FLOOD RISK ASSESSMENT
FOR RESIDENTIAL DEVELOPMENT AT
QUADRING ROAD, DONINGTON

FINAL REPORT

ECL0676/ARC SURVEY & DESIGN CONSULTANTS

DATE FEBRUARY 2022

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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 Mr A Hubbard in respect of a development that consists of one replacement dwelling at Quadring Road, Donington.

A planning application for the proposed development is to be submitted by ARC Survey and Design Consultants.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

The site is located at 89 Quadring Road, Donington, Spalding, PE11 4SJ. The National Grid Reference of the site is 52177/33504.

The location of the site is shown in Figure 1.

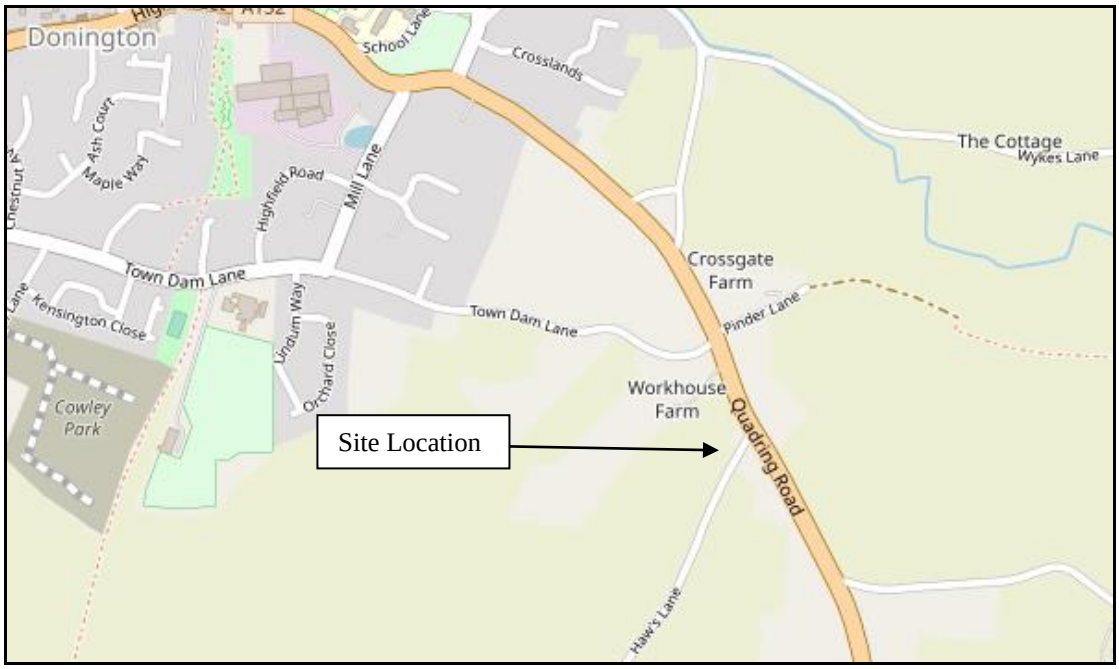


Figure 1 – Location Plan (© OpenStreetMap contributors)

2.2 Existing Site

The site is on the western side of Quadring Road to the north of the junction with Haw's Lane. The site comprises a single storey dwelling and its garden. The site is surrounded by agricultural land. The area of development is approximately 0.07 hectares.

A topographic survey of the site has been undertaken and spot levels are shown in Attachment 1. The site is flat with ground levels typically ranging between +2.8m OD and +3.1m OD. Haw's Lane alongside the site is at a level of +3.2m OD.

The site is in the Black Sluice Internal Drainage Board (IDB) District. Surface water at the site would naturally drain through soakaway to the riparian drainage system and IDB network. There is a riparian drain on the western side of Haw's Lane to the south of the site. This drain discharges to the Queen Dike, an IDB Drain, approximately 500m south 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 consists of one replacement 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

The site is located within Flood Zone 3, an area with a high probability of flooding, of the Environment Agency Flood Maps for Planning as shown in Figure 2.

