

**FLOOD RISK ASSESSMENT
FOR RESIDENTIAL DEVELOPMENT AT
SILTSIDE, GOSBERTON RISEGATE**

FINAL REPORT

ECL0520/SHIELDS WILSON

DATE JULY 2021

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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 Scenic Homes in respect of a development that consists of one residential dwelling at Siltside, Gosberton Risegate.

A planning application for the proposed development is to be submitted by Shields Wilson.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

The site is located at 40 Siltside, Gosberton Risegate, Lincolnshire, PE11 4ET. The National Grid Reference of the site is 52178/33012.

The location of the site is shown in Figure 1.



Figure 1 – Location Plan (© OpenStreetMap contributors)

2.2 Existing Site

The site is an undeveloped area of land on the north side of Siltside. The site forms part of the garden of 38 Siltside. The western boundary of the site is formed by an access to land that is to the north of the site. The area of development is approximately 0.02 hectares.

Environment Agency LiDAR data shows that the site is flat with ground levels between +3.3m OD and +3.4m OD. The carriageway level of Siltside adjacent to the site is estimated to be +3.2m OD.

The site is in the Welland and Deepings Internal Drainage Board (IDB) District. Surface water at the site drains naturally through soakaway and hence to the IDB drain system. The nearest IDB drain, Risegate Eau, is on the southern side of Siltside.

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 be two storey. A Site Plan of the proposed development 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 Available Flood Risk Information

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

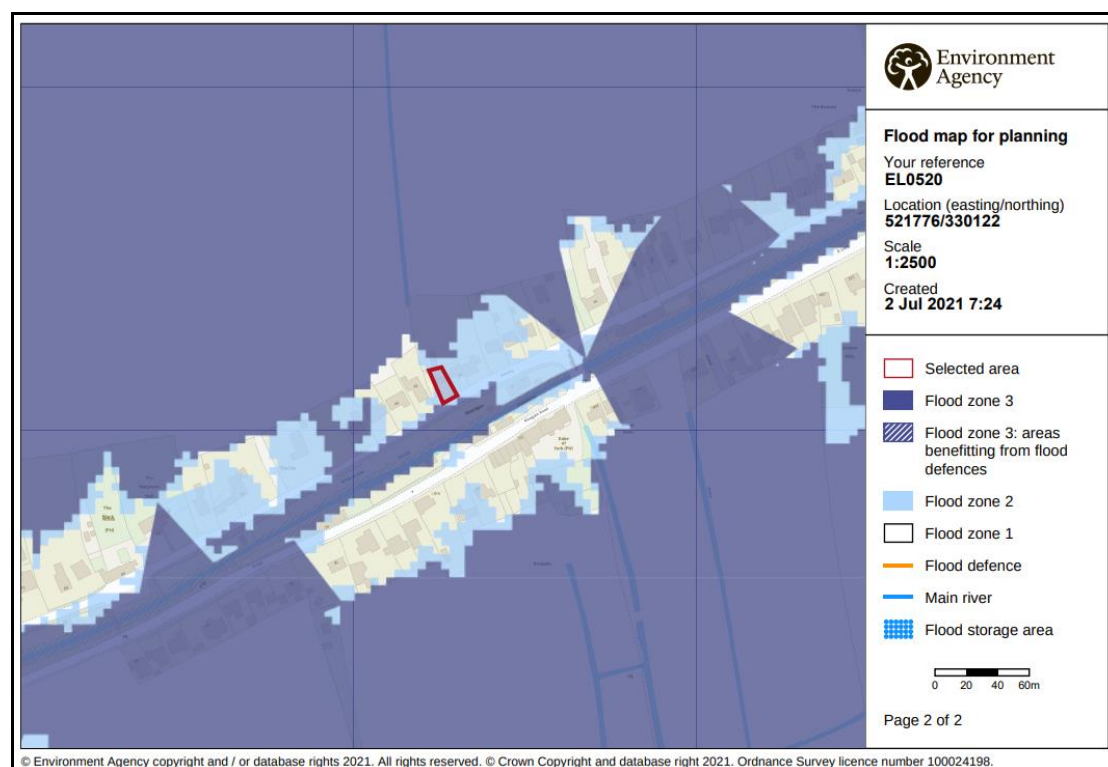


Figure 2 – Environment Agency Flood Map for Planning

The Environment Agency Long Term Flood Risk maps show that:

- the site has a very low risk of flooding (annual probability less than 0.1%);
- 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 outside the 'Low Hazard' area
Residual Peak Depth Map for the 1% fluvial and 0.5% tidal	The site is outside the area at risk during a breach	The site is outside the area at risk during a breach

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 2 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, 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, opportunities to undertake the development at an alternative site with a lower flood risk are limited.

