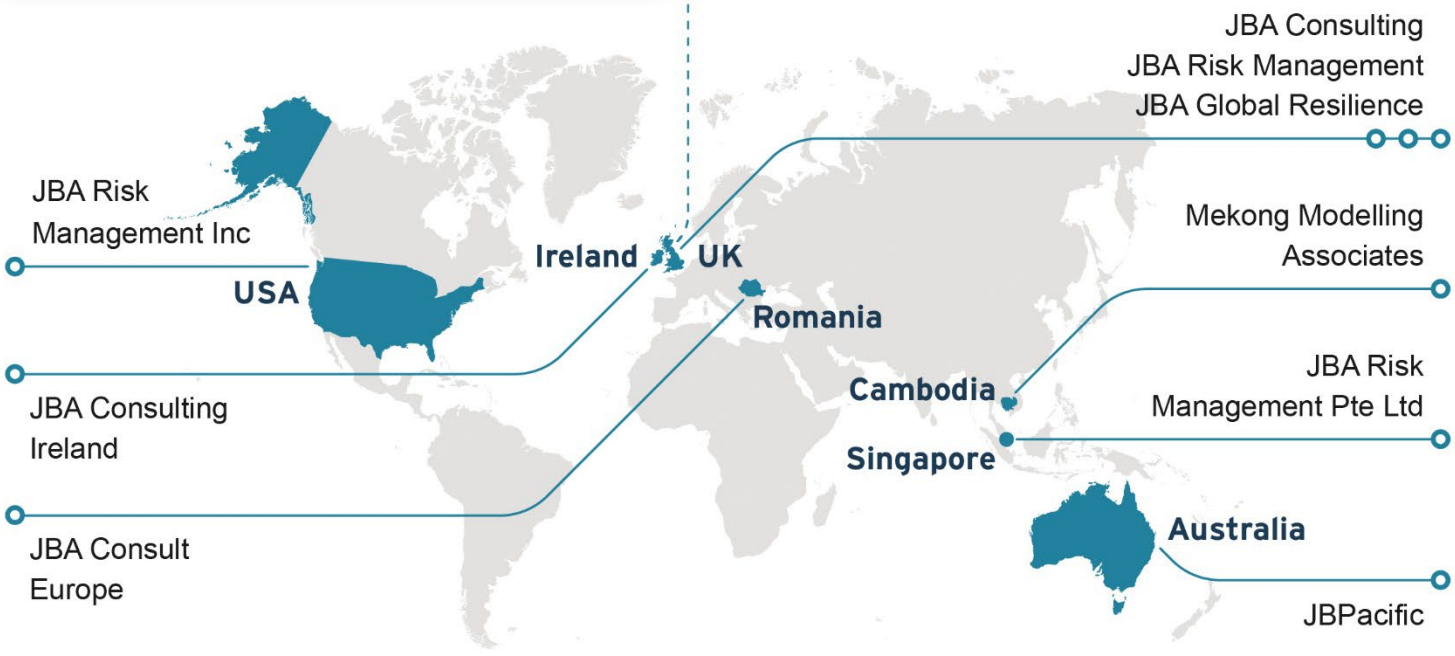

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