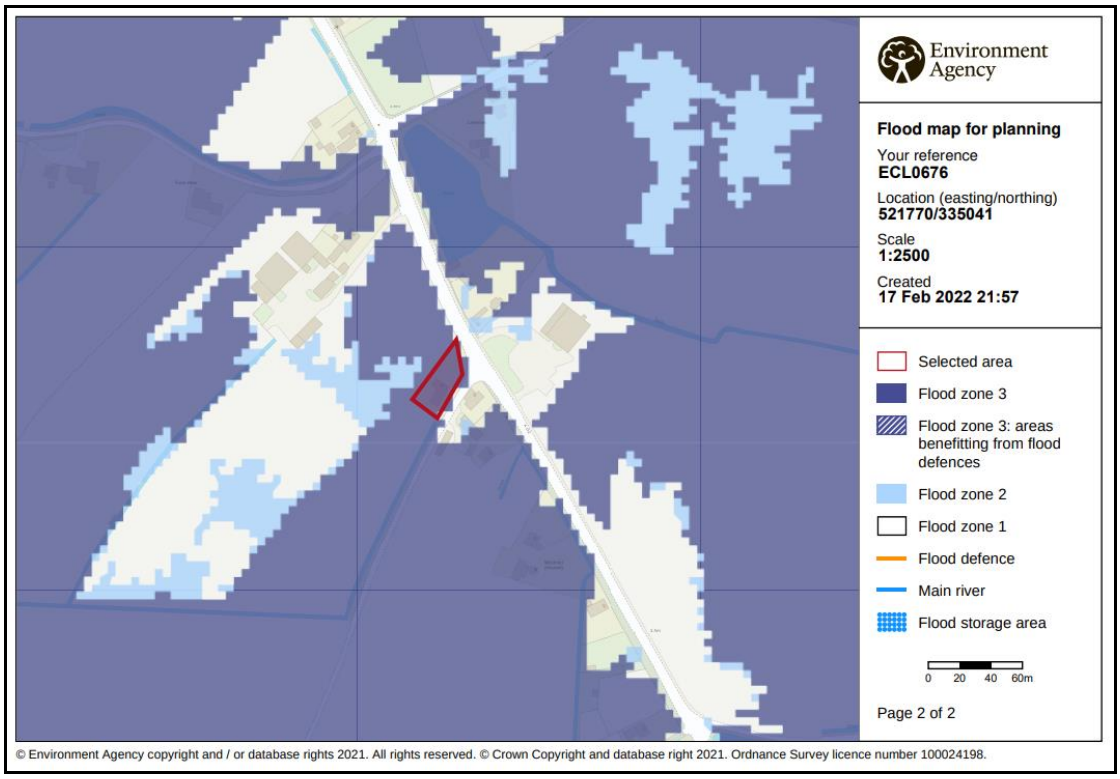


Figure 2 – Environment Agency Flood Map for Planning

The Environment Agency Long Term Flood Risk maps show that:

- the site has a medium risk of flooding (annual probability between 1% and 3.3%);
- 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 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.

The proposed development is a replacement dwelling and therefore it is not necessary to apply the Sequential Test to the development.

The Exception Test requires consideration of the wider sustainability benefits of a development and that the development would be safe and residual risks managed.

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 8.4km north west of the tidal River Welland downstream of Spalding. The nearest main river is the South Forty Foot Drain which is 4.4km 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 site drains to Queens Dike, an IDB watercourse approximately 500m south west of the site. The site and surrounding land drains by gravity 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 Boards 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:

- local blockages to the Black Sluice IDB main drain system;
- an event in the local drainage network greater that exceeds that standard of protection;
- failure of Donington North Ing Pumping Station; 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 Black Sluice IDB drainage system is low due to the maintenance standards achieved and managed by the IDB.

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 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.

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 in excess of +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

The South East Lincolnshire SFRA includes maps demonstrating the impact of climate change in 2116. The Residual Peak Depth maps within the SFRA show that when the climate change allowances are applied to the 1% annual probability fluvial (1 in 100 chance each year) and the 0.5% annual probability tidal (1 in 200 chance each year) 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 Donington North Ing Pumping Station could lead to an increased level of risk at the site.

