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Huntingdonshire Level 2 Strategic Flood Risk Assessment Site Summary

Site CfS:275

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 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:275. 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:275

- Location: Former RGE Engineering Site and HDC Car Park, The Avenue, Godmanchester
- Existing site use: car park and vacant industrial buildings
- Existing site use vulnerability: Less vulnerable
- Proposed site use: Residential
- Proposed site use vulnerability: More vulnerable
- Site area (ha): 2.5
- Watercourse: River Great Ouse
- Environment Agency (EA) model: Lower Ouse - Downstream 2015
- Summary of requirements from Level 2 SFRA scoping stage:
    - 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

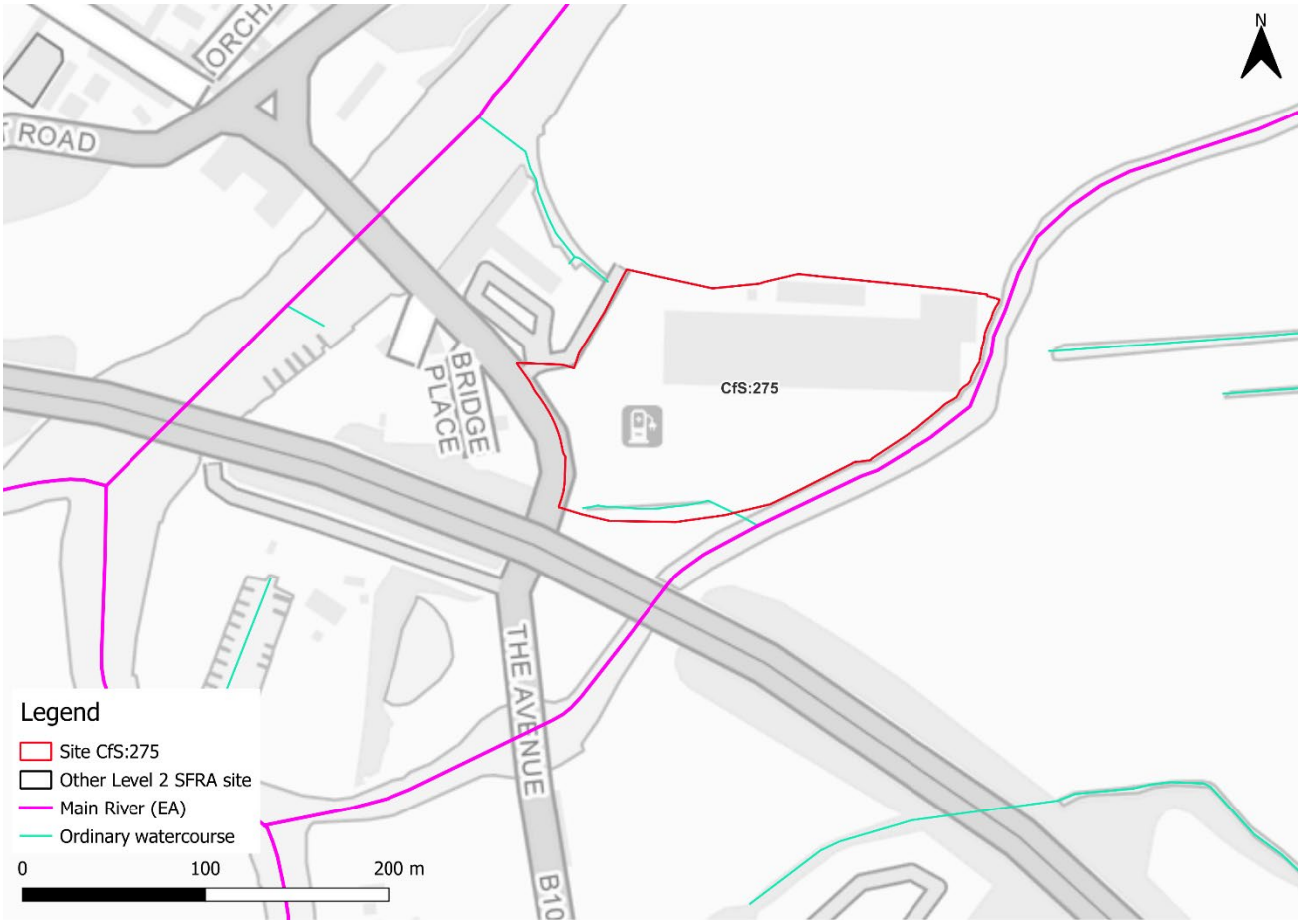

Figure 1-1: Existing site location boundary

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 north, east and south of the site are within Flood Zone 3b, which is based on the Flood Map for Planning 3.3% AEP defended event with a small patch in the north within Flood Zone 2 due to close proximity to surrounding rivers. The centre and west of the site is in Flood Zone 1.

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)
65	7	0	28

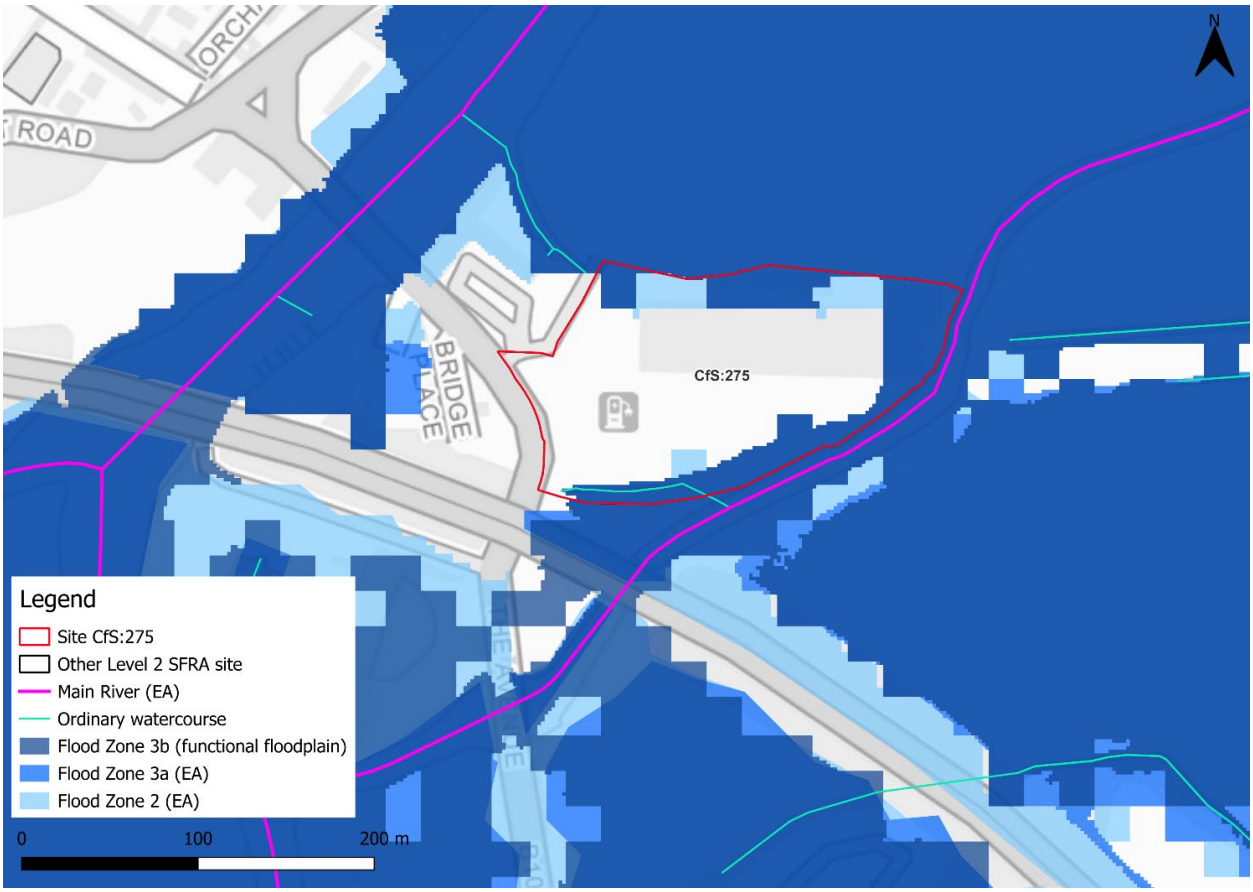

Figure 2-1: Existing risk

2.1.2 Fluvial undefended model outputs (Lower Ouse - Downstream, 2015)

The Lower Ouse - Downstream (2015) detailed model shows the majority of the affected areas in the north, east and south have a flood depth of 0-0.6m but there are areas in the south and southeast, parallel to Cooks Backwater that reach 1.2m. The velocity is largely below 0.25 m/s but there are small patches where a velocity between 0.25 and 0.5 m/s is predicted. The hazard in the affected areas is either a danger for some or a danger for most. Flood Zone 3 looks slightly different to the modelled 100-year flood event. This may be due to changes the EA have made to the Flood Map for Planning through NaFRA2, since the model was last updated.

