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Huntingdonshire Level 2 Strategic Flood Risk Assessment Site Summary

Site CfS:7

Final Draft Report

Prepared for

Huntingdonshire District Council

Date

November 2025

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Prepared by	Jackson Pawley BSc Analyst
Reviewed by	Mike Williamson BSc MSc CGeog FRGS EADA Principal Analyst
Authorised by	Paul Eccleston BA CertWEM CEnv MCIWEM C.WEM Technical Director

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JBA Project Manager	Mike Williamson
Address	Phoenix House, Lakeside Drive, Centre Park, Warrington, WA1 1RX
JBA Project Code	2022s1322

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:7. 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:7

- Location: Brittens Farm, Station Road, Kimbolton
- Existing site use: Agricultural
- Existing site use vulnerability: Less vulnerable
- Proposed site use: Residential
- Proposed site use vulnerability: More vulnerable
- Site area (ha): 1.56
- Watercourse: River Kym and unnamed watercourse
- Environment Agency (EA) model: River Kym (Lower Ouse - Kym 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

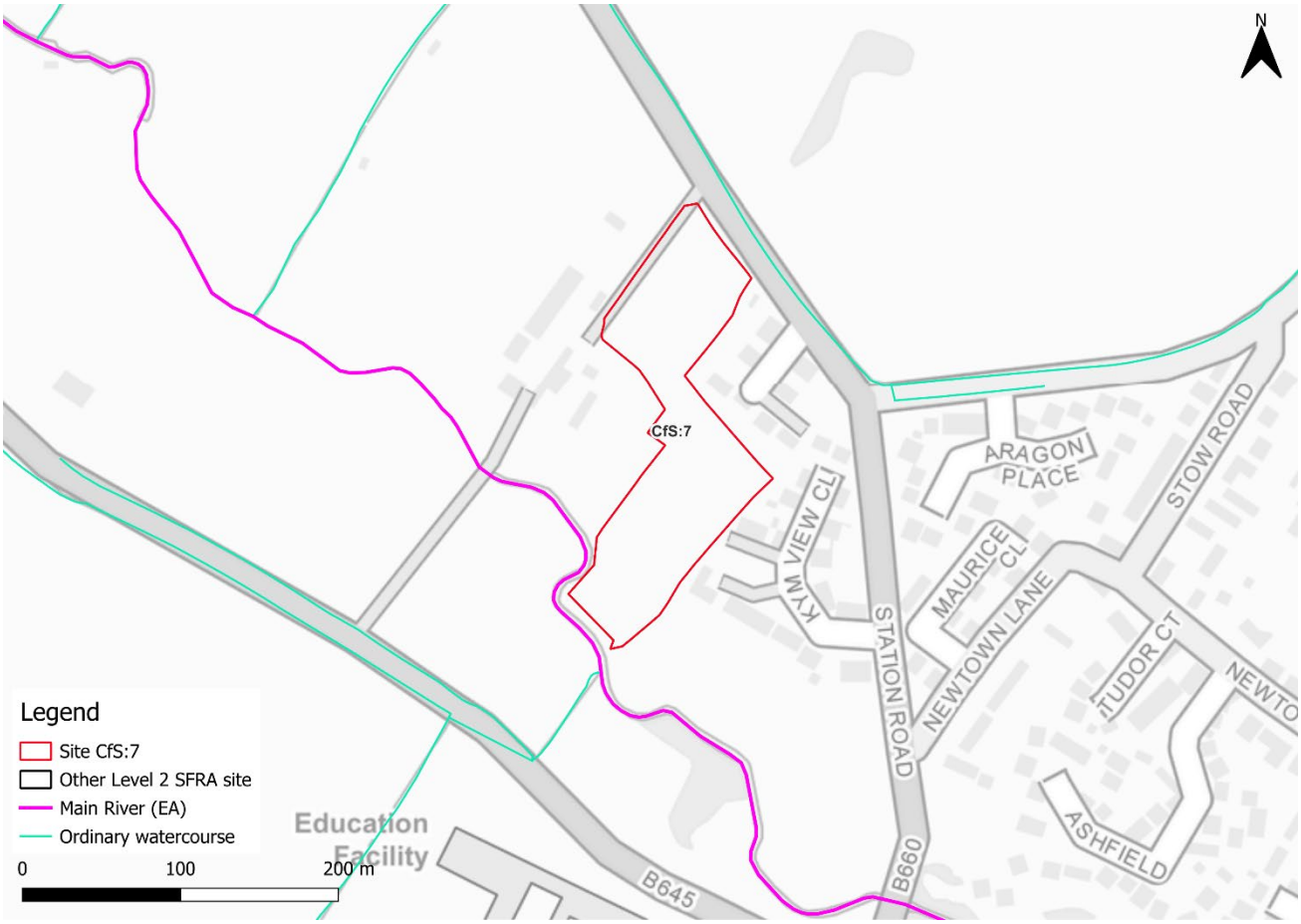

Figure 1-1: Existing site location boundary

Figure 1-2: Aerial photography

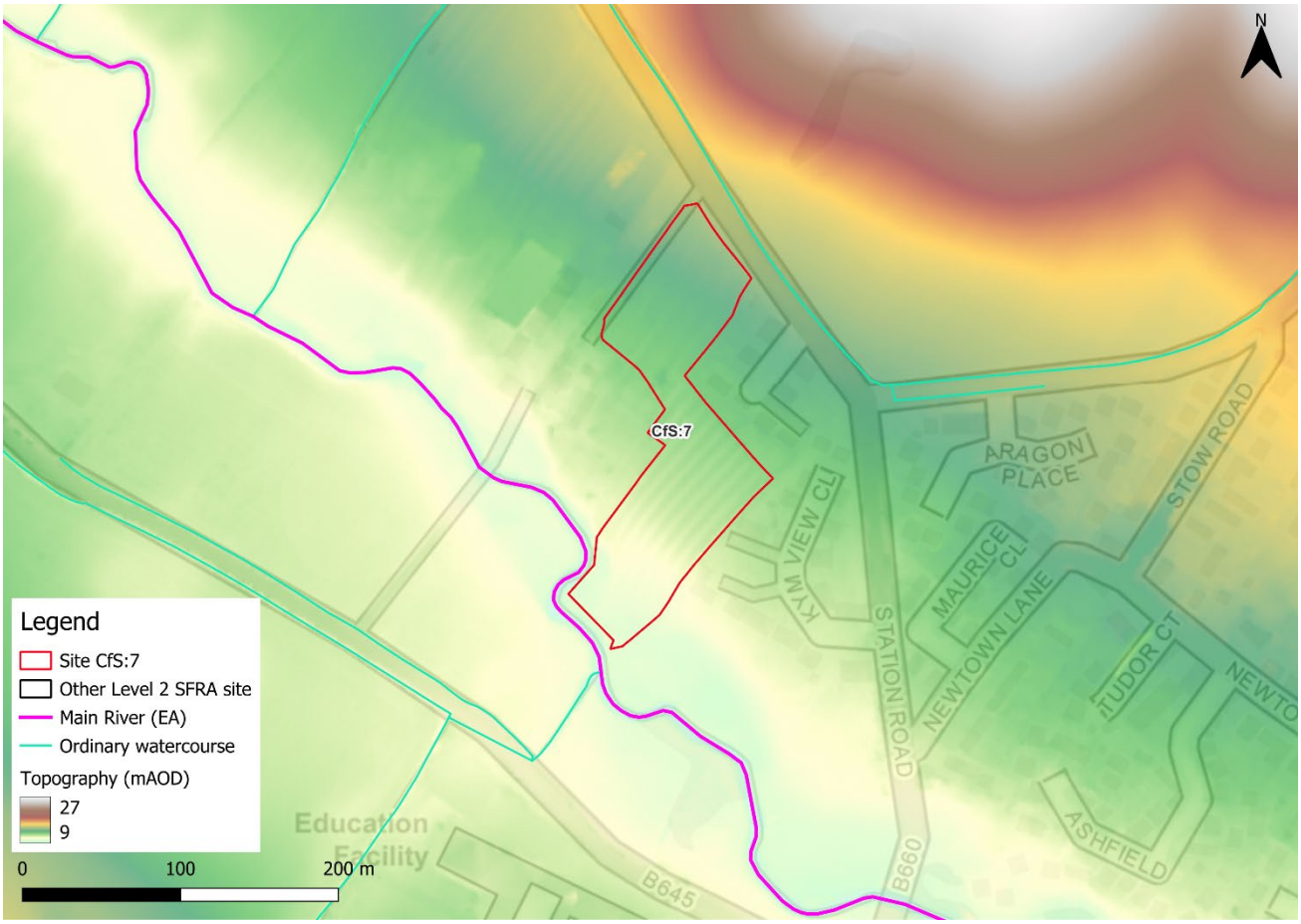

Figure 1-3: Topography

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 southern boundary, southeastern and southwestern corners are within Flood Zone 3b, which is based on the Flood Map for Planning 3.3% AEP defended event with an area of Flood Zone 3a in the same area and Flood Zone 2 covers the rest of the southern area.

