

**FLOOD RISK ASSESSMENT
FOR RESIDENTIAL DEVELOPMENT AT
MAPLE WAY, DONNINGTON**

FINAL REPORT

ECL0659/G R MERCHANT LTD

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ELLINGHAM CONSULTING LTD

Email: tim@ellinghamconsulting.co.uk

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This document has been prepared solely as a Flood Risk Assessment in support of a planning application for a proposed residential development at Maple Way, Donnington. "Ellingham Consulting Ltd" accepts no responsibility or liability whatsoever for any use made of this document other than by the client G R Merchant 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 G R Merchant Ltd in respect of a development that consists of six residential dwellings at Maple Way, Donnington.

A planning application for the proposed development is to be submitted by G R Merchant.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

The site is situated off Maple Way, Donington, Spalding, Lincolnshire, PE11 4XL. The National Grid Reference of the site is 52092/33544.

The location of the site is shown on Figure 1.



Figure 1 – Location Plan (© OpenStreetMap contributors)

2.2 Existing Site

The site is at the eastern end of Maple Way. The site is part of the garden to property on Goxhill Avenue and is laid to lawn. The area of development is 0.38 hectares.

Environment Agency LiDAR data shows that the site is flat with typical ground levels between +3.3m OD and +3.5m OD. The lowest parts of the site are close to the southern and eastern boundaries of the site. Maple Way at the entrance to the site is at a level of +3.5m OD.

The site is in the Black Sluice Internal Drainage Board's (IDB) district. Surface water at the site would naturally drain through soakaway and hence to the IDB drain system. The nearest IDB maintained watercourse 'Branch North to Flinders Park' is approximately 50m east of the site.

The online British Geological Survey maps indicate that the site is likely to be underlain by Oxford Clay Formation - Mudstone. The superficial deposits at the site are Clay and Silt.

2.3 Proposed Development

The proposed development consists of six residential dwellings. The dwellings will be single storey. 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

The site is located within Flood Zone 1, an area with a low probability of flooding, of the Environment Agency Flood Maps for Planning as shown in Figure 2.

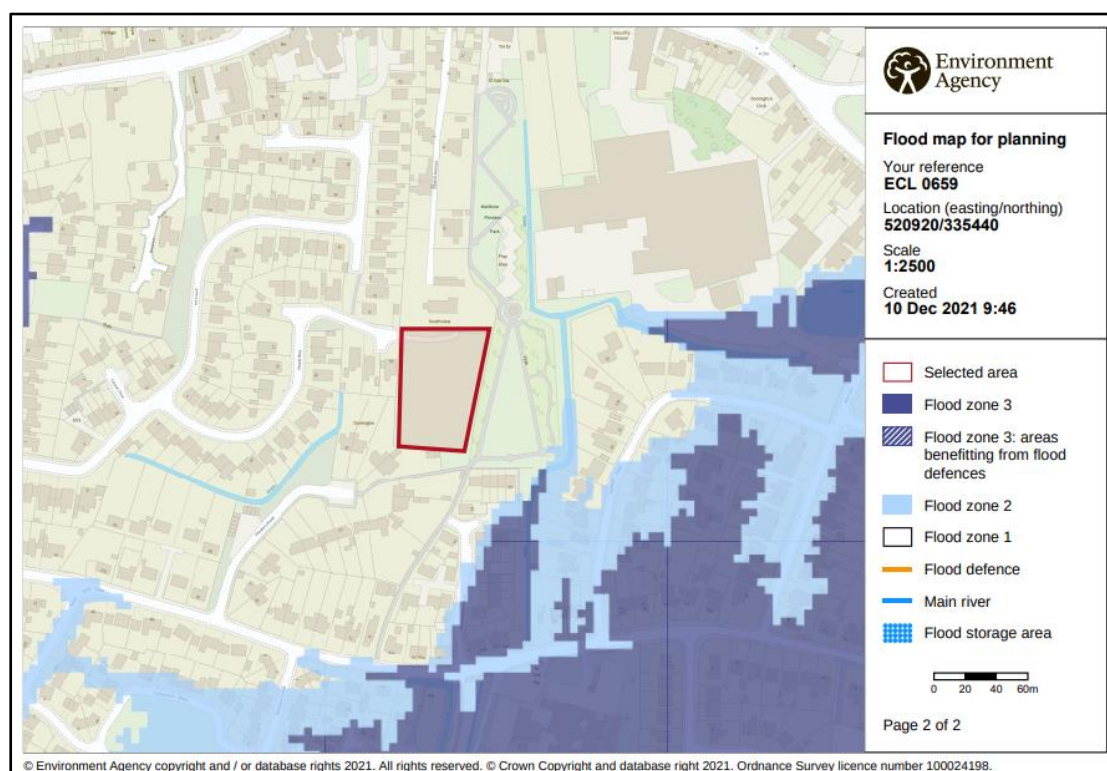


Figure 2 – Environment Agency Flood Map for Planning

The Environment Agency Long Term Flood Risk Maps show that:

- the site has a very low risk of flooding from rivers or the sea (annual probability less than 0.1%);
- part of 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 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 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, taking advice from the Environment Agency as appropriate, to consider the Sequential Test.

