

FLOOD RISK ASSESSMENT

Proposed Regeneration Project

The Elms Golf Centre, Wainfleet



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DOCUMENT HISTORY

1	Planning Application	04.12.2023
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1 INTRODUCTION

- 1.1 This Flood Risk Assessment (FRA) accompanies a planning application for the regeneration of the Elms Golf Centre, Croft Bank, Wainfleet.
- 1.2 The objective of this FRA is to identify, appraise, manage, and reduce the flood risk to life and property at the proposed site and has been produced in accordance with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance.

2 THE SITE & SURROUNDINGS

- 2.1 The application site is the Elms Golf Centre and until relatively recent it included facilities such as a 9-hole golf course and a driving range. The golf facilities, including the club house restaurant, are no longer in use and the golf course and driving range are now in poor condition. Part of the site is currently used for the sale of touring caravans and motorhomes. Although the site is within the parish of Croft, it is within the settlement of Wainfleet All Saints. It is on the northern edge of the village (Figure 1) and is accessed via Croft Bank, just off the main Boston to Skegness Road (A52).



Figure 1: Aerial photograph showing the location of the site in relation to Wainfleet.

2.2 To the south of the site are a number of large, dilapidated greenhouses. To the east is a business park comprising of a number of industrial type buildings. The Wainfleet Relief Channel runs along the northern site boundary and beyond this is agricultural land. To the west is a paddock which is partly used for caravan storage and to the northwest is a larger area of caravan storage and a certified camping site. The majority of the boundaries are formed by mature tall landscaping which provides an effective screen and restricts views into the site from the surrounding areas.

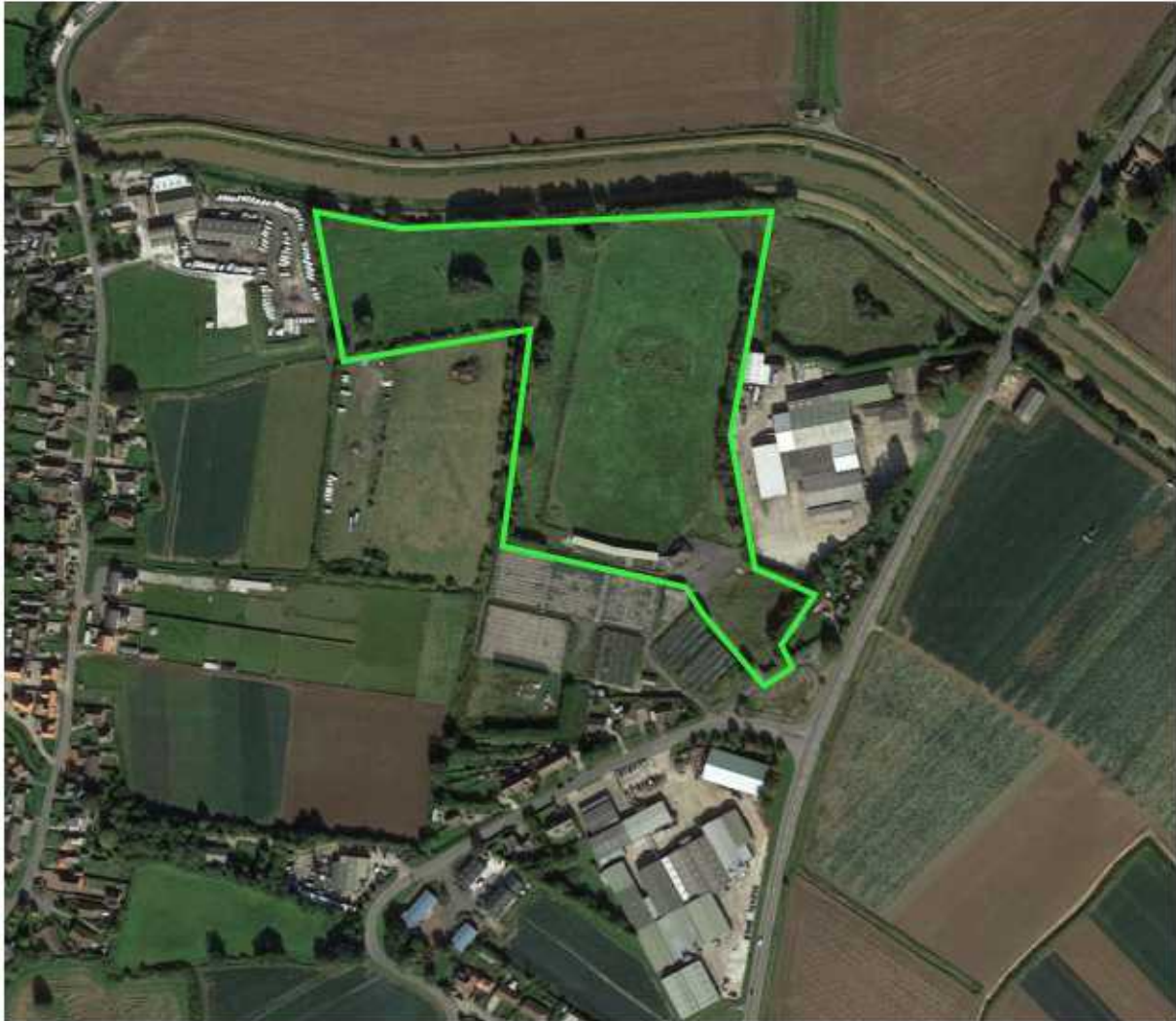


Figure 2: Aerial photograph showing the site in more detail.

