

**FLOOD RISK ASSESSMENT FOR
ALL YEAR ROUND OCCUPANCY OF GLAMPING PODS
AT LAND OFF FELLANDS GATE, OLD LEAKE**

FINAL REPORT

ECL1185-2/RDC

DATE FEBRUARY 2024

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DISCLAIMER

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1.0 INTRODUCTION

This Flood Risk Assessment has been prepared in accordance with National Planning Policy Framework (NPPF) and supporting planning practice guidance (PPG) on Flood Risk and Coastal Change.

In areas at risk of flooding or for sites of 1 hectare or more, developers are required to undertake a site-specific Flood Risk Assessment to accompany an application for planning permission. This Flood Risk Assessment has been produced on behalf of Mr P Wilkinson in respect of all year-round occupancy until 31 January 2049 of up to thirty-six glamping pods at land off Fellands Gate, Old Leake.

A planning application for the proposals has been submitted by Robert Doughty Consultancy.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

The site is on land off Fellands Gate, Old Leake, Boston, Lincolnshire, PE22 9PN. The National Grid Reference of the site is 53943/35206.

The location of the site is shown in Figure 1.



Figure 1 – Location Plan (© OpenStreetMap contributors)

2.2 Existing Site

The site is on the north eastern side of Fellands Gate. The predeveloped site comprised part agricultural land and part grassed paddock. The wider surrounding area is predominantly agricultural with a small number of residential properties. The area of development is approximately 2.5 hectares.

A topographic survey undertaken in August 2021 shows that ground levels within the site are between +1.5m OD and +2.0m OD. Following excavation of the lake the site level is +2.0m OD. Felland Gate carriageway adjacent to the site is typically +2.1m OD.

The site is in the Witham Fourth Internal Drainage Board's (IDB) district. Surface water at the site would naturally drain through soakaway and hence to the IDB drain system. The north eastern boundary of the site is formed by an IDB Drain.

The online British Geological Survey maps indicate that the site is likely to be underlain by the Kimmeridge Clay Formation mudstone. The bedrock is shown to be overlain with superficial deposits of Tidal Flat Deposits – Clay and Silt.

2.3 Development

Planning permission was granted in September 2022 for up to thirty-six glamping pods at the site under application B/22/0192. This Flood Risk Assessment has been prepared to support an application for all year-round occupancy until 31 January 2049. Details of the site are provided in Attachment 1.

2.4 Local Development Documents

The South East Lincolnshire Local Plan 2011 – 2036, adopted in March 2019, is the Local Plan for the district. Policy 4: Approach to Flood Risk states the requirements for flood risk reduction.

The South East Lincolnshire Level 1 and Level 2 Strategic Flood Risk Assessment (SFRA) was prepared in June 2017.

The Joint Lincolnshire Flood Risk and Drainage Management Strategy has been prepared by Lincolnshire County Council as the Lead Local Flood Authority. The purpose of the Strategy is to increase the safety of people across Lincolnshire by reducing the number of people at risk of flooding, increasing the resilience of local communities, and reducing the impact of flooding.

2.5 Available Flood Risk Information

An extract in the Environment Agency Flood Map for Planning is shown in Figure 2. The site is located within Flood Zone 3, an area with a high probability of flooding.

