FLOOD RISK ASSESSMENT FOR PROPOSED RESIDENTIAL DEVELOPMENT OFF STOCKWELL GATE, WHAPLODE, SPALDING, LINCS.

FINAL REPORT

GEOFF BEEL CONSULTANCY

OCTOBER 2016

GCB/MERCHANT

CONTENTS

1.0 INTRODUCTION

1.1 An outline planning application is to be submitted by G R Merchant Ltd on behalf of D & R Property Services Ltd for proposed residential development off Stockwell Gate, Whaplode, Spalding, Lincs.

1.2 A Flood Risk Assessment is required to accompany the planning application and meet the requirements and general principles contained in the Planning Practice Guidance to the National Planning Policy Framework (NPPF) and for approval by the Environment Agency.

The site, as situated, is located within Flood Zone 3 of the Environment Agency's Flood Zone Maps. The latest Agency Flood Maps have been created as a tool to raise awareness of flood risk with the public and our partner organisations, such as Local Authorities, Emergency Services and Drainage Authorities. The Maps do not take into account any flood defences.

The site is also shown just in Flood Zone 3 of the South Holland District Council's Strategic Flood Risk Assessment Residual Depths Map.

The site is also located in the South Holland IDB drainage district.

1.3 Geoff Beel Consultancy was appointed on 18th October 2016 to undertake a Flood Risk Assessment.

2.0 LOCATION

2.1 The development site is located at land off Stockwell Gate, Whaplode. The National Grid Reference of the central point of the development is TF 33352523.

2.2 The position and extent of the site is shown on Fig 1 – Location & Site Layout Plans at the end of the document.

2.3 The site, located within the South Holland Internal Drainage Board district is shown within Flood Zone 3 as detailed on the Environment Agency Flood Zone Map but just in Flood Zone 3 of the Council's Strategic Flood Risk Assessment Residual Depths Map.

3.0 THE SITE AND SEQUENTIAL TEST

3.1 The site is currently agricultural land.

3.2 The area of development is approximately 0.28 hectare.

3.3 The proposed site layout consists the construction of four two-storey dwellings with garages. Existing land levels are generally at 3.00m aOD.

3.4 The Sequential Test and Exception Test will require to be applied by the Local Planning Authority but the development may be permitted as the site is protected against both the 1 in 200 year return period tidal event and the 1 in 100 year return period fluvial event.

The Sequential Test is met as whils: the site is located just in Flood Zone 1 of the Councils' SFRA Residual Depths Map, the risk of flooding is only as a result of a breach to the River Welland tidal defences which have a design life against the 1 in 1000 year flood event.

4.0 EXISTING FLOOD ALLEVIATION MEASURES

4.1 The site is within a defended floodplain, as defined in Appendix 1 of the Environment Agency's 'Policy for the Protection of Floodplains' and is considered to be passive until such time as a flood greater than that for which the defences were designed occurs. The likelihood of flooding due to overtopping or failure of a flood defence embankment is considered to be small.

The development site within the South Holland Internal Drainage Board is protected by the River Welland tidal defences between Spalding and Fosdyke Bridge with embankment levels of a minimum of 7.00m aOD.

4.2 The site and the surrounding land drains by gravity to the nearby Whaplode River main drain immediately west of the site and in a northerly direction to the Holbeach River Outfall Sluice and hence to the tidal River Welland.

4.3 The existing standard of drainage for the South Holland Internal Drainage Board is 1 in 50 years return period, compatible with the Department of the Environment, Food and Rural Affairs target level of service for rural drainage and flood defence works. Freeboard of 900mm is provided to the lowest land levels.

4.4 Current maintenance standards within the South Holland Internal Drainage Board and of the Environment Agency defences are generally very good.

During the operation and maintenance of its pumping stations, associated structures and channel systems, particularly those that could affect property, the Board 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. However, bank slips, blocked culverts etc may occur from time to time and these matters are usually dealt with promptly.