3 THE PROPOSAL

3.1 The proposal is to regenerate the site to provide a high-quality facility for local residents and for visitors to the area. As can be seen in Figure 3, the proposal involves the following elements:

- Erection of a building comprising of 10 no. business/commercial/retails units.
- Display areas for the sale of touring caravans and motorhomes.
- Excavation of 2 no. fishing lakes and 2 no. wildlife ponds.
- Creation of 48no. touring caravan and motorhome pitches.
- Erection of 6 no. bespoke two storey lakeside holiday lodges.
- Erection of a toilet/shower block and erection of a maintenance/machine store.
- Construction of internal access roads and a car park.
- Widespread planting of native trees throughout the site.



Figure 3: The proposed site layout plan.

4 FLOOD RISK PLANNING POLICY

- 4.1 The NPPF sets out the Government's national policies on different aspects of land use planning and in relation to flood risk. The NPPF is also supported by web-based Planning Practice Guidance (PPG)
- 4.2 The PPG uses Flood Zones to characterise flood risk, and these refer to the probability of river and sea flooding, ignoring the presence of defences. They are shown on the Environment Agency's Flood Map for Planning and are as indicated in the Table 1 (below). As can be seen in Figure 4 (page 7), the site is located within Flood Zone 3a.

TABLE 1: FLOOD ZONES

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 & 3)
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
Zone 3b The Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

- 4.3 The NPPF requires the application of a Sequential Test to steer new development to areas with the lowest probability of flooding. The Flood Zones provide the basis for applying the test.
- 4.4 The aim is to steer new development to Flood Zone 1 (areas with a low probability of river or sea flooding). Where there are no reasonably available sites in Flood Zone 1, local planning authorities in their decision making should take into account the flood risk vulnerability of land uses (as shown in Table 2, page 7) and consider reasonably available sites in Flood Zone 2 (areas with a medium probability of river or sea flooding), applying the Exception Test if required. Only where there are no reasonably available sites in Flood Zones 1 or 2 should the suitability of sites in Flood Zone 3 (areas with a high probability of river or sea flooding) be considered, taking into account the flood risk vulnerability of land uses and applying the Exception Test if required.