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)
84	9	3	4

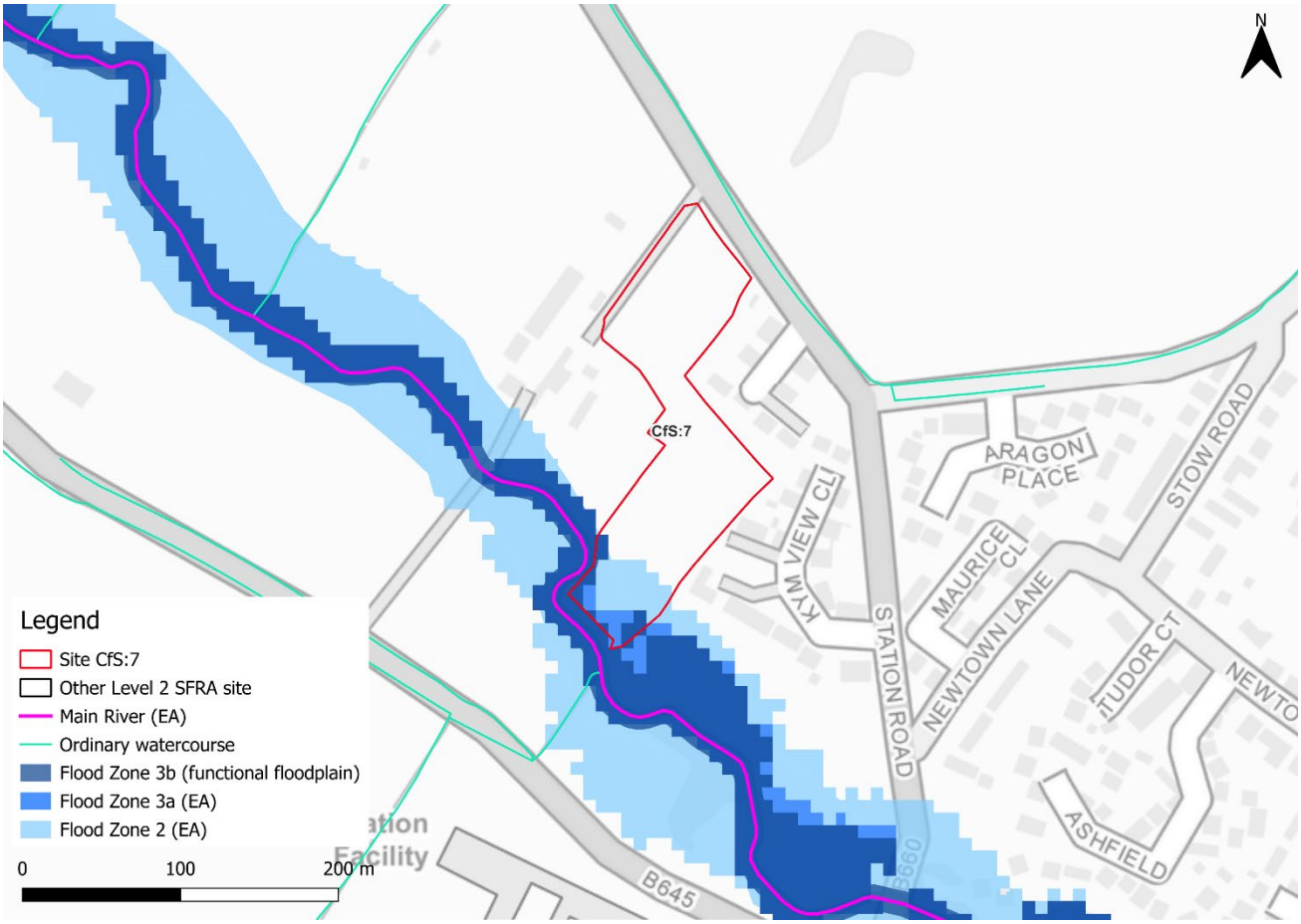

Figure 2-1: Existing risk

2.1.2 Fluvial undefended model outputs River Kym (Lower Ouse - Kym 2015)

The Lower Ouse - Kym (2015) detailed model shows a small extent in the southern area of the site affected. The depth is mostly less than 0.6m but in the southwestern corner, flood depths between 0.9 and 1.2m are present. The modelled velocity is below 0.25m/s in most of the affected area, and a small patch between 0.25 and 0.5m/s along the southern boundary. The hazard is a danger for some in the southwestern corner.

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 Floodplain and Riparian Woodland in the south and north of the site. Tree planting can help reduce runoff.

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.

