FLOOD RISK ASSESSMENT
FOR RESIDENTIAL DEVELOPMENT AT
LUTTON GOWTS, LONG SUTTON

FINAL REPORT

ECL1173/STATUS DESIGN

DATE DECEMBER 2023

ELLINGHAM CONSULTING LTD
Email: tim@ellinghamconsulting.co.uk

CONTENTS

1.0 INTRODUCTION

2.0 SITE LOCATION AND DESCRIPTION
- 2.1 Site Location
- 2.2 Existing Site
- 2.3 Proposed Development
- 2.4 Local Development Documents
- 2.5 Available Flood Risk Information

3.0 FLOOD RISK VULNERABILITY
- 3.1 The Sequential and Exception Test
- 3.2 Vulnerability Classification
- 3.3 Application of the Sequential and Exception Test

4.0 SITE SPECIFIC FLOOD RISK
- 4.1 Local Flood Assets
- 4.2 Sources of Flooding
- 4.3 Probability of Flooding
- 4.4 Historic Flooding
- 4.5 Climate Change
- 4.6 Residual Risks

5.0 FLOOD RISK MITIGATION
- 5.1 Summary of Risks
- 5.2 Mitigation Measures

6.0 CONCLUSIONS

ATTACHMENT 1 – Indicative Site Layout (Dwg SD-23-017/1)

DISCLAIMER
This document has been prepared solely as a Flood Risk Assessment in support of a planning application for proposed residential development at Lutton Gowts, Long Sutton. "Ellingham Consulting Ltd" accepts no responsibility or liability whatsoever for any use made of this document other than by the client "Status Design" for the purposes it was originally commissioned and prepared. All comments and opinions made are based upon information available to "Ellingham Consulting Ltd" during the necessary investigative process, and the conclusions and recommendations, could therefore, differ in the event of material subsequently being found erroneous, incomplete, or misleading. "Ellingham Consulting Ltd" therefore, accepts no liability should this prove to be the case.

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 Status Design in respect of a development that comprises of five dwellings at Lutton Gowts, Long Sutton.

A planning application for the proposed development is to be submitted by Status Design.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

The site is located on Lutton Gowts, Long Sutton, Spalding, PE12 9LQ. The National Grid Reference of the site is 54378/32449.

The location of the site is shown in Figure 1.

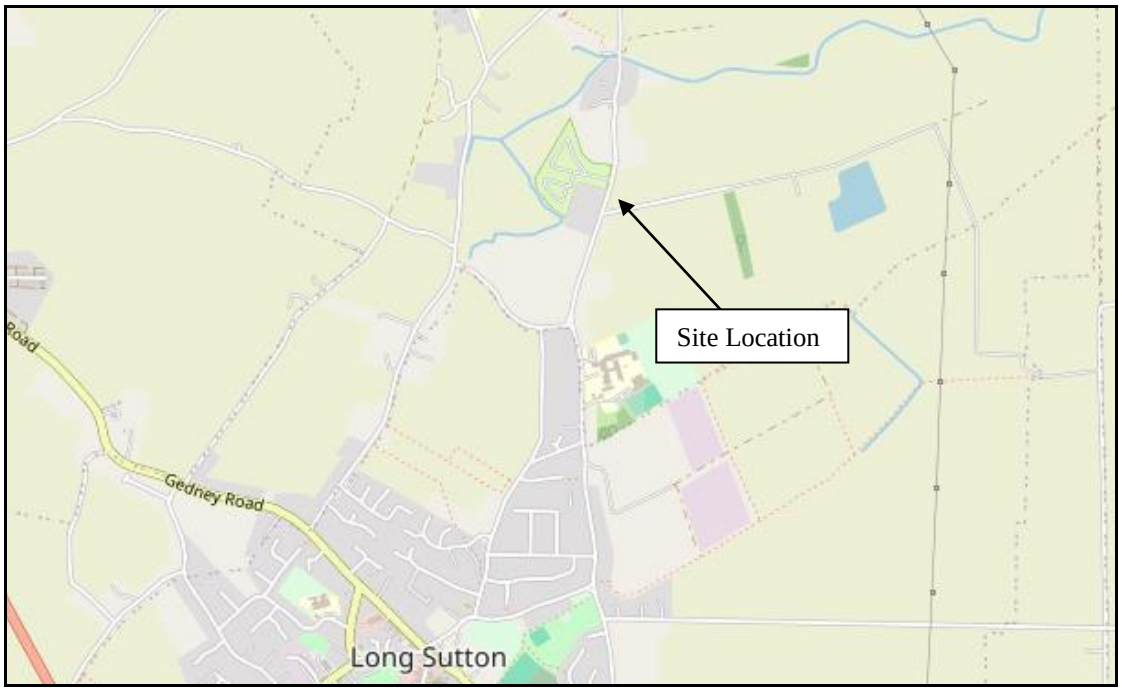


Figure 1 – Location Plan (© OpenStreetMap contributors)