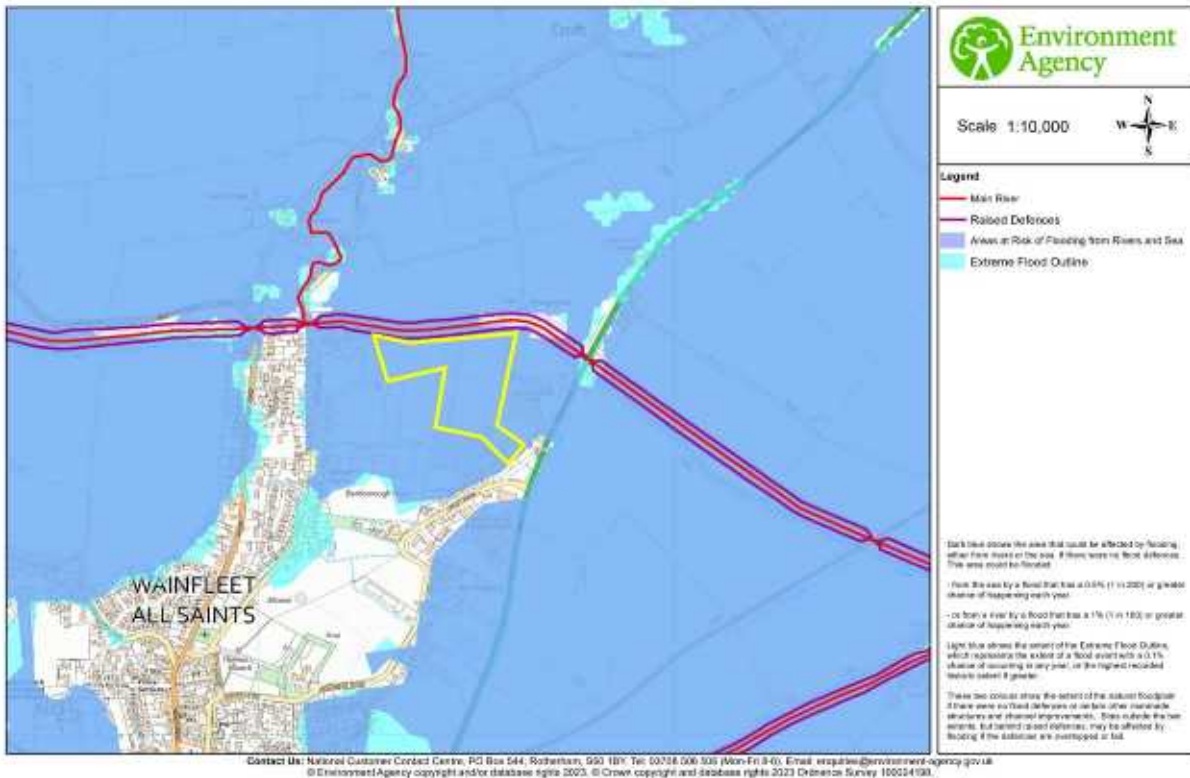


Figure 4: Extract from the Flood Map for Planning with the site highlighted.

TABLE 2: FLOOD RISK VULNERABILITY CLASSIFICATION	
Essential infrastructure	<ul style="list-style-type: none"> • Transport infrastructure • Essential utility infrastructure • Wind turbines.
Highly vulnerable	<ul style="list-style-type: none"> • Emergency Service which are required in times of flood • Basement Dwellings • Mobile Home parks • Installations requiring hazardous substances consent
More vulnerable	<ul style="list-style-type: none"> • Hospitals • Residential institutions (i.e., care homes, hostels, prisons) • Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs, and hotels • Non-residential uses for health services, nurseries and educational establishments • Landfill and hazardous waste management facilities • Site used for holiday short-let caravans and camping
Less vulnerable	<ul style="list-style-type: none"> • Emergency services which are not required to be operational during flooding • Buildings used for commercial establishments (i.e., shops, restaurants) • Land and buildings used for agriculture and forestry

- 4.5 With regards to the sequential test, the site was until recently an established tourist facility and needs redevelopment. Therefore, sequentially it cannot be located anywhere else. Furthermore, when considering the sequential test in the Coastal Zone, Annex 2 of the Local Plan (2018) deems new and extensions to caravan sites to automatically pass the sequential test. Although not explicitly related to inland sites within Flood Zone 3, it is reasonable to apply the same standard given that it is at a lesser risk than the Coastal area. Given these factors, the sequential test is passed.
- 4.6 Based on the vulnerability of a development the PPG states what Flood Zone(s) the development is appropriate in. This is demonstrated by Table 3 which is reproduced below. Table 3 confirms that the proposed retail/business units, classified as 'less vulnerable' in Table 2, are appropriate within Flood Zone 3 and not subject to the Exception Test. In relation to the touring/motorhome pitches and the lakeside lodges, these are classified as 'more vulnerable' in Table 2. Whilst these are permitted within Flood Zone 3, they are required to pass the Exception Test.

TABLE 3: FLOOD RISK VULNERABILITY AND FLOOD ZONE 'COMPATIBILITY'					
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a	Exception Test required	✗	Exception Test required	✓	✓
Zone 3b	Exception Test required	✗	✗	✗	✓*

KEY: ✓ Development is appropriate ✗ Development should not be permitted

- 4.7 The NPPF states that for this Test to be passed it should be demonstrated that:

a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; and

b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

- 4.8 Annex 2 of the Local Plan recognises the importance of tourism to the Coastal Zone economy and as a result confirms that the first criterion of the Exception Test is passed. Again, it is reasonable to apply the same standard. In addition, the proposed retail/business units will provide economic benefits to the community and employment opportunities.

- 4.9 In relation to the second criterion, this site-specific FRA has been produced to ensure that the development is safe and will not increase risk elsewhere.
- 4.10 Overall the proposal satisfies the requirements of the Sequential and Exception Tests.

5 FLOOD RISK SOURCES

- 5.1 The following sources of flood risk have been identified. Where mitigation is required to reduce the risk from flooding this is discussed in Section 6.

FLOOD HISTORY

- 5.2 The Environment Agency advise in their letter dated 13th October 2023 that flooding occurred in Wainfleet in June 2019. However, the map provided (Figure 5) shows that the flooding from this event did not affect the site.