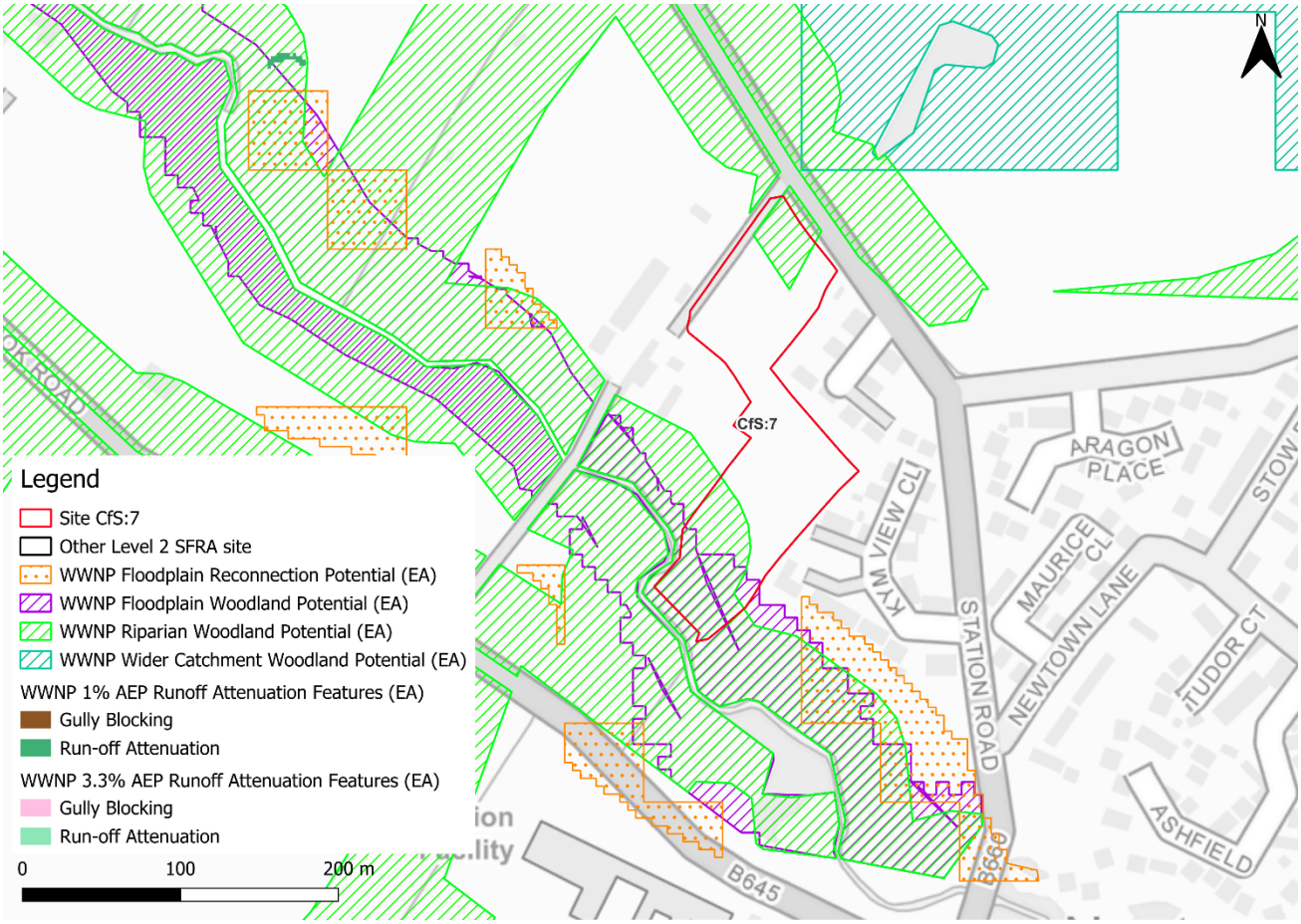

Figure 2-5: Natural Flood Management (NFM) potential mapping

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 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)
2% in absence of 3.3% AEP event	19	30

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

The Lower Ouse - Kym (2015) climate change model outputs are very similar to the present-day model outputs. Depths remain largely below 0.6m with a patch in the southwest reaching 0.9-1.2m. There are more patches in the affected area in the south with a velocity between 0.25 and 0.5m/s compared to the present-day outputs and a danger for most hazard classification covers a larger proportion of the affected area.

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 not expected to increase in the site due to climate change as shown in Figure 2-9.

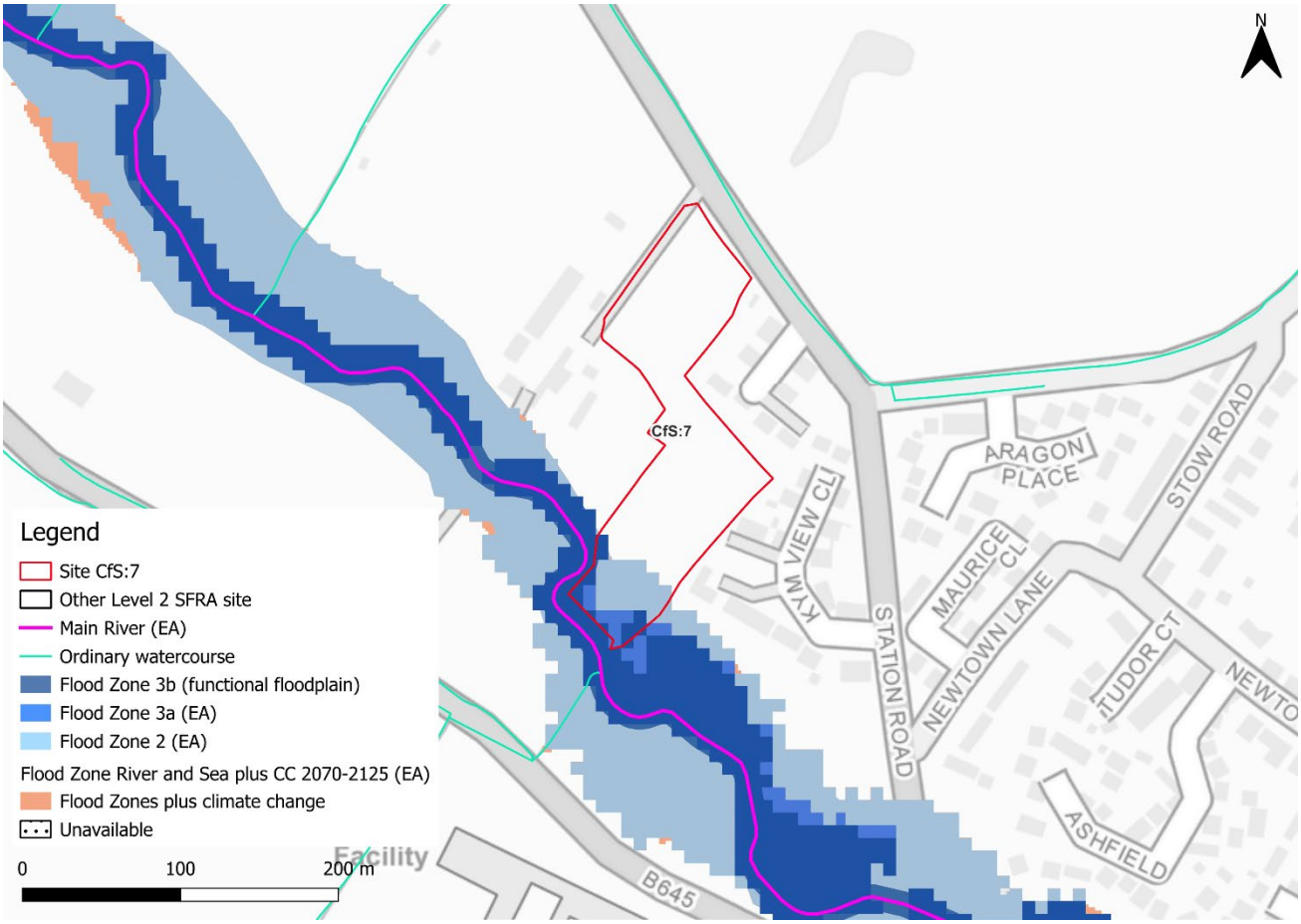

Figure 2-9: Flood Map for Planning 1% and 0.1% AEP undefended flood events +19% (central climate change allowance)

2.4 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 one flood event, Easter 1998, impacting the southern boundary of the site. The flood source for this event is unknown.

