

**FLOOD RISK ASSESSMENT
FOR RESIDENTIAL DEVELOPMENT
COUNTER DRAIN DROVE, TONGUE END, SPALDING**

FINAL REPORT

ECL1342/CLIVE WICKS ASSOCIATES

DATE SEPTEMBER 2024

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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 S Lewis in respect of a development that consists of a residential dwelling at The Old Mission, Counter Drain Drove, Tongue End.

A planning application for the proposed development is to be submitted by Clive Wicks Associates. Permission was granted under application H03-0093-23 for two dwellings at the site. The proposed dwelling would supersede that approval.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

The site is located at The Old Mission, Counter Drain Drove, Tongue End, Spalding, Lincolnshire, PE11 3JJ. The National Grid Reference of the site is 51657/31908.

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 south eastern side of Counter Drain Drove. The site consists of a series of outbuildings and area of hardstanding. The site is surrounded by agricultural land apart from a dwelling to the south west of the site. The area of development is approximately 0.12 hectares.

A topographic survey has been undertaken and spot levels are shown in Attachment 1. Ground levels within the site are typically between +1.1m OD and +1.4m OD. The carriageway level of Counter Drain Drove adjacent to the site is +2.0m OD.

The site is in the Welland and Deepings Internal Drainage Board (IDB) District. Surface water at the site would naturally drain through soakaway and hence to the Board's main drain system. Delph Drain, an IDB Main Drain, is on the south eastern side of Counter Drain Drove.

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 Proposed Development

The proposed development consists of one residential dwelling. The dwelling will have two storeys. Details of the proposed development are provided in Attachment 2.

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 from 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.

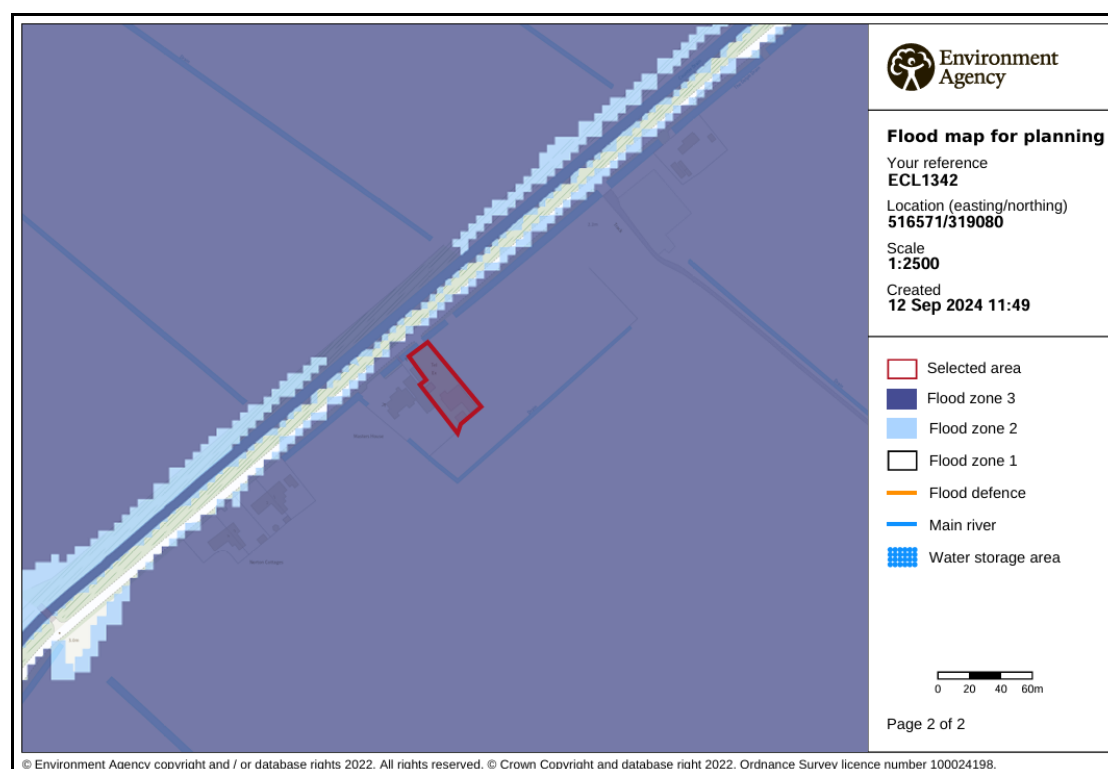


Figure 2 – Environment Agency Flood Map for Planning

The Environment Agency Long Term Flood Risk maps show that:

- the site has a medium risk of flooding from rivers (annual probability between 1% and 3.3%);
- 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 when river levels are normal.