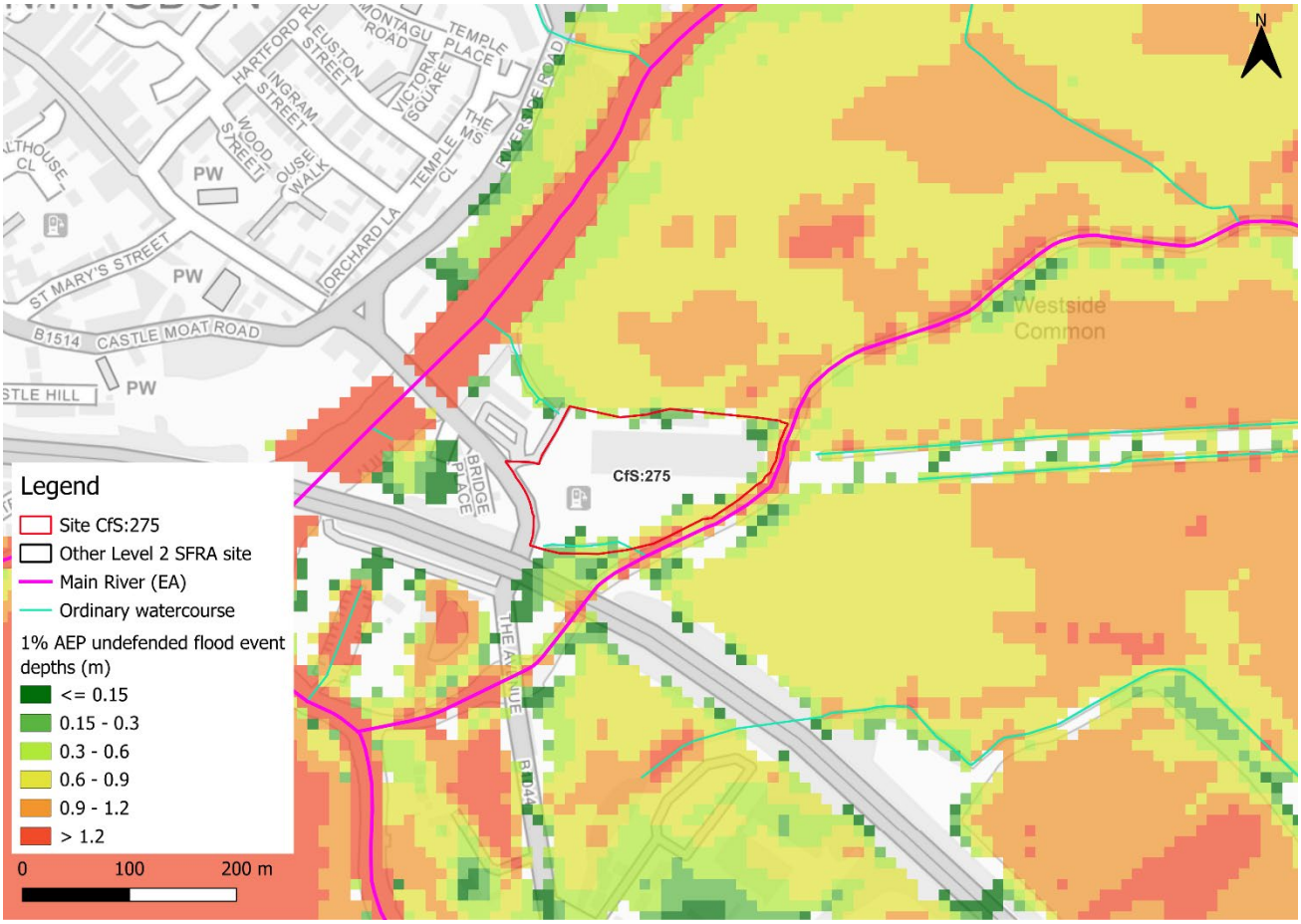

Figure 2-2: Flood depths for 1% AEP undefended flood event

Figure 2-3: Flood velocities for 1% AEP undefended flood event

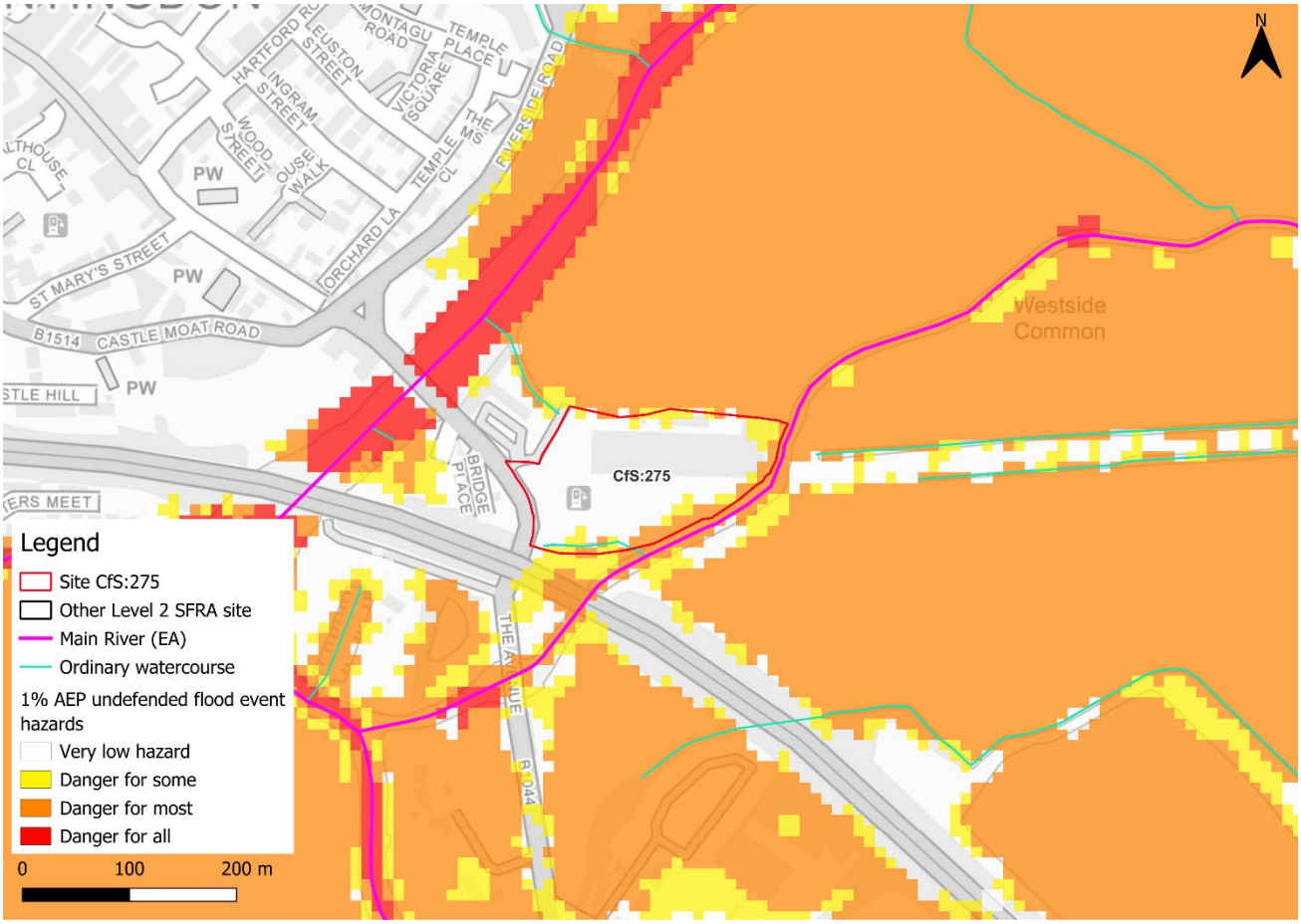

Figure 2-4: Flood hazard[1] for 1% AEP undefended flood event

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 2-5. 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 Riparian and Floodplain Woodland in the

1 Fluvial hazard ratings based on Table 4 of the SUPPLEMENTARY NOTE ON FLOOD HAZARD RATINGS AND THRESHOLDS FOR DEVELOPMENT PLANNING AND CONTROL PURPOSE – Clarification of the Table 13.1 of FD2320/TR2 and Figure 3.2 of FD2321/TR1. May 2008.

east and along the southern boundary. Tree planting can help reduce runoff. There is also potential for Floodplain Reconnection in the southwest of the site.

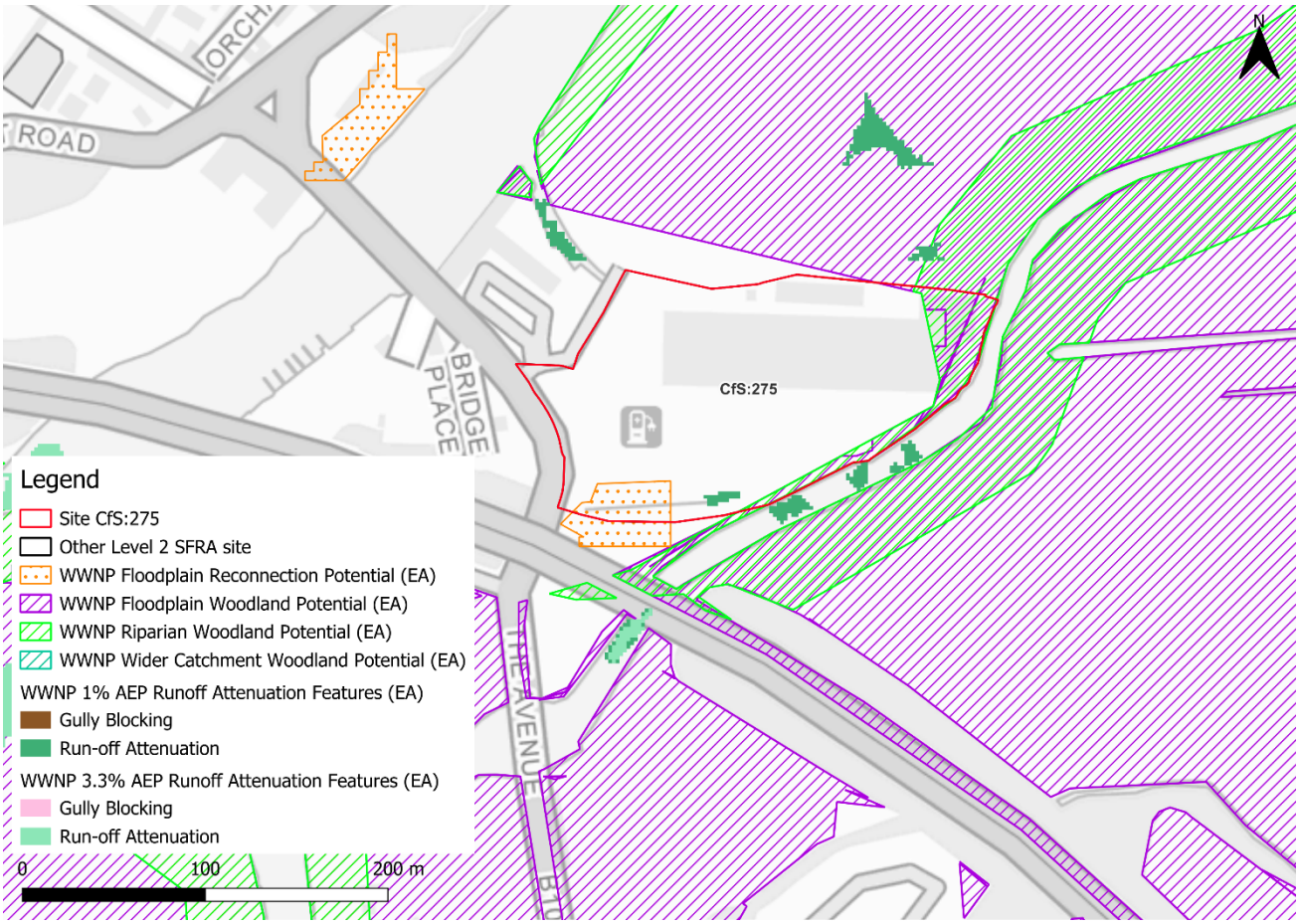

Figure 2-5: Natural Flood Management (NFM) potential mapping

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 Great Ouse 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)
2% in absence of 3.3% AEP event	19	30
1%	19	30
0.1%	19	30