The site is not at risk from any Environment Agency system during the 1% annual probability (1 in 100 chance each year) fluvial event or a 0.5% annual probability (1 in 200 chance each year) tidal event 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 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

Based upon the information available during the preparation of this flood risk assessment, to mitigate against the remote risk of flooding it is recommended that the floor level of the dwellings is 0.3m above ground levels with 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 occupiers of the dwellings should register with the Floodline Direct Warnings Service to receive any future flood warnings.

Should there be a failure of Donington North Ing 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.

6.0 CONCLUSIONS

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

- The proposed development consists of a 2 storey replacement dwelling at Quadring Road, Donington.

- The proposed development is in Flood Zone 3. 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 Black Sluice 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 to mitigate against the risk of flooding during the lifetime of the development.

- The development passes the Sequential Test and Exception Test and is therefore suitable for the proposed location.

ATTACHMENT 1

EXISTING SITE PLAN

PROPOSED PLANS AND ELEVATIONS
(Dwg 21 039 P101)

68

North

521800.00

335050.00

521725.00

SE5
521801.145
335059.170
5.122

EP

3.505

3.523

3.462

3.476

3.500

3.493

3.503

G1.10
S3.00
H10.00

BB

3.067

2.984

2.868

3.018

3.041

G0.90
S3.00
H8.00

DILAP

2.843

2.970

2.868

3.054

2.915

NAME PLATE

3.384

2.882

STUMP

2.832

2.878

3.360

3.361

3.389

3.395

G0.70
S1.00
H3.00

2.880

IC

2.947

SE3
521789.996
335048.115
3.341

2.879

2.877

2.792

2.901

3.224

3.266

3.301

3.332

G0.70
S1.00
H3.00

VP

G1.00
S1.00
H3.00

2.906

IC
CL 2.921

3.020

POST

2.823

3.051

2.857

2.967

2.823

HAWES LANE

EP

2.929

3.061

GRASS

2.979

GRASS

2.938

3.044

2.998

SAPLINGS

G0.50
S1.00
H2.00

3.044

IC
CL 3.054

3.012

3.132

POST

CONCRETE

3.039

3.167

2.960

STUMP

2.909

3.040

3.215

3.249

WINDOW
H7.113
S6.225

EAVE
7.497

S6.363
H7.247

S4.184
H5.087

RIDGE
9.226

EAVE
7.505

2.988

3.109

3.134

VP

G

3.017

3.108

3.130

3.131

F/R
5.754

DP
F/R
6.082

2.978

FENCE

3.040

3.103

3.041

3.094

3.019

3.069

3.079

3.090

3.066

DP

DP

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3.125

EAVE
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3.013

3.095

3.187

3.239

GOAL SHED

3.099

3.128

3.041

3.114

