FLOOD RISK ASSESSMENT FOR A CHANGE OF USE AT BEACON FARM, SPALDING

FINAL REPORT

ECL0346/3D PLANNING LTD

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ATTACHMENT 1 – Site Plan (Dwg 389SK01)

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 Slator Bros (Farms) Ltd in respect of a Change of Use from agricultural use to industrial use and one replacement building at Beacon Farm, Spalding.

A planning application for the Change in Use is to be submitted by 3D Planning Ltd.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

The site is at Beacon Farm, Wiseman's Gate, Weston, Spalding, Lincolnshire, PE12 6JD. The National Grid Reference of the site is 52851/32527.

The location of the site is shown in Figure 1.

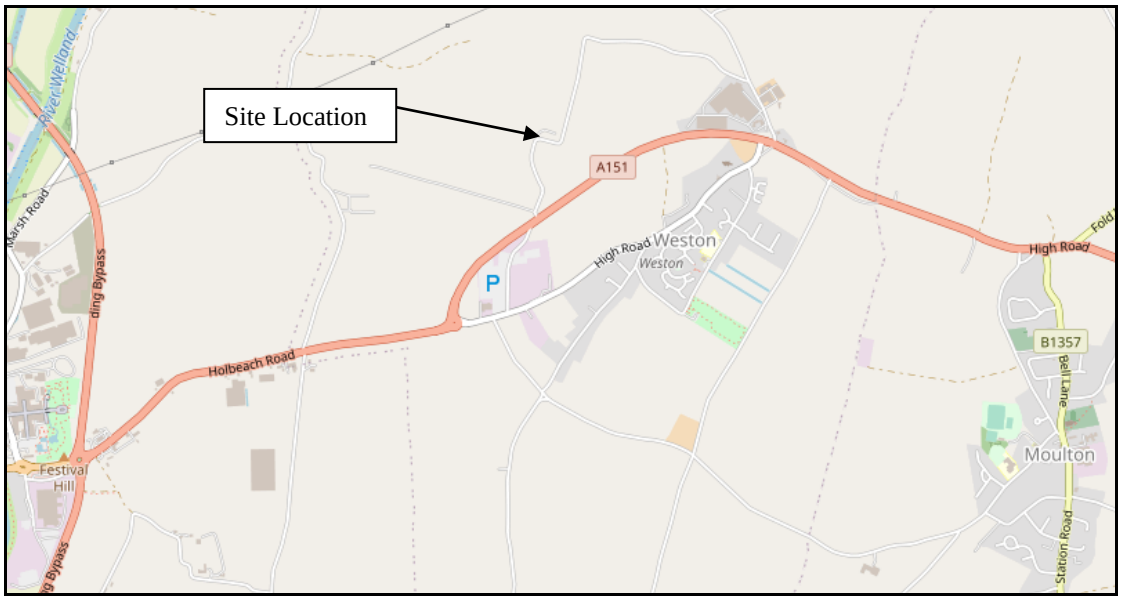


Figure 1 – Location Plan (© OpenStreetMap contributors)

2.2 Existing Site

The site is located on the western side of Wiseman's Gate and consists of the three buildings, hard standing areas, and an access. Immediately to the north of the site is an agricultural building used as a grain store. The site is surrounded by agricultural land. The area of development is approximately 0.45 hectares.

Environment Agency LiDAR data show that the site is at a level of +3.2m OD. The carriageway level of Wiseman's Gate and much of the surrounding agricultural land is typically at a level of +2.8m OD.

The site is in the South Holland Internal Drainage Board (IDB) District. Surface water at the site would naturally drain through soakaway and hence to the IDB drain system. There are riparian drains close to the northern and western boundaries of the site and the nearest IDB high priority watercourse, Lords Drain, is approximately 400m to the west.

The online British Geological Survey maps indicate that the site is likely to be underlain by Oxford Clay Formation Mudstone. The bedrock is shown to be overlain with superficial deposits of clay and silt.

2.3 The Development

The retrospective application is for the Change of Use of three buildings and the replacement of one of the buildings. The buildings were used for agriculture but have been in an industrial use.

