



Huntingdonshire Level 2 Strategic Flood Risk Assessment Site Summary

Site CfS:47

Final Draft Report

Prepared for
Huntingdonshire District
Council

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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

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1 Background

This is a Level 2 Strategic Flood Risk Assessment (SFRA) site screening report for Local Plan Site CfS:47. 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:47

- Location: Hungary Hall, West of A141, Wyton-on-the Hill
- Existing site use: Agriculture with several residential buildings at Wyton House and Hungary Hall Farm
- Existing site use vulnerability: More vulnerable
- Proposed site use: Mixed use
- Proposed site use vulnerability: More vulnerable
- Site area (ha): 383.5
- Watercourse: High Lode (main river), several ordinary watercourses
- Environment Agency (EA) model: Fenland Bury Brook 2016
- Summary of requirements from Level 2 SFRA scoping stage:
 - o Assessment of fluvial flood depths, velocities and hazards
 - o Assessment of surface water flood extent, depths and hazards
 - Assessment of all other sources of flood risk



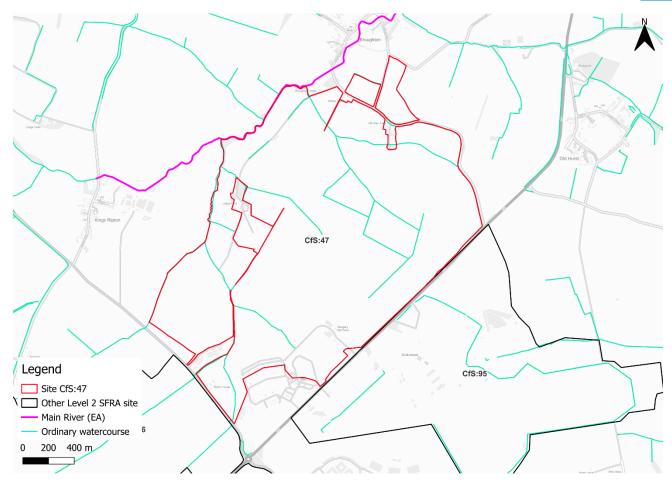


Figure 1-1: Existing site location boundary



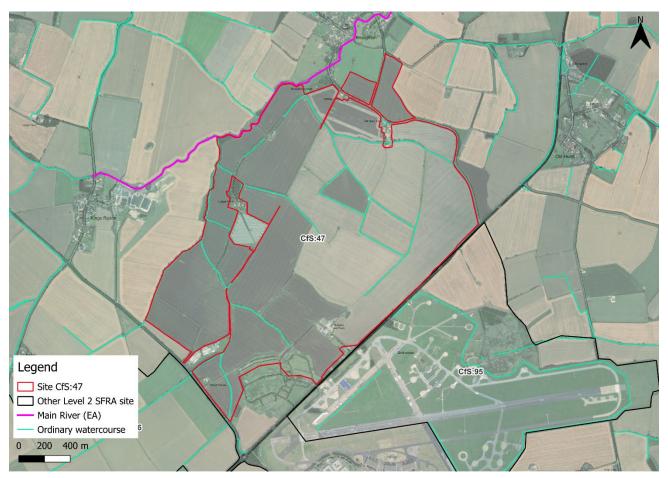


Figure 1-2: Aerial photography



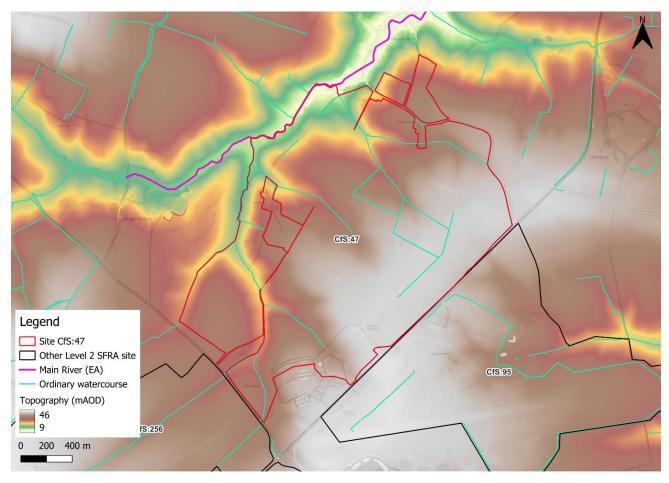


Figure 1-3: Topography



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 2.1.3) or the impacts of climate change (Section 2.3).

