



Huntingdonshire Level 2 Strategic Flood Risk Assessment Site Summary

Site CfS23:24291

Final Draft Report

Prepared for
Huntingdonshire District
Council

Date
November 2025





Document Status

Issue date 6 November 2025

Issued to Frances Schulz

BIM reference JFI-JBA-XX-XX-RP-EN-0072

Revision P03

Prepared by Kira Khangura

Technical Assistant

Reviewed by Mike Williamson BSc MSc CGeog FRGS EADA

Principal Analyst

Authorised by Paul Eccleston BA CertWEM CEnv MCIWEM C.WEM

Technical Director

Carbon Footprint

The format of this report is optimised for reading digitally in pdf format. Paper consumption produces substantial carbon emissions and other environmental impacts through the extraction, production and transportation of paper. Printing also generates emissions and impacts from the manufacture of printers and inks and from the energy used to power a printer. Please consider the environment before printing.

Accessibility

JBA aims to align with governmental guidelines on accessible documents and WGAG 2.2 AA standards, so that most people can read this document without having to employ special adaptation measures. This document is also optimised for use with assistive technology, such as screen reading software.



Contract

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. Kira Khangura of JBA Consulting carried out this work.

Purpose and Disclaimer

Jeremy Benn Associates Limited ("JBA") has prepared this Report for the sole use of Huntingdonshire District Council in accordance with the Agreement under which our services were performed.

JBA has no liability for any use that is made of this Report except to Huntingdonshire District Council for the purposes for which it was originally commissioned and prepared.

No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by JBA. This Report cannot be relied upon by any other party without the prior and express written agreement of JBA.

JBA disclaims any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to JBA's attention after the date of the Report.

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.



Copyright

© Jeremy Benn Associates Limited 2025



Contents

1	Background		
	1.1	Site CfS23:24291	1
2	Flood risk	from rivers and sea	5
	2.1	Existing risk	5
	2.2	Flood risk management	9
	2.3	Impacts from climate change	14
	2.4	Historic flood incidents	21
	2.5	Emergency planning	21
	2.6	Observations, mitigation options, site suitability, sequential approach to development management - fluvial	23
3	Flood risk	from surface water	26
	3.1	Existing risk	26
	3.2	Impacts from climate change	29
	3.3	Observations, mitigation options, site suitability, sequential approach to development management - surface water	32
4	Cumulative	e impacts assessment and high risk catchments	34
	4.1	Level 1 cumulative impacts assessment	34
5	Groundwa	ter, geology, soils, SuDS suitability	35
6	Residual ri	isk	38
	6.1	Potential defence breach	38
	6.2	Flood risk from reservoirs	38
7	Overall site	e assessment	40
	7.1	Can part b) of the exception test be passed?	40
	7.2	Recommendations summary	40
	7.3	Site-specific FRA requirements and further work	40
8	Licencing		42



	_			
.ist	\sim t	 \sim	1 1 1	-00
151	()	(1	111	

Figure 1-1: Existing site location boundary	2
Figure 1-2: Aerial photography	3
Figure 1-3: Topography	4
Figure 2-1: Existing risk	6
Figure 2-2: Flood depths for 1% AEP undefended flood event	7
Figure 2-3: Flood velocities for 1% AEP undefended flood event	8
Figure 2-4: Flood hazard for 1% AEP undefended flood event	9
Figure 2-5: EA Spatial Flood Defences dataset	10
Figure 2-6: Flood depths for 1% AEP defended flood event	11
Figure 2-7: Flood velocities for 1% AEP defended flood event	12
Figure 2-8: Flood hazard ¹ for 1% AEP defended flood event	13
Figure 2-9: Natural Flood Management (NFM) potential mapping	14
Figure 2-10: Flood depths for 1% AEP undefended flood event +19% (central climate change allowance)	15
Figure 2-11: Flood velocities for 1% AEP undefended flood event +19% (central climate change allowance)	te 16
Figure 2-12: Flood hazard¹ for 1% AEP undefended flood event +19% (central climate change allowance)	e 17
Figure 2-13: Flood depths for 1% AEP defended flood event +19% (central climate charallowance)	ange 18
Figure 2-14: Flood velocities for 1% AEP defended flood event +19% (central climate change allowance)	19
Figure 2-15: Flood hazard¹ for 1% AEP defended flood event +19% (central climate challowance)	nange 20
Figure 2-16: Recorded historic flood events onsite and around the site	21
Figure 2-17: EA Flood Warning Areas and Flood Alert Areas	22
Figure 2-18: Potential access and escape routes	23
Figure 3-1: Surface water flood extents (NaFRA2 - Risk of Flooding from Surface Water map)	er 27
Figure 3-2: Medium risk event surface water flood depths (Third generation - Risk of Flooding from Surface Water map)	28
Figure 3-3: Medium risk event surface water flood hazard (Third generation - Risk of Flooding from Surface Water map)	29



Figure 3-4: Low risk event surface water flood extent, as a proxy for the medium risk explusion 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 of 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 of plus climate change (Third generation - Risk of Flooding from Surface Water map)	
Figure 5-1: JBA 5m Groundwater Emergence Map	35
Figure 5-2: Soils and geology	37
Figure 6-1: EA Reservoir Flood Map	39



List of Tables

Table 2-1: Existing flood risk based on percentage area of site at risk	5
Table 2-2: Modelled climate change allowances for peak river flows for the Upper and Bedford Ouse management catchment	15
Table 3-1: Existing surface water flood risk based on percentage area at risk using the NaFRA2 RoFSW map	e 26
Table 5-1: Groundwater Hazard Classification	36



1 Background

This is a Level 2 Strategic Flood Risk Assessment (SFRA) site screening report for Local Plan Site CfS23:24291. 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 CfS23:24291

- Location: Ruddles Lane, Wyton
- Existing site use: Agricultural
- Existing site use vulnerability: Less vulnerable
- Proposed site use: Renewable Energy
- Proposed site use vulnerability: Essential infrastructure
- Site area (ha): 29
- Watercourse: Ordinary Watercourse, Back Brook (unmodelled) and River Great Ouse
- Environment Agency (EA) model: Lower Ouse 2015 Downstream Lower Ouse
- Summary of requirements from Level 2 SFRA scoping stage:
 - Subject to the Exception Test as essential infrastructure development proposed in Flood Zone 3b
 - 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
 - Potential residual risk from a breach of the Wyton FAS Huntingdon Road Embankment