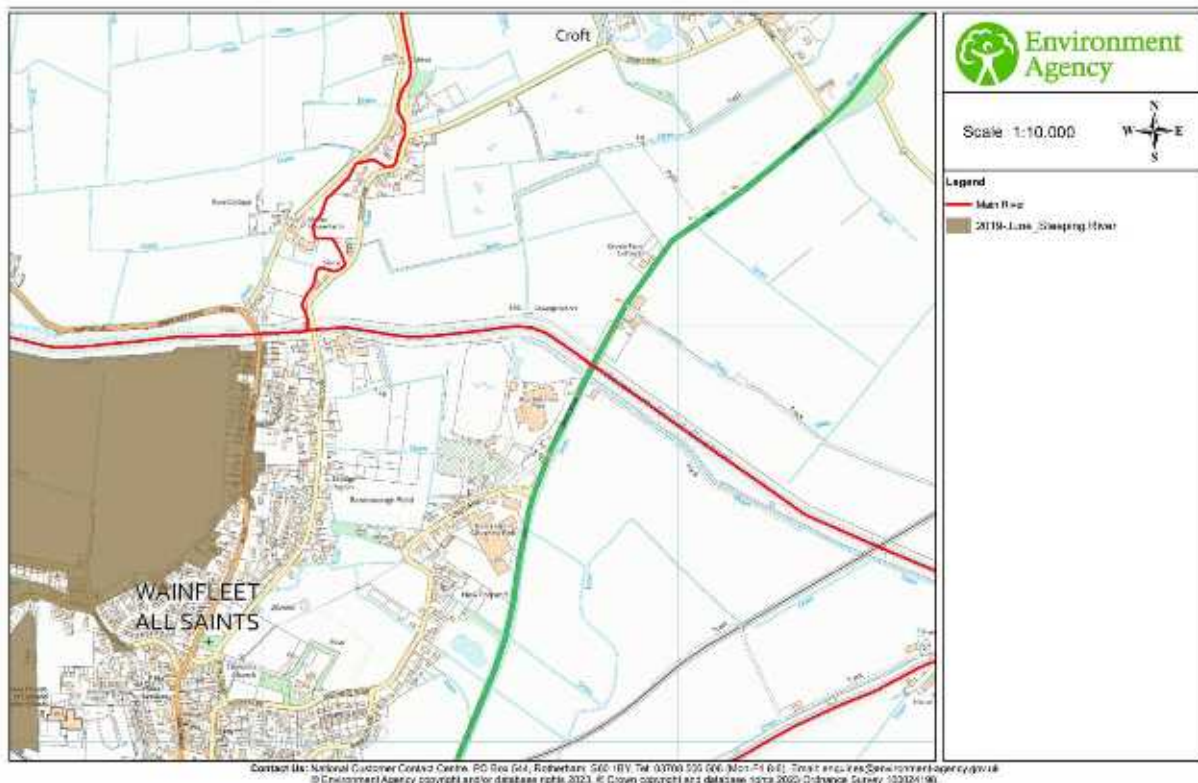


Figure 5: The historic flood maps shows that the site was not affected in June 2019.

TIDAL

- 5.3 Although the North Sea is almost 7km to the east the Environment Agency advice that the site could be affected by tidal flooding. The Hazard Maps (Appendix A) show that the site would not be affected during a present-day breach or overtopping of the sea defences. The future hazard maps (year 2115) show that during the worst-case breach

event (1 in 1000-year chance of occurring) the site continues to be unaffected (Figure 6). The worst-case overtopping scenario (0.1%) shows the site could be affected by depths of up to 1.6m during a 1 in 1000-year event.

- 5.4 The Environment Agency have also advised that the existing tidal defences protecting this site consist of earth embankments, concrete floodwalls and natural sand dunes supplemented by beach foreshore levels. These are said to be in a fair condition and reduce the risk of flooding (at the defence) to a 0.5% (1 in 200) chance of occurring in any year. The Agency inspect these defences routinely to ensure potential defects are identified.

