

**FLOOD RISK ASSESSMENT  
FOR RESIDENTIAL DEVELOPMENT ON  
POSTLAND ROAD, CROWLAND**

**FINAL REPORT**

**ECL1487/SEAGATE HOMES**

**DATE MARCH 2025**

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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 Seagate Homes Ltd in respect of a development that consists of nine residential dwellings on Postland Road, Crowland.

A planning application for the proposed development is to be submitted by Seagate Homes Ltd.

## 2.0 SITE LOCATION AND DESCRIPTION

### 2.1 Site Location

The site is located on land at Postland Road, Crowland, Lincolnshire, PE6 0JB. The National Grid Reference of the site is 52476/31092.

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 northern side of Postland Road and immediately north of an access road to a garden centre. The site is an undeveloped plot situated between residential dwellings to the west and the garden centre to the east. The area of development is approximately 1.2 hectares.

A topographic survey of the site is provided in Attachment 1. Ground levels are typically between +1.1m OD and +1.2m OD. Within the site there are areas where stockpiled material elevates ground levels significantly above the typical site level.

The site is in the North Level Internal Drainage Board (IDB) district. Surface water at the site would naturally drain through soakaway and hence to the riparian and IDB drainage system. The nearest IDB Main Drain is Brickfield Drain approximately 300m north 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 Abbey Sand and Gravel.

## 2.3 Proposed Development

The proposed development consists of nine 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 located within Flood Zone 1, an area with a low probability of flooding.

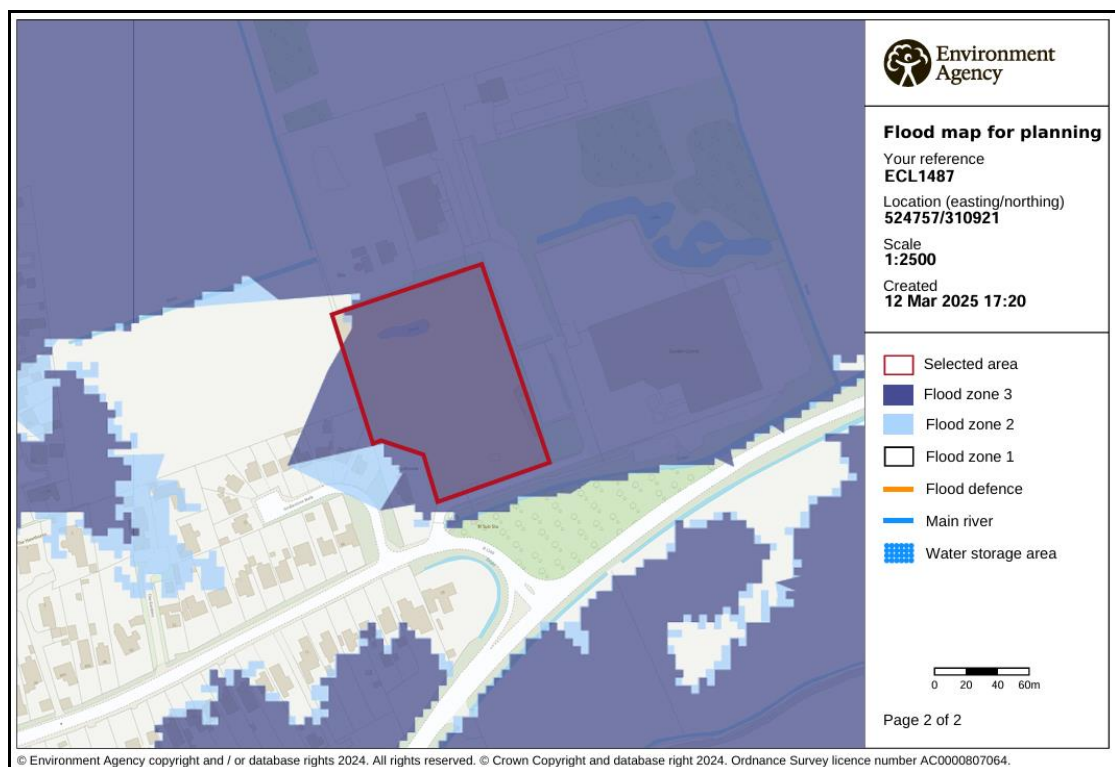


Figure 2 – Environment Agency Flood Map for Planning

The Environment Agency Long Term Flood Risk maps provide an indication of the risk from the primary sources of flooding. The details provided with these maps are summarised in Table 1. The fluvial design flood to be considered within a Flood Risk Assessment is the 1% annual probability event. As such the depths of flooding identified is the maximum depth that occurs during a low chance (between 0.1% and 1% chance each year) event.