2.2 Existing Site

The site is on the eastern side of Lutton Gowts. Monmouth Lane forms the southern boundary of the site and there is a dwelling to the north. The site consists of agricultural land. The area of development is approximately 1.6 hectares.

Environment Agency LiDAR data shows that the site is flat with ground levels that are typically between +3.6m OD and +3.7m OD. The carriageway level of Lutton Gowts adjacent to the site is +4.2m OD. The land that fronts the Lutton Gowts carriageway on its western side opposite Monmouth Lane is typically +4.1m 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 is a riparian drain on the eastern boundary of the site. The nearest IDB Watercourse is on the southern side of Monmouth Lane approximately 250m east of the site.

The online British Geological Survey maps indicate that the site is likely to be underlain by Ampthill 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 five new dwellings. The dwellings will have two storeys. A Site Plan is 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 Flood Zones

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

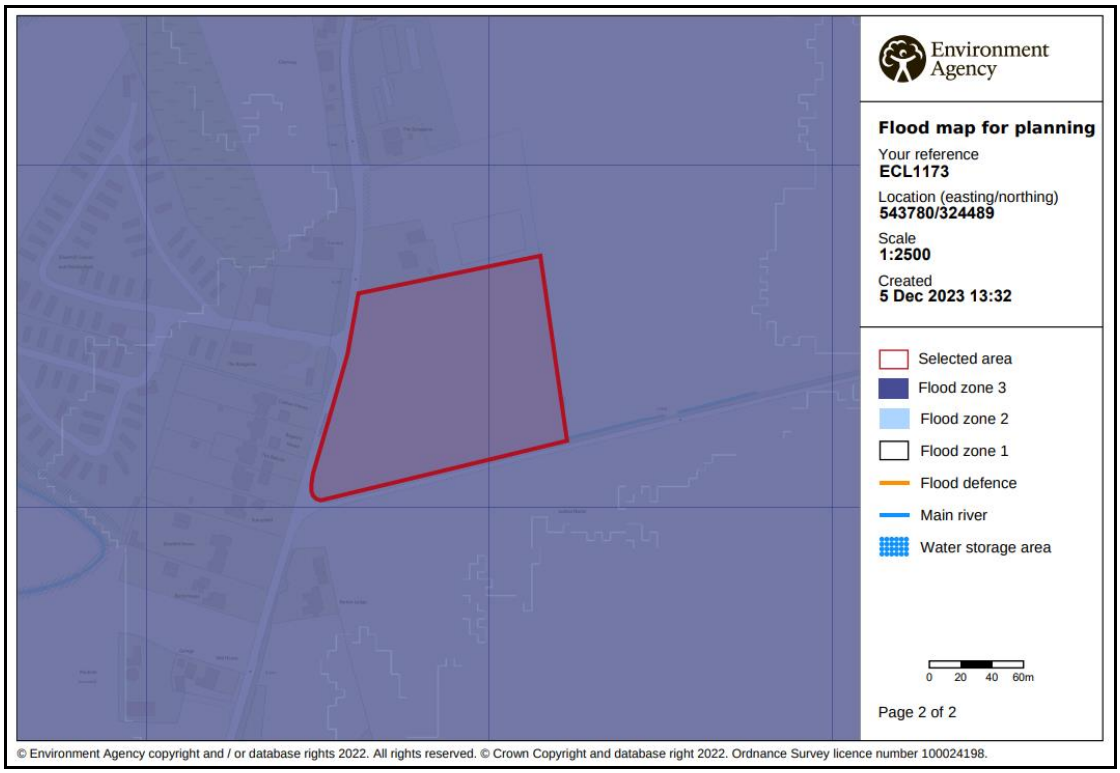


Figure 2 – Environment Agency Flood Map for Planning

The Environment Agency Long Term Flood Risk maps show that:

- the site has a low risk of flooding from rivers or the sea (annual probability between 0.1% and 1%);
- the site has a low risk of surface water flooding (annual probability between 0.1% and 1%); and
- the site is not 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 'Low Hazard' 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 proposed development is covered by the description of buildings used for dwellings 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 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 South Holland district that are near the River Nene lie within Flood Zone 3. As such, the opportunities to undertake the development at an alternative site with a lower flood risk are limited. The proposed development will form an annexe to an existing dwelling therefore it is not practical to undertake the development elsewhere.