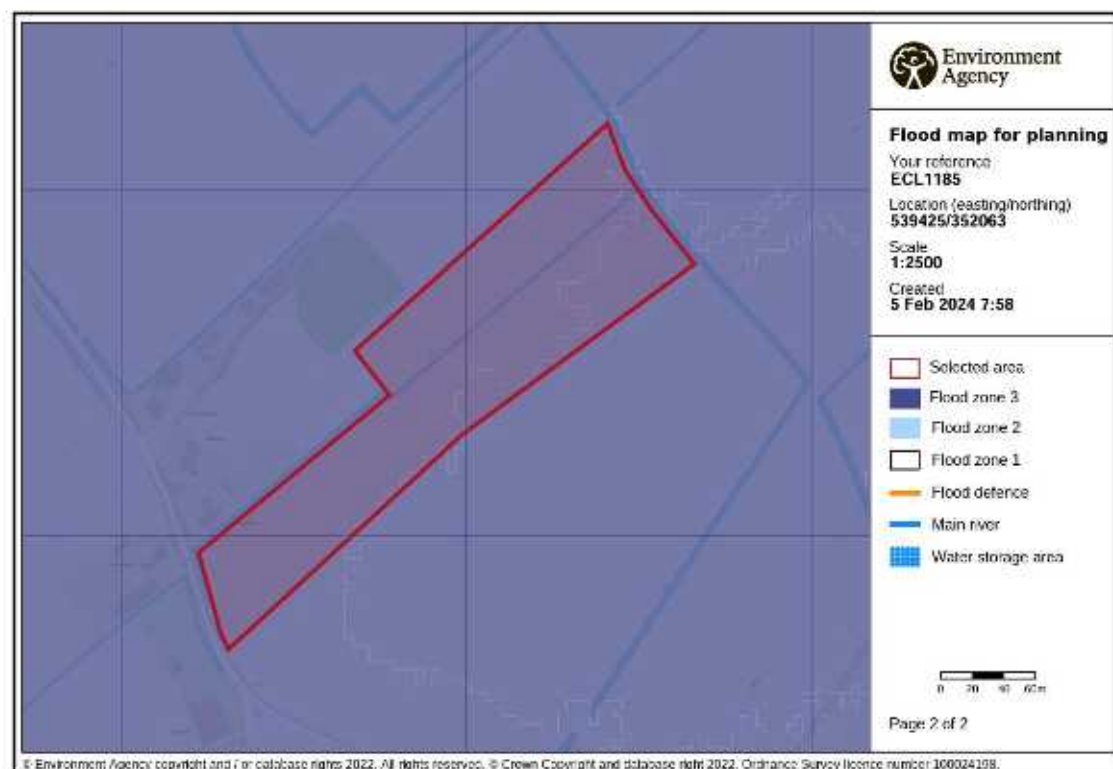


Figure 2 – Environment Agency Flood Map for Planning

The Environment Agency Long Term Flood Risk maps show that:

- the site is within an area with a low risk of flooding from rivers or the sea (annual probability between 0.1% and 1%);
- the site is within an area with a very low risk of surface water flooding (annual probability less than 0.1%); and
- the site is not within an area at risk of reservoir flooding.

The South East Lincolnshire Level 1 and Level 2 SFRA was prepared in June 2017. Within the SFRA the Flood Hazard Map for 2115 shows that parts of the site have a Flood Hazard between 1.25 and 2 indicating a Danger for Most.

Flood risk Product Data provided by the Environment Agency for the site has been used within this assessment.

3.0 FLOOD RISK VULNERABILITY

3.1 The Sequential and Exception Test

The NPPF requires the application of a Sequential Test to ensure that new development is in areas with the lowest probability of flooding.

The Exception Test is a method to demonstrate and help ensure that flood risk to people and property will be managed, while allowing necessary development to go ahead in situations where suitable sites at lower risk of flooding are not available.

3.2 Vulnerability Classification

Table 2 of the PPG Flood Risk and Coastal Change categorises different types of uses and development according to their vulnerability to flood risk. The proposed development is covered by the description of 'sites used for holiday or short-let caravans and camping, subject to a specific flood warning and evacuation plan' and is classified as 'More Vulnerable'.

Table 3 of the PPG Flood Risk and Coastal Change sets out Flood Risk Vulnerability and flood zone 'compatibility'. The site is in defended Flood Zone 3 and the development is 'More Vulnerable' therefore it is necessary to complete the Exception Test.

3.3 Application of the Sequential Test and Exception Test

It is for the Local Planning Authority, using the evidence provided and taking advice from the Environment Agency as appropriate, to consider whether an application passes the Sequential Test.

Large parts of the Boston Borough lie within Flood Zone 3. Due to the extent of Flood Zone 3, there are limited opportunities for developments of this nature to be at an alternative site with a lower flood risk. The site has permission for glamping units with a constraint on occupancy therefore the site is considered to be sequentially preferable.

The Exception Test requires consideration of the wider sustainability benefits of a development and that the development would be safe and residual risks managed.

The South East Lincolnshire Local Plan recognises that tourism plays a significant role in the local economy. Tourist facilities can offer benefits to local communities directly through employment, and indirectly, such as by supporting local food producers, local shops, pubs, and restaurants. The development will therefore provide a wider sustainability benefit.

Section 5 of this Flood Risk Assessment describes the flood mitigation measures and the management of the residual risks, demonstrating that this development will be safe and not increase flood risk elsewhere. The development is considered to pass the Exception Test.

4.0 SITE SPECIFIC FLOOD RISK

4.1 Local Flood Assets

The site is approximately 3.9km from the coastal defences to The Wash. There are several secondary defences between the site and the sea defence. The coastal defences are the responsibility of the Environment Agency.