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 Flood Zones

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

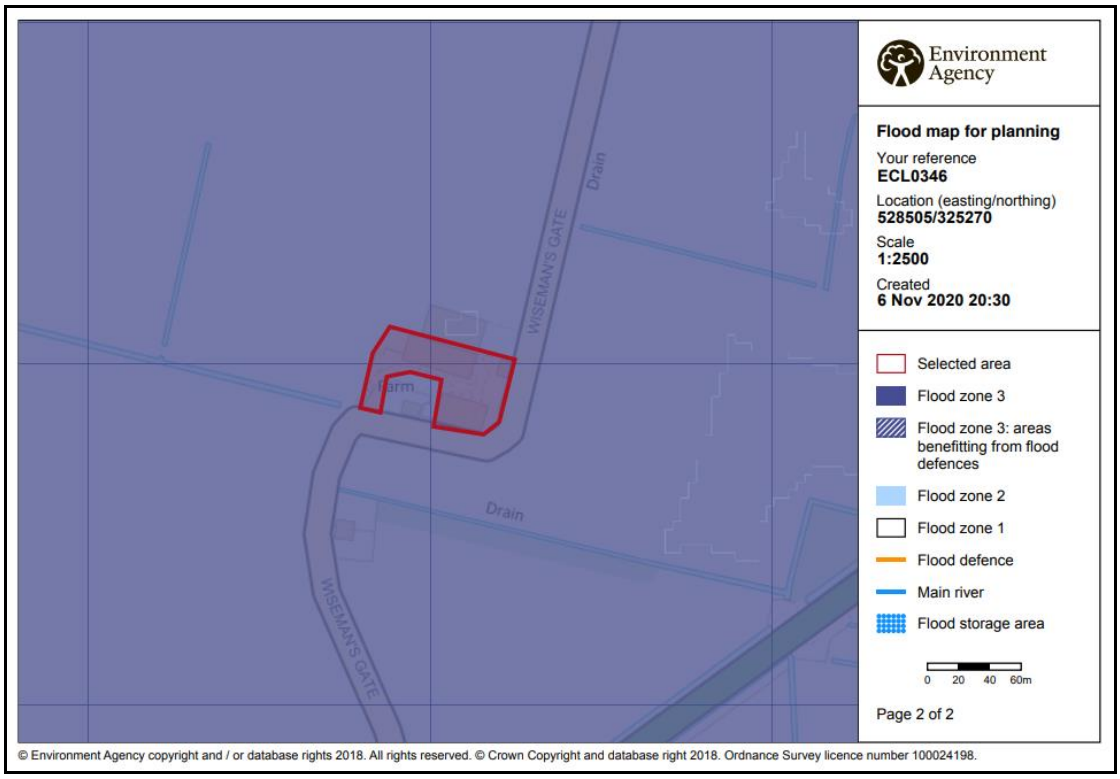


Figure 2 – Environment Agency Flood Map for Planning

The Environment Agency Long Term Flood Risk maps show that:

- the site has a low risk of flooding from rivers or the sea (annual probability between 0.1% and 1%);
- the site has a very low risk of surface water flooding (annual probability less than 0.1%); and
- the site is within an area at risk of reservoir flooding.

Table 1 shows the level of risk at the site within the South East Lincolnshire SFRA.

SFRA Map	Present Day	2116
Residual Flood Hazard Map for the 1% fluvial and 0.5% tidal event	The site is in the 'Danger for Some' area	The site is in the 'Danger for Most' area
Residual Peak Depth Map for the 1% fluvial and 0.5% tidal	The peak flood depth is between 0.0m and 0.25m.	The peak flood depth is between 0.5m and 1.0m.

Table 1 – Flood Risk within SFRA Maps

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 development is covered by the description of buildings used for industry and is classified as 'Less Vulnerable'.

Table 3 of the PPG Flood Risk and Coastal Change sets out Flood Risk Vulnerability and flood zone 'compatibility'. The site is in Flood Zone 3 and the development is 'Less Vulnerable' therefore the development is considered appropriate. The development therefore does not require the application of the Exception Test.

PPG Flood Risk and Coastal Change defines that the lifetime of the development in terms of flood risk and coastal change is 100 years.

3.3 Application of the Sequential Test

It is for the Local Planning Authority, taking advice from the Environment Agency as appropriate, to consider the Sequential Test.

Large parts of the South Holland district between the River Welland and River Nene lie within Flood Zone 3. As such the opportunities to undertake the development at an alternative site within Flood Zone 1 are limited. The development is utilising previously developed land.

The River Welland has defences that provide protection during the 0.5% annual probability (1 in 200 chance each year) event. The SFRA states that it is necessary to use the refined flood risk information (hazard and depth maps) to assist with the application of the sequential test. The hazard and depth maps show that the peak flood depth at the site is between 0.5m and 1.0m. However, considering the change in use from agricultural to industrial together with the standard of protection provided by the Environment Agency defences the site could be considered to pass the Sequential Test.

4.0 SITE SPECIFIC FLOOD RISK

4.1 Local Flood Assets

The site is 2.7km east of the Coronation Channel. The Coronation Channel is a bypass channel of the River Welland constructed in the 1950's to convey river flows around Spalding. The Coronation Channel together with the Crowland and Cowbit Washes offer flood reduction to Spalding and the surrounding district.