The site partially borders the High Lode main river to the northwest which is where the risk comes from. There is also risk from the ordinary watercourse tributary west of Lodge Farm. Flood Zone 3b in this location is based on the Flood Map for Planning 3.3% AEP defended fluvial event. 99% of the site is within Flood Zone 1, indicating that this area is at low risk of flooding from rivers and the sea. The source of the flood zones in this location is fluvial.

It is worth noting that Flood Zones 3a and 2 are likely based on the EA's New National Model rather than the Fenland Bury Brook 2016 model, for reasons unknown at this stage.

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

Flood Zone 1 (%	Flood Zone 2 (%	Flood Zone 3a (%	Flood Zone 3b (%
area)	area)	area)	area)
99	<1	<1	<1



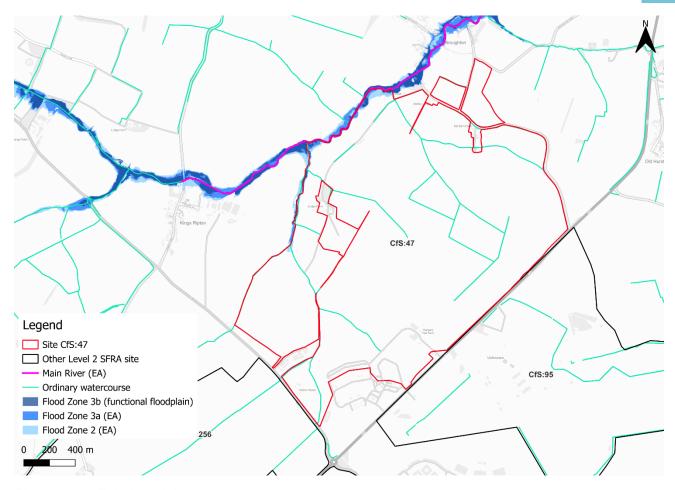


Figure 2-1: Existing risk

2.1.2 Fluvial undefended model outputs (Fenland Bury Brook 2016)

Figure 2-2, Figure 2-3 and Figure 2-4 show the modelled flood depths, velocities and hazards for the 1% AEP undefended event respectively. Modelled risk is nominal and can be mitigated through the addition of a blue green corridor along the length of the High Lode watercourse. The ordinary watercourse tributary has not been modelled though risk is apparent in the Flood Map for Planning.





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 hazard¹ for 1% AEP undefended flood event

2.2 Flood risk management

2.2.1 Flood defences

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

2.2.2 Working with Natural Processes

The EA's Working with Natural Processes (WwNP) dataset has been interrogated to identify opportunities for Natural Flood Management (NFM) to reduce flood risk to the site and surrounding areas. These areas are shown in Figure 2-5. Note, the WwNP mapping is broadscale and indicative, therefore further investigation will be required for any land shown to have potential for WwNP. The entire site and the majority of the surrounding land is within an area whereby there is potential for catchment woodland planting to reduce flood

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.



risk in the local area and downstream. This includes for riparian tree planting along the watercourses.

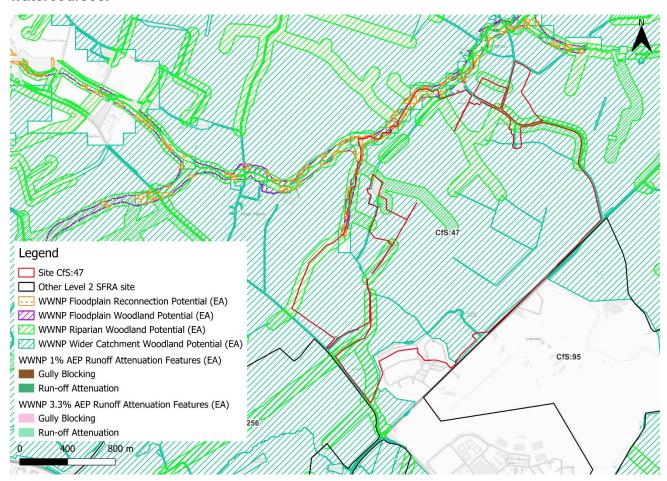


Figure 2-5: Natural Flood Management (NFM) potential mapping

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 High Lode have been modelled using the Fenland Bury Brook 2016 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 Old Bedford and Middle Level management catchment