There is a long-term strategy for the maintenance of the Environment Agency defences which is reviewed and updated periodically.

There is an extensive local drainage network managed by Witham Fourth IDB. An IDB Board Drain, Gride Bridge to Common Side Drain, forms the north eastern boundary of the site. The site and surrounding land drains by gravity to Hobhole Pumping Station which discharges to The River Witham. The pumping station is operated and maintained by Witham Fourth IDB.

During the operation and maintenance of its pumping stations, associated structures, and channel systems, the IDB seeks to maintain a general standard capable of providing flood protection to its district. A routine maintenance programme is in place to ensure that the Board's assets are commensurate with the standard of protection that is sought.

Current maintenance standards of the Witham Fourth IDB's and the Environment Agency's defences are generally good.

4.2 Sources of Flooding

A summary of the sources of flooding is provided in Table 1.

Source of Flooding	Level of Risk
Drainage Network Flooding	The risk is assessed in Section 4.3.
Surface Water Flooding	Based upon the EA maps the risk is very low.
Fluvial Flooding	The site is not at risk of fluvial flooding.
Tidal Flooding	The risk is assessed in Section 4.3, 4.5 and Section 4.6.
Reservoir Flooding	Based upon the EA maps the site is not at risk of flooding from reservoirs.
Groundwater Flooding	There is no evidence to suggest the site is at risk of groundwater flooding.

Table 1 – Sources of Flooding

4.3 Probability of Flooding

The probability of flooding associated with blockages in the Witham Fourth IDB drainage system is low due to the maintenance standards already achieved and managed by the IDB. Failure of Hobhole Pumping Station would lead to increased level of flood risk within the IDB catchment.

Through the operation and maintenance of the pumping stations and the channel system the Board seek to maintain a general standard capable to providing flood protection to agricultural land and developed areas of 1 in 20 years and 1 in 100 years, respectively. The risk associated with flood events that exceed the standard of protection provided is lowered due to the Witham Fourth IDB main drains incorporating freeboard. This freeboard provides storage during the exceedance events.

The site is protected by coastal defences. They are in fair condition and reduce the risk of flooding (at the defence) to a 0.67% (1 in 150) chance of occurring in any year. Based upon the standard of defence and the distance of the site from the defence the site is not considered to be at risk during the present day overtopping event.

4.4 Historic Flooding

During the preparation of this assessment, no evidence was discovered of the site being flooded.

4.5 Climate Change

Climate change is likely to impact the site through increased rainfall intensity and duration affecting the local drainage network and increased tide levels.

The lifetime of the development to be considered for the change to the occupancy is 25 years. The Environment Agency Overtopping Hazard Mapping indicates the maximum flood depths during the 0.1% annual probability (1 in 1000 chance each year) event in 2115 to be greater than 1.6m and the velocity at the site is between 0.3m/s and 1.0m/s. During the lifetime of the development the amount of overtopping of the defence that would occur during an extreme event would be significantly less than in 2115. Based upon the extent of agricultural land that is at a lower level than the site the risk from overtopping in 2149 is considered to be low.

4.6 Residual Risk

The Flood Hazard Maps for 2006 in the SFRA show that the lowest parts of the site have a Flood Hazard of between 0.75 and 1.25 indicating Danger for Some. The Environment Agency Hazard Mapping indicates the maximum flood depth in the event of a combined breach is 0.5m. Due to the landscaping work undertaken on site it that has raised ground levels to in excess of +2.0m OD the site is not at risk.

The Flood Hazard Maps for 2115 in the SFRA show that the site has a Flood Hazard of between 1.25 and 2 indicating Danger for Most. The maximum flood depth at the site during the 0.1% annual probability (1 in 1000 chance each year) event in 2115 with combined breaches is between 1.0m and 1.6m. The residual risks are mitigated by the landscaping that will reduce breach flood depths across the site to between 0.5m and 1.0m.

The lifetime of the development to be considered for the change to the occupancy is 25 years. Without modelling of a breach scenario in 2049 it is necessary to estimate the potential flood level.

The increase in flood level as a consequence of a breach is not linear between the present day and 2115. For example the annual rate at which sea levels increase due to climate change will increase over time. It is therefore considered that the breach hazard risk at the site in 2049 will be closer to the present day level of risk than the 2115 level of risk. Based upon the information available it is not anticipated that flood depths would be above 0.25m and hazard rating would be Low Hazard.