The SFRA states that as it is necessary to use the refined flood risk information (hazard and depth maps) to assist with the application of the sequential test. The refined flood risk information contained within the SFRA demonstrates the site is not at risk during the 1% fluvial and 0.5% tidal event. The site therefore has a low probability of flooding and is considered to pass the Sequential Test.

4.0 SITE SPECIFIC FLOOD RISK

4.1 Local Flood Assets

The site is 6.2km north west of the tidal River Welland downstream of Spalding. The River Glen, a tributary of the River Welland, is 2.8km to the south of the site. The defences on the River Welland and the River Glen 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 periodically.

There is an extensive local drainage network managed by Welland and Deepings IDB. An IDB maintained watercourse, Risegate Eau, is on the southern side of Siltside. The Risegate Eau catchment drains in an easterly direction to Risegate Eau Pumping Station which 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 Welland and Deepings IDB and the Environment Agency are generally good.

4.2 Sources of Flooding

The potential sources of flooding identified during this assessment are:

- local blockages to the Welland and Deepings IDB main drain system;
- an event in the local drainage network greater that exceeds that standard of protection;
- failure of Risegate Eau Pumping Station;
- overtopping and / or breaching of the River Glen 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 Welland and Deepings IDB drainage system is low due to the maintenance standards achieved and managed by the IDB.

The standard of drainage provided by Welland and Deepings 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

Welland and Deepings IDB main drains incorporating a freeboard. This provides storage during events greater than 2% annual probability (1 in 50 chance each year).

The River Welland tidal defences provide protection during the 0.5% annual probability (1 in 200 chance each year) tidal event. The River Glen has defences that provide 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 tide levels.

The River Welland tidal defences provide protection during the 0.5% annual probability (1 in 200 chance each year) event inclusive of the effects of climate change. The estimated tide level during this event is +7.13m OD and typical defence levels are more than +7.5m OD. In summary the existing systems and defences are appropriate for the design life of the development (i.e., 100 years).

4.6 Residual Risks

There is a residual risk of flooding to land close to the River Welland should a breach of the tidal defences occur. The South East Lincolnshire SFRA includes maps demonstrating the residual peak depth in 2116. The Residual Peak Depth maps within the SFRA show that when the climate change allowances are applied to the 1% annual probability (1 in 100 chance each year) fluvial event and the 0.5% annual probability (1 in 200 chance each year) tidal event, the site is not at risk.

5.0 FLOOD RISK MITIGATION

5.1 Summary of Risks

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

Due to the standards of the existing defences the site is not at risk of flooding from any Environment Agency system during the 1% annual probability (1 in 100 chance each year) fluvial event or the 0.5% annual probability (1 in 200 chance each year) tidal event. 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 proposed arrangement increases the impermeable area and therefore there will be an increased volume of surface water that has the potential to increase flood risk.

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 floor level of the dwelling is constructed 0.3m above surrounding ground levels. Furthermore, there should be 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 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 occupier of the dwelling should register with the Floodline Direct Warnings Service to receive any future flood warnings.

Should there be a failure of Risegate Eau 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 utilising 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.

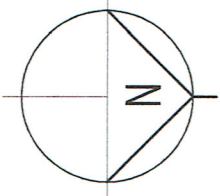
6.0 CONCLUSIONS

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

- The proposed development consists of one two storey residential dwelling on Siltside, Gosberton Risegate.
- The proposed development is in Flood Zone 2. The development is protected by defences during the 1% annual probability (1 in 100 chance each year) fluvial event and 0.5% annual probability (1 in 200 chance each year) tidal event including an allowance for climate change. The site is not at risk during a breach of the tidal defences.
- 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 Welland and Deepings IDB main drains incorporating a significant freeboard. This provides storage during events greater than 2% annual probability (1 in 50 chance each year).
- It is recommended that the floor level is 0.3m above ground level with 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

**SITE LAYOUT AS PROPOSED
(Dwg SCE GR / pl / 01)**



Foul Drainage - Install Package Treatment Unit in accordance with Building Regulation and other Legislation. Discharge of treated water to suitably sized and located proprietary soakaway. (Infiltration Testing to be carried out in accordance with BRE 365)

Surface Water Drainage - Roof water to discharge to suitably sized and located proprietary soakways.

Flood Risk - Finished Floor Level to be placed in accordance with recommendations within the accompanying FRA.

Highways - New vehicular access to be provided in accordance with LCC Highways Specification.

Driveway to incorporate turning area for vehicles to be capable of leaving site in forward gear.

Driveway to be permeable construction with tarmac apron to verge in accordance with LCC Specification.

Boundary fencing as indicated on layout plan.