Return period (AEP event)	Central allowance 2080s (% increase)	Higher central allowance 2080s (% increase)
2% (in absence of 3.3%)	6%	15%



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

Figures 2-6, 2-7 and 2-8 show the modelled flood depths, velocities and hazards for the 1% AEP undefended event plus the central climate change allowance (+6%) respectively. Risk is modelled to increase slightly in extent. However, risk can still be mitigated through the addition of a blue green corridor.

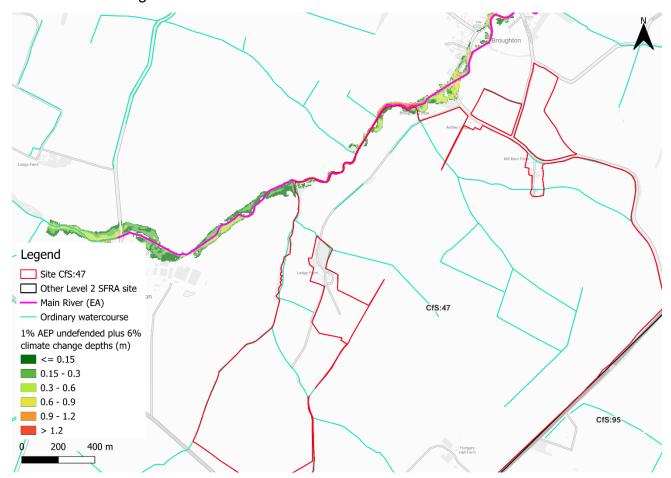


Figure 2-6: Flood depths for 1% AEP undefended flood event +6% (central climate change allowance)



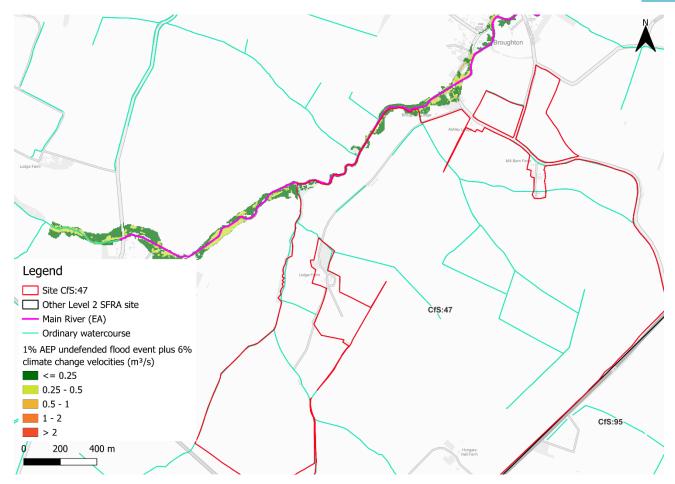


Figure 2-7: Flood velocities for 1% AEP undefended flood event +6% (central climate change allowance)





Figure 2-8: Flood hazard¹ for 1% AEP undefended flood event +6% (central climate change allowance)

The impacts of climate change on flood risk from the High Lode watercourse have been modelled by the EA through the New National Model which models the central allowance 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 slightly in the site due to climate change as shown in Figure 2-9. However, risk can still be mitigated through the addition of a blue green corridor.