5.0 POTENTIAL SOURCES OF FLOODING

5.1 Five potential sources of flooding have been identified as a result of this assessment:

a) local blockages to soakaways
b) local blockages to IDB main drain system.
c) storm return period of 1 in 50 years being exceeded
d) failure of the Holbeach River Outfall Sluice
e) overtopping and breaching of defences of the tidal River Welland

5.2 The probability of flooding from source a) is low due to the maintenance standards by the future owner and the design requirements of BRE36.

The probability of flooding from b) is also low due to the South Holland IDB main drain design standard incorporating a minimum 900mm freeboard to the lowest land level which provides adequate storage in events greater than 1 in 50 years.

Previous historic rainfall events of 1968 and 1978, estimated to be greater than 1 in 100 year events, caused no flooding to any residential properties at the time and the Boards policy is to provide a standard of drainage which satisfies NPPF requirements of a 1 in 100 year return period for fluvial protection inclusive of the effects of climate change and developments to the arterial system enables a flexible approach to be adopted and meet the criteria for "sustainable urban drainage".

5.3 Failure of the Holbeach River Outfall Sluice may occur due to long term mechanical breakdown or power supply being disrupted. However, in these circumstances, if 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 utilising temporary pumping equipment. The probability of such an occurrence is also considered to be low.

5.4 The flood embankments to the tidal River Welland provide a 1 in 200 year return period level of protection.

The 1 in 200 year River Welland tidal event at Fosdyke Bridge in 2069 is estimated to be 6.41m aOD as against existing embankment levels of a minimum of 7.00m aOD.

There is a low risk during such an event for wave and wind action to cause overtopping and/or breaching of the first line defences parallel with the River Welland. However, the site is located 6.25kms from the River Welland defences and any overtopping/breaching would be minimal.

The development site has existing land levels generally at 3.00m aOD which are compatible with surrounding land levels between the site and the river defences.

5.5 The South Holland Strategic SFRA Residual Depth map shows the site could be affected by floodwaters between 0.00 – 0.50m as a result of a breach to the River Welland tidal defences. Similarly, the Environment Agency Tidal Hazard Mapping shows the site as affected by between 0.00-0.25m depth of water as a result of a breach.

It is necessary to mitigate against this remote risk of flooding and finished floor levels have been raised 500mm above Stockwell Gate carriageway level with 300mm of flood resilient construction above finished floor level.

5.6 Surface water drainage from the development site will be to soakaways to BRE365 design requirements and Building Regulations approval.

6.0 EXTENT OF KNOWN FLOODING

6.1 During the preparation of this assessment, no evidence was discovered of the site being flooded or of any adjoining properties.

7.0 PROBABILITIES AND TRENDS OF FLOODING

7.1 The probability of this development flooding from localised drainage systems is very low.

7.2 The probability of the site flooding with water from any South Holland IDB main drain is less than 1% because of the standards of the existing flood defence systems, storage within existing drainage channels and the location of the site.

7.3 The probability of the site flooding with tidal waters from any main river system is less than 1% because of the standards of the existing flood defences and the location of the site.

7.4 If under very extreme events, levels of floodwater from the South Holland IDB main drains or arterial systems rose to such an extent that the site was affected, the situation would not be sudden. It is very probable that sufficient time would be available to take precautionary actions to limit the extent and potential impact of flooding.

7.5 The water levels in the drainage channels will tend to rise as a result of the impacts of climate change. However the existing systems and defences together with the proposed floor levels 500mm above Stockwell Gate carriageway level with 300mm of flood resilient construction above finished floor level will be appropriate for the design life of the development (i.e. 100 years).

7.6 Safe access and egress is readily available onto Stockwell Gate and hence in a generally southerly direction to Whaplode located in Flood Zone 1.

8.0 IMPACTS OF FLOODING

8.1 No significant impacts of flooding are anticipated.

8.2 Floor levels of the development will be 500mm above Stockwell Gate carriageway level with 300mm of flood resilient construction above finished floor level which together with the proposed sustainable drainage system will offer additional protection against impacts arising from any extreme short duration, localised events.