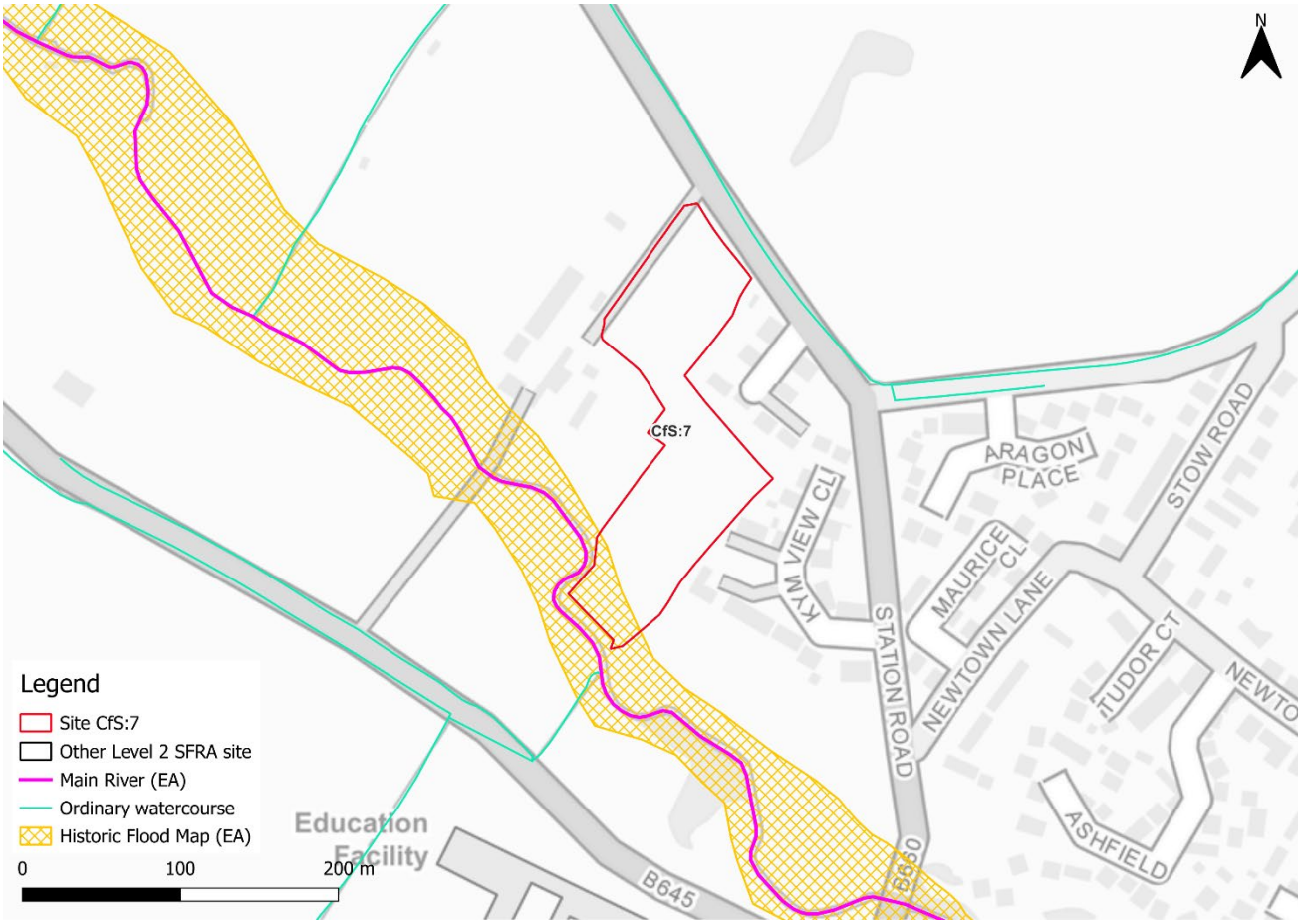

Figure 2-10: Recorded historic flood events onsite and around the site

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 this site is located within a FWA, namely the River Kym at Tilbrook, Kimbolton, Stonely and Great Staughton 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. As shown in Figure 2-11, this site is located within a FAA, namely the River Kym in Bedford Borough and Cambridgeshire FAA.

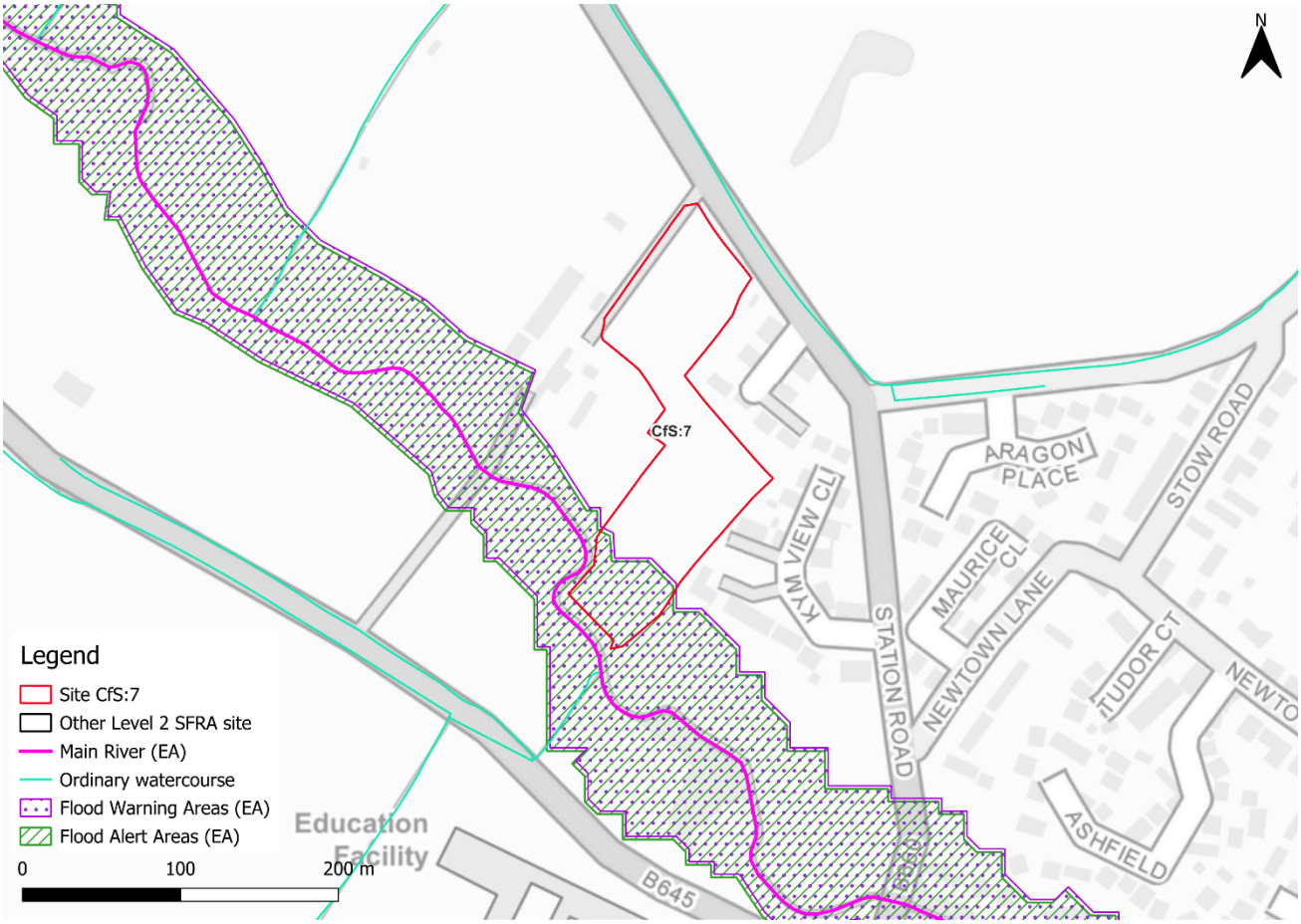

Figure 2-11: EA Flood Warning Areas and Flood Alert Areas

2.5.2 Access and escape routes

Based on available information, safe access and escape routes could likely be achieved during a flood event via the B660 in the north, as shown in Figure 2-12.

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.
  - Local detailed modelling of the River Kym shows significant flood depths and hazards within the 1% AEP event extent. This risk increases slightly with 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 remain largely confined to the areas immediately surrounding the watercourse in the north.
- Defences:
  - The site does not benefit from any formal engineered flood defences, according to the EA's spatial flood defences dataset.

- Mitigation:
  - It should be possible to include the risk area within a blue green corridor, offering multifunctional benefits including ecological, social and amenity value to the site.
  - Risk from the ordinary watercourse to the north of the site should be investigated at the FRA stage. Modelling may be required.
  - If works are proposed on or near a river, 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 escape routes must be available at times of flood and appear to be available from the north of the site, via the B660. A FWA is in place however which should provide advanced warning for site users to evacuate ahead of a flood event in the short term.
  - 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 a low surface water flood risk across the site. 1% of the site is modelled to be at risk during the high risk event, 1% is at risk in the medium risk event and 9% is at risk during the low risk event. 91% of the site is at very low risk of flooding from surface water, as shown in Table 3-1. Flooding is predicted via various flow paths in the low risk event. There is high risk of flooding in the southeast corner of the site where the blue green corridor is recommended.