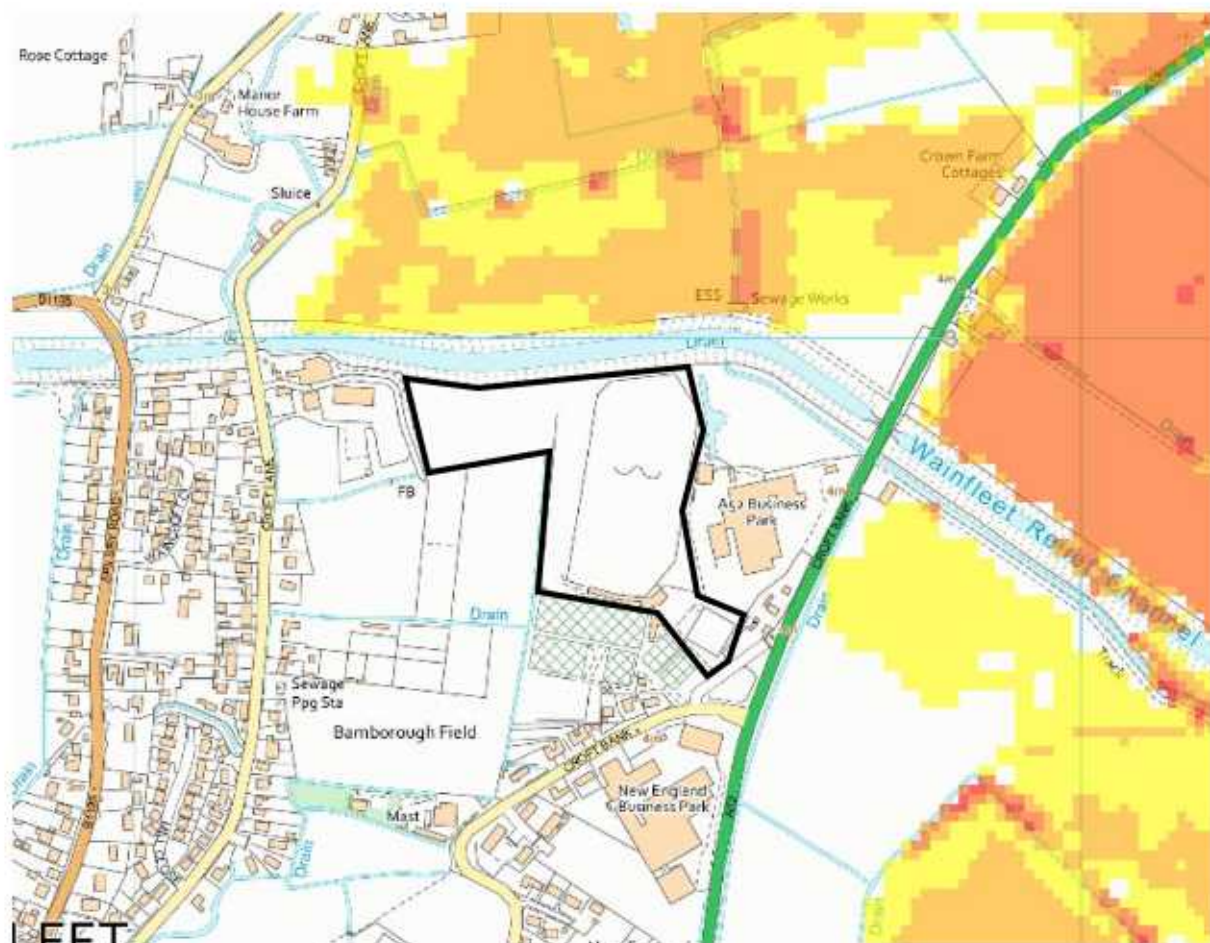


Figure 6: The 0.1% (1 in 1000 year) breach maps showing the site is not affected.

- 5.5 Taking into account the tidal defences and the fact that the site would not be affected even during the worst-case future scenario, the risk from tidal flooding is considered to be low.

FLUVIAL

- 5.6 The River Steeping is located close to the south, east and west side of Wainfleet. The Wainfleet Relief Channel runs alongside the northern site boundary. The River

Steeping is considered by the Environment Agency to be the main potential source of flood risk to the site. The river and the relief channel have raised defences along both banks consisting of earth embankments and concrete floodwalls. They are in said to be in fair condition and reduce the risk of flooding (at the defence) to a 20% (1 in 5) chance of occurring in any year. As can be seen in Figure 7, with the defences in place there is no risk of flooding to the site. With climate change added, the existing defences protect the site against a 1% (1 in 100) fluvial event. Only during a worst case 1 in 1000-year (0.1%) climate change event would the site be partially affected by fluvial flooding (Figure 8).