The Lower Ouse - Downstream 2015 climate change model outputs are very similar to the present-day model outputs in the undefended scenarios. Both depth mapping shows the majority of the site have a depth between 0 and 0.6m with the south and southeast reaching between 0.6 and 1.2m. The velocity is still largely below 0.25m/s but there is a larger area which reaches 0.25-0.5m/s in the south and north of the site. The hazard is predicted to be a danger for some and a danger for most (largely confined to the south).

Figure 2-6: Flood depths for 1% AEP undefended flood event +19% (central climate change allowance)

Figure 2-7: Flood velocities for 1% AEP undefended flood event +19% (central climate change allowance)

Figure 2-8: Flood hazard[1] for 1% AEP undefended flood event +19% (central climate change allowance)

The impacts of climate change on flood risk from the Lower Ouse have been modelled by the EA through the New National Model which models the central allowance (+19% on peak river flows for the Upper and Bedford Ouse EA management catchment) for the 3.3% AEP defended, 1% AEP defended and undefended, and 0.1% AEP defended and undefended fluvial events. Fluvial flood risk is expected to increase in the site due to climate change as shown in Figure 2-9.

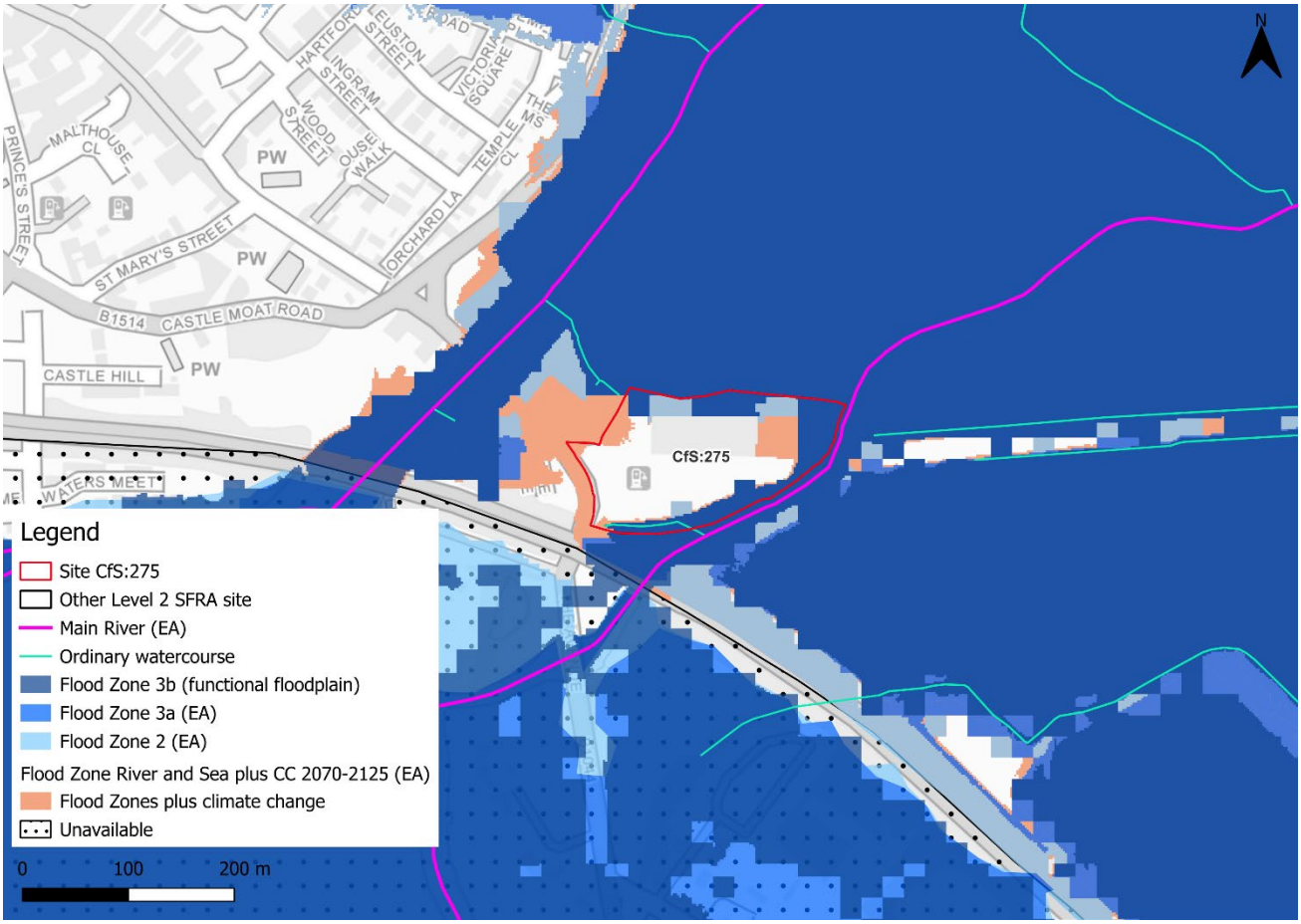

Figure 2-9: Flood Map for Planning 1% and 0.1% AEP undefended flood events +19% (central climate change allowance)

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 2-10 which shows a historic flood event which occurred in the site. The source of the March 1947 event is unknown.

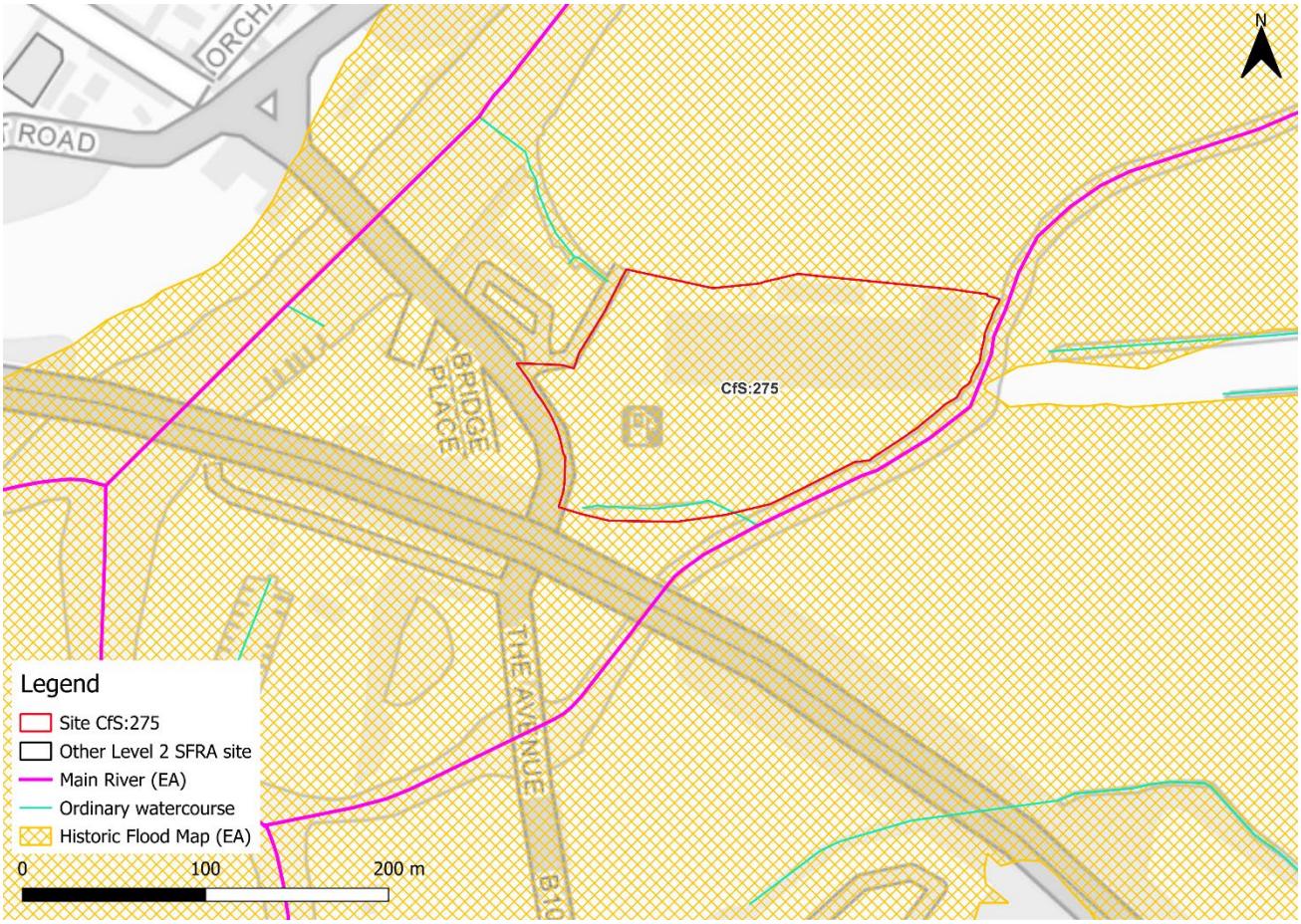

Figure 2-10: Recorded historic flood events onsite and around the site

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. As shown in Figure 2-11, the eastern border of the site is located within a FWA, namely the River Great Ouse at Huntingdon and Hartford.