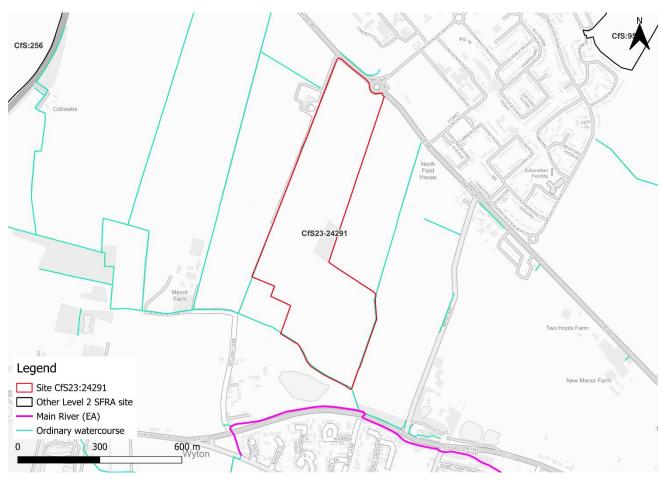


Figure 1-1: Existing site location boundary



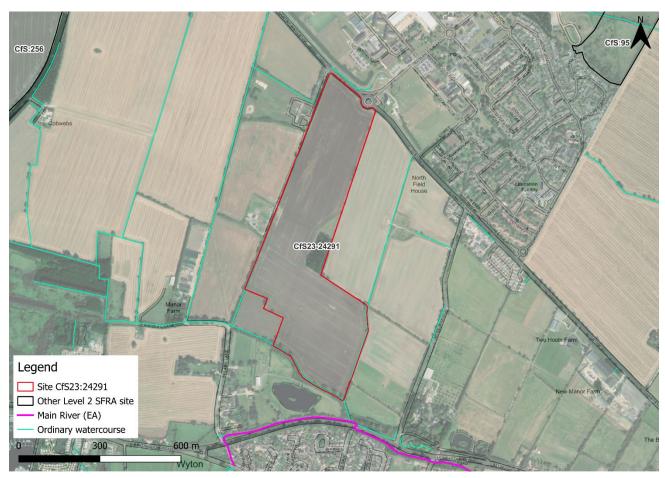


Figure 1-2: Aerial photography



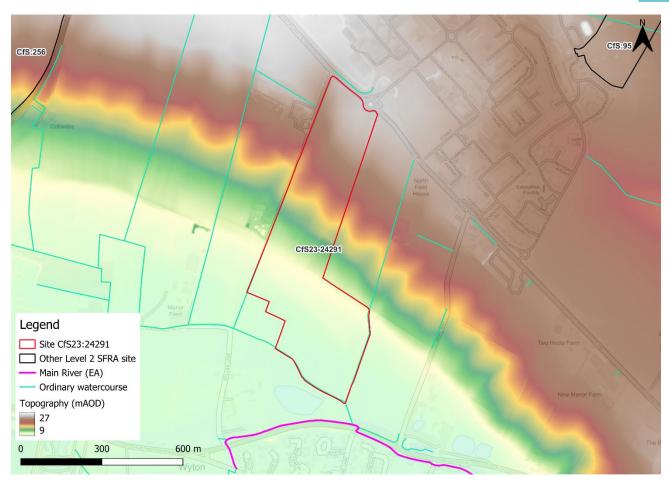


Figure 1-3: Topography



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 majority of the site is within Flood Zone 1, and therefore at low risk of flooding from rivers and the sea. In the south of the site, 6% of the site is within Flood Zone 3b, and additional 14% is within Flood Zone 3a and a further 4% is within Flood Zone 2. The source of the risk is fluvial from Back Brook and the River Great Ouse. Flood Zone 3b is based on the Flood Map for Planning 3.3% AEP defended event. However, the site is defended to a 100-year standard of protection. The 3.3% AEP event should not therefore cause risk to the site.

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)
76	4	14	6



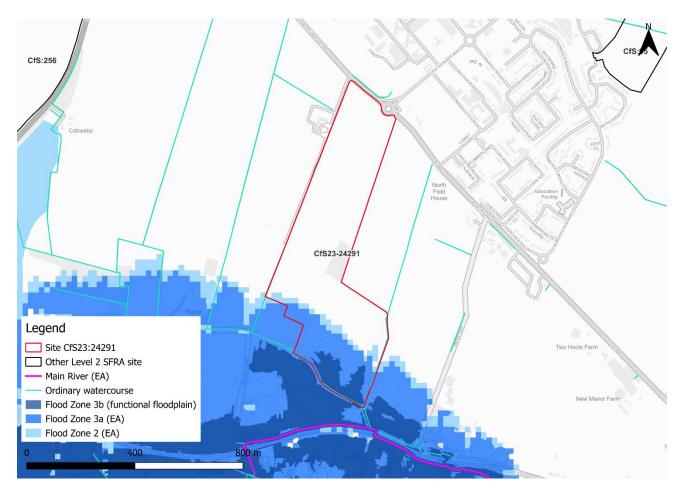


Figure 2-1: Existing risk

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

Figures 2-2, 2-3 and 2-4 show the modelled flood depths, velocities and hazards for the 1% AEP undefended event respectively.

Modelling of the 1% AEP undefended event shows risk is confined to the south of the site, with moderate depths predominately between 0.3 and 0.6m. Flood velocity and hazard are confined to the same area in the south of the site. Velocity is less than 0.25m³/s and hazard is predominantly classified as 'Danger for most'. The centre and north of the site are not modelled to be at risk in the 1% AEP undefended event. The Flood Map for Planning flood zones are similar to the modelled events for the equivalent return periods.