5.0 FLOOD RISK MITIGATION

5.1 Summary of Risks

The probability of this development flooding from localised drainage systems is low. Failure of Hobhole Pumping Station could lead to an increased level of risk at the site.

The site is protected by coastal defences. They are in fair condition and reduce the risk of flooding (at the defence) to a 0.67% (1 in 150) chance of occurring in any year. Over time there will be a gradual increase in risk to the site due to climate change. The risk of the site being inundated during an overtopping event in 2049 is considered to be low due to the extent of lower lying agricultural land and the distance of the site from the defence.

Based upon the Environment Agency's Hazard Maps for the present day and 2115, the landscaping at the site, and the rate at which sea level rise will occur, it is anticipated that during the 0.1% annual probability (1 in 1000 chance each year) event in 2049 the hazard rating at the site would be low hazard and flood depths would be below 0.25.

5.2 Mitigation Measures

The South East Lincolnshire Standing Advice Matrix identifies the appropriate mitigation for short let camping and caravanning sites (including log cabins and chalets). The standing advice limits occupation however in this instance the applicant considers that the risks associated with occupation during the winter can be mitigated. The risks to the site are mitigated through the use of Flood Warnings and a Flood Warning and Evacuation Plan.

The overall responsibility for managing a flood event and for the co-ordination of flood warnings and evacuation procedures lies with the Site Owner. The site is registered to receive Environment Agency Flood Warnings and the Site Manager will receive the alerts.

The Flood Warning and Evacuation Plan sets out the actions to be undertaken upon receipt of the staged warning codes.

Following the receipt of a Flood Warning the Site Owner is responsible for making the decision of whether the occupants evacuate the site to an area that is not at risk of tidal flooding, move to a temporary refuge that is available to the users of the site, or remain on the site.

If it is decided to evacuate the site this should be in a westerly direction where the risk during a breach of the tidal defences is lower. Sibsey, approximately 4km west of the site, is in Flood Zone 1 and not at risk during a tidal breach.

If it is unsafe to evacuate the site via the route described above the occupants could move to a temporary safe refuge that is above the flood level. Occupants will be accommodated at Icen House which is located to the south west of the site. Icen

House is owned by the Site Owner and should it be required, will provide a safe refuge above flood level for the occupants of the site.

6.0 CONCLUSIONS

As a result of this assessment, the following conclusions have been reached.

- The proposal is for all year round occupancy until 2049 of glamping pods at land off Fellands Gate, Old Leake.
- The site is located within an Internal Drainage Board catchment and through the operation and maintenance of the pumping stations and the channel system the Board seek to maintain a general standard capable to providing flood protection to agricultural land and developed areas of 1 in 20 and 1 in 100 years, respectively.
- The site is in Flood Zone 3. The site benefits from defences on the Lincolnshire coastline that provide protection during the 0.67% annual probability (1 in 150 chance each year) event.
- During a breach of the tidal defences in 2049 the maximum flood depth at the site is estimated to be up to 0.25m and the hazard rating is Low Hazard.
- The risks to the site are mitigated through the use of Flood Warnings and a Flood Warning and Evacuation Plan.
- The development passes the Sequential Test and Exception Test and is therefore suitable for the proposed location.

ATTACHMENT 1

LANDSCAPE MASTERPLAN (Dwg P21-0483/0065550-201)



- KEY**
- Site boundary
 - Existing grass to be improved by overseeding where required
 - Proposed wild flower meadow
 - Proposed wetland meadow at pond edge
 - Indicative areas of proposed native buffer planting
 - Indicative proposed tree planting
 - Indicative proposed native hedgerow
 - Indicative proposed area of lake
 - Indicative proposed area of Sturgeon & Koi Carp fish pond
 - Indicative proposed location of seating
 - Indicative proposed location of picnic bench seating
 - Indicative proposed location of paved area for placement of barbeque or similar
 - Indicative proposed access roads
 - Indicative proposed glamping pods with parking (36) **6.65m x 3.25m**
 - Indicative proposed wooden circular shelter
 - Indicative proposed bund; 1:3 slope; approximately 6 metres in width - subject to engineer's specifications

Rev	Date	By	Note

Landscape Masterplan

Fellands Gate, Old Leake

Client: Wilkinson Developments
 DRWG No: P21-0483.006
 Drawn by: VR
 Date: 06/04/2022
 Scale: 1:1,000 @ A2

REV:
 Approved by: HS

Pegasus
 Environment