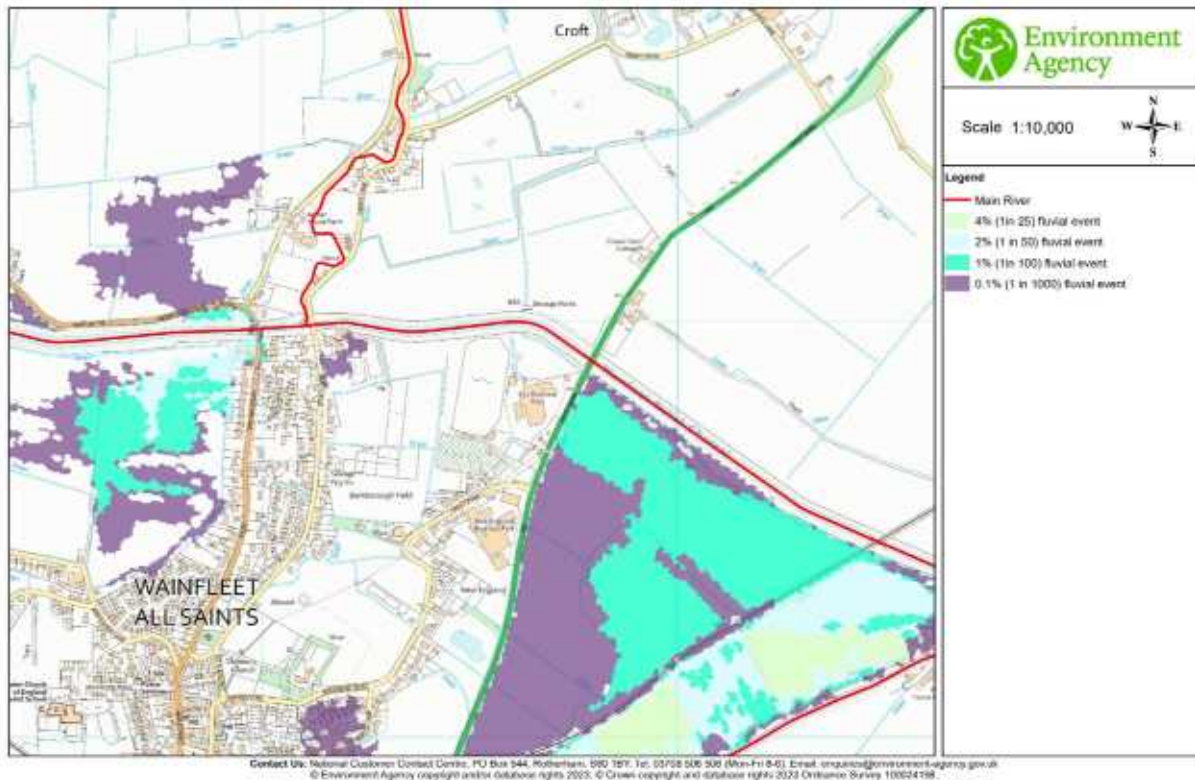


Figure 7: The existing defences protect the site from fluvial flooding.

- 5.7 For certain locations the Environment Agency have carried out modelling to map the maximum values of flood depth, velocity, and hazard rating (danger to people) resulting from overtopping and / or breaching of the fluvial defences at specific locations for a number of scenarios. In this instance the hazard maps show the potential results of a breach in the fluvial defences in the northwest corner of the site.
- 5.8 During the present-day scenarios, a breach in the defences to the northwest of the site could cause flooding to depths of between 0.5-1.0m. During the same events in the future (2115) small areas of the site could be affected by flooding between 1.0-1.6m. The worst-case scenario from a breach in the fluvial defences can be seen in Figure 9.

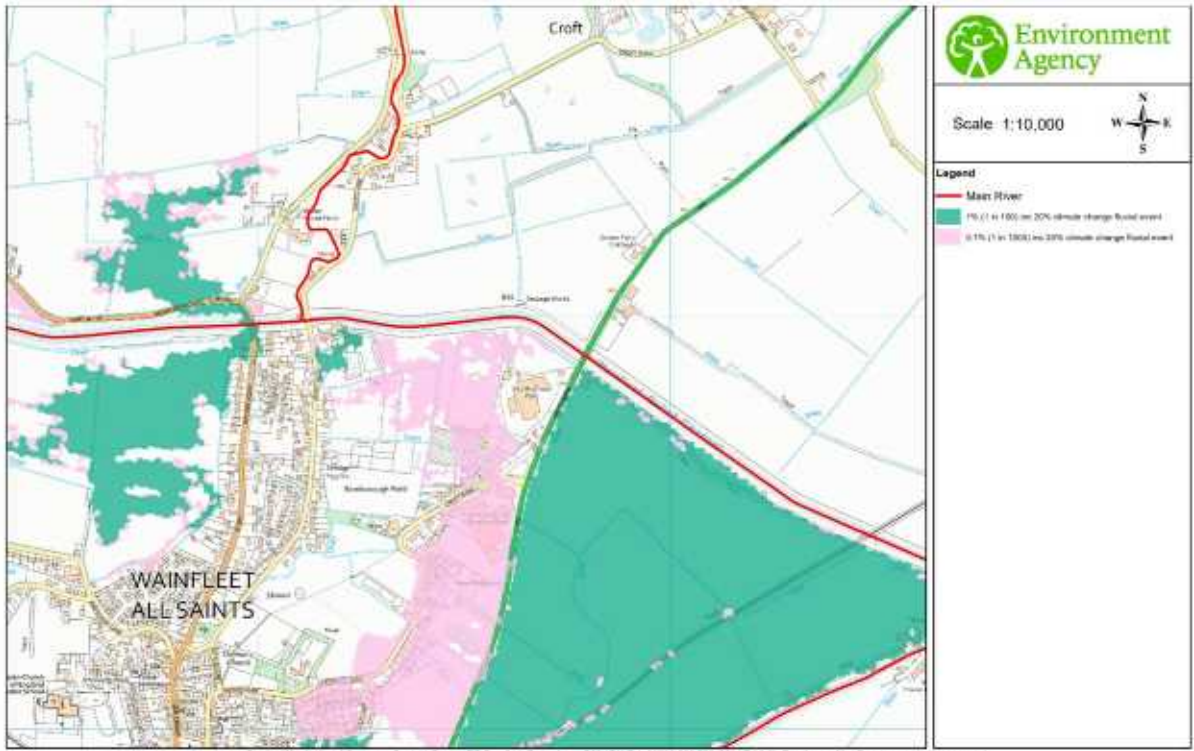


Figure 8: Risk of fluvial flooding (with defences) taking into account climate change.