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% event	The site is partly in the 'Low Hazard' area	The site is partly in the 'Low Hazard' area
Residual Peak Depth Map for the 1% fluvial and 0.5% event	The peak flood depth at the site is between 0.00m and 0.25m	The peak flood depth at the site is between 0.00m and 0.25m

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 proposed development is covered by the description sites used for holiday or short-let caravans and camping 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 Flood Zone 3 and the development is 'More Vulnerable' therefore it is necessary to complete 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, using the evidence provided and taking advice from the Environment Agency as appropriate, to consider whether an application passes the Sequential Test.

The site has outline permission for two dwellings. It is considered that this permissions has established the principle for development at the site and therefore the development passes the Sequential Test. It is proposed that the dwelling that form this application will replace the existing permission.

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 Local Plan has a target of a net increase of at least 11,681 dwellings in South Holland over the 25-year local plan period. The Plan considers this new housing is required to ensure the sustainability of the Local Plan area. The proposed development will contribute to this target.

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 500m south east of the River Glen approximately 1km downstream of the confluence between the Bourne Eau and the River Glen. The risk of flooding to the land to the south east of the River Glen is reduced by an embankment.

The site is 7.2km west of the River Welland upstream of Spalding. The land to the west of the River Welland and the Cowbit Washes is protected by an embankment.

The River Glen and River Welland are main rivers with defences that are the responsibility of the Environment Agency. There is a long-term strategy for maintenance of Agency assets which is reviewed and updated periodically.

There is an extensive local drainage network managed by Welland & Deepings IDB. There is an IDB maintained watercourse, Delph Drain, on the south eastern side of Counter Drain Drove. The site and surrounding land are within the Deeping Fen catchment and drain in a north easterly direction to Pode Hole Pumping Station. The Pumping Station discharges to Vernatts Drain which flows into the 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 Welland and Deepings Internal Drainage Board and the Environment Agency are generally good.

4.2 Sources of Flooding

A summary of the sources of flooding is provided in Table 2.

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 risk is assessed in Section 4.3 and 4.5.
Tidal Flooding	The site is in excess of 10km from the tidal River Welland and therefore not at risk.
Reservoir Flooding	Based upon the EA Maps the site is at risk of reservoir flooding, the risk of a breach is assessed in Section 4.6.
Groundwater Flooding	Based upon the local drainage network the risk is low.

Table 2 – Sources of Flooding

4.3 Probability of Flooding

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

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 Welland & Deepings IDB main drains incorporating freeboard. This freeboard provides storage during the exceedance events.

The fluvial defences on the River Glen and River Welland provide protection against the 1% annual probability (1 in 100 chance each year) 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 flood levels in the River Welland.

The River Glen and River Welland defences have been designed to include an allowance for climate change.

In summary the existing systems and defences are appropriate for the design life of the development (i.e., 100 years).

4.6 Residual Risk

There is a residual risk of flooding at the site should a breach occur. The South East Lincolnshire SFRA includes maps demonstrating the impact of a breach in 2115. 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) event the peak depth at the site is between 0.0m and 0.25m.

An extract from the SFRA map is shown in Figure 3 below.