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)
91	9	1	1

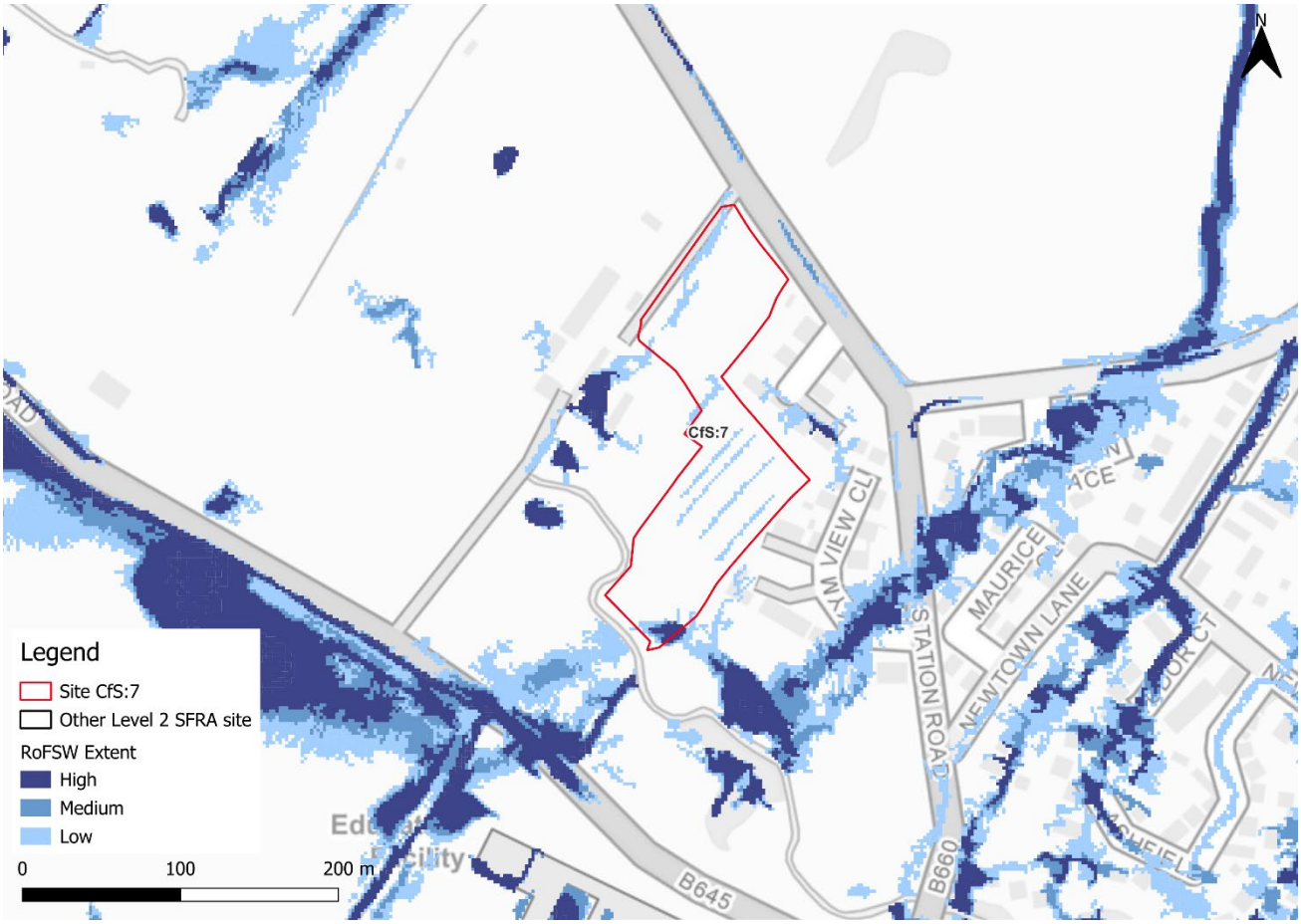

Figure 3-1: Surface water flood extents (NaFRA2 - Risk of Flooding from Surface Water map)

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, the extent is concentrated to the River Kym and the area around it. This impacts the southern area of the site with flood depths up to 0.9m in most of the affected areas and an area in the southwest reaching above 1.2m. The hazard is largely a significant hazard with an extreme hazard closer to the River Kym.

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 significantly larger extent in the south, northwest and centre of the site in the third generation surface water mapping. The flood depth is below 0.15m in the northwest and centre but gradually increases in the south of the site from below 0.15m

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

to above 1.2m closer to the River Kym. The hazard is low in the northwest and centre but is mostly an extreme hazard in the south of the site.

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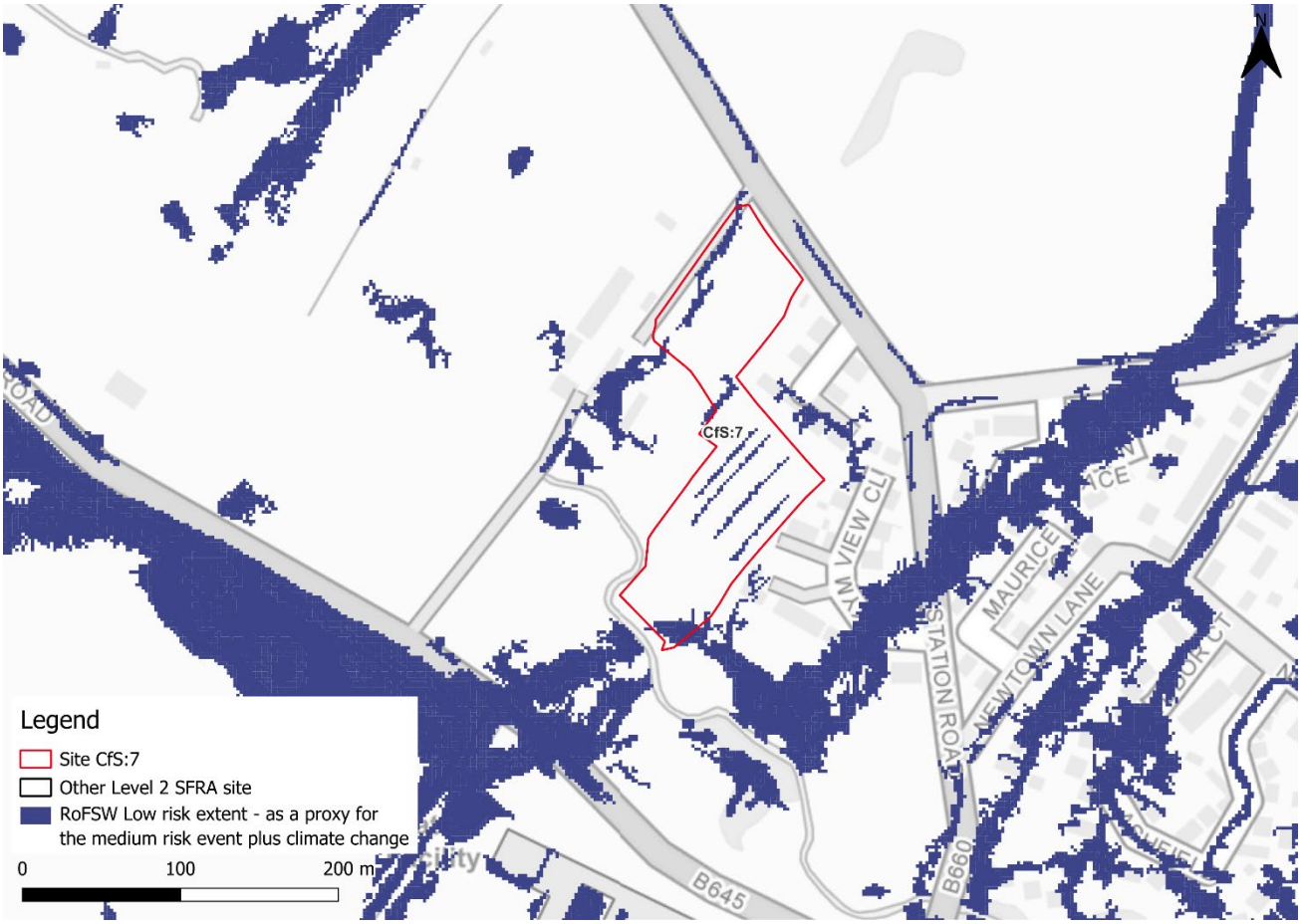

Figure 3-4: Low risk event surface water flood extent, as a proxy for the medium risk event plus climate change (NaFRA2 - Risk of Flooding from Surface Water map)