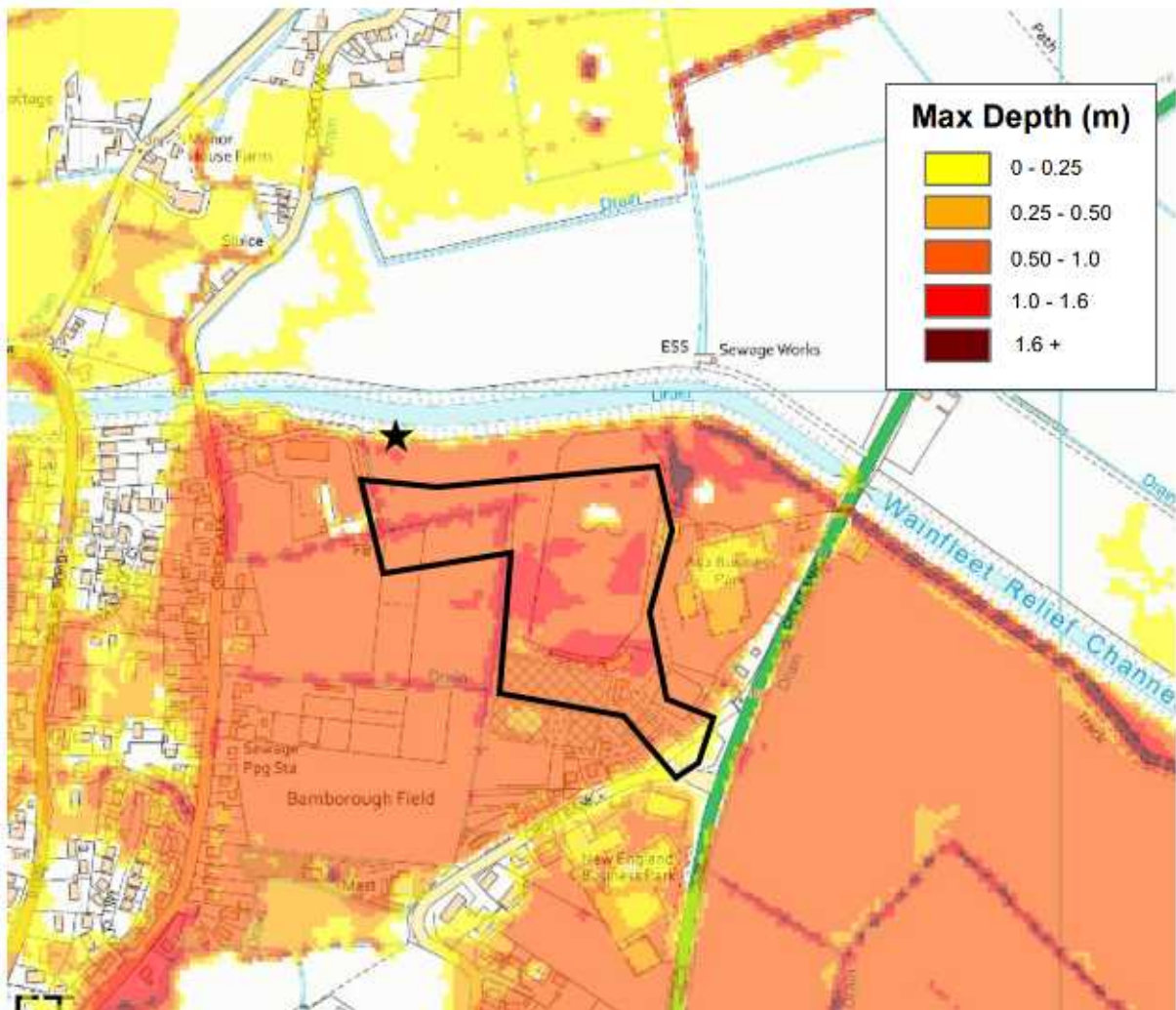


Figure 9: Depth of water from a breach in the fluvial defences in 2115 (0.1%, 1 in 1000).

SURFACE WATER & DRAINAGE

- 5.9 The Flood Map for Planning shows that the site is at 'very low' risk of surface water flooding (Figure 10). 'Very low' risk means that each year this area has a chance of flooding of less than 0.1%. The same map also shows that the site is not at risk of reservoir flooding.