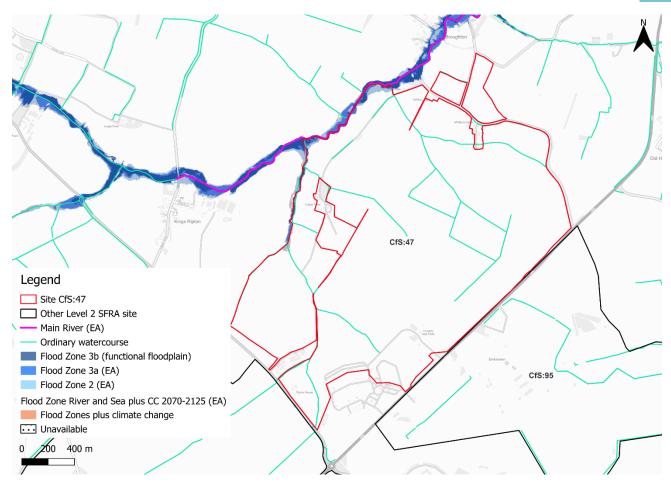


Figure 2-9: Flood Map for Planning 1% and 0.1% AEP undefended flood events +6% (central climate change allowance)

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. There are no recorded historic flood events within the vicinity of the site, according to these datasets.

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 2-10, the risk area along the High Lode main river is within a FWA, namely the Bury Brook at Kings Ripton, Broughton, Wistow, Bury and Ramsey 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 2-10, the risk area along the High Lode main river and the ordinary watercourse tributary is located within a FAA, namely the Bury Brook in Cambridgeshire FAA.

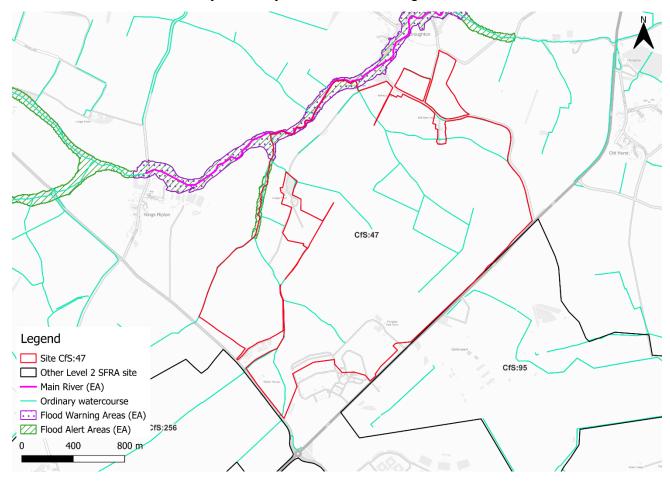


Figure 2-10: EA Flood Warning Areas and Flood Alert Areas

2.5.2 Access and escape routes

Based on available information, safe access and escape routes are available during a flood event via multiple locations around the site, as indicated by the orange circles in Figure 2-11.



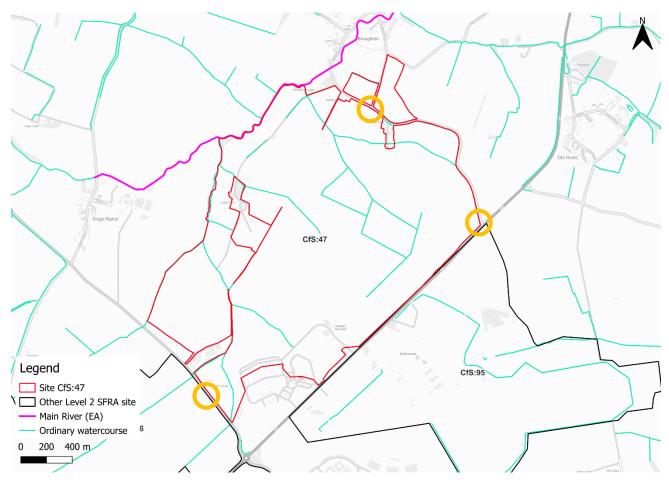


Figure 2-11: Potential access and escape routes

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

Observations:

- 99% of the site is within Flood Zone 1 and therefore at low risk from rivers and the sea. the additional risk from climate change is nominal.
- o The risk area can be mitigated through the inclusion of a blue green corridor.
- There are several unmodelled ordinary watercourses flowing through the site. Risk from these watercourses is unknown. However, using the 0.1% AEP surface water event as a proxy, risk is modelled to be apparent from all of the ordinary watercourses.