	Present Day		2050 Epoch	
	Risk of Flooding	Depth (Low chance)	Risk of Flooding	Depth (Low chance)
Rivers and the Sea	The site has a very low chance (between less than 0.1% chance each year)	No data available	No data available	No data available
Surface Water	Isolated areas of the site have a low risk (between 0.1% and 1% chance each year)	During low risk events depths are up to 0.2m	Isolated areas of the site have a low risk (between 0.1% and 1% chance each year) or medium risk (between 1% and 3.3% chance each year)	During low risk events depths are up to 0.2m
Reservoir	At risk when river levels are normal			

Table 1 – Environment Agency Long Term Flood Risk Maps

Table 2 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 event	The site is predominantly in the 'Danger for Some' area	The site is in the 'Danger for All' area
Residual Peak Depth Map for the 1% fluvial event	The peak flood depth is between 1.0m and 2.0m.	The peak flood depth is between 1.0m and 2.0m.

Table 2 – 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 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.

The Corporation Bank that protects the site is designated under the Reservoirs Act and therefore is subject to a level of inspection and maintenance which makes the risk of failure very low. This is evidenced by the Environment Agency Long Term Flood Risk Maps which shows the site has a very low chance (between less than 0.1% chance each year) of flooding.

When applying the Sequential Test, based upon the settlement by settlement approach adopted for site allocations with the South Holland District, it is reasonable that alternative sites within Crowland, rather than the wider district, should be considered.

Comparison has been made with Housing Allocation site Cro050 which adjoins and is to the north west of the site. Whilst the allocated site is partially in Flood Zone 1 and partially in Flood Zone 3 the level of flood risk is similar to the application site. Both sites have a maximum breach depth of between 1m and 2m.

The proposed site is also in a similar position to the allocated site. Both sites are in the north eastern part of Crowland and the sites are equidistant to the centre of Crowland. In this regard, although the application site is outside the settlement boundary it can be considered to be in an equally sustainable position to the allocated site.

Based upon the above the site 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.

Whilst it is acknowledged that the site is outside of the settlement development boundary it is not considered to be within open countryside. There is built development to the east and north of the site and therefore the proposed dwellings will not extend the edge of the built development on the eastern side of Crowland. Furthermore, development of Housing Allocation site Cro050 will see the development site entirely surrounded by built development.

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. In summary the site is protected to the appropriate standard and the residual risk is mitigated.

The development is considered to pass the Exception Test.

## 4.0 SITE SPECIFIC FLOOD RISK

### 4.1 Local Flood Assets

The site is 1.7km east of the River Welland. Crowland Washes provides floodplain storage for the River Welland. The village of Crowland is protected from the River Welland by the Corporation Bank approximately 800m west of the site.

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 North Level Internal Drainage Board. There nearest IDB Main Drain, Brickfield Drain, is approximately 300m north of the site. The site is within the Postland Catchment which discharges to the River Welland via the Postland Pumping Station.

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 North Level 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 3.

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 low.
Fluvial Flooding	The risk is assessed in Section 4.3 and Section 4.5.
Tidal Flooding	The site is not at risk of tidal flooding.
Reservoir Flooding	The residual risk of a breach of defences is assessed in section 4.6.
Groundwater Flooding	There is no evidence to suggest the site is at risk of groundwater flooding.

Table 3 – Sources of Flooding

### 4.3 Probability of Flooding

The probability of flooding associated with blockages in the North Level 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 North Level IDB main drains incorporating freeboard. This freeboard provides storage during the exceedance events.

The Corporation Bank provides protection against the 1% annual probability (1 in 100 chance each year) event. The defence falls within the Reservoirs Act 1975 legislation. As such it is inspected annually by a Supervising Engineer who will assess its structural integrity to provide protection to people and property.