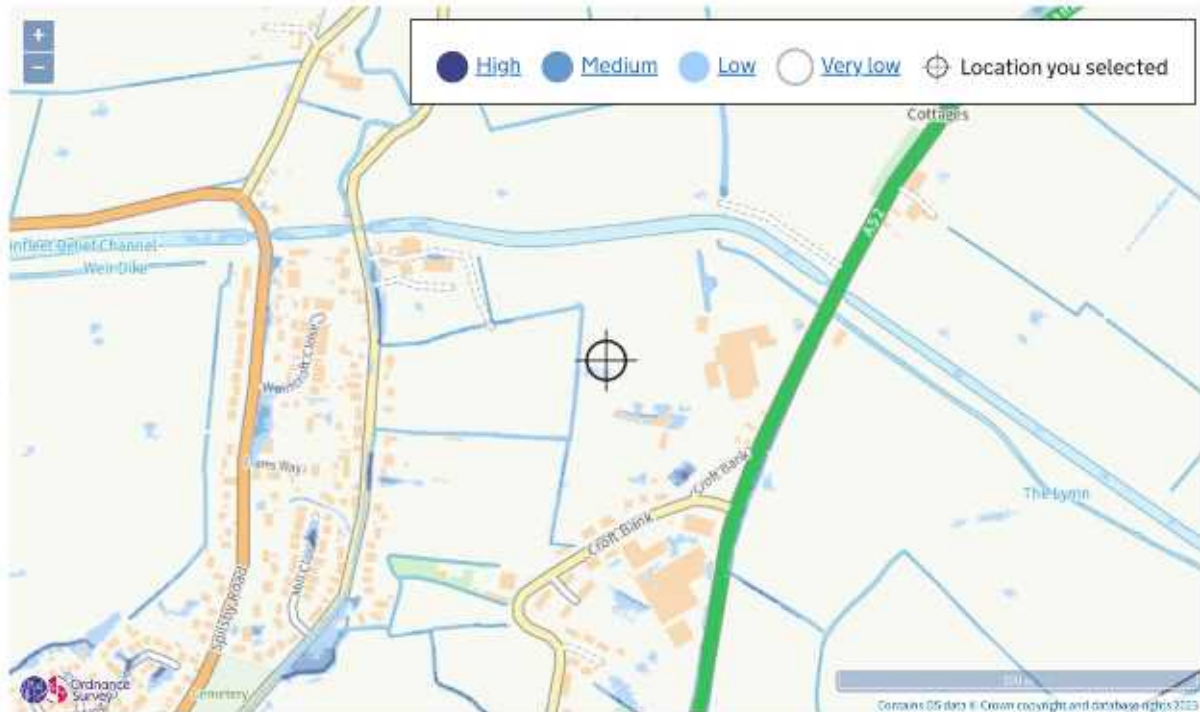


Figure 10: Extract from the Surface Water flood map with the site highlighted.

6 MITIGATION

- 6.1 The previous section has identified the sources of flooding which could potentially pose a risk to the site and the proposed caravans. This section of the FRA sets out the mitigation measures which are to be incorporated within the proposed development to address and reduce the risk of flooding to within acceptable levels.

TOURING CARAVAN & MOTORHOME PITCHES

As the site is not shown to be affected by a breach in the tidal defences and is only affected in the future scenarios for overtopping, it is recommended that the following seasonal restriction is imposed on the permission:

The touring caravan/motorhome pitches shall be available for year-round holiday occupation until 31st December 2049. From 1st January 2050 onwards, no caravans or motorhomes shall be on the site between 1st November in any year and 14th March in the succeeding year.

The owners of the site shall sign up to the Environment Agency flood warning service.

The submitted Flood Warning and Evacuation Plan (FWEP) should be kept up to date on a yearly basis.

LAKESIDE HOLIDAY LODGES

The proposed lakeside holiday lodges have been designed with a raised ground floor level which is 1m above existing ground level. In addition to this measure, demountable flood barriers will be installed to all ground floor doors and full height windows. These barriers will be a minimum height of 600mm. Further physical measures that will be incorporated into the buildings include water resisting air bricks, backwater valves and non-return valves and all electrical installations will be located at least 600mm above the raised floor level.

If a beam and block floor is to be used, provision will be incorporated for draining the under-floor voids. Wall vents will be fitted with 'Flood Angel' air bricks which allow air to free pass through as a usual, (complying with BS493:1995) but under flood conditions shut down when in contact with water. A removable mesh prevents the passage of debris which may otherwise impinge on the moving part.

The lodges will be two storeys in height and all bedrooms will be located on the first floor.

As full mitigation is provided against the risks of both tidal and fluvial flooding there is no recommendation for a seasonal restriction.

The submitted Flood Warning and Evacuation Plan (FWEP) should be kept up to date on a yearly basis and a copy kept within each lodge.

RETAIL / BUSINESS UNITS

To protect the building the floor level will be set 300mm above the existing ground level. Further physical measures that will be incorporated into the building flood resilient construction, solid ground floor, include water resisting air bricks, backwater valves and non-return valves and all electrical installations will be located at least 600mm above the raised floor level.

It is recommended that each tenant registers for the Environment Agency flood warning service.

7 CONCLUSIONS

- 7.1 This FRA is compliant with the requirements set out in the NPPF and the associated Planning Practice Guidance. This report demonstrates that subject to the flood mitigation measures being implemented there will be no risk to life or property as part of this development.
- 7.2 As the number of buildings and amount of impermeable area being created by the development is relatively low (compared to the overall site area) it is considered that there will be no increase in flood risk to the surrounding area as a result of the development. Whilst the spoil from the proposed ponds and lakes will be spread across the site, the amount this will increase the levels across the site will be negligible. The ponds and lakes will also provide an element of water storage in the unlikely event of a flood occurring.
- 7.3 Overall it is considered that there are no flood related reasons why the development cannot proceed.