The River Nene has defences that provide protection during the 0.5% annual probability (1 in 200 chance each year) event including climate change. Therefore the 'actual risk' of flooding at the site is low and is considered to pass the Sequential Test.

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 5.2km west of the tidal River Nene. The site is protected by the River Nene tidal defences between Wisbech and Sutton Bridge. The River Nene is 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 South Holland IDB. There is an IDB Watercourse on the southern side of Monmouth Lane 250m east of the site. The site and the surrounding land are within the Lutton Leam catchment and which discharges to the tidal River Nene at Lutton Leam Tidal Sluice.

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

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.
Tidal Flooding	The risk is assessed in Section 4.3 and 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 2 – Sources of Flooding

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.

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 South Holland IDB main drains incorporating freeboard. This freeboard provides storage during the exceedance events.

The site benefits from defences on the River Nene that provide protection during a 0.5% annual probability (1 in 200 chance each year) tidal event and a 1% annual probability (1 in 100 chance each year) fluvial 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 Nene.

The River Nene tidal 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 residual peak depth in 2116. When climate change allowances are applied to the 1% annual probability (1 in 100 chance each year) fluvial event and 0.5% annual probability (1 in 100 chance each year) tidal event the peak depth at the site from direct overtopping together with breach failure is between 0.5m and 1.0m. An extract from this map is shown in Figure 3 below.

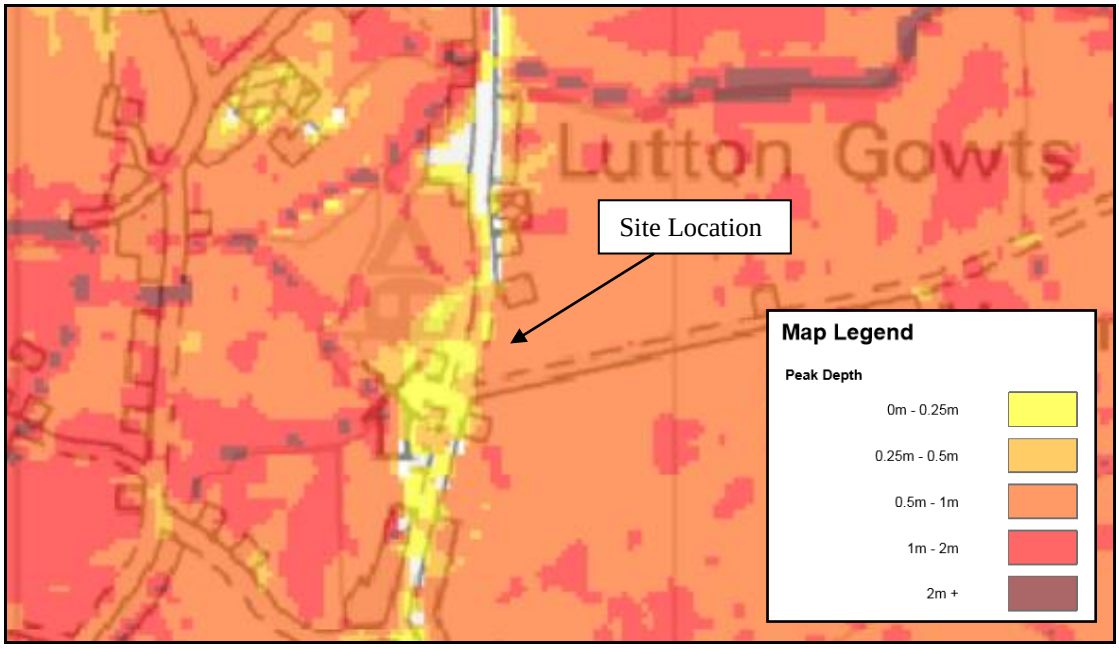


Figure 3 – SFRA 2116 Residual Peak Depth Map (0.5% annual probability)

The land that fronts the Lutton Gowts carriageway on its western side opposite Monmouth Lane is typically +4.1m OD and has a breach depth of up to 0.25m. A conservative estimate of the flood level is therefore +4.4m OD. This is a depth of up to 0.8m within the site.