Mitigation:

- A blue green corridor should be considered for the High Lode and could apply to several of the ordinary watercourses onsite.
- The site-specific FRA should fully investigate and confirm risk from the ordinary watercourses.
- All 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, 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.
- Were development of this site to proceed, given the proximity of this site to neighbouring sites CfS:95 and CfS:256, it would be prudent to formulate a strategy to develop these sites in tandem and for consultation between each developer to take place to ensure a joined-up approach for sustainable development is in place.

Defences:

o The site does not benefit from any formal engineered defences.

Access and escape:

- Safe access and escape routes must be available at times of flood and appear to be available from multiple locations around the site. However, the FRA must confirm safe and dry routes
- 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, surface water risk to the site is predominantly very low. Approximately 4% of the site is at high surface water risk. A further 2% is at medium risk and a further 4% is at low surface water risk, as shown in Table 3-1.

Surface water risk is generally coincident with the course of the ordinary watercourses (Figure 3-1). There are also multiple areas of ponding in topographic low spots, most notably alongside the A141 along the southeastern facing site boundary.

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)
90	4	2	4



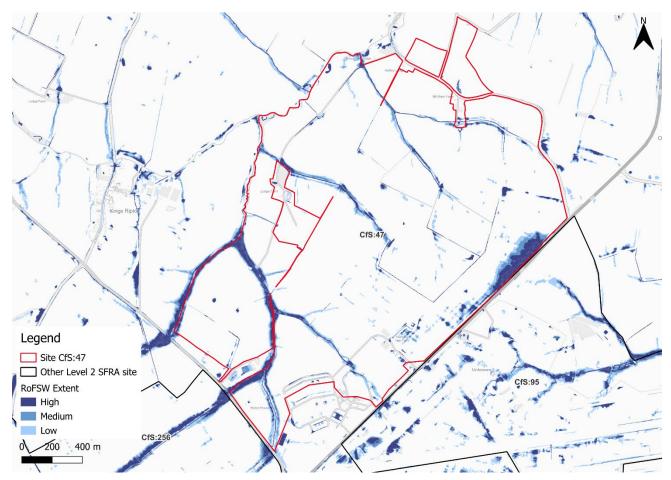


Figure 3-1: Surface water flood extents (NaFRA2 - Risk of Flooding from Surface Water map)

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 outside of the ordinary watercourse channels are generally shallow (Figure 3-2), and hazards low (Figure 3-3). The risk area along the High Lode main river can be mitigated within the blue green corridor alongside the fluvial risk.



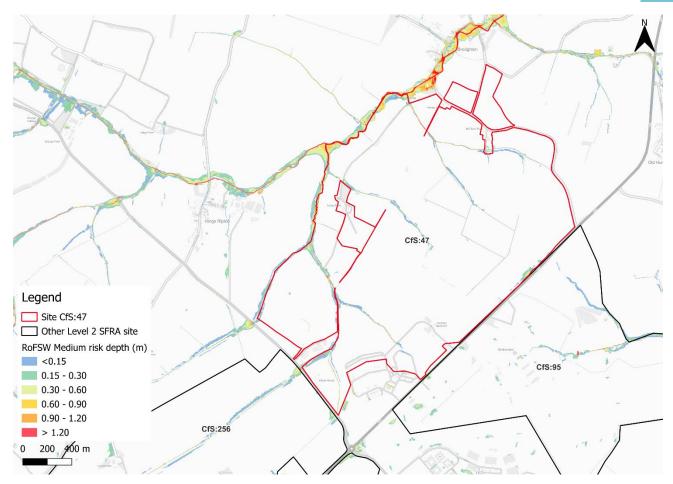


Figure 3-2: Medium risk event surface water flood depths (Third generation - Risk of Flooding from Surface Water map)