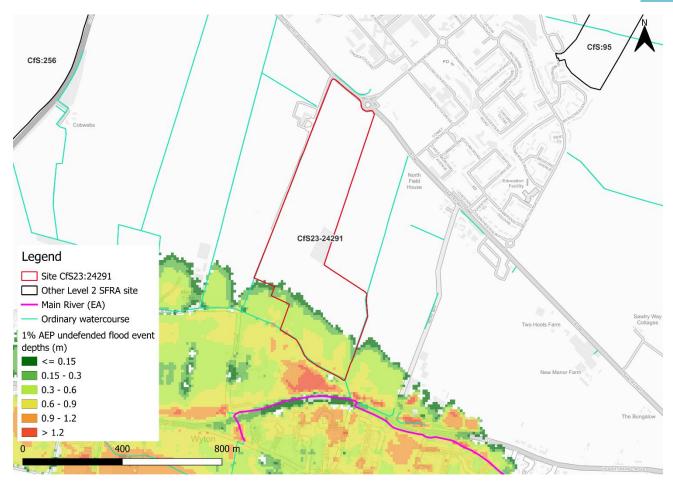


Figure 2-2: Flood depths for 1% AEP undefended flood event



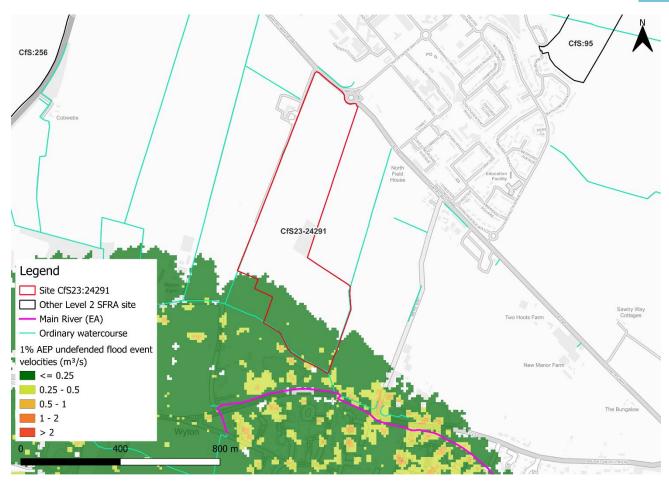


Figure 2-3: Flood velocities for 1% AEP undefended flood event



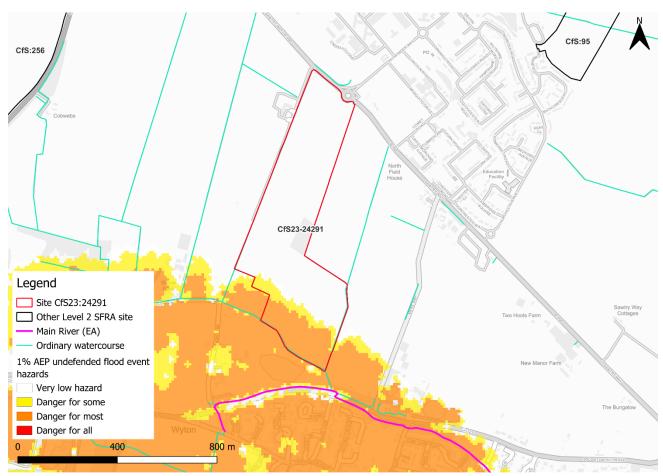


Figure 2-4: Flood hazard¹ for 1% AEP undefended flood event

2.2 Flood risk management

2.2.1 Flood defences

There are embankments along the River Great Ouse watercourse. The embankments are designed to provide protection from a 1% AEP fluvial event and are managed by the EA.

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.



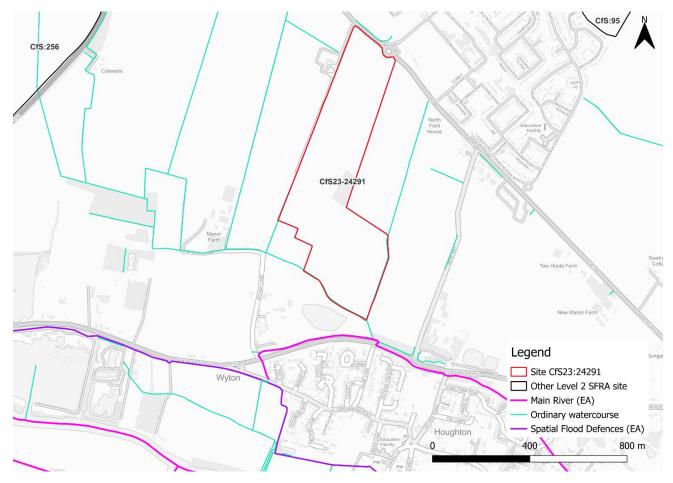


Figure 2-5: EA Spatial Flood Defences dataset

2.2.2 Fluvial defended model outputs (Downstream Lower Ouse)

Figures 2-6, 2-7 and 2-8 show the modelled flood depths, velocities and hazards for the 1% AEP defended event respectively. Modelling shows that risk to the entire site, including in the south, is removed during the 1% AEP defended event. However, the south of the site is considered to be at residual risk.