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. As shown in Figure 2-11, this site is located within a FAA, namely the River Great Ouse in Cambridgeshire from Brampton to Earith

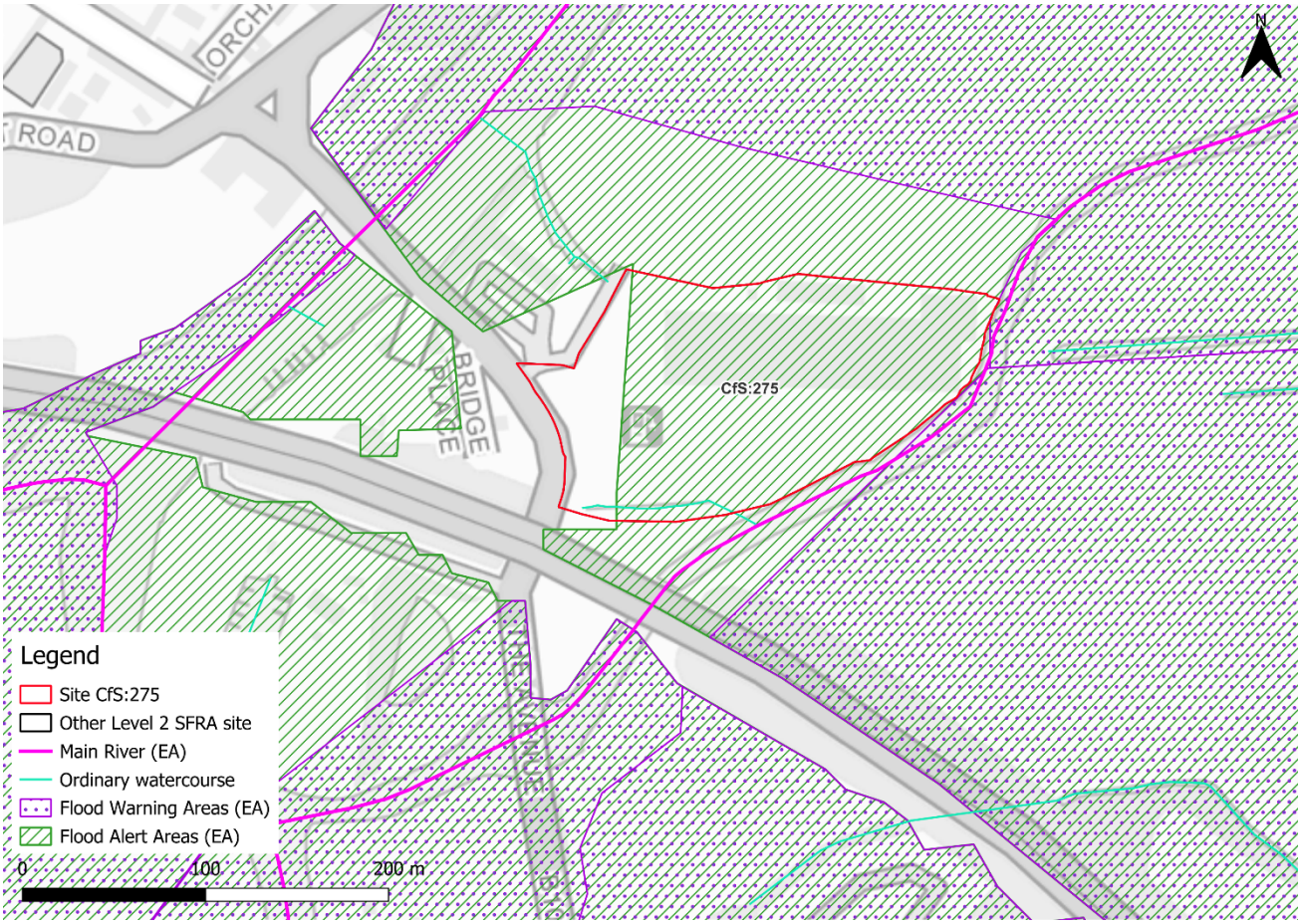

Figure 2-11: EA Flood Warning Areas and Flood Alert Areas

2.5.2 Access and escape routes

Based on available information, safe access and escape routes are unlikely to be achieved. As shown in Figure 2-12, all roads leading to the site are within Flood Zone 2 or 3a.

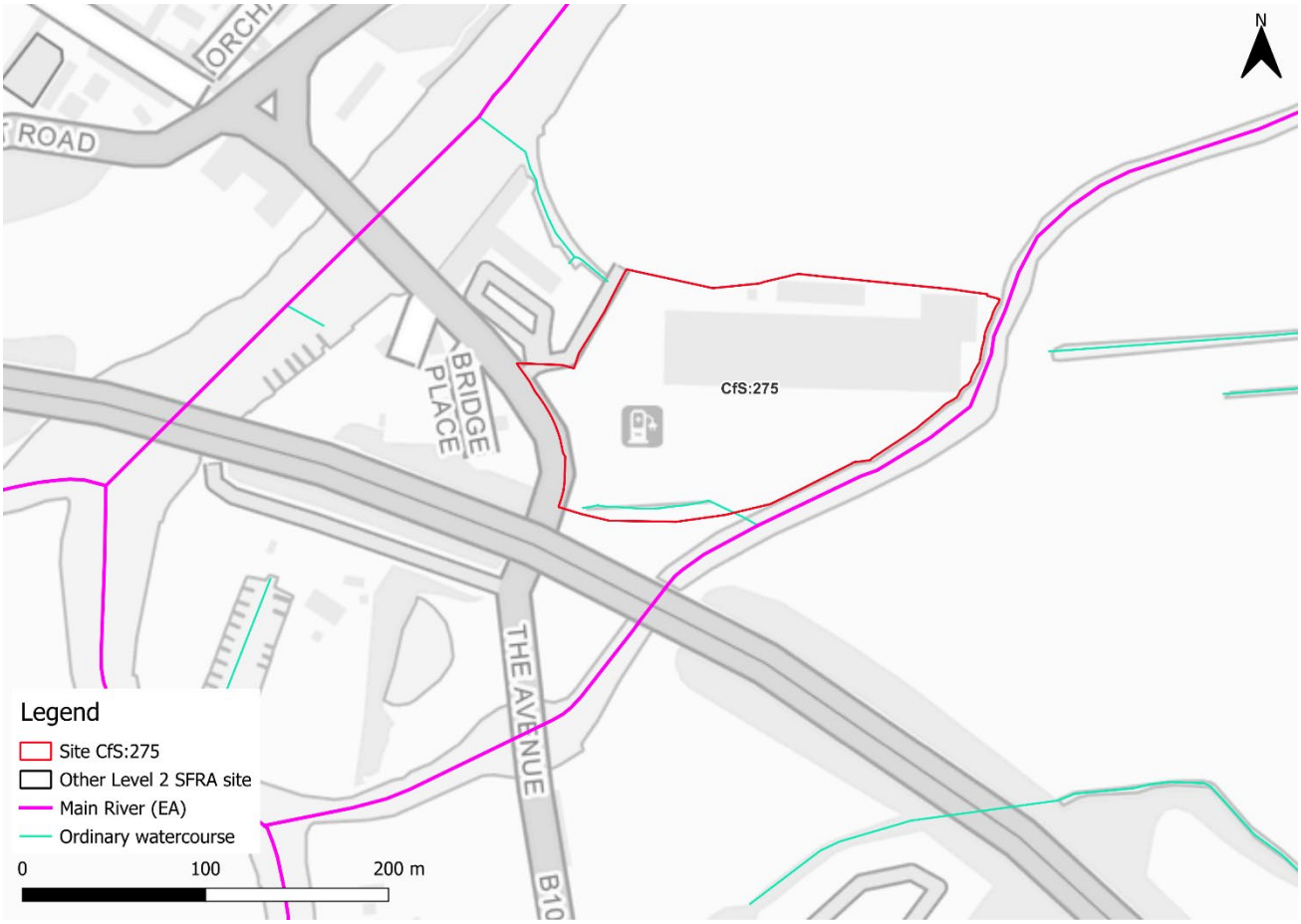

Figure 2-12: Potential access and escape routes

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 site is partially located within fluvial Flood Zone 3a and therefore must be subject to the exception test.
  - The site is located at a confluence in the River Great Ouse. This makes potential access and escape routes more challenging to achieve.
  - Local detailed modelling of the Lower Ouse - Downstream shows moderate flood depths and hazards within the 1% AEP event extent. This risk increases slightly with climate change. It is therefore recommended that all development avoids the 1% AEP plus central climate change event flood extent, which should be possible as the modelled risk is confined to the site boundaries. If development and access routes cannot be fully sited outside of this event extent, then the exception test cannot be passed.
  - However, the flood zones of the Flood Map for Planning are different to the equivalent modelled events. Flood depths and hazards are not available for

the Flood Map for Planning. The present day flood zones and with climate change surround the site and cause risk to a large area of the site.
    - The area of functional floodplain onsite should remain undeveloped.
- Defences:
    - There are no defences protecting the site, according to the EA's Spatial Flood Defences dataset.
- Mitigation:
    - It is recommended that this site is not developed for more vulnerable uses due to the risk exhibited by the Flood Map for Planning. Safe access and escape routes cannot be defined.
    - Were development options to be explored, the site-specific FRA should look to update the current model of the River Great Ouse and investigate modelled depths and hazards, accounting for climate change.
    - 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.
- Access and escape:
    - Safe access and egress are not considered to be achievable based on the Flood Zone mapping due to total inundation of the A1307.
    - EA flood warnings and alerts should continue to be in place to ensure early evacuation of site users before an extreme flood event occurs.

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, there is low flood risk across the site. 2% of the site is modelled to be at risk during the high risk event, 3% is at risk in the medium risk event and 5% is at risk during the low risk event. 95% of the site is at very low risk of flooding from surface water, as shown in Table 3-1. Flooding is predicted along the southern boundary and in the southeast parallel to Cooks Backwater. There is also a patch in the brownfield site where the Engineering Site used to be.