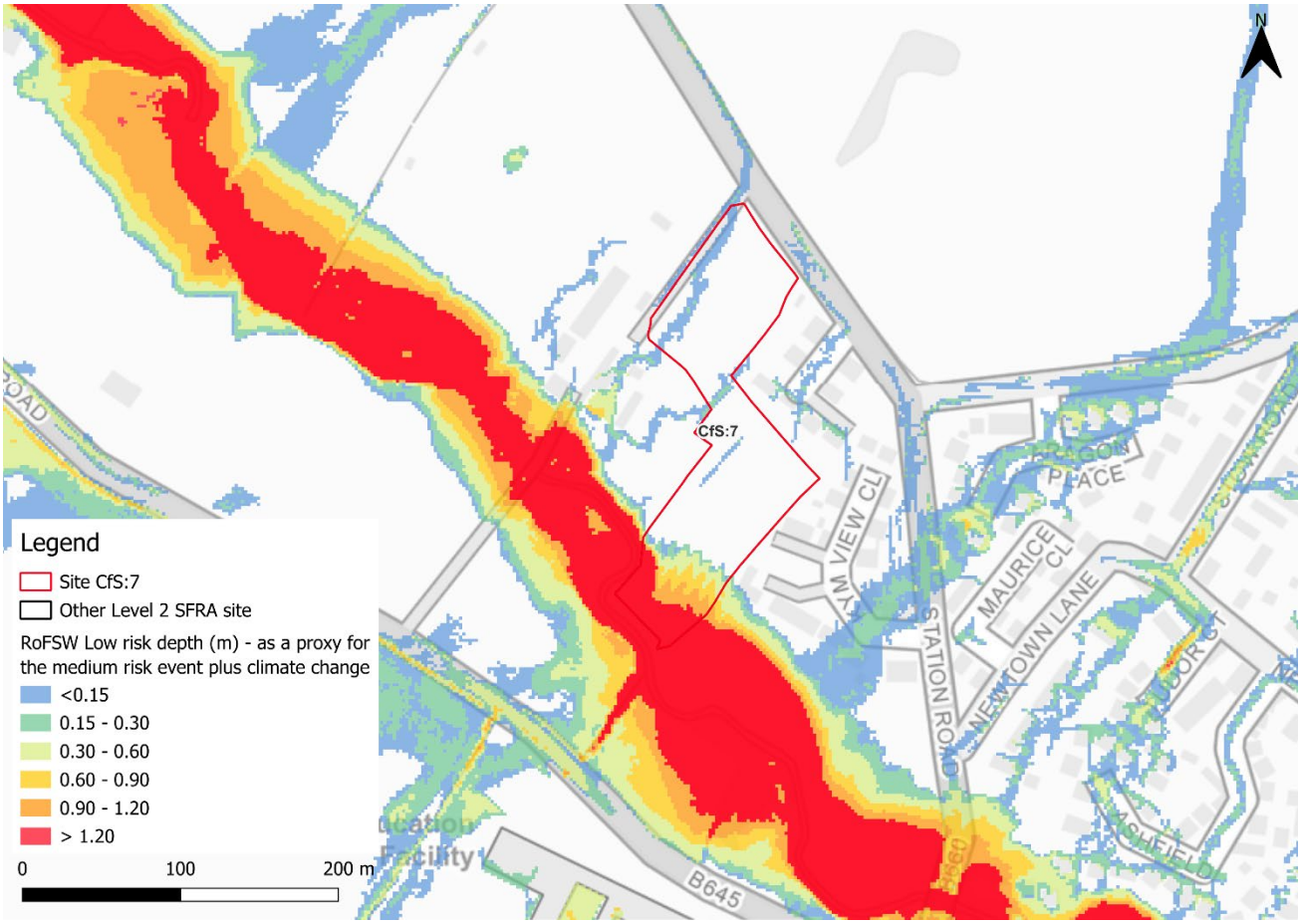

Figure 3-5: Low risk event surface water flood depths, as a proxy for the medium risk event plus climate change (Third generation - Risk of Flooding from Surface Water map)

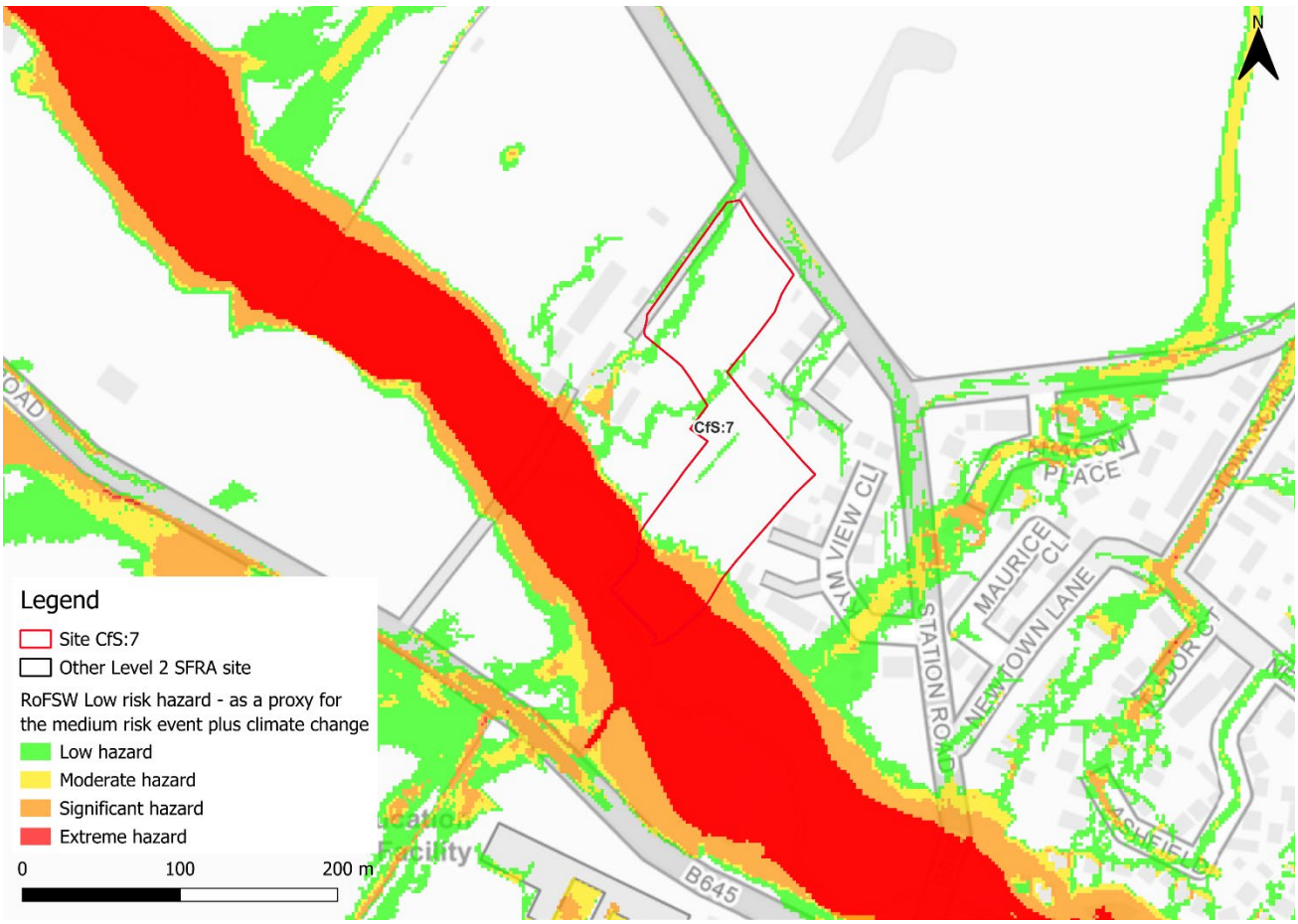

Figure 3-6: Low risk event surface water flood hazard, as a proxy for the medium risk event plus climate change (Third generation - Risk of Flooding from Surface Water map)

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

- Current risk to the site is predominantly low, with 91% of the site being at very low surface water flood risk. Surface water risk in the high and medium risk events is confined to the floodplain of the River Kym.
- 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 greater with climate change with more significant flooding in the south, northwest and centre of the site.
- 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 adjacent to the River Kym should be left free of development and used as a blue green corridor 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. The flow paths in the north of the site are generally shallow therefore it may be possible to regrade the land whilst not increasing risk elsewhere.
- 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 Kym (and Til) 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[3]. Figure 5-1 shows the map covering this site and the surrounding areas. Table 5-1 explains the risk classifications.