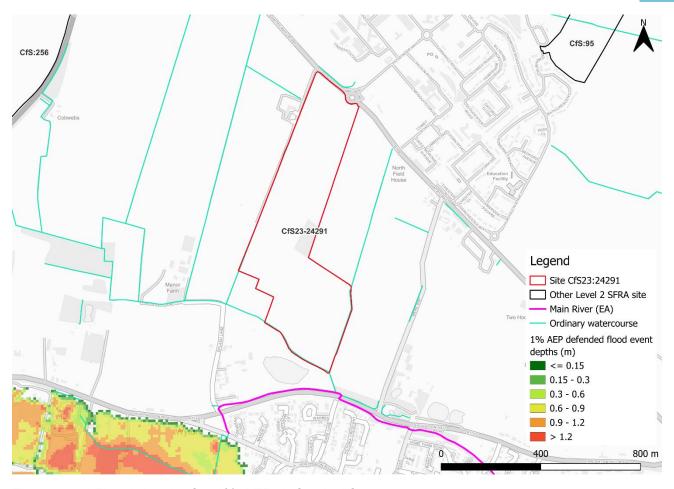


Figure 2-6: Flood depths for 1% AEP defended flood event



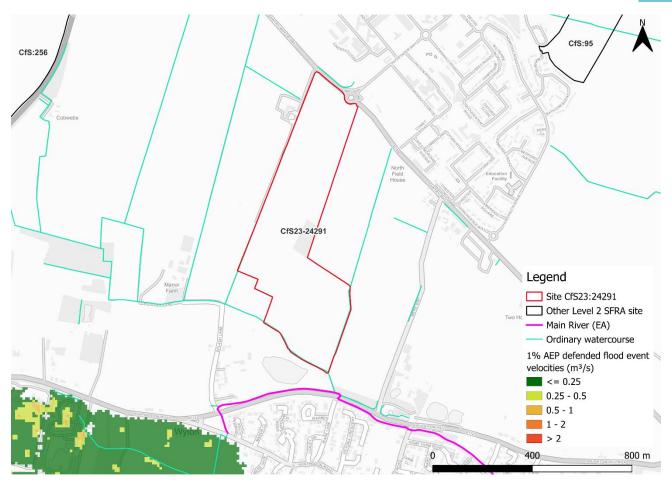


Figure 2-7: Flood velocities for 1% AEP defended flood event



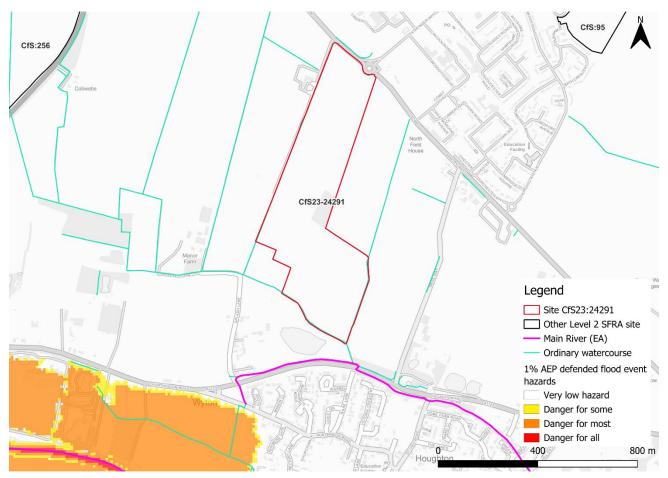


Figure 2-5: Flood hazard¹ for 1% AEP defended flood event

2.2.3 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 2-9. Note, the WwNP mapping is broadscale and indicative, therefore further investigation will be required for any land shown to have potential for WwNP. In the south and north of the site, there is potential for woodland tree planting to intercept, slow, store and filter water. Along the unnamed ordinary watercourses, there is potential for riparian tree planting to attenuate flooding.



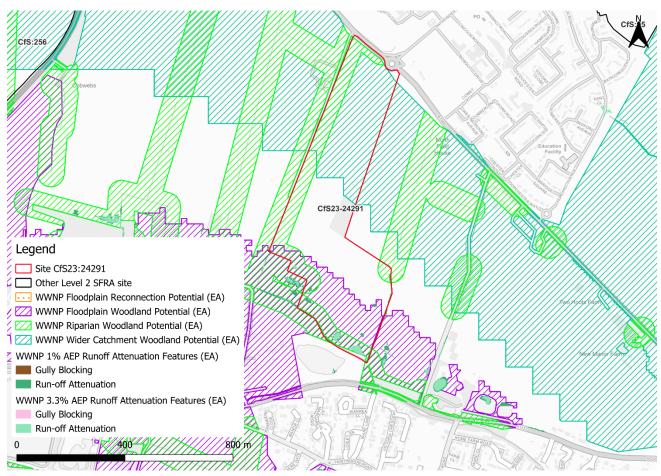


Figure 2-96: Natural Flood Management (NFM) potential mapping

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)
1%	19	30
0.1%	19	30

Figures 2-10, 2-11 and 2-12 show the modelled flood depths, velocities and hazards for the 1% AEP undefended event plus the central climate change allowance (+19%) respectively. Risk remains similar to the present day modelled flood depths, velocities and hazards.

Figures 2-13, 2-14 and 2-15 show the modelled flood depths, velocities and hazards for the 1% AEP defended event plus the central climate change allowance (+19%) respectively. The modelling shows no risk to the site in the defended scenario. That would suggest that the defences also protect the site against the impacts of fluvial climate change.

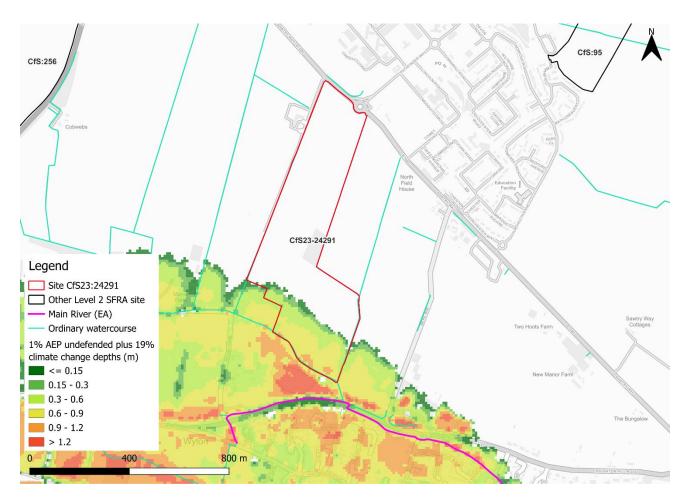


Figure 2-10: Flood depths for 1% AEP undefended flood event +19% (central climate change allowance)



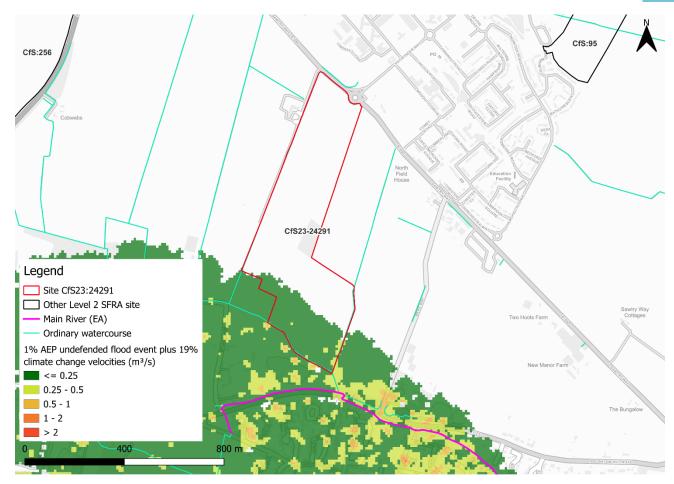


Figure 2-7: Flood velocities for 1% AEP undefended flood event +19% (central climate change allowance)