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)
95	5	3	2

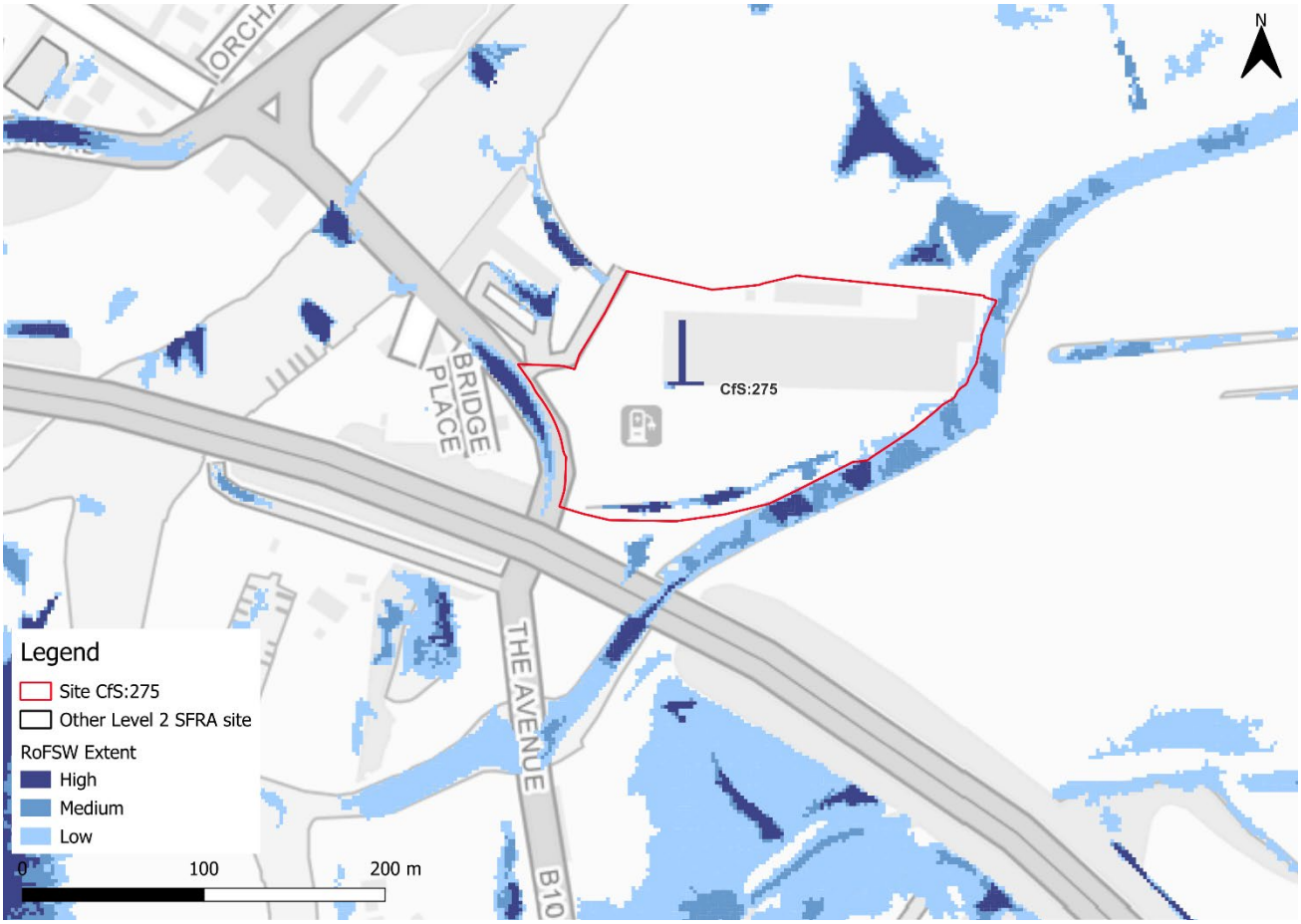

Figure 3-1: Surface water flood extents (NaFRA2 - Risk of Flooding from Surface Water map)

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, there is a very small extent in the south of the site. This has depth between 0.15 and 0.6m and a mostly moderate hazard.

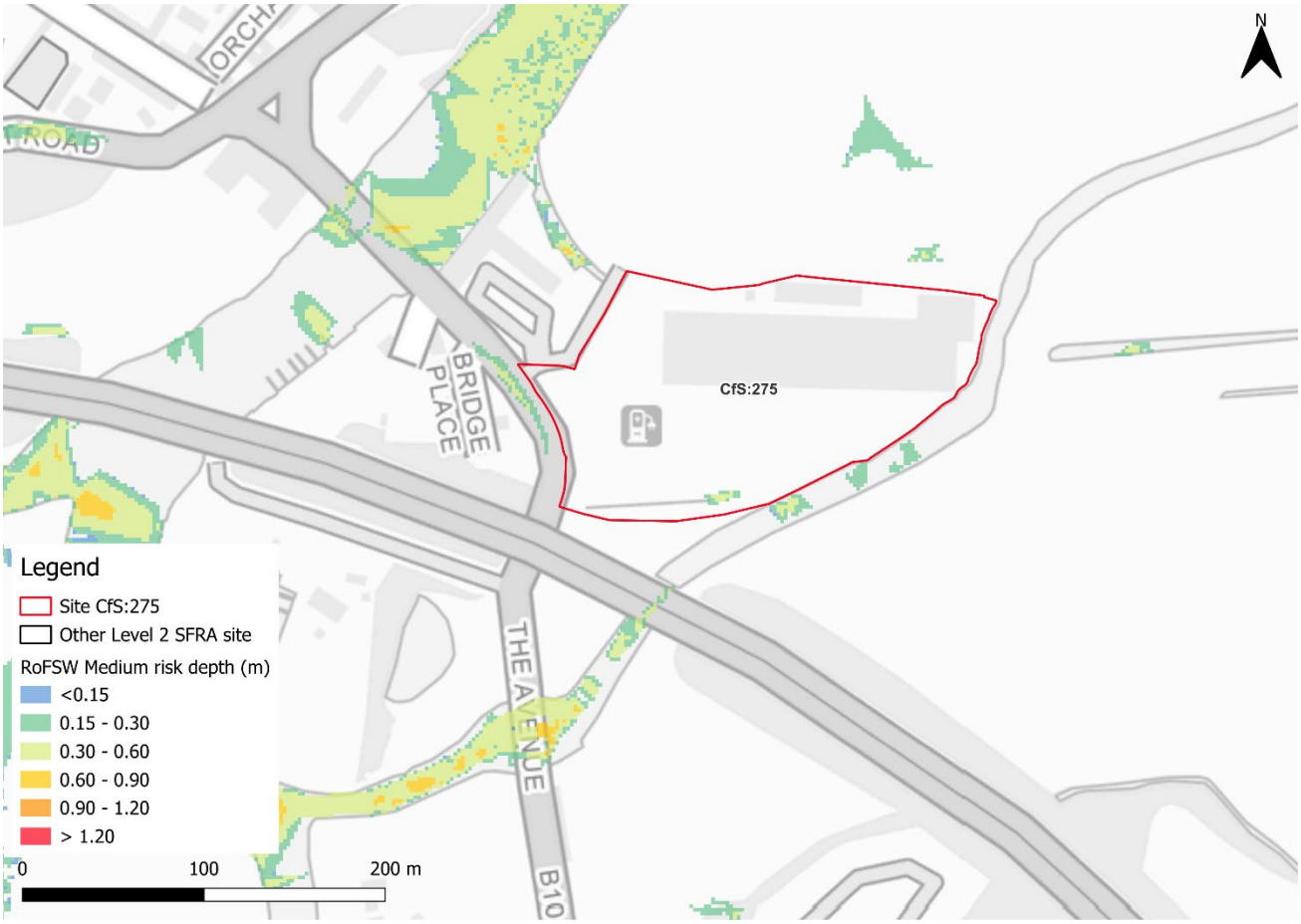

Figure 3-2: Medium risk event surface water flood depths (Third generation - Risk of Flooding from Surface Water map)