3.048

3.034

3.050

3.044

3.072

3.090

SLABS

3.119

3.103

3.133

DP

D.P.C
3.361

3.137

3.130

3.022

2.931

GRASS

RIDGE
8.849

2.914

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3.115

2.905

2.955

2.931

3.115

3.134

3.141

3.106

3.075

2.923

3.131

3.214

3.259

WINDOW
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H8.040

EAVE
7.917

RIDGE
9.393

EAVE
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2.917

2.907

GRAVEL

POST

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3.000

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3.115

EAVE
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DP

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3.063

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3.131

3.145

2.969

SLABS

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3.082

CONCRETE

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UNDEFINED

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3.071

BLOCK PAVED

3.133

3.142

3.237

3.259

2.874

FENCE

3.027

EDGE OF CULTIVATION

3.212

3.200

EDGE OF CULTIVATION

3.332

3.159

TB

PIPE 225Ø
1.854

1.885

RS

TB

3.169

3.101

3.204

3.255

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4.661

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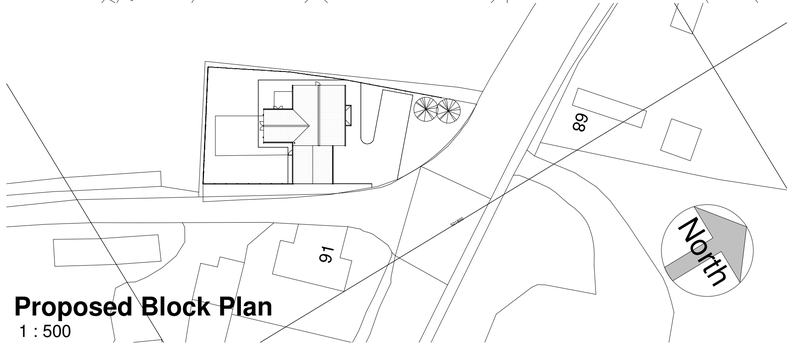
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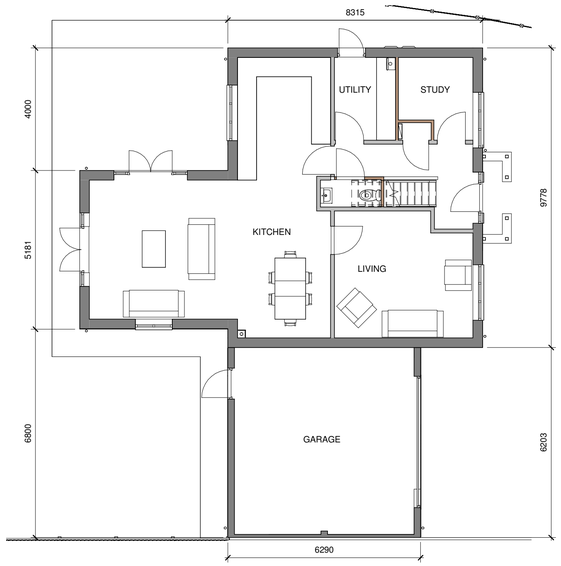
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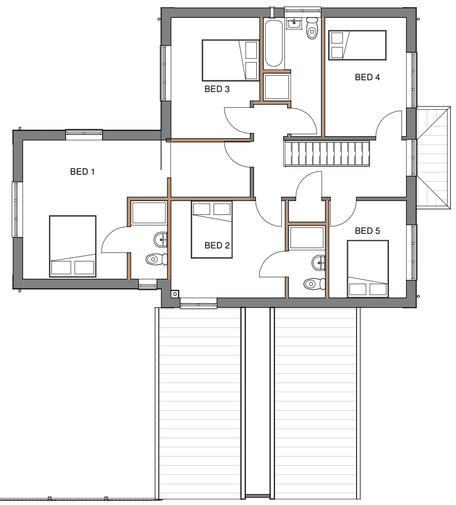
Proposed Site Plan
1 : 200



Proposed Block Plan
1 : 500



3 Proposed Ground Floor
1 : 100



4 Proposed First Floor
1 : 100



5 NE Proposed
1 : 100



6 NW Proposed
1 : 100

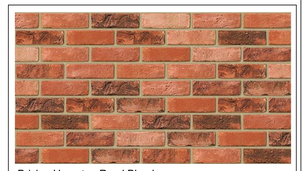


7 SE Proposed
1 : 100

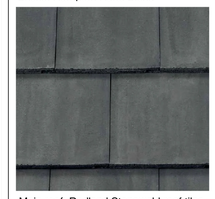


8 SW Proposed
1 : 100

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10 Thurlaston Close,
Peterborough, PE3 6LD
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e: arcpb.co.uk



Bricks: Hampton Rural Blend



Main roof: Redland Stonewold roof tiles



Porch roof: Redland Slate grey plain tile
Windows: Cream uPVC
Front door: Composite dark grey RAL 7016
Garage door: Steel dark grey RAL 7016
RW Goods: Black half round gutter on brackets (no fascia) Circular black uPVC downpipes
Cills: Composite stone

No.	Description	Date

89 Quadring Road,
Donington

Replacement dwelling

Proposed plans and elevations

Project number	21 039
Date	17.02.22
Drawn by	RG
Paper size	A1
	P101
Scale	As indicated

1 to 200 (0 2 4 6 8 10)
1 to 500 (0 5 10 15 20 25)
1 to 1250 (0 10 20 30 40 50 60)

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