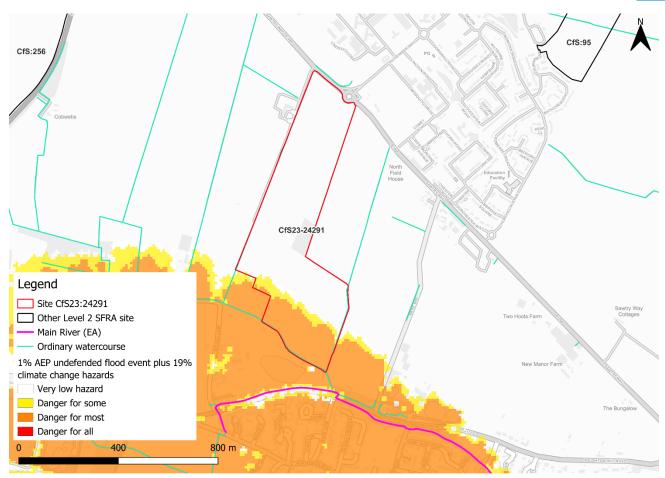


Figure 2-8: Flood hazard¹ for 1% AEP undefended flood event +19% (central climate change allowance)



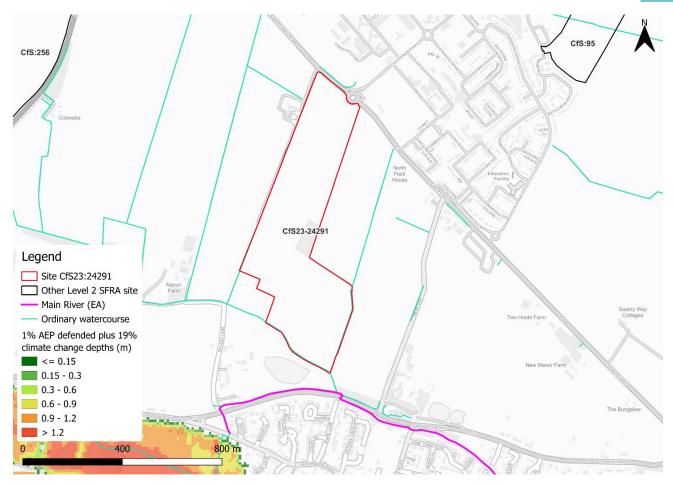


Figure 2-9: Flood depths for 1% AEP defended flood event +19% (central climate change allowance)





Figure 2-14: Flood velocities for 1% AEP defended flood event +19% (central climate change allowance)



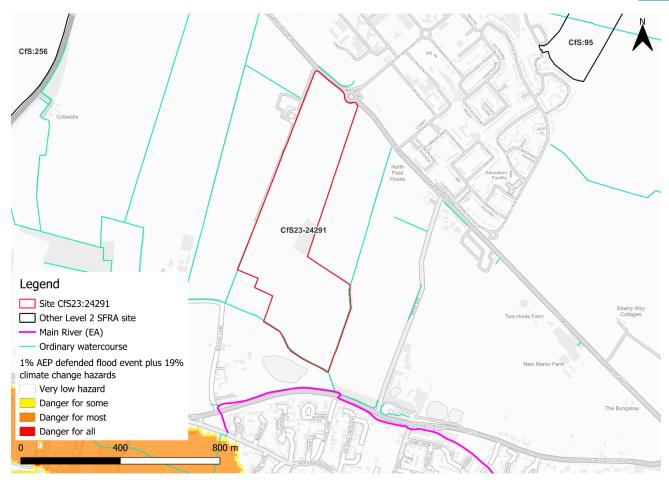


Figure 2-15: Flood hazard¹ for 1% AEP defended flood event +19% (central climate change allowance)

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 2-16 which shows historical flooding in close proximity to the site. There has been one historic flood in March 1947. The source for this event is unknown.

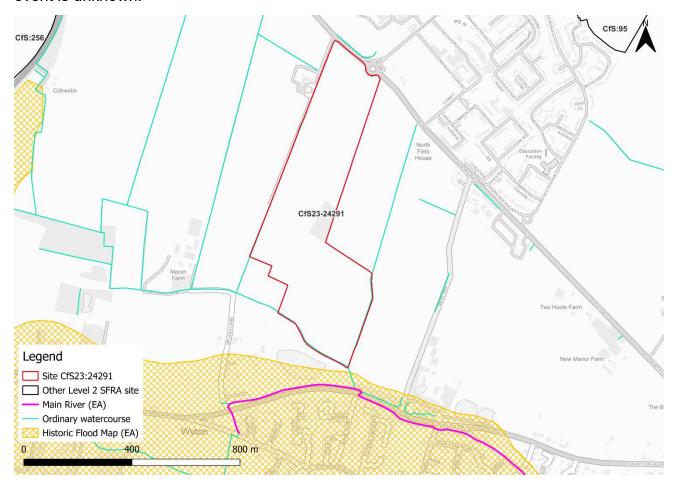


Figure 2-1610: Recorded historic flood events onsite and around the site

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 2-17, this site is located within a FWA, namely the River Great Ouse at Wyton and Houghton 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 2-17, this site is located within a FAA, namely the River Great Ouse in Cambridgeshire from Brampton to Earith FAA



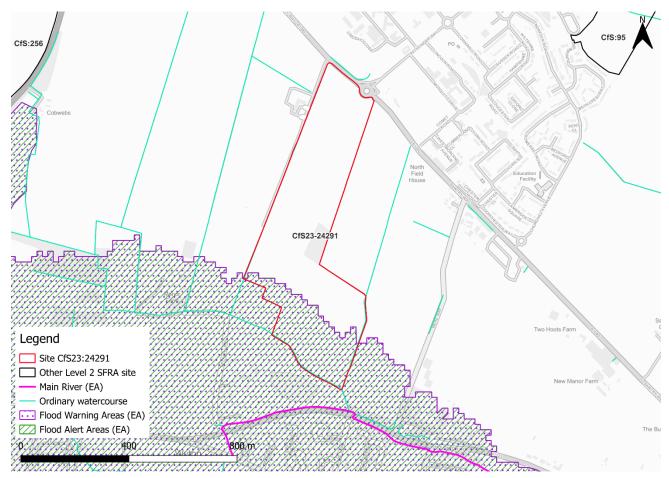


Figure 2-17: EA Flood Warning Areas and Flood Alert Areas

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 Sawtry Way B1090 at the north of the site, as shown by the orange circle in Figure 2-18. However, the flood alert should remain in place to ensure site users can be safe and evacuate the site during the 0.1% AEP fluvial event plus climate change.