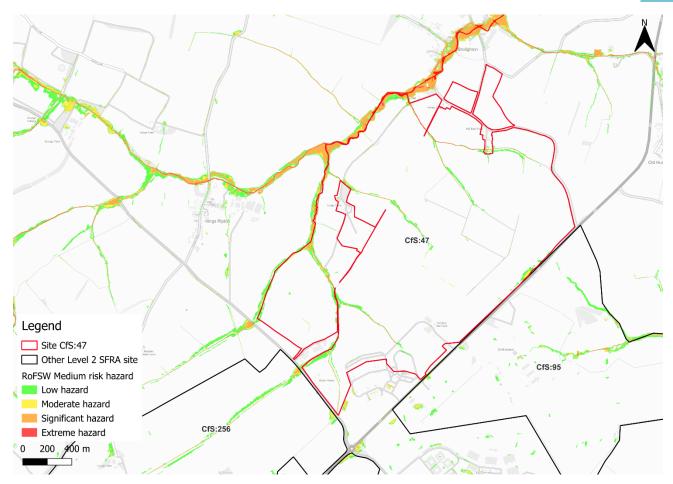


Figure 3-3: Medium risk event surface water flood hazard² (Third generation - Risk of Flooding from Surface Water map)

3.2 Impacts from climate change

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

Using the low risk event as a proxy, the medium risk surface water event is likely to increase in extent across the site when accounting for climate change (Figure 3-4). The third generation surface water map indicate maximum flood depths are likely to increase around the channels (Figure 3-5), with some areas of moderate and significant hazard (Figure 3-6).

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



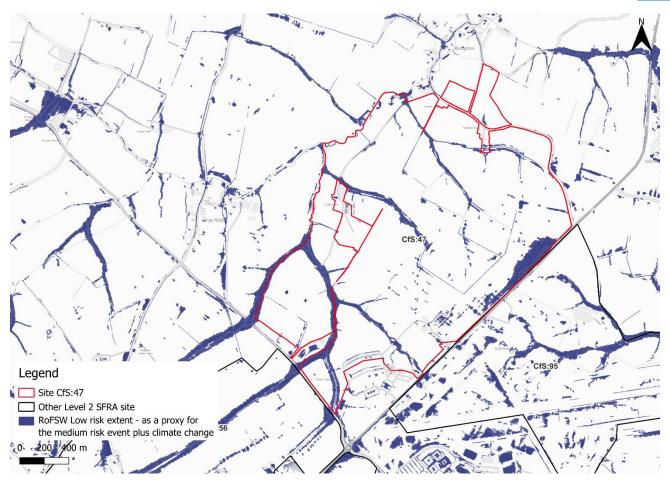


Figure 3-4: Low risk event surface water flood extent, as a proxy for the medium risk event plus climate change (NaFRA2 - Risk of Flooding from Surface Water map)



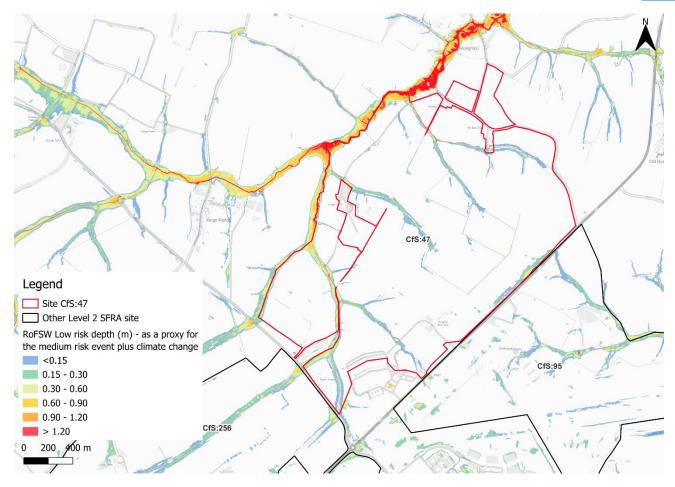


Figure 3-5: Low risk event surface water flood depths, as a proxy for the medium risk event plus climate change (Third generation - Risk of Flooding from Surface Water map)