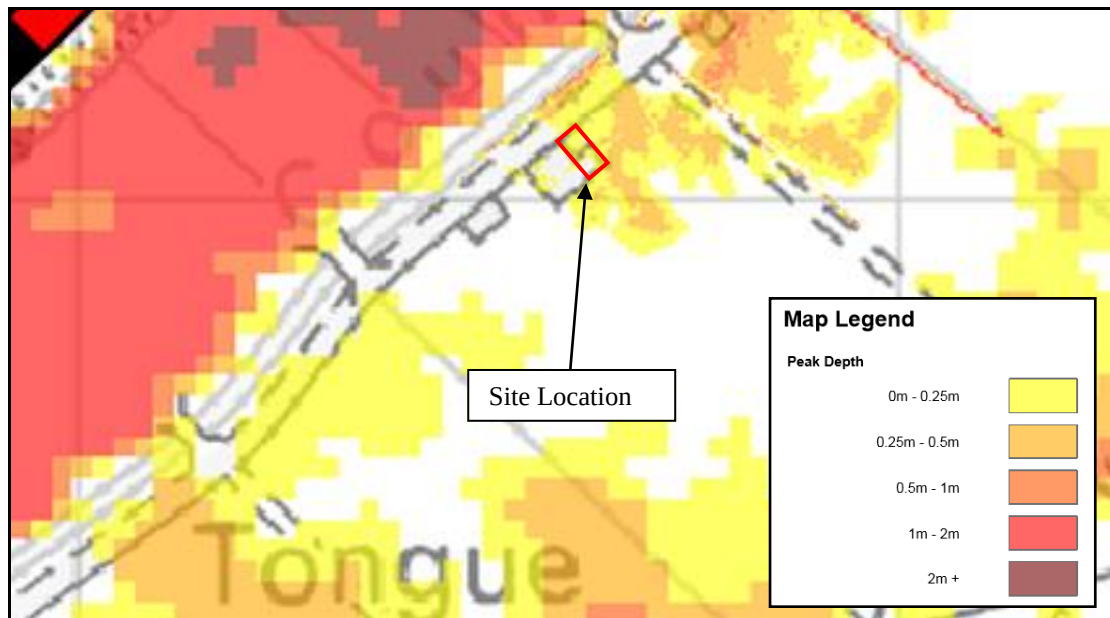


Figure 3 – SFRA 2116 Residual Peak Depth Map during the 1% fluvial and 0.5% tidal Annual Probability Event

5.0 FLOOD RISK MITIGATION

5.1 Summary of Risks

The probability of this development flooding from localised drainage systems is low. Failure of Pode Hole Pumping Station could lead to an increased level of risk within the IDB catchment.

The probability of the site flooding from any Environment Agency system is less than 1% annual probability (1 in 100 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.

The SFRA considers the residual risk associated with overtopping and a breach in the defences in 2116. The maps show that part the site is in a 'Low Hazard' area and at risk of flooding up to a depth of 0.25m.

There will be no increase in impermeable area associated with the development so there is no potential that flood risk will be increased elsewhere. The development will reduce the impermeable area and therefore provide betterment.

These risks will be addressed through the mitigation measures set out below.

5.2 Mitigation Measures

The mitigation measures proposed have been determined in accordance with the SFRA (Appendix C) Standing Advice Matrix. The site is within an area with a hazard rating of 'Low Hazard' and based upon the matrix it is recommended that the floor level of the dwelling is 0.3m above surrounding ground level and there is 0.3m of flood resilient construction above finished floor level.

The risks during an exceedance event or a breach are lowered because the dwelling has two storeys with the sleeping accommodation on the first floor.

The developer should ensure that the eventual occupier of the dwelling is sufficiently aware of the risk of flooding, and the standard of the existing defences. The Environment Agency operates a flood warning system for properties at risk of flooding to enable householders to protect life or take actions to manage the effect of flooding on property. Floodline Warnings Service is a national system run by the Environment Agency for broadcasting flooding warnings. The occupier of the dwelling should register to receive flood warnings.

Should there be a failure of Pode Hole 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.

It is recommended that surface water run-off is managed so that stormwater from the site will not affect any adjoining properties or increase the flood risk elsewhere.

6.0 CONCLUSIONS

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

- The proposed development consists of one 2 storey residential dwelling at The Old Mission, Counter Drain Drove, Tongue End.
- 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 proposed development is in Flood Zone 3. The site benefits from defences on the tidal River Glen and River Welland that provide protection during the 1% annual probability (1 in 100 chance each year) fluvial event including an allowance for climate change.
- The site is in an area with a 'Low Hazard' hazard rating and the peak flood depth in the area of the proposed dwelling is 0.25m.
- It is recommended that the finished floor level of the dwelling is 0.3m above ground levels with 0.3m of flood resilient construction above finished floor level.
- The development passes the Sequential Test and Exception Test and is therefore suitable for the proposed location.

ATTACHMENT 1

TOPOGRAPHICAL SURVEY (DWG 24-69-01)

ATTACHMENT 2

PROPOSED SITE PLAN (DWG 21-2584-02)