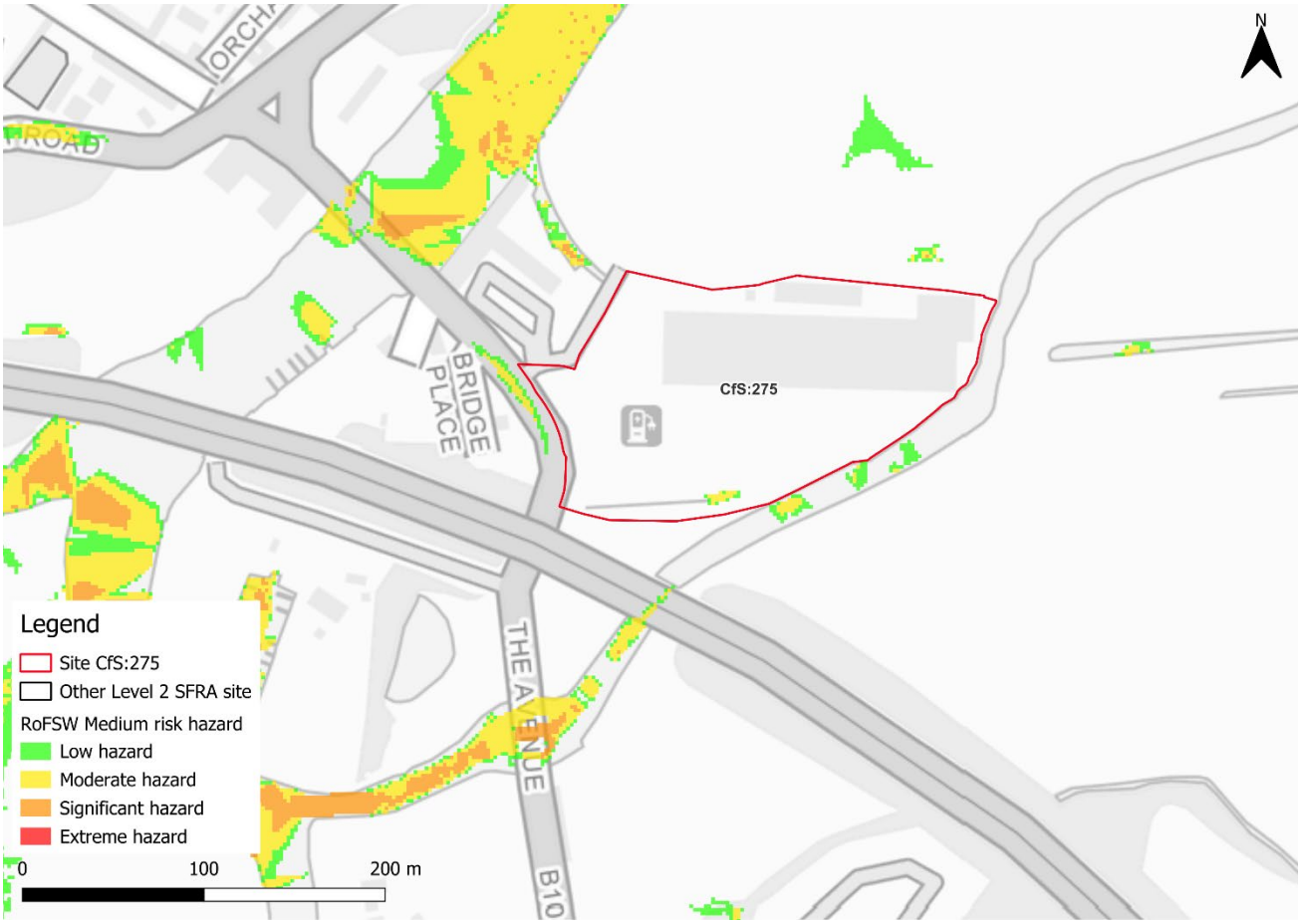

Figure 3-3: Medium risk event surface water flood hazard[2] (Third generation - Risk of Flooding from Surface Water map)

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. There is a larger extent which seems to stretch from the Cooks Backwater in the south and east of the site. With depths largely of 0.15-0.3m with patches in the south having a depth of 0.3-0.6m. The hazard rating is mostly a low hazard with patches in the

2 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

south and southeast which reach a moderate hazard and small areas in the south reaching a significant hazard classification.

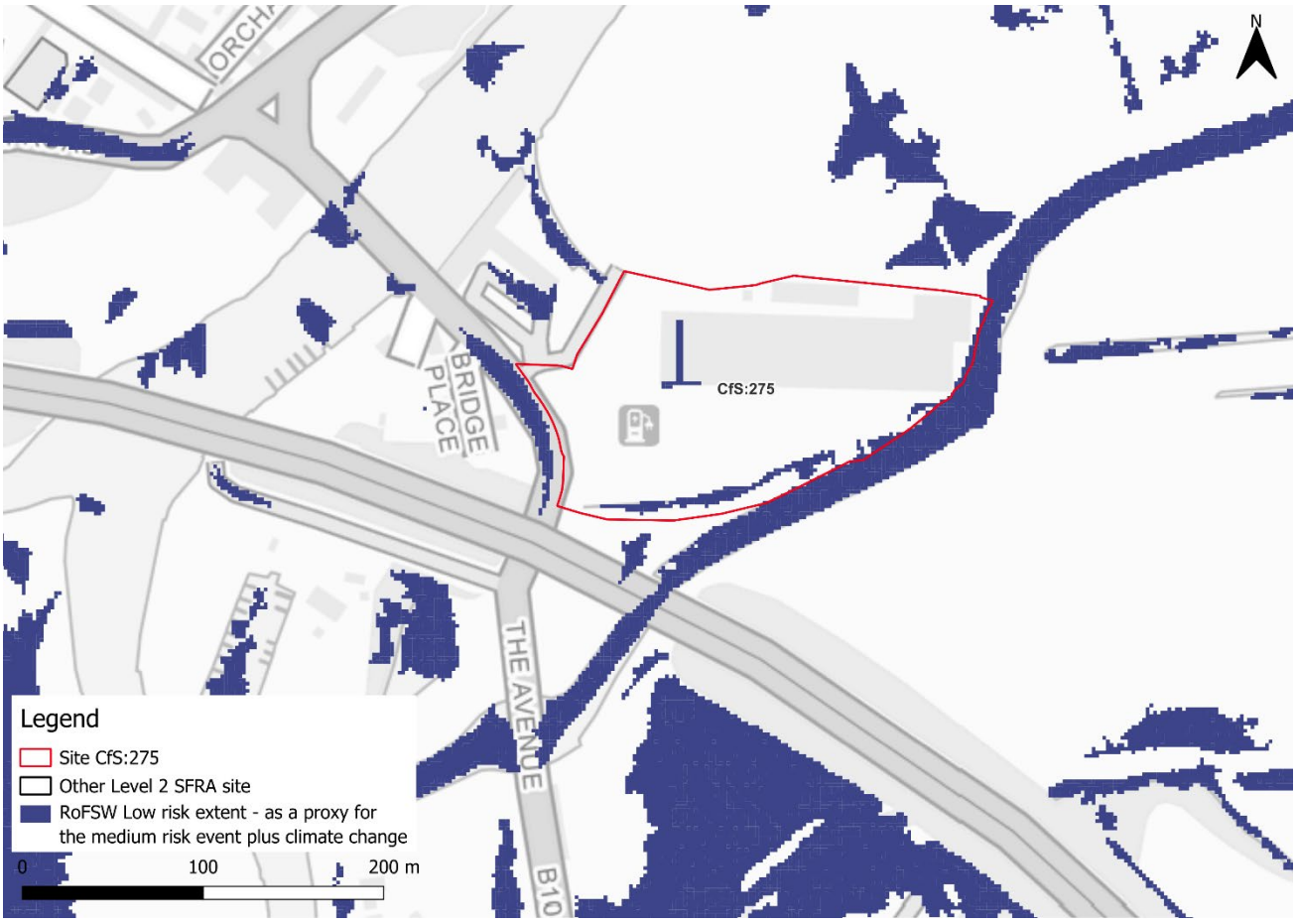

Figure 3-4: Low risk event surface water flood extent, as a proxy for the medium risk event plus climate change (NaFRA2 - Risk of Flooding from Surface Water map)

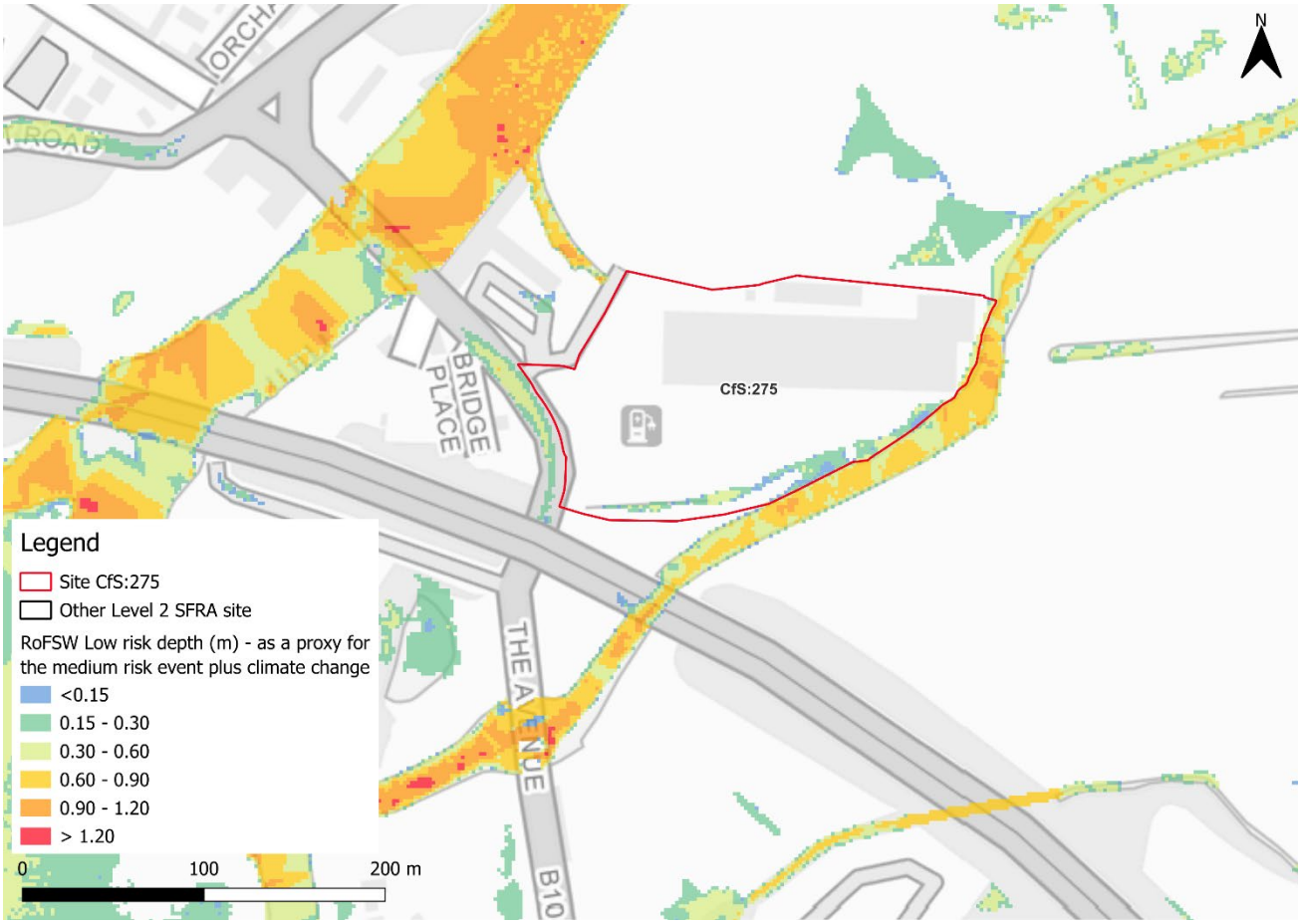

Figure 3-5: Low risk event surface water flood depths, as a proxy for the medium risk event plus climate change (Third generation - Risk of Flooding from Surface Water map)