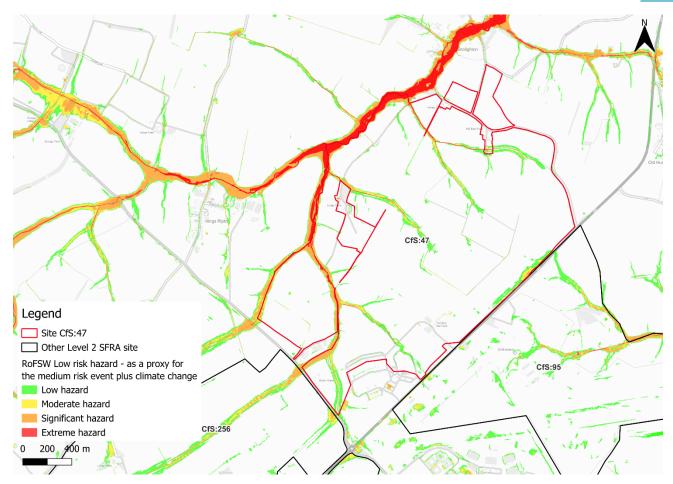


Figure 3-6: Low risk event surface water flood hazard, as a proxy for the medium risk event plus climate change (Third generation - Risk of Flooding from Surface Water map)

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

- Current risk to the site is predominantly very low, with 90% of the site being at very low surface water flood risk and the risk mainly confined to existing ordinary watercourse channels and topographic low spots where generally shallow ponding occurs.
- 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 be greater in extent than the present day medium risk event, with a greater extent of modelled flooding along the channels 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 ordinary watercourses should be included within a network of green blue corridors. These corridors can provide multiple benefits alongside flood risk, including ecological, social and amenity benefits.
- Any infilling of ponds, drainage ditches, or redirecting of channels should be avoided, if possible.
- Access and escape routes appear viable across the site. However, the FRA will
 be required to confirm surface water flood risk conditions and whether safe
 access and escape routes would be achievable.
- 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 Bury Brook 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 Guide³. Figure 5-1 shows the map covering this site and the surrounding areas. Table 5-1 explains the risk classifications.

The majority of the site is located within an area classified as no risk of emergence; therefore, infiltration SuDS should be suitable across the majority of the site. The underlying bedrock within the site is a combination of mudstone, siltstone and sandstone (Figure 5-2). Mudstone and siltstone generally have low permeability though sandstone and till are generally highly permeable.

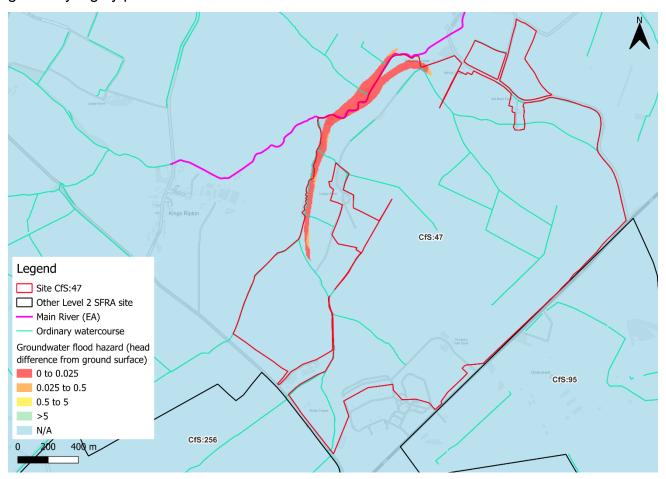


Figure 5-1: JBA 5m Groundwater Emergence Map

Site CfS_47 - Hungary Hall, West of A141, Wyton-on-the Hill

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.		



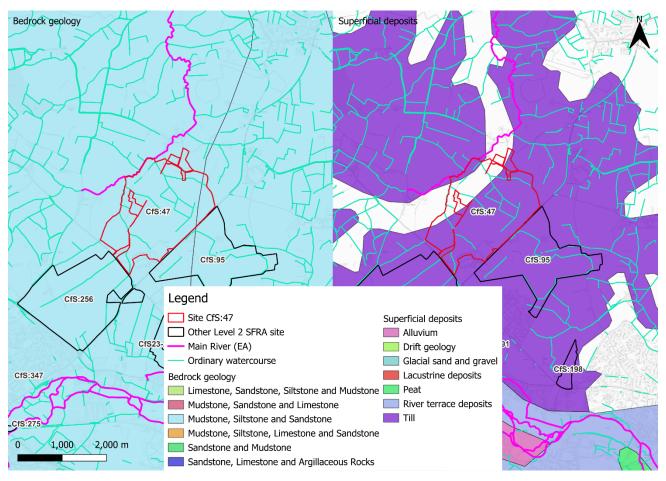


Figure 5-2: Soils and geology



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 several culverts beneath the B1090 road along the southwestern boundary.