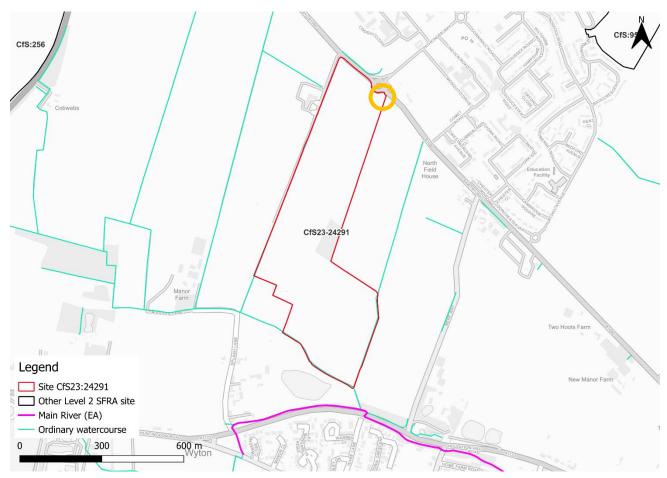


Figure 2-18: Potential access and escape routes

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

Observations:

- The proposed development of the site would see a change in the risk classification from less vulnerable to Essential Infrastructure, according to the NPPF.
- The site is partially located within fluvial Flood Zone 3a and therefore must be subject to the exception test.
- Based on current information, it should be possible to develop the majority of the site outside of the risk area in the south. Due to the classification of the site as 'Essential Infrastructure', it is important that infrastructure is designed and constructed to remain operational and safe in times of flood.
- Local detailed modelling of the River Great Ouse shows significant flood depths and hazards within the 1% AEP event extent. This risk increases with climate change. It is therefore recommended that all development avoids the 1% AEP plus central climate change event flood extent. If development and access routes cannot be fully sited outside of this event extent, then it may not be possible for the exception test to be passed, depending on whether it can



- be designed and constructed to remain operational and safe during a flood event, including for the extreme event accounting for 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:

- When accounting for defences, the 1% AEP defended plus central climate change event remains in channel leaving the site at low risk in the future.
 However, it is not appropriate to consider the site as flood free as residual flood risk remains from possible defence breaches.
- According to the EA's Spatial Flood Defences dataset, the defences on the River Great Ouse are in fair condition and may have defects that could reduce performance of the asset. The EA, as asset owner, should be consulted as to the actual condition of these defences and should provide any details on possible refurbishment or replacement.
- Areas behind flood defences are at particular risk from the rapid onset of fast flowing and deep flooding, with little or no warning if defences are breached. Emergency plans must be in place for such areas and safe access and escape routes must be in place for the lifetime of development. Resistance and resilience measure may also be put in place as a measure to manage residual flood risk when avoidance measures have been exhausted.
- When considering whether defended sites could be appropriate for development, the FRCC-PPG states that the likelihood of the defences keeping pace with climate change should be considered i.e. available funding streams and funding options such as Community Infrastructure Levy, planning obligations / S106 agreements, or Partnership Funding.
- Ideally the sequential approach would mean that areas of a site relying on defences to stay safe would be avoided in favour of sites in Flood Zone 1 and not at risk from climate change.

Mitigation:

- o Ideally, the risk area would remain undeveloped and left as open greenspace.
- The site-specific FRA should confirm the risk to the site, including confirmation on the extent of the functional floodplain.
- The site-specific FRA should investigate potential risk from Back Brook and the ordinary watercourse to the north to understand potential additional fluvial risk to the site.
- o If works are proposed on or near a river or flood defence, a separate permission may be required. The type of permission needed and whether it must be sought from the Environment Agency, Lead Local Flood Authority or Internal Drainage Board will depend on the activity and location proposed. The developer should check if they need permission to do work on a river or flood defence. If the development of the site involves any activity within



specified distances of Back Brook main river, a flood risk activity permit may be required in addition to planning permission. For non-tidal main rivers, a flood risk activity permit may be required if the development of the site is within 8 metres of a riverbank, flood defence structure or culvert A flood risk activity permit may also be required for activity (e.g. land raising) in the floodplain of a main river if it could affect flood flow or storage, and potential impacts are not controlled by a planning permission.

Access and escape:

- Safe access and escape routes must be available at times of flood and appear to be available via Sawtry Way B1090 at the north of the site. 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, surface water risk to the site is predominantly very low. Approximately 6% of the site is at high surface water risk. A further 6% is at medium risk and a further 8% is at low surface water risk, as shown in Table 3-1. Surface water risk is predominantly in the south of the site, coincident with the area of modelled fluvial risk. There are additional small areas of surface water risk to the north of the site.

Table 3-1: Existing surface water flood risk based on percentage area at risk using the NaFRA2 RoFSW map

Very low risk (% area)	Low risk (% area)	Medium risk (% area)	High risk (% area)
80	8	6	6



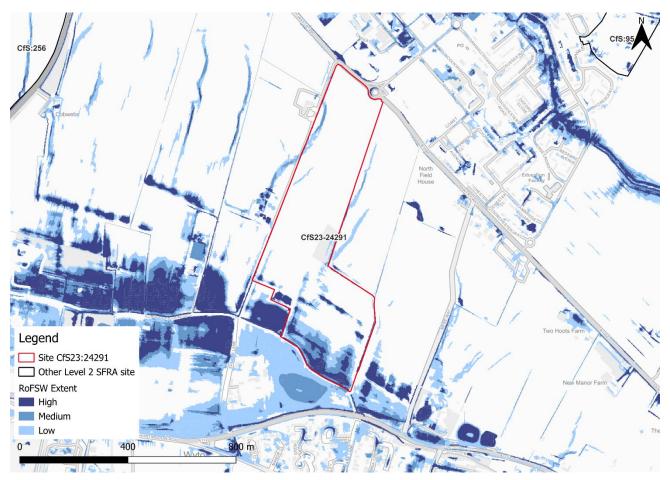


Figure 3-1: Surface water flood extents (NaFRA2 - Risk of Flooding from Surface Water map)

3.1.2 Risk of Flooding from Surface Water - third generation depths and hazard

Based on the EA's national scale third generation RoFSW map, flood depths within the site in the medium risk event are generally shallow and sparse. Small areas in the south of the site are classified as low hazard.