#### 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.

The Corporation Bank provides protection against the 1% annual probability (1 in 100 chance each year) event including climate change.

#### 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. 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 the site is at risk with depths between 1.0m and 2.0m. An extract from this map is shown in Figure 3 below.

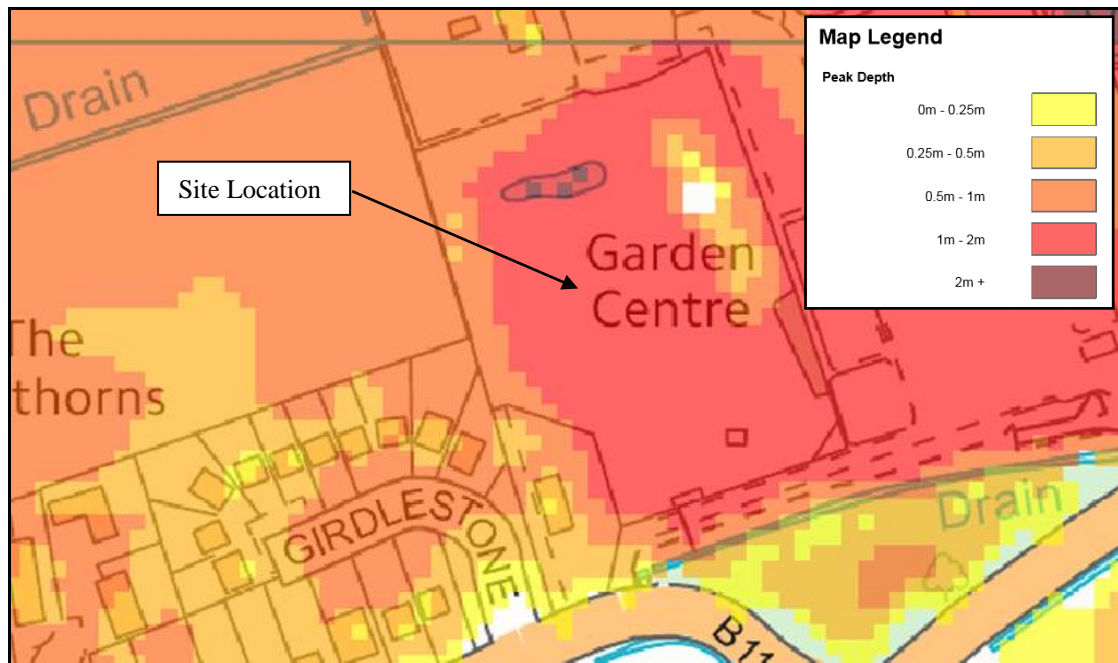


Figure 3 – SFRA 2116 Residual Peak Depth Map

The depth of flooding on the land to the west of the site has an area where breach depths are below 0.5m. Environment Agency LiDAR shows ground levels in the area being in excess of +2.1m OD. A flood level of +2.6m OD can therefore be estimated. This is 1.4m – 1.5m above typical ground levels 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 Postland 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 a breach in the defences. The residual flood level during a 1% annual probability (1 in 100 chance each year) fluvial event in 2116 is estimated to be +2.6m OD. This is a flood depth of 1.4m to 1.5m within the site.

The proposed development increases the impermeable area and therefore has the potential to increase the rate of surface water runoff from the site.

### 5.2 Mitigation Measures

Based upon the information available during the preparation of this flood risk assessment and in accordance with the South East Lincolnshire Standing Advice Matrix it is proposed that:

- the dwellings will have two storeys;
- finished floor level will be a minimum of 1.0m above ground level;
- there are demountable defences to 0.6m above finished floor level; and
- there is flood resilient construction to +2.9m OD (1.7m to 1.8m above typical site levels).

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 occupiers of the dwellings should register to receive flood warnings.