5.0 FLOOD RISK MITIGATION

5.1 Summary of Risks

The probability of this development flooding from localised drainage systems is low. Failure of Lutton Leam Tidal Sluice 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 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 the peak flood depth at the site is between 0.5m and 1.0m.

The development increases the impermeable area and therefore has the potential to increase flood risk elsewhere.

5.2 Mitigation Measures

The site has a low 'actual risk' of flooding. Based upon the information available during the preparation of this flood risk assessment, it is recommended that the finished floor level of the dwellings is at +4.6m OD, 1.0m above the lowest ground level at the site. It is recommended that there is 0.3m of flood resilient construction above finished floor level.

The developer should ensure that the eventual occupiers of the dwellings are 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 dwellings should register to receive 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 Lutton Leam Tidal Sluice 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 using temporary pumping equipment.

It is recommended that surface water run-off is managed so that stormwater from the development 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 comprises five 2-storey residential dwellings at Lutton Gowts, Long Sutton.

- 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 Nene and provide protection during the 1% annual probability (1 in 100 chance each year) fluvial event and 0.5% annual probability (1 in 200) tidal event including climate change.

- There is a residual risk to the site associated with a breach of the tidal defences. To mitigate this risk, it is recommended that the floor levels are at +4.6m OD, 1.0m above ground level, and there is 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

INDICATIVE SITE LAYOUT
(DWG SD23-017/1)

General Notes

Do not scale from this drawing.

This drawing is copyright and may not be altered, traced, copied, photographed or used for any purpose other than that for which it is issued without written permission from Meares Status Design.

The General Contractor is to check all dimensions on site and report discrepancies to the Architect.

All details shown on this drawing are based upon typical site conditions related to the area. No responsibility can be accepted for abnormal conditions unless reported to the Architects so that design amendments may be considered. Site soil surveys are recommended in respect of foundations to establish specific site conditions before foundation work is undertaken.

Please note this drawing is not a conveyance drawing.

Proposed on-site soakaways to be maintained by the owner for the life duration of the property.

This drawing is limited in the amount of information contained and does not purport to contain a full specification of the works. It is solely for the purpose of obtaining Planning and Building Regulations approvals. This drawing must not be used as a contract document alone. The works will not be supervised or inspected by Status Design unless specifically contracted to do so. It is the client or their agent's responsibility to control workmanship, substitution of materials, adherence to specification, variations to contract, etc.

All materials to be new, unless stated otherwise and all components and materials, etc. to be used, fitted and installed, etc. in strict accordance with manufacturers' instructions and relevant Code of Practice. Materials should conform to appropriate British Standard specification or BBA Certificate or European Code equivalent.

The Employer/Client shall ensure that the selected contractor is conversant with and adopts all measures necessary to achieve compliance with Health and Safety Legislation for Building Sites and Work Places. The Employer/Client is advised that should the works need to comply with the Construction Design and Management Regulations 2015 (CDM) and Health and Safety at Work, etc. Act 1974 (HSW Act) an independent Planning Supervisor will be required, whom should be supplied with a set of all relevant drawings, etc.

The works shall comprise of all that shown on the drawings and information, etc. Works that may not specifically be shown but may be reasonably inferred as necessary to carry out the works shall be deemed to be included.

These notes relate to this drawing and all associated drawings.

It is the property/landowner's responsibility to be aware of the Party Wall, etc. Act 1996 when building or carrying out alterations in close proximity to adjoining neighbour's boundaries.



INDICATIVE SITE LAYOUT

Status DESIGN
CONSULTANTS IN ARCHITECTURE & PLANNING

PROPOSED RESIDENTIAL DEVELOPMENT FOR 5No HOUSES AT LUTTON GOWTS, LONG SUTTON FOR

MRS. W. MORRIS
MRS. J. CLAXTON
MR. S. LUCAS

INDICATIVE SITE LAYOUT

1:200	SD23-017/1
NOV-23	B.GILHAM

7 Edinburgh Walk, Holbeach,
Spalding, Lincs. PE12 7AP
Tel: 01406 424343 Fax: 01406 490702

SD23-017/1