There are differences in the extent of surface water flooding between the NaFRA2 RoFSW map and the third-generation depths and hazard mapping, with the NaFRA2 extents appearing significantly larger in the south of the site. This reinforces the requirement for detailed assessment of surface water at the FRA stage to establish surface water flood risk conditions.



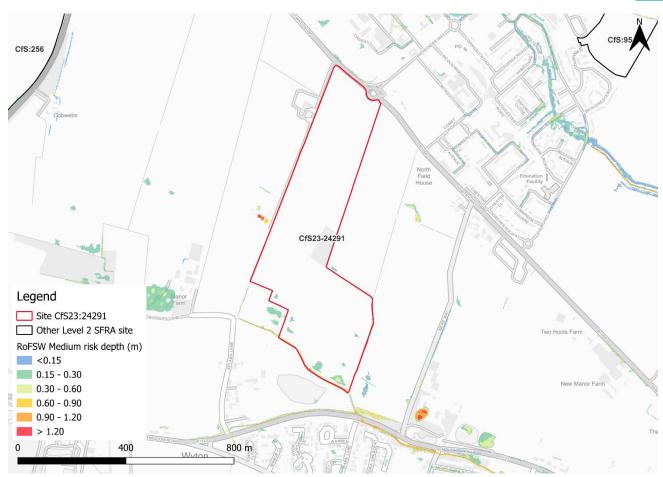


Figure 3-2: Medium risk event surface water flood depths (Third generation - Risk of Flooding from Surface Water map)



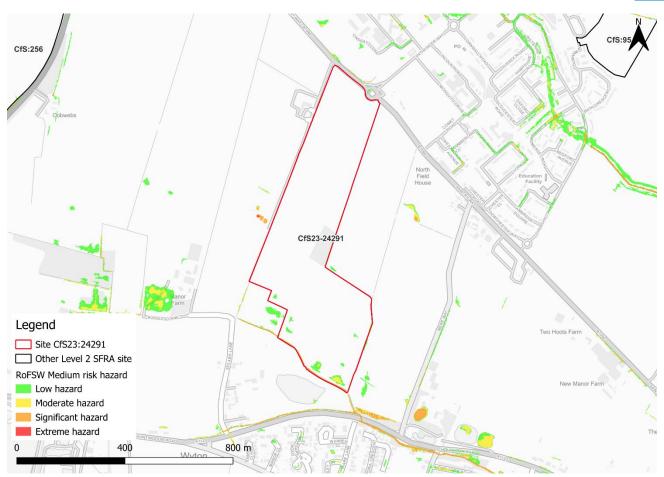


Figure 3-3: Medium risk event surface water flood hazard² (Third generation - Risk of Flooding from Surface Water map)

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 shows a slight increase in extent when accounting for climate change (Figure 3-4). Additionally, the third generation surface water maps indicate maximum flood depths are likely to increase to between 0.30 to 0.60m in the south of the site (Figure 3-5), with areas along the south boundary classified as significant and extreme hazard.

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



The NaFRA2 extents appear to be slightly larger in area than the third generation mapping. There are therefore 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.

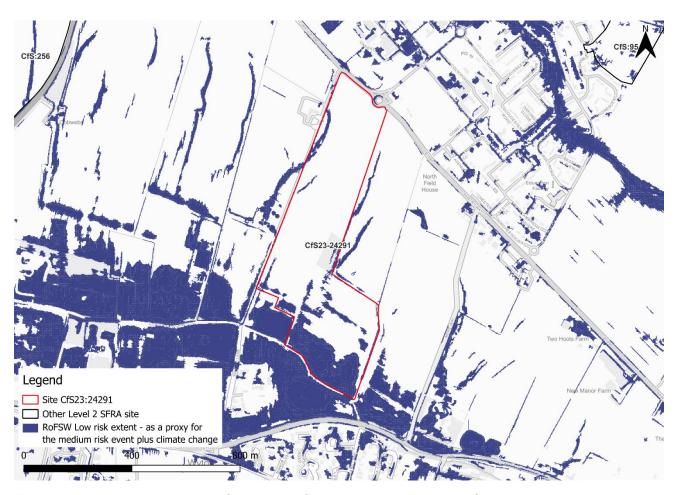


Figure 3-4: Low risk event surface water flood extent, as a proxy for the medium risk event plus climate change (NaFRA2 - Risk of Flooding from Surface Water map)



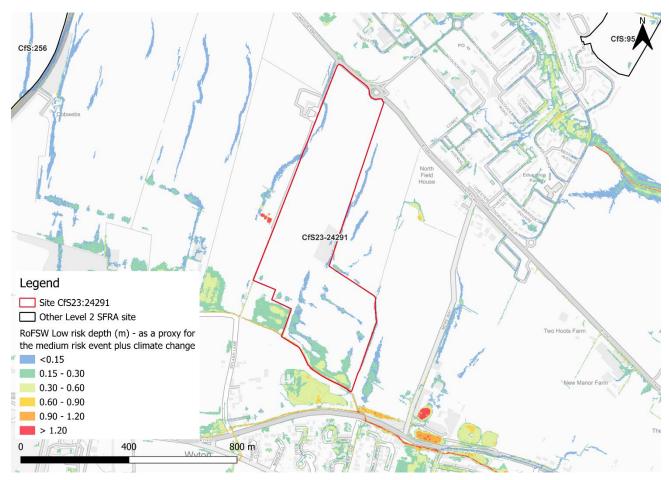


Figure 3-5: Low risk event surface water flood depths, as a proxy for the medium risk event plus climate change (Third generation - Risk of Flooding from Surface Water map)



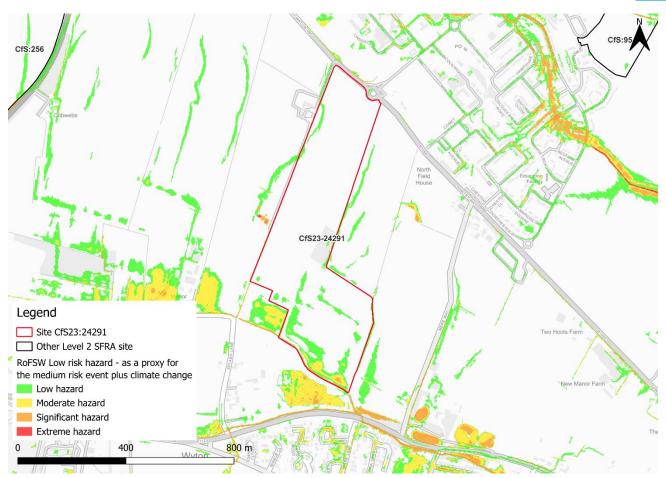


Figure 3-6: Low risk event surface water flood hazard, as a proxy for the medium risk event plus climate change (Third generation - Risk of Flooding from Surface Water map)