North of Spalding, downstream of the confluence with the Coronation Channel, the area is protected by the River Welland tidal defences between Spalding and Fossdyke. The defences are 1.9km west of the site and minimum embankment levels of +7.0m OD. The River Welland and the Coronation Channel 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 every 5 years.

There is an extensive local drainage network managed by South Holland IDB. There is an IDB High Priority Watercourse 400m west of the site. The site and surrounding land are part of the Lords catchment and drain by gravity to Lords Drain Pumping Station. The pumped water discharges to the tidal River Welland.

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 Boards assets are commensurate with the standard of protection that is sought.

Current maintenance standards of the South Holland Internal Drainage Board and the Environment Agency are generally good.

4.2 Sources of Flooding

The potential sources of flooding that have been identified during this assessment are:

- local blockages to the IDB drainage system;
- an event in the local drainage network that exceeds the standard of protection;
- failure of Lords Drain Pumping Station; and
- overtopping and/or breaching of the Coronation Channel defences; and
- overtopping and/or breaching of the River Welland tidal defences.

4.3 Probability of Flooding

The probability of flooding associated with blockages in the South Holland IDB drainage system is low due to the maintenance standards achieved and managed by the IDB.

The standard of drainage provided by South Holland IDB is assessed at 2% annual probability (1 in 50 chance each year), compatible with the Department of the Environment, Food and Rural Affairs (DEFRA) target level of service for rural drainage and flood defence works. The risk associated with flooding due to events greater than 2% annual probability (1 in 50 chance each year) is lowered due to the South Holland IDB high priority watercourses incorporating a freeboard. This provides storage during events greater than 2% annual probability (1 in 50 chance each year).

The Coronation Channel earth embankment has a minimum crest level of +6.0m OD. The 1% annual probability (1 in 100 chance each year) peak flood level inclusive of climate change during the next 100 years in the River Welland is +5.45m OD. The Coronation Channel embankment provides a standard of protection of 1% annual probability (1 in 100 chance each year) with a minimum 0.55m freeboard.

The River Welland tidal defences provide protection during a 0.5% annual probability (1 in 200 chance each year) event.

4.4 Historic Flooding

During the preparation of this assessment, no evidence was discovered of the site being flooded. Previous historic rainfall events of 1968 and 1978, estimated to be greater than 1% annual probability (1 in 100 chance each year), caused no flooding to any residential properties.

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 flood level in the River Welland at Fossdyke during the 0.5% annual probability (1 in 200 chance each year) event inclusive of climate change to 2069 is estimated to be 6.41m AOD. The minimum defence level of the River Welland embankments is 7.0m AOD.

In summary the site is not at risk for the design life of the development (i.e. 100 years).

4.6 Residual Risk

The South East Lincolnshire SFRA includes maps demonstrating the impact of climate change in 2116. The Residual Peak Depth maps within the SFRA indicate the

maximum flood depths associated with a breach and overtopping of defences. These show that when the climate change allowances are applied to the combination of a 1% annual probability (1 in 100 chance each year) fluvial event and a 0.5% annual probability (1 in 200 chance each year) tidal event the peak flood depth at the site is between 0.5m and 1.0m. An extract from this map is shown in Figure 3 below.

