FLOOD RISK ASSESSMENT
FOR RESIDENTIAL DEVELOPMENT
AT STATION ROAD, SURFLEET

FINAL REPORT

ECL1419/GR MERCHANT LTD

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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 GR Merchant Ltd in respect of a development that consists of one residential dwelling at Station Road, Surfleet.

A planning application for the proposed development is to be submitted by GR Merchant Ltd.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

The site is located on land between 55-81 Station Road, Surfleet, Spalding, PE11 4DB. The National Grid Reference of the site is 52604/32862.

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 Station Road. The site consists of an area of land within an agricultural field. There are dwellings to the north east and south west of the field. The south eastern boundary of the site if formed by the River Glen. The area of development is 0.31ha.

Environment Agency LIDAR data shows that site levels are typically between +4.0m OD and +4.1m OD. The carriageway level of Station Road adjacent to the site is +4.5m OD. The land at the south eastern boundary of the site rises up to +4.6m OD alongside the River Glen.

The site is in the Welland and Deepings Internal Drainage Board (IDB) District. Surface water at the site drains through a local network and hence to the IDB drain system. The nearest IDB maintained watercourse, Cemetery Drain, is 400m north west of the site.

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 is one residential dwelling. The dwelling will have two storeys. Details of the proposed development 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 from the Environment Agency Flood Map for Planning is shown in Figure 2. The site is located within Flood Zone 1, an area with a low probability of flooding.

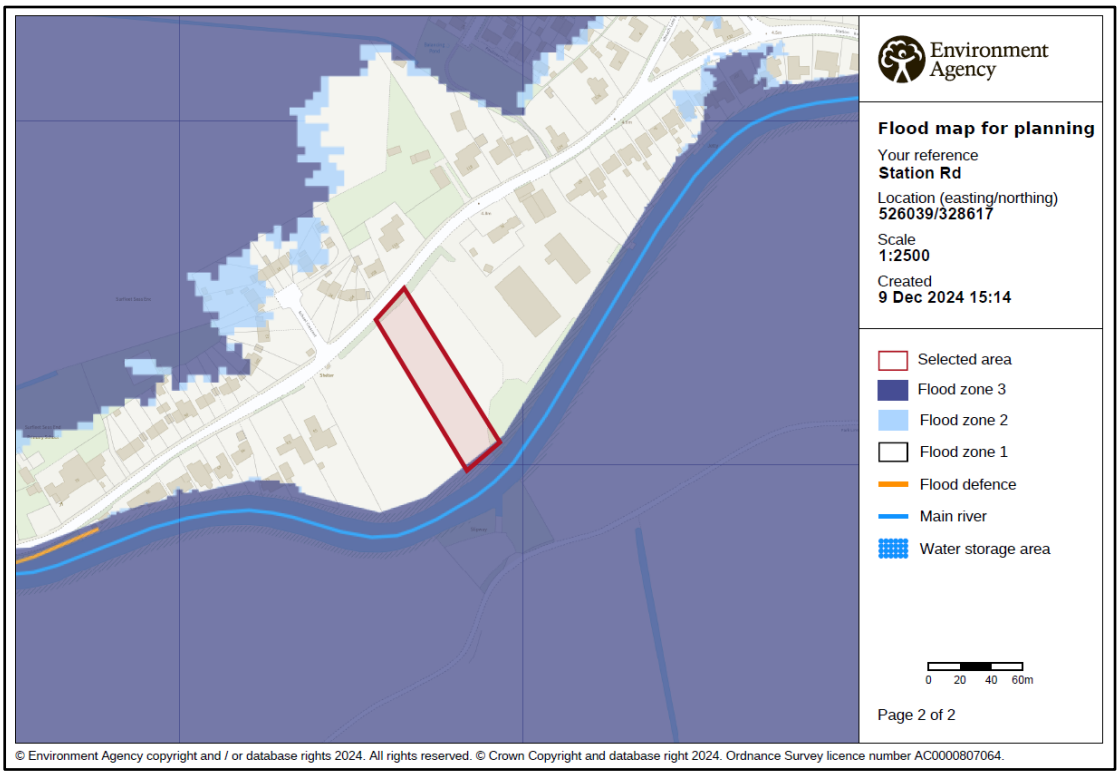

Figure 2 – Environment Agency Flood Map for Planning

The Environment Agency Long Term Flood Risk maps show that:

- the site is not at risk of flooding from rivers or the sea;
- part of the site close to the north eastern boundary has a low risk of surface water flooding (annual probability between 0.1% and 1%) and the remainder of the site has 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.

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 outside 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 event	The site is outside the area at risk of flooding.	The site is at risk of flooding with depths 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 1 and the development is 'More Vulnerable' therefore it is not 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 proposed development is in Flood Zone 1, the area with the lowest risk of flooding. The site is therefore considered to pass the Sequential Test.

4.0 SITE SPECIFIC FLOOD RISK

4.1 Local Flood Assets

The southeastern boundary of the site is formed by the River Glen. The risk of flooding at the site is reduced by high ground on the northern bank of the River Glen. The River Glen is a Main River and 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 Welland and Deepings IDB. Cemetery Drain, an IDB maintained watercourses, is 400m north west of the site. The site and the surrounding land are within the Surfleet Village catchment and drain in a south westerly direction to Surfleet Village Pumping Station which discharges to the River Glen.