Should there be a failure of Postland 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 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

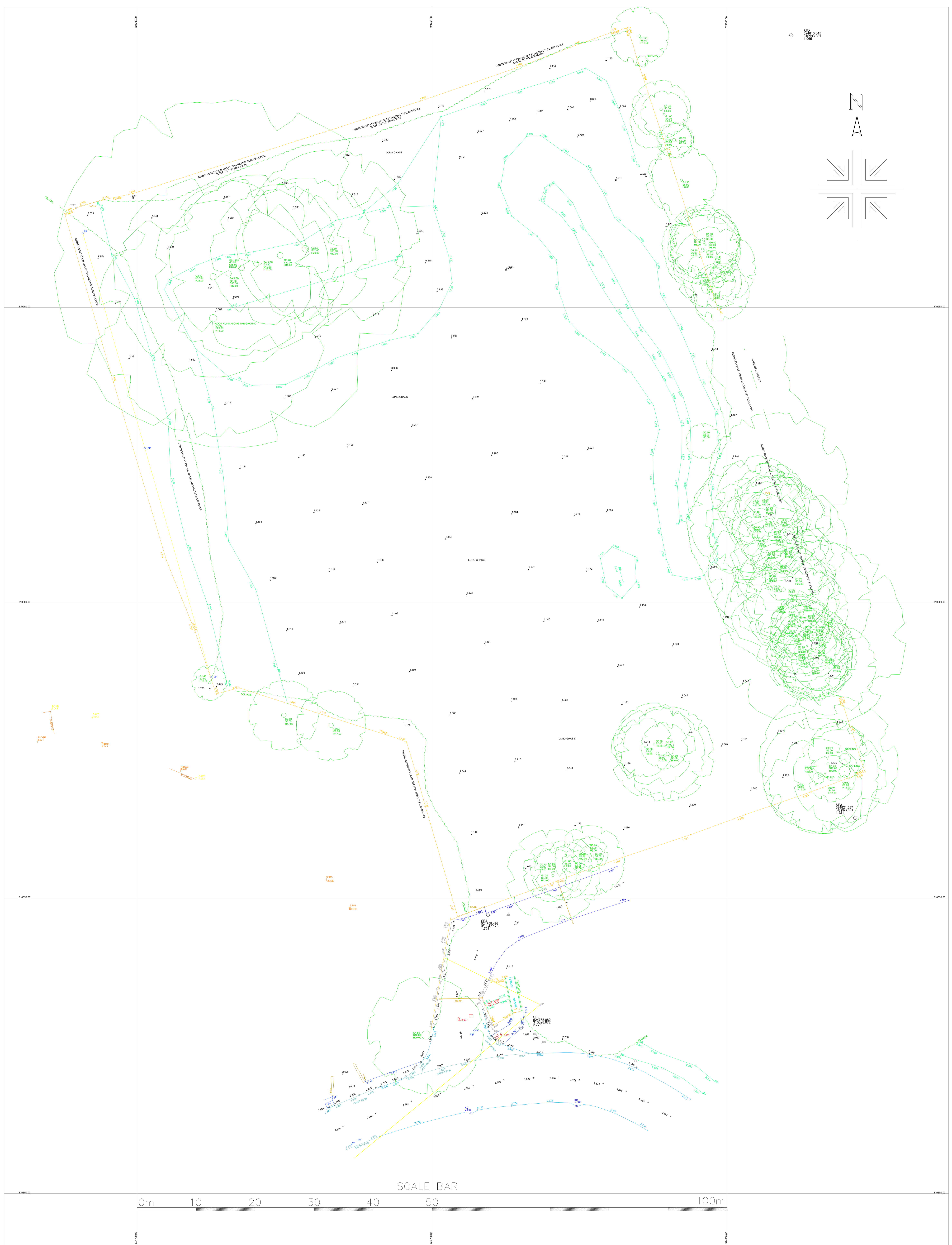
As a result of the assessment, the following conclusions have been reached.

- The proposed development consists of nine 2 storey dwellings on land north of Postland Road, Crowland.
- 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 Corporation Bank provides protection against the 1% annual probability (1 in 100 chance each year) event including climate change in the River Welland.
- During the life of the development, a flood depth estimated to be 1.2m to 1.4m above typical ground level could occur at the site should there be a breach of the Corporation Bank.
- It is proposed that the finished floor level will be a minimum of 1.0m above ground level, there are demountable defences to 0.6m above finished floor level and there is flood resilient construction to +2.9m OD (1.7m to 1.9m above typical site levels).
- The development passes the Sequential Test and Exception Test and is therefore suitable for the proposed location.