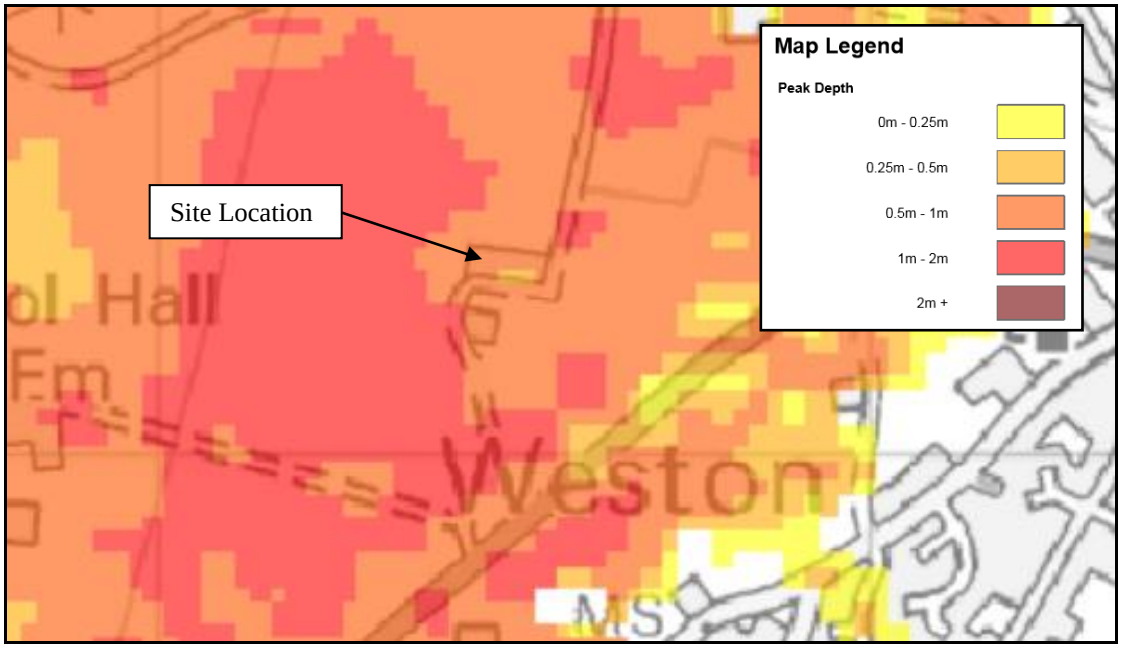


Figure 3 – SFRA 2116 Residual Peak Depth Map

5.0 FLOOD RISK MITIGATION

5.1 Summary of Risks

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

The probability of the site flooding from any Environment Agency system is less than 0.5% annual probability (1 in 200 chance each year) because of the standards of the existing flood defences. Over time there will be a gradual increase in risk to the site due to climate change. During the design life of the development it is not anticipated that the site would flood from overtopping of the defences.

The SFRA considers the residual risk associated with overtopping and a breach in the defences in 2116. The maps show that the peak flood depth at the site is between 0.5m and 1.0m.

The development will not increase the impermeable area so there is no potential that flood risk will be increased elsewhere due to surface water.

5.2 Mitigation Measures

Based upon the information available during the preparation of this flood risk assessment and in light of the change of use from agriculture to industry it could be considered that no additional flood risk mitigation is required. The intensity of use today is materially similar to when the site was used for agriculture and as such there is no material increase in risk. The probability of the breach scenario leading to the flooding shown on the Residual Peak Depth maps is lowered due to the Environment Agency standards for the inspection and maintenance of their defences and the flood depths assume no intervention to try to address the breach.

The developer should ensure that the occupiers of the buildings are sufficiently aware of the risk of flooding, and the standard of the existing defences. The Environment Agency provides a Flood Warning Service which includes Flood Warning Codes and uses direct warning methods where the risks and impacts of flooding are high.

In addition to direct and indirect flood warnings, the Environment Agency operates a 24 hour a day Floodline Service providing advice and information on flooding. The occupiers of the buildings should register with the Floodline Direct Warnings Service to receive any future flood warnings.

During an exceedance event it is anticipated that sufficient time would be available to take precautionary actions to limit the potential impact of flooding.

Should there be a failure of Lords Drain Pumping Station and conditions were such to put properties and land at risk of flooding, the Internal Drainage Board would take emergency action to maintain the drainage level of service by utilising temporary pumping equipment.

6.0 CONCLUSIONS AND RECOMMENDATIONS

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

- The retrospective application is for the Change of Use of three buildings and the replacement of one of the buildings. The buildings were used for agriculture but have been in an industrial use.

- The development is in a defended floodplain. It is in the floodplain of the River Welland and Coronation Channel and protected during the 1% annual probability (1 in 100 chance each year) fluvial event. During the design life of the development, including an allowance for climate change, the site is not at risk of flooding from overtopping.

- During a breach in the defences in 2116 the peak flood depth at the site is between 0.5m and 1.0m.

- The site is located within an Internal Drainage Board catchment with a minimum standard of drainage of 2% annual probability (1 in 50 chance each year) which accords with DEFRA guidelines for rural development. The risk of flooding is lowered further due to the South Holland IDB high priority watercourses incorporating a significant freeboard. This provides storage during events greater than 2% annual probability (1 in 50 chance each year).

- Based upon the information available during the preparation of this flood risk assessment and in light of the change of use from agriculture to industry it could be considered that no additional flood risk mitigation is required.

- The development passes the Sequential Test and is therefore suitable.

ATTACHMENT 1

SITE PLAN
(Dwg 389SK01)

0 10 20 30 40 50

METRES

NORTH

UNIT 7

BUILDING A (UNITS 4-6)

BUILDING B
(UNITS 10-11)

White House Farm

3

BUILDING C
(UNITS 8-9)

WISEMANS GATE

Rev	Date	Detail

i-id DESIGN

INTERIOR DESIGN | ARCHITECTURE | PROJECT MANAGEMENT

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Job Title: CHANGE OF USE
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Scale: 1:200 @ A1 Date: 06/11/20

Drawing Title:
SITE PLAN UNITS 4-6 AND 8-11

Drawing No:
3895SK01 Revision: -

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