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 IDB 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 / low.
Fluvial Flooding	The risk is assessed in Section 4.3 and 4.5.
Tidal Flooding	The risk is not at risk of tidal flooding.
Reservoir Flooding	Based upon the EA maps the site is not at risk of reservoir flooding.
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 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 & Deeping IDB main drains incorporating freeboard. This freeboard provides storage during the exceedance events.

The high ground on the boundary of the site provides protection during the 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 Glen.

The Flood Risk Assessments: Climate Change Allowances guidance states that a range of climate change allowances should be considered. For the 2080s (100 year) timeframe within the Welland Management Catchment the allowance ranges from 17% to 53%. The higher central allowance for climate change is 28%.

The high ground on the boundary of the site provides protection during the 1% annual probability (1 in 100 chance each year) fluvial event including climate change. Ground levels in the right bank of the River Glen are lower than those on the left bank and therefore floodwater would inundate agricultural land to the south east of the Rover Glen prior to flooding the site.

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 2116. 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 depth is between 0.5m and 1.0m. An extract from this map is shown in Figure 3 below.

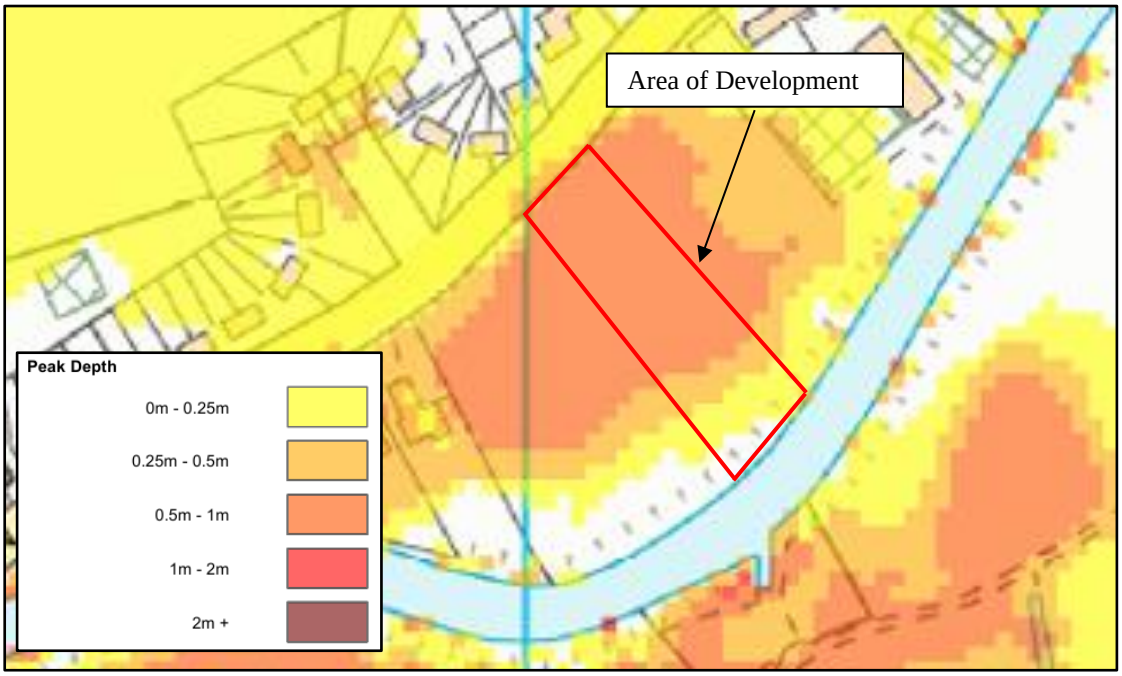

Figure 3 – SFRA 2116 Residual Peak Depth Map

5.0 FLOOD RISK MITIGATION

5.1 Summary of Risks

The probability of this development flooding from localised drainage systems is low. Failure of Fourth District 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 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 2115. The maximum flood depth within the area to be occupied by the dwelling 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

Based upon the information available during the preparation of this flood risk assessment it is recommended that the finished floor level of the dwelling is 1.0m above surrounding ground levels and there is 0.3m of flood resilient construction above finished floor level.

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 Surfleet Village Pumping Station and conditions were such to put properties and land at risk of flooding, the IDB 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 consists of a 2 storey dwelling on land between 55-81 Station Road, Surfleet.

- 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 1. The proposed development is protected during the 1% annual probability (1 in 100 chance each year) event including an allowance for climate change by high ground alongside the River Glen.

- There is a residual risk associated with a breach of the defences. During the design life of the development, including an allowance for climate change, the peak flood depth is between 0.5m and 1.0m.

- It is recommended that the finished floor levels of the dwelling are 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 is therefore suitable for the proposed location.

ATTACHMENT 1

LOCATION AND SITE PLAN

(4287-24-03A)

SITE PLAN 1:500

ref:	revision	date
A	CLIENTS AMENDMENTS	DEC '2024

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Project

ERECTION OF DWELLING, GARAGE & POOL
LAND BETWEEN 55-81 STATION ROAD
SURFLEET
SPALDING, LINCS. PE11 4DB

Client

MR D SNAITH

Drawing

LOCATION & SITE PLAN

Job Ref.	Drawing No.
4287-24	03A
Date	**Drawn**
DECEMBER 2024	SLD

Scales

1:500 (Unless Otherwise Stated)