## **ATTACHMENT 1**

**TOPOGRAPHIC SURVEY (DWG SE-1401-1)**

**PROPOSED SITE LAYOUT (DWG PRC 02 V9)**



**JOB TITLE**  
**TOPOGRAPHIC SURVEY OF**  
**THE LAND OFF JAMES**  
**ROAD, CROWLAND**

**CLIENT**  
**SEAGATE HOMES**

<b>SE REF</b> SE1401-1	<b>DRAWN BY</b> AR
<b>SHEET SIZE &amp; SCALE</b> A0 @ 1:200	<b>DATE OF SURVEY</b> JUNE 2024
<small>LATEST REVISIONS AND DETAILS</small>	



SURVEYED EXTENTS SUCH AS FENCIBLES, WALLS AND HEDGES ETC DO NOT REPRESENT A LEGAL BOUNDARY OR LEGAL OWNERSHIP AND FURTHER ADVICE SHOULD BE SOUGHT IN THIS MATTER.

SURVEYED DATA IS A RESULT OF MEASUREMENTS TO EXISTING FEATURES AT THE TIME OF THE SURVEY. SURVEY DATA SHOWN IS ALSO DEPENDANT ON THE CLIENTS SPECIFICATION.

AREAS OF VEGETATION OR HEAVY TRAFFIC MAY CAUSE DETAIL TO BE MISSED.

MANHOLE CHAMBERS WILL NOT BE INSPECTED IF THERE IS A RISK TO PUBLIC OR ANY STAFF MEMBERS. CRACKED COVERS AND THOSE THAT DO NOT LIFT WITH REASONABLE FORCE WILL NOT BE LIFTED. CHAMBERS, PIPES AND FLOWS ARE MEASURED ABOVE GROUND AND SHOULD BE CHECKED PRIOR TO ANY CONSTRUCTION/ALTERATIONS.

DRAWING UNITS, LEVELS AND DIMENSIONS ARE SHOWN IN METRES.

THE DATA USED FOR THE HORIZONTAL AND VERTICAL CONTROL FOR THIS SURVEY HAS BEEN RECORDED USING OUR SURVEY GRADE GNSS RECEIVERS. THIS DATA WAS PROVIDED BY TRIMBLE VRS CORRECTION SERVICE AND PRIMARY SURVEY CONTROL IS BASED ON OSGB36(15)

THIS SURVEY HAS A SCALE FACTOR OF 1 APPLIED AND HAS BEEN BASED ON SET AND REFERENCED TO SET.

PLOTTING ON PAPER MAY LEAD TO ERRORS AND SCALING RISKS. PLEASE DO NOT SCALE FROM THIS DRAWING.

ALL DIMENSIONS SHOULD BE CHECKED ON SITE PRIOR TO CONSTRUCTION.

THIS DRAWING IS TO BE USED FOR ITS ORIGINAL PURPOSE ONLY. NO RESPONSIBILITY WILL BE ACCEPTED IF THIS IS SUPPLIED TO ANY OTHER PARTY OTHER THAN THE ORIGINAL CLIENT.

ANY DISCREPANCIES NOTICED ON SITE, SHOULD BE REPORTED IMMEDIATELY AND WORK SHOULD BE PAUSED ON SITE.

# POSTLAND ROAD, CROWLAND



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Do not scale plans - use figure or grid dimensions where given. Any deviation from the drawing is to be reported to the originator immediately.

IF IN DOUBT ASK!

## Key

- Boundary
- Proposed Housing
- Existing Surrounding Buildings
- Private Rear/Front Garden Areas
- Principal Highway / Road
- Private Drives & Car Parking Spaces
- Footpaths
- Housetypes - Point of Access
- Primary Site Access
- Existing Retained Trees & Hedges
- Proposed Tree & Hedge Planting



Rev	Notes	Date	By



Project: <b>PROPOSED RESIDENTIAL DEVELOPMENT AT POSTLAND ROAD, CROWLAND</b>	
Drawing: <b>SITE LAYOUT</b>	
Drawn: <b>DL</b>	Date: <b>16.04.25</b>
Status: <b>PLANNING</b>	Scale: <b>1:500 @ A2</b>
Drawing Number: <b>PRC-SH-SL-AR-1001</b>	Revision: <b>-</b>