The Environment Agency Maps for Planning show that the site is in Flood Zone 1, the area with the lowest risk of flooding. The site is therefore considered to pass the Sequential Test.

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4.0 SITE SPECIFIC FLOOD RISK

4.1 Local Flood Assets

The site is 9.4km north west of the tidal River Welland downstream of Spalding. The nearest main river is the South Forty Foot Drain which is 3.5km west of the site.

The River Welland and South Forty Foot Drain 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 Black Sluice IDB. The nearest IDB watercourse is 50m east of the site. The site and surrounding land drains by gravity through the North Ing Pump Drain to Donington North Ing Pumping Station. The pumping station is operated and maintained by Black Sluice IDB.

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 Board's assets are commensurate with the standard of protection that is sought.

Current maintenance standards of the Black Sluice IDB's and the Environment Agency's defences are generally good.

4.2 Sources of Flooding

The potential sources of flooding identified during this assessment are:

- surface water flooding;
- an event in the local drainage network that exceeds the standard of protection; and
- failure of Donington North Ing Pumping Station.

The probability of flooding from these sources is discussed in Section 4.3.

4.3 Probability of Flooding

The Environment Agency Long Term Flood Risk Maps indicate the probability and depth of surface water flooding. During:

- high risk (annual probability 3.3%) events the site is not at risk of surface water flooding;
- medium risk (annual probability 1%) events the site is not at risk of surface water flooding; and
- low risk (annual probability 0.1%) events part of the site is at risk with depths below 0.3m.

The maps show that the site is not at risk during the present day 1% annual probability (1 in 100 chance each year) event.

The standard of drainage provided by Black Sluice 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 Black Sluice IDB main drains incorporating freeboard. This provides storage during events greater than 2% annual probability (1 in 50 chance each year).

4.4 Historic Flooding

During the preparation of this assessment, no evidence was discovered of the site being flooded.

4.5 Climate Change and Residual Risk

Climate change is likely to impact the site through increased rainfall intensity and duration affecting the local drainage network.

An estimate of the 1% annual probability (1 in 100 chance each year) surface water event with an allowance for climate change can be made from the 0.1% annual probability (1 in 1000 chance each year) event. The extent and depths of flooding during the 0.1% annual probability (1 in 1000 chance each year) event are shown in Figure 3.



Figure 3 – Environment Agency Surface Water Flood Risk Map
– 0.1% Annual Probability

Based upon Figure 3 the maximum depth of surface water flooding that could be anticipated during the 1% annual probability event (1 in 100 chance each year) during the life of the development is below 0.3m.

5.0 FLOOD RISK MITIGATION

5.1 Summary of Risks

During the 1% annual probability (1 in 100 chance each year) surface water event the development is not at risk of flooding. Over time there will be a gradual increase in risk to the site due to climate change. Based upon the Environment Agency Long Term Flood Risk Maps it is estimated that during the 1% annual probability (1 in 100 chance each year) event with climate change areas close to the eastern and southern boundaries of the site are at with depths below 0.3m.

The proposed development increases the impermeable area and therefore there is an increased volume of surface water that has the potential to increase flood risk.

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 dwellings is 0.3m above typical site levels. It is recommended that there is 0.3m of flood resilient construction above finished floor level.

The vulnerability of people at a site at risk of flooding should be lowered where possible. The occupants of the dwelling should be made aware of the risk of flooding. Due to the nature of the flooding, current flood warning systems are unlikely to provide a reliable indication of when the site is at risk.

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 six single storey dwellings at Maple Way, Donnington.
- The proposed development is in Flood Zone 1 as defined in the NPPF. The development is at risk of surface water flooding.
- The site is not at risk of surface water flooding during the 1% annual probability (1 in 100 chance each year) event. During the 1% annual probability (1 in 100 chance each year) event with climate change the maximum flood depth at the site is below 0.3m.
- It is recommended that the finished floor level of the dwellings is 0.3m above typical site levels 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

BLOCK AND LOCATION PLANS (Dwg 3655-20-01D)