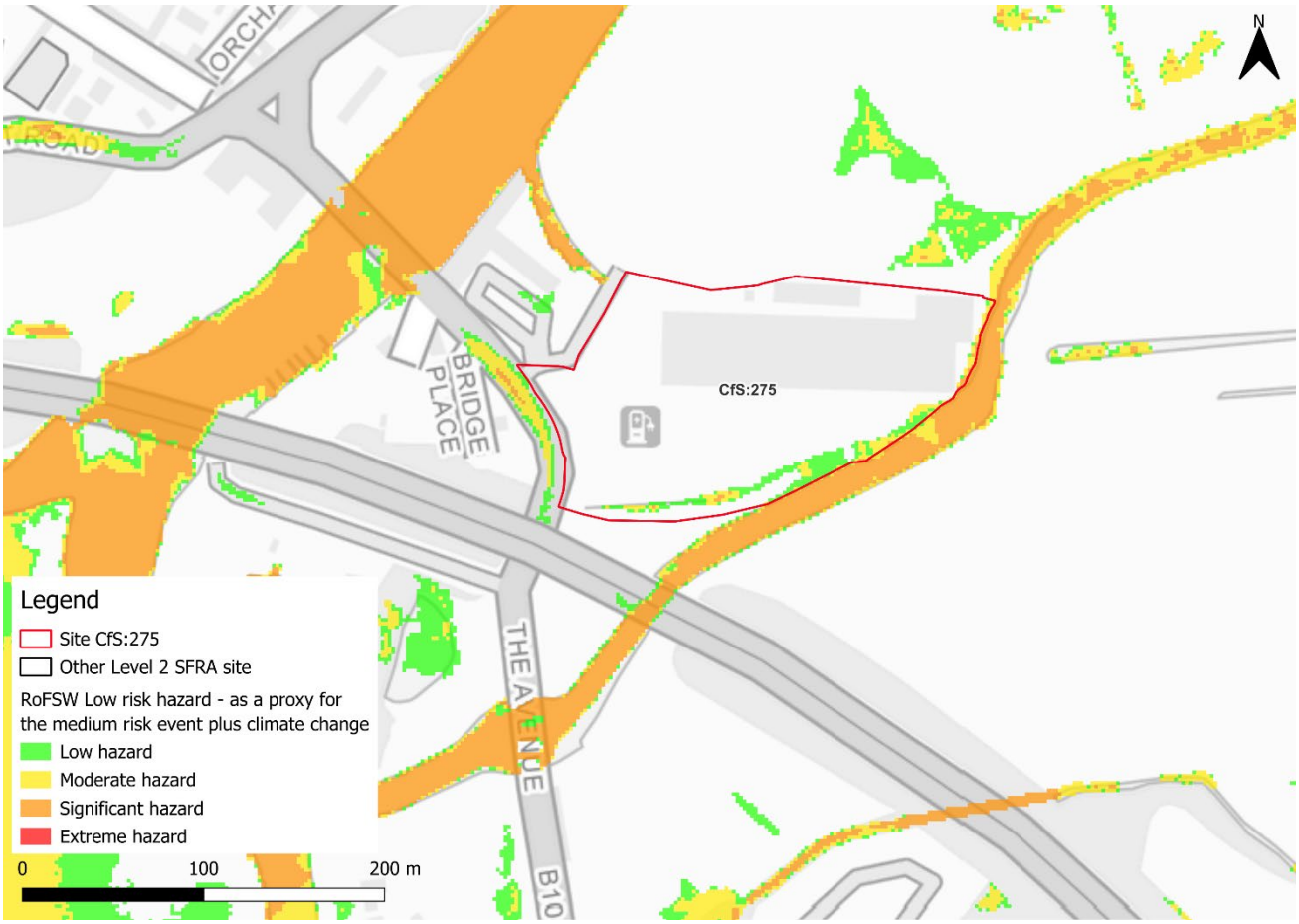

Figure 3-6: Low risk event surface water flood hazard, as a proxy for the medium risk event plus climate change (Third generation - Risk of Flooding from Surface Water map)

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

- Current risk to the site is predominantly low, with 95% 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 higher in the climate change mapping with further flooding predicted in the south and east.
- 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. Existing brownfield 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.
- Safe access and escape routes will be challenging to achieve with significant hazards to the surrounding roads.
- Assessment of the current drainage system in place should be carried out to ascertain any current capacity issues and whether the current system could accommodate the proposed residential development or whether further capacity will be required.
- 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 agrees that this site may not be suitable for residential development.

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 Ouse (Roxton to Earith) 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[3]. 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 whole of the site is classified as no risk. Any infiltration SuDS should therefore be suitable at this site.

3 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.	

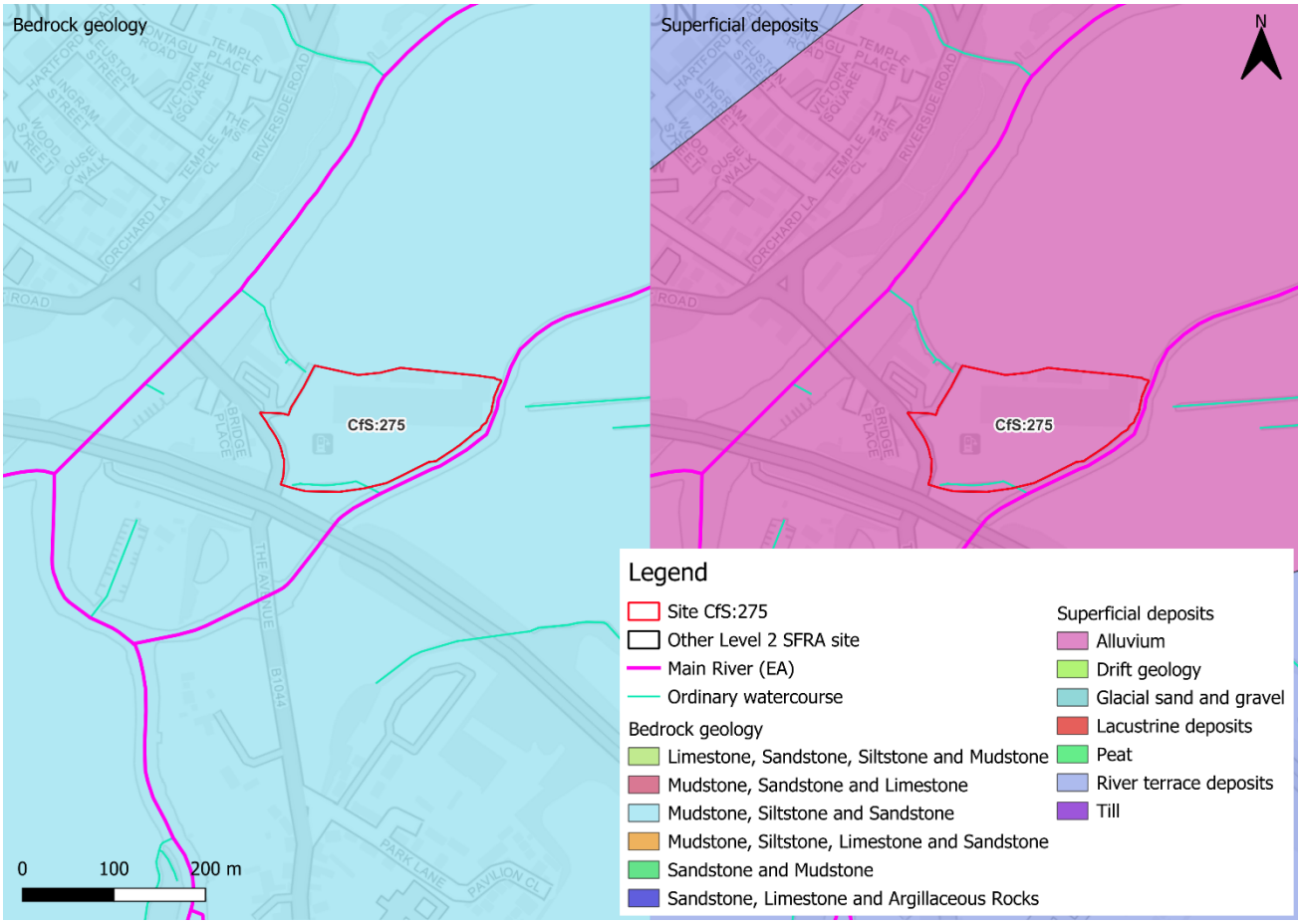

Figure 5-2: Soils and geology

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 underneath the A1307 south and west of the site.

6.1 Potential blockage

A blockage of these 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.