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

- Current risk to the site is predominantly very low, with 80% 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 south 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.
- 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 differences between the NaFRA2 RoFSW map and the thirdgeneration 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 routes should be retained onsite, if possible. Infilling of natural depressions or ditches should be avoided.
- The RoFSW map is not suitable for identifying whether an individual property will flood and is therefore indicative. The RoFSW map is not appropriate to act as the sole evidence for any specific planning or regulatory decision or assessment of risk in relation to flooding at any scale without further supporting studies, modelling, or evidence.



4 Cumulative impacts assessment and high risk catchments

4.1 Level 1 cumulative impacts assessment

A cumulative impact assessment was completed through the Huntingdonshire Level 1 SFRA (2024), which aimed to identify catchments sensitive to the cumulative impact of new development. This site is located within one catchment, namely the 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 Guide³. 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 north of the site is classified as no risk. Infiltration SuDS should therefore be suitable in this area. The south of the site, where the fluvial risk is present, is shown to have groundwater levels between 0 to 0.025m below the ground surface in the 100 year return period flood event. Infiltration SuDS are therefore unlikely to be appropriate in this area. Within this zone there is a risk of groundwater flooding to both surface and subsurface assets. There is possibility of groundwater emerging at the surface locally. The site-specific FRA should further investigate groundwater levels through percolation testing in both wet and dry weather conditions across 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.

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.

6.1 Potential defence breach

A breach of the defence on the River Great Ouse may cause flooding to the site, depending on the severity of the breach and the magnitude of the flood event. Such a scenario should be investigated at the FRA stage. Standards of protection (SoP) and condition surveys may be required, including for consultation with the defence owner.

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 in a 'wet day' and 'dry day' scenario from Grafham Water reservoir, located in the Cambridgeshire LLFA. The reservoir is owned by Anglian Water Services Ltd.

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.



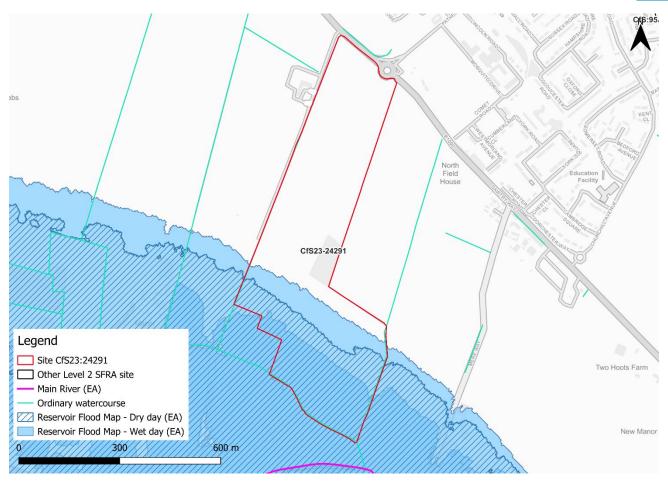


Figure 6-1: EA Reservoir Flood Map



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 essential infrastructure and is located within Flood Zone 3a and Flood Zone 3b. Based on the information presented in this Level 2 SFRA, the exception test could be passed and the site allocated, assuming the risk area can remain undeveloped, or it can be proven that the development can be designed and constructed to remain operational and safe during a flood event, including for the extreme event accounting for climate change.

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:

- Based on current information, it should be appropriate to develop this site for Essential Infrastructure purposes given it is located predominantly within Flood Zone 1 and with fluvial and surface water risk largely confined to the south of the site
- Risk from Back Brook and the ordinary watercourse should be investigated at the FRA stage. Modelling may be required.
- The functional floodplain extent should be investigated further given it is based on a defended event and still poses a risk to the site.
- A detailed drainage strategy will be required, given the site is currently greenfield. Runoff should remain at greenfield rates, in consultation with the LLFA.
- 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.
- EA flood warnings and alerts should continue to be in place to ensure early evacuation of site users before an extreme flood event occurs

7.3 Site-specific FRA requirements and further work

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

- Potential modelling of the Back Brook watercourse and the unnamed ordinary watercourse to assess up to date risk to the site.
- Investigation into the extent of the functional floodplain in this location.



- Further modelling to understand the impacts of climate change on surface water flood risk to the site.
- 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.
- 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.



8 Licencing

To cover all figures within this report:

- Contains Environment Agency information © Environment Agency and/or database right [2025]
- Contains public sector information licensed under the Open Government Licence v3.0. © Crown copyright and database rights [2025]
- HDC Ordnance Survey licence number: 100022322 [2025]
- © 2021 Esri, Maxar, Earthstar Geographics, USDA FSA, USGS, Aerogrid, IGN, IGP, and the GIS User Community

,

www.jbaconsulting.com





Our Offices

Limerick

Romania

Bristol Newcastle Coleshill Newport Cork Peterborough Doncaster Portsmouth Dublin Saltaire Edinburgh Skipton Exeter **Tadcaster** Thirsk Glasgow Haywards Heath Wallingford Leeds Warrington

JBA Risk
Management Inc

USA

Ireland
UK

JBA Consulting
Ireland

JBA Risk Management
JBA Global Resilience

JBA Consulting

Associates

JBA Risk Management Pte Ltd

Mekong Modelling

Singapore

JBPacific

Registered Office

JBA Consult Europe

1 Broughton Park Old Lane North Broughton SKIPTON North Yorkshire BD23 3FD United Kingdom +44(0) 1756 799919 info@jbaconsulting.com www.jbaconsulting.com

Follow us on X in

Jeremy Benn Associates Limited Registered in England 3246693

Cambodia_

JBA Group Ltd is certified to ISO 9001:2015 ISO 14001:2015 ISO 27001:2022 ISO 45001:2018