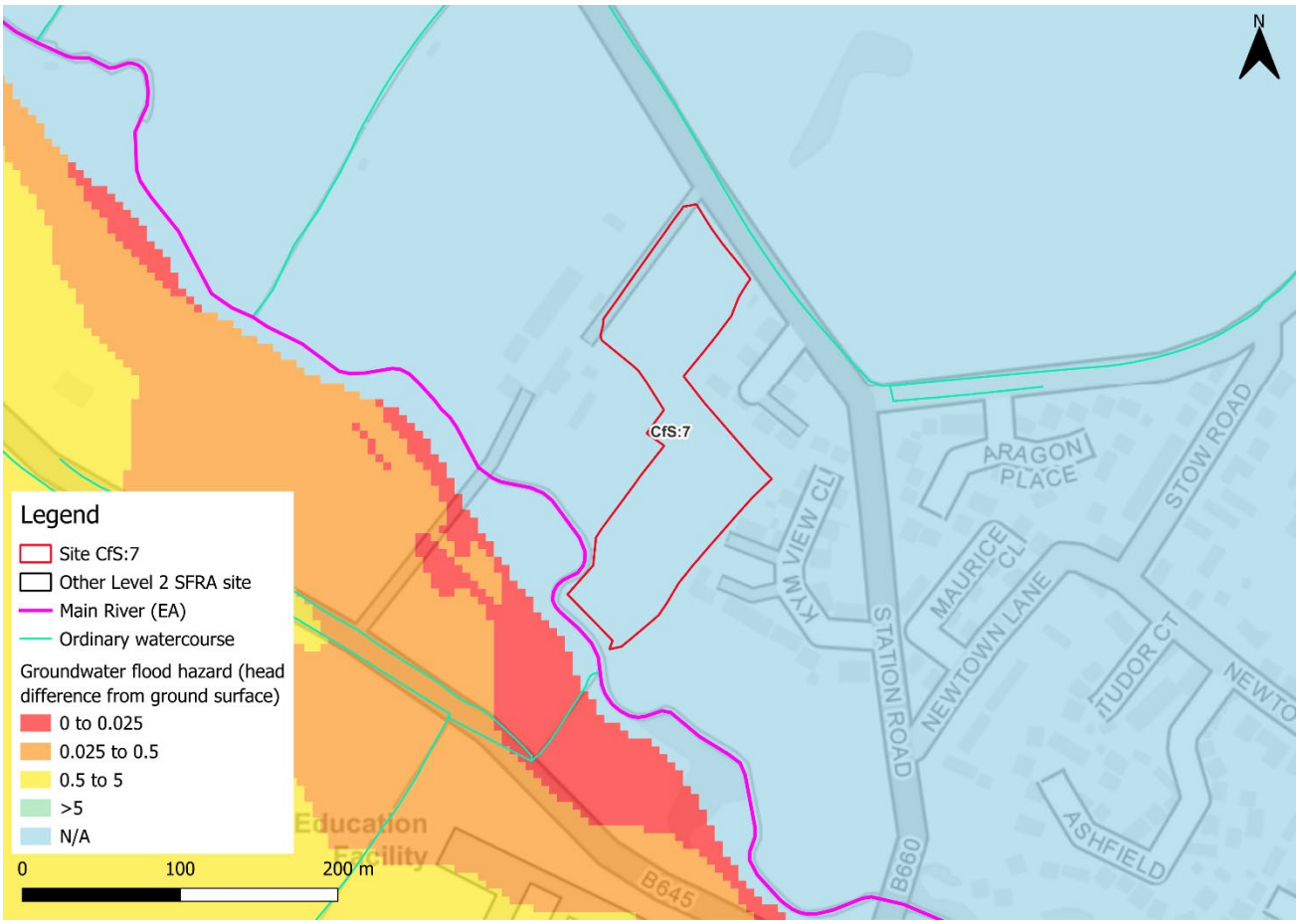

Figure 5-1: JBA 5m Groundwater Emergence Map

The entire site is classified as no risk. 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.	

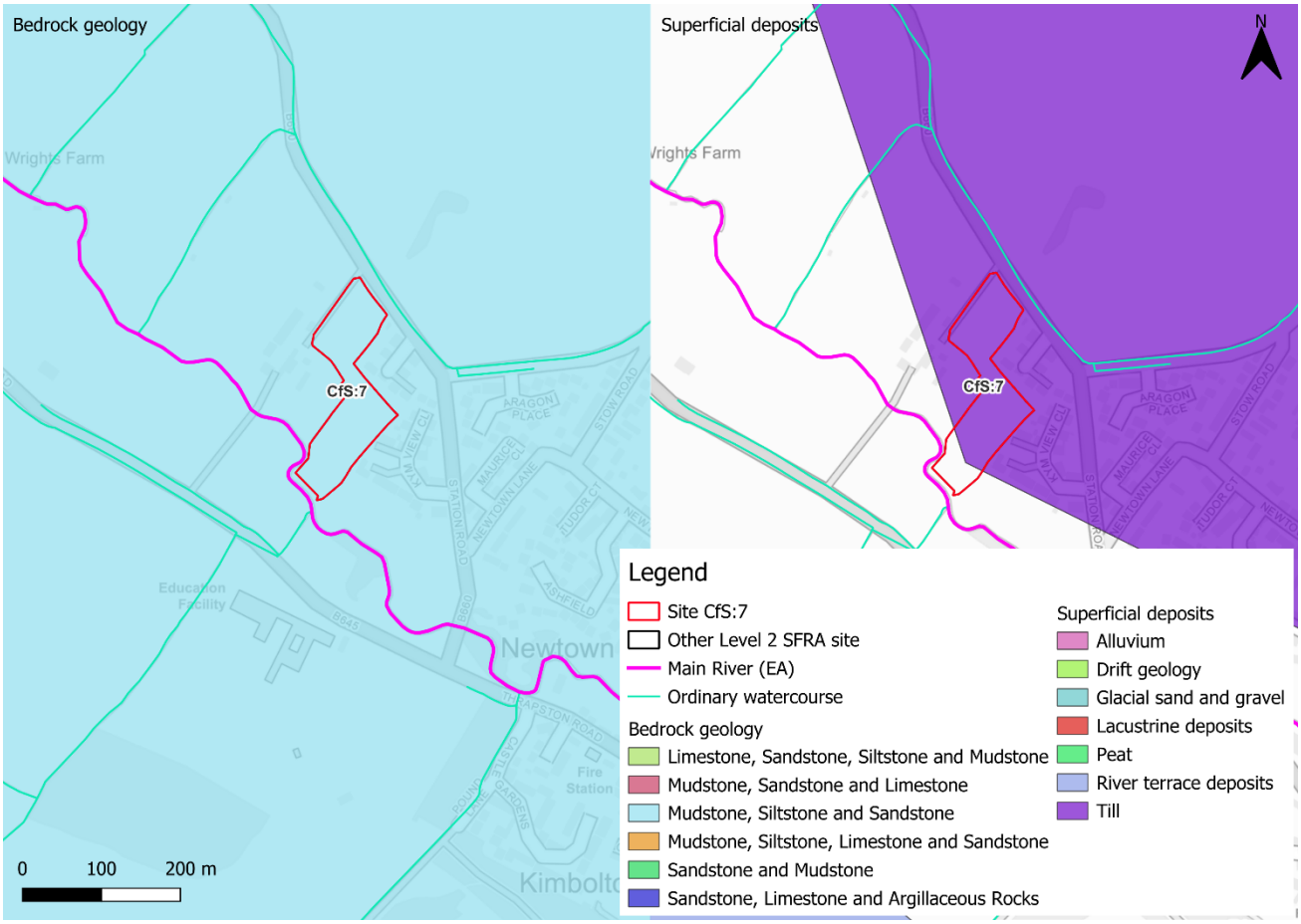

Figure 5-2: Soils and geology

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 B645, B660 and the unnamed road.