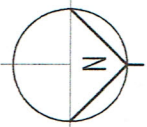
Landscaping - remove overgrown vegetation from site and provide replacement frontage hedge -

(cherry laurel) *Prunus Laurocerasus* 'Rotundifolia'

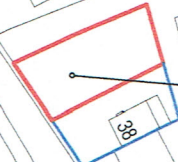
40/60cm bare root / pot grown depending upon planting season @ 4 / 5 per metre run.

Set plants in suitably prepared pits with mulch cover using clean bark chippings (10-60mm)

Tree Planting - Betula Pendula (silver birch) planted to front garden 1.8 - 2.0m planting ht. provide suitable stake and ties.



APPLICATION SITE
(adjacent No.38 Siltside)



SILTSIDE
West View Cottage

44

42

6

7

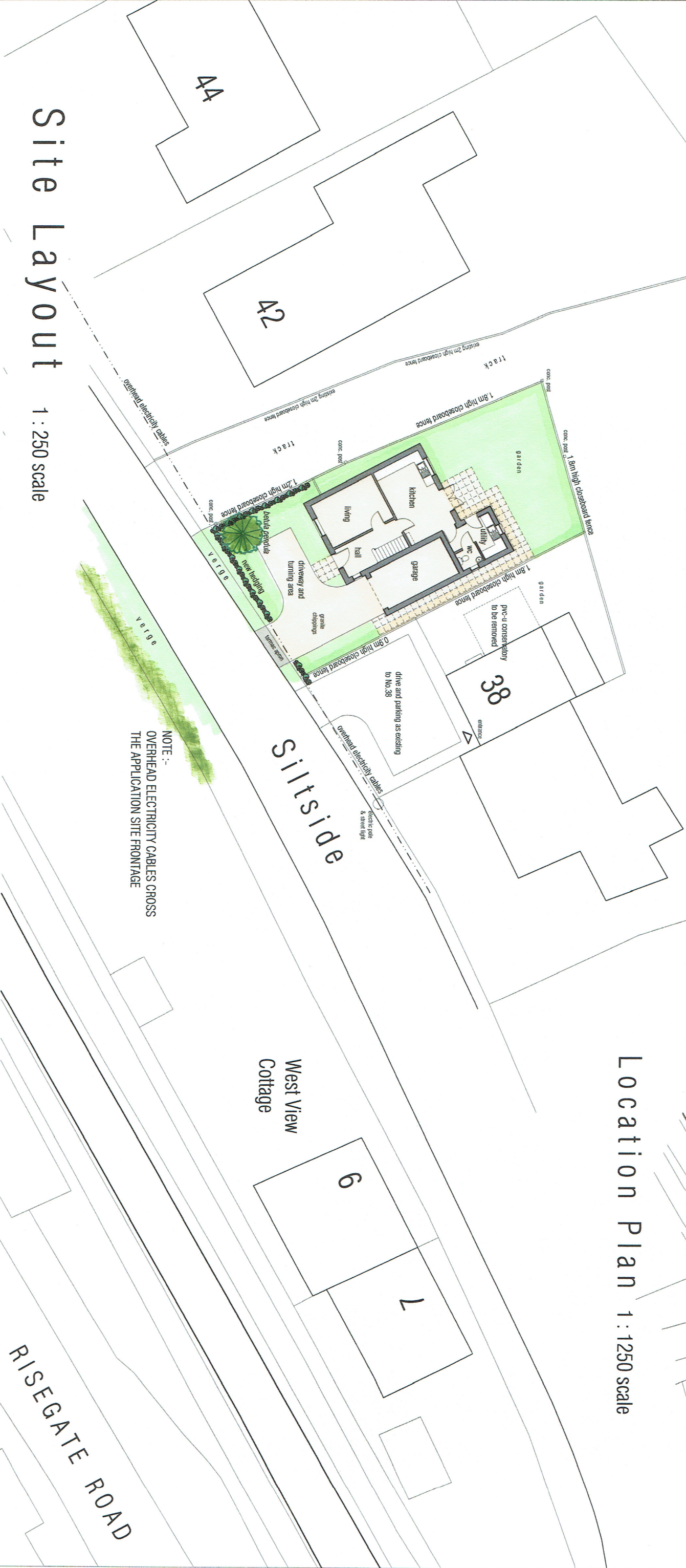
Drummers Bridge

RISEGATE ROAD

Duke of York (PH)

DRAIN

Location Plan 1:1250 scale



Site Layout 1:250 scale

NOTE :-
OVERHEAD ELECTRICITY CABLES CROSS
THE APPLICATION SITE FRONTAGE

mlp

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SH
SCENIC
HOMES

Project
Proposed Detached Dwelling
Adjacent to No. 38 Siltside
Gosberton Risegate Spalding PE11 4ET

Drawing
Site Layout as proposed

date
july 2021

scale(s)
1:1250 & 1:250 @A3

DRG. No. SCE GR / pl / 01