6.1 Potential blockage

A blockage of the culverts beneath the B1090 may cause flooding to the site, depending on the severity of the blockages and the magnitude of the flood events. 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. There may also be other culverted structures on or around the vicinity of the site that should be investigated at the FRA stage.

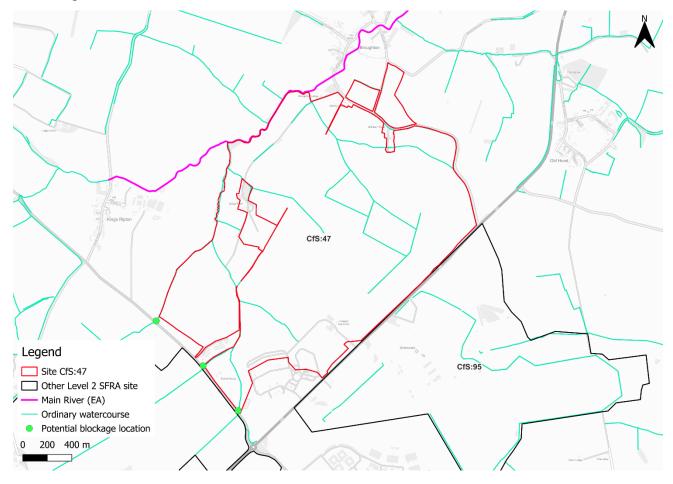


Figure 6-1: Potential blockage / breach locations



6.2 Flood risk from reservoirs

The EA's Reservoir Flood Maps (RFM) (2021) show where water may go in the unlikely event of a reservoir or dam failure. Figure 6-1 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 Holland Wood reservoir. The undertaker is Abbots Ripton Farming Company.

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 Services Ltd 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.

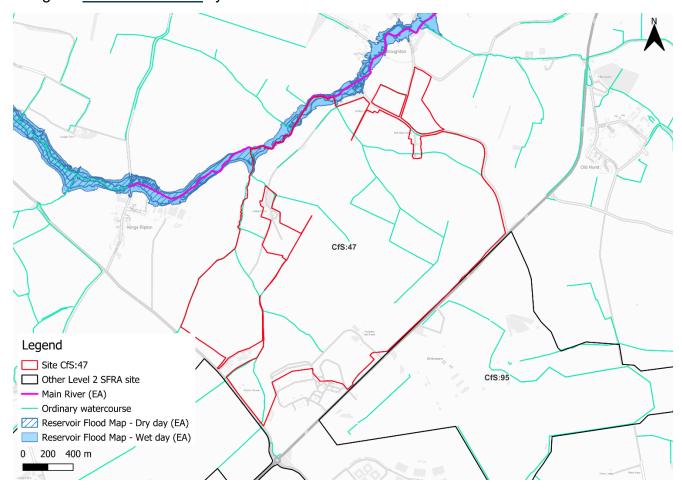


Figure 6-2: EA Reservoir Flood Map



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 the site is proposed for more vulnerable development and is partially 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 areas are included within blue green corridors. 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 fluvial risk area along High Lode and its tributary should remain undeveloped and included in a blue green corridor.
- Risk from the ordinary watercourses should be investigated at the FRA stage.
 Modelling will likely 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.
- 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 ordinary watercourses should be included within the site design and layout. Infilling of drainage ditches should be avoided.
- There is potential residual risk to the site from blockage of the culverts beneath the B1090 which 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 a flood event.
- Were development of this site to proceed, given the proximity of this site to neighbouring sites CfS:95 and CfS:256, it would be prudent to formulate a strategy to develop these sites in tandem and for consultation between each developer to take place to ensure a joined-up approach for sustainable development is in place.



7.3 Site-specific FRA requirements and further work

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

- The potential inclusion of blue green corridors along watercourses and channels should be assessed.
- Risk from the ordinary watercourses, including for residual risk from the culverts, should be investigated at the FRA stage. Modelling will likely be required.
- 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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