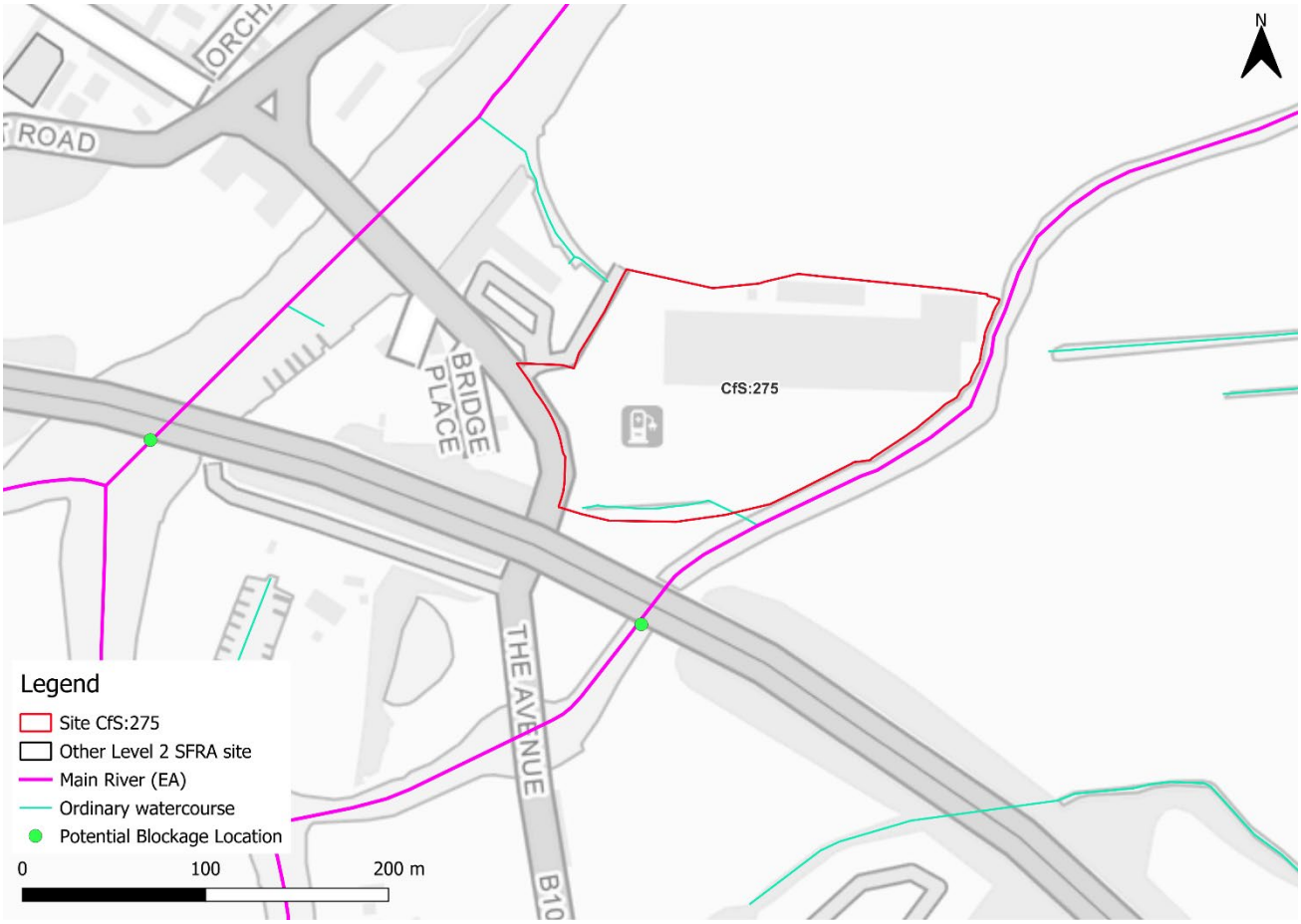

Figure 6-1: Potential blockage locations

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. Figure 6-2 shows the RFM in a 'dry day' and 'wet day'

scenario. 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 potentially at risk from Hinchingbrooke Country Park lakes.

The EA's SFRA guidance states that where a proposed development site is shown to be at potential risk from reservoir failure, then an assessment into whether the reservoir design or maintenance schedule needs improving should be carried out. Expert advice may be required from an all-reservoirs panel engineer. The Council should consult Anglian Water to ascertain whether the proposed development could affect the reservoir's risk designation, it's design category or how it is operated. The Council, as category 1 responders, can access more detailed information about reservoir risk and reservoir owners using the Resilience Direct system.

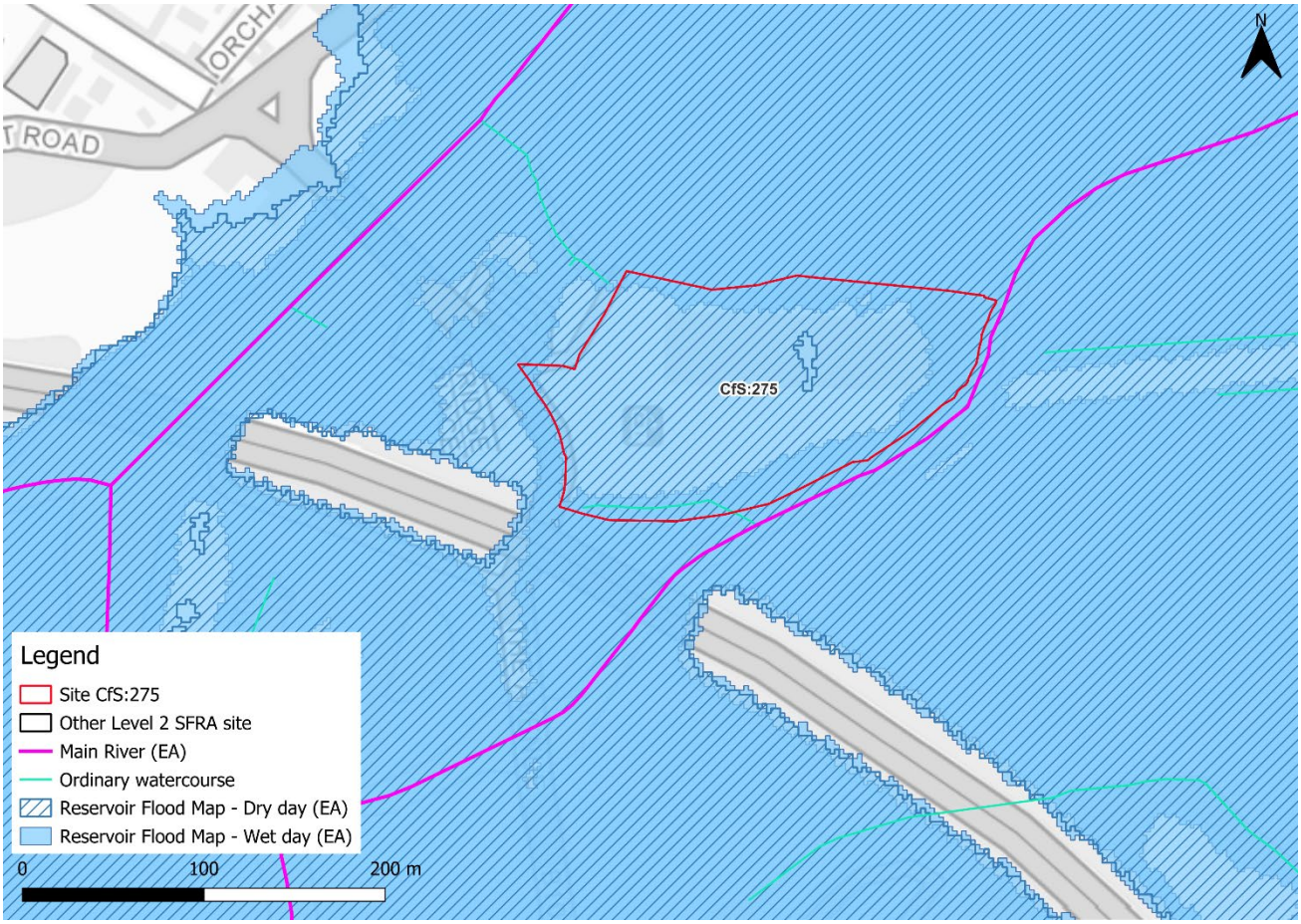

Figure 6-2: EA Reservoir Flood Map

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. Further work is required in order to allocate this site, 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 allocated for development.

7.3 Site-specific FRA requirements and further work

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

- Were development options to be explored, any 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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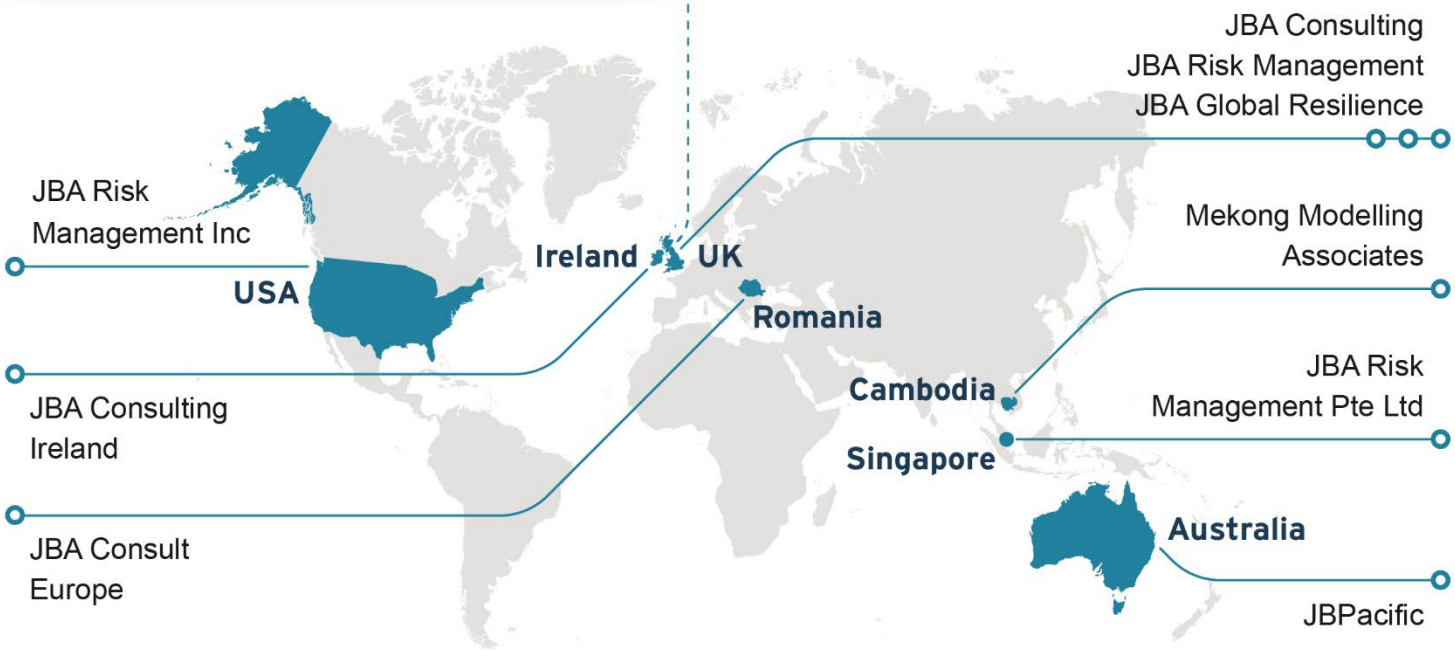

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