6.1 Potential blockage

Blockages 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.

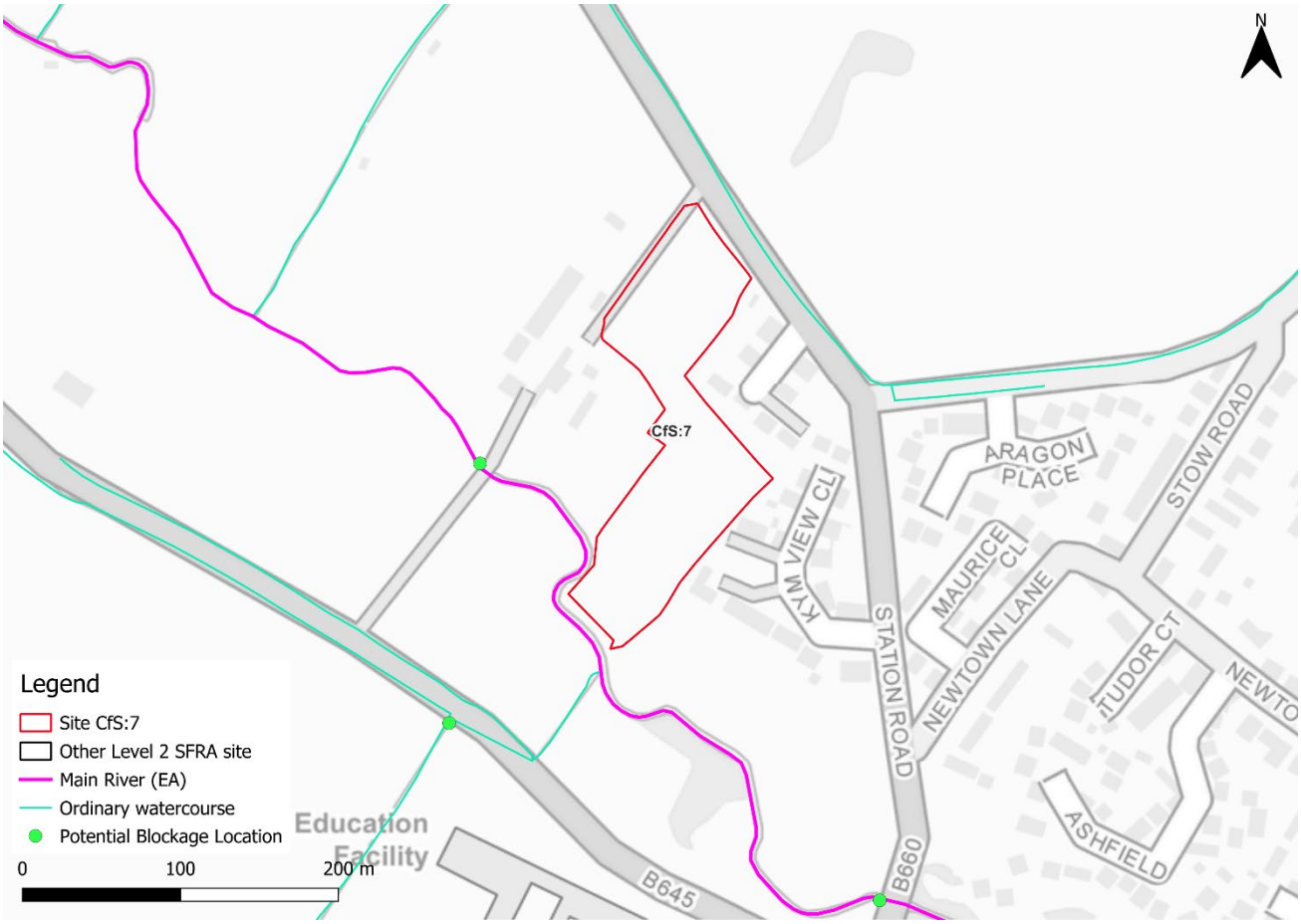

Figure 6-1: Potential blockage locations

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 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 could be passed and the site allocated, assuming the fluvial risk area can remain undeveloped and be included within a blue green corridor. However, the test should be reapplied at the application stage as some 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:

- The main area of risk adjacent to the River Kym should be left free of development and used as a blue green corridor.
- Topographic flow paths should be included in site design though regrading or redirection may be possible given the shallow nature of the flooding.
- Risk from the ordinary watercourse should be investigated at the FRA stage. Modelling may be required.
- A detailed drainage strategy will be required for any new development, given the site is currently greenfield.
- There is potential residual risk to the site from a blockage of the culverts beneath the B645, B660 and unnamed 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 a 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 watercourse.
- 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.
- 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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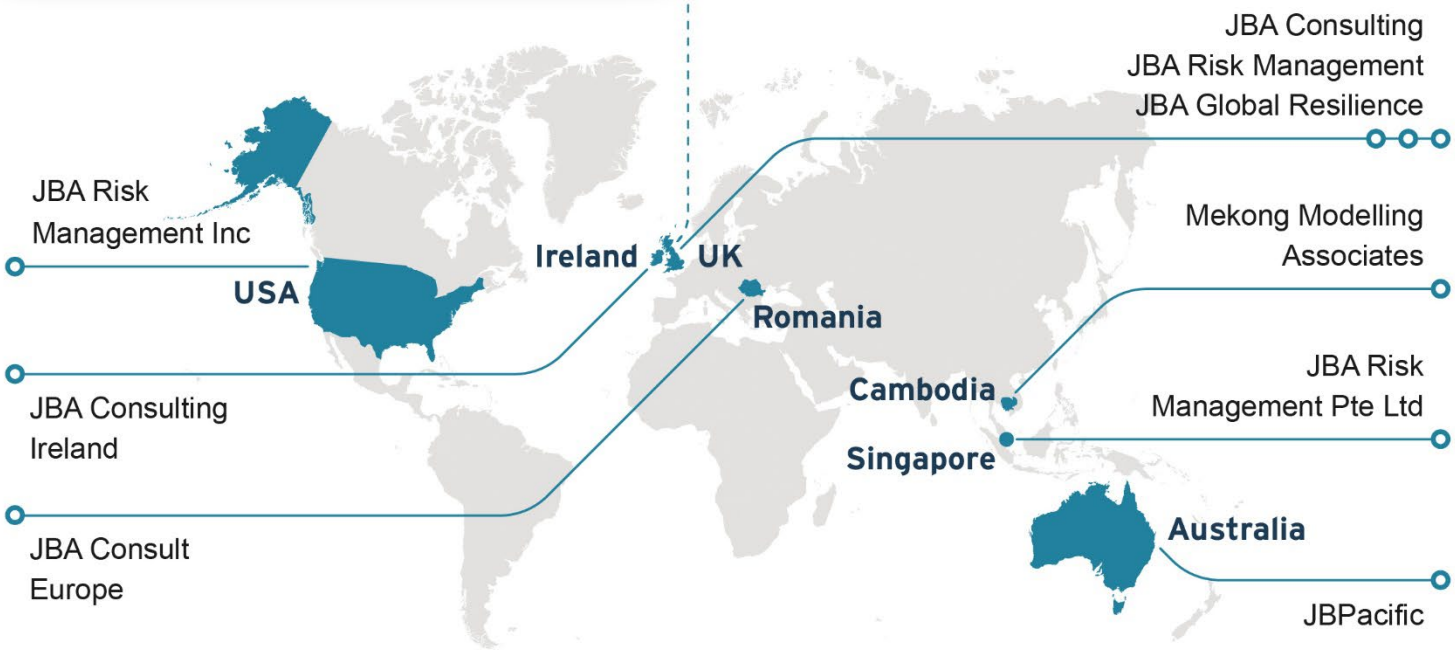

Registered Office
1 Broughton Park
Old Lane North
Broughton
SKIPTON
North Yorkshire
BD23 3FD
United Kingdom

+44(0) 1756 799919
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