8.3 The general location of the site within the catchment is such that if flooding occurred from any of the South Holland IDB main drain systems, then probably 2 to 3 days warning time would be available.

8.4 No displacement of water from the site will affect any adjoining properties as a soakaway drainage system will be utilised.

9.0 RESIDUAL RISK – EXTREME EVENTS

9.1 The residual risk from extreme events is very low on this site, because of its location, within the South Holland IDB area and its location 5.00kms from the River Welland tidal defences.

9.2 The site is just within Flood Zone 3 according to NPPF classification and actually has a very low risk of flooding due to the current standards of drainage and flood defence and land levels. The site is not located within a Functional Flood Plain of any 'main river' or 'main drain'. The Environment Agency Flood Zone Maps have been produced irrespective of existing flood defences and standards of protection.

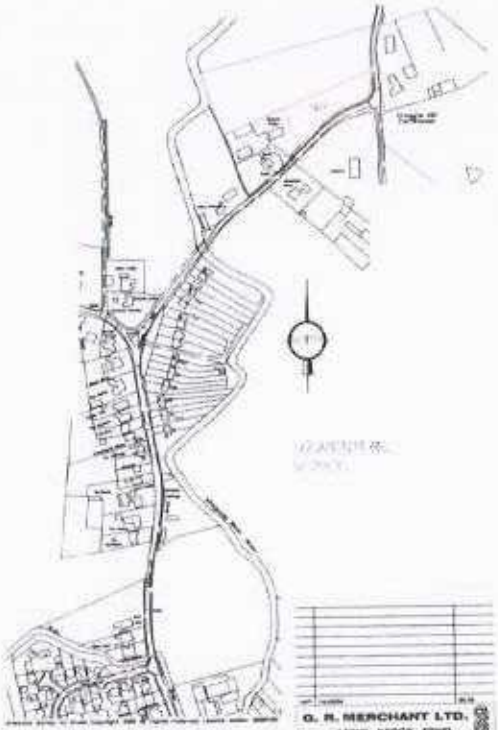
9.3 South Holland District Council in conjunction with the Environment Agency and the local IDB's within the Council area have carried out a Strategic Flood Risk Assessment of the whole District by appointed Consulting Engineers.

The Strategic Flood Risk Assessment has produced more definitive Flood Risk Maps than those published by the Environment Agency and at the same time has analysed flood return periods of all tidal and fluvial defences to account for the effects of climate change. Breach scenarios of embankments failing and/or being overtopped have also been carried out to establish Flood Risk Zones. As a result of the Strategic Flood Risk Assessment for the site is outside any Rapid Inundation Zone and defended by tidal defences and tidal doors.

10.0 CONCLUSIONS AND RECOMMENDATIONS

10.1 As a result of the assessment, the following conclusions have been reached:-

- The proposed development is located in the Passive Floodplain protected by River Welland tidal defences to a 1 in 200 year return period, (1.0%)
- The site is just in Flood Zone 3 with the actual risk of flooding from any Environment Agency river system being very low (less than 0.5%).
- Although the site is located within an Internal Drainage District with a minimum standard of drainage of 1 in 50 years, this accords with Defra guidelines for rural development. Freeboard to design water level of 900mm to lowest land level is available for events greater than 1 in 50 years providing further storage within the drainage channels.
- Finished floor levels of the dwellings will be raised 500mm above Stockwell Gate carriageway level with 300mm of flood resilient construction above FFL.
- On site rainwater from the development will be discharged to proposed soakaway drainage to BRE365 design requirements and Building Regulations approval.



G. R. MERCHANT LTD.

ARCHITECTURAL, STRUCTURAL AND LAND DRAINAGE CONSULTANTS

Enter a postcode or place name:

Whaplode, Lincolnshire

Go

Other topics for this area...

Flood Map for Planning (Rivers and Sea)

Flood Map for Planning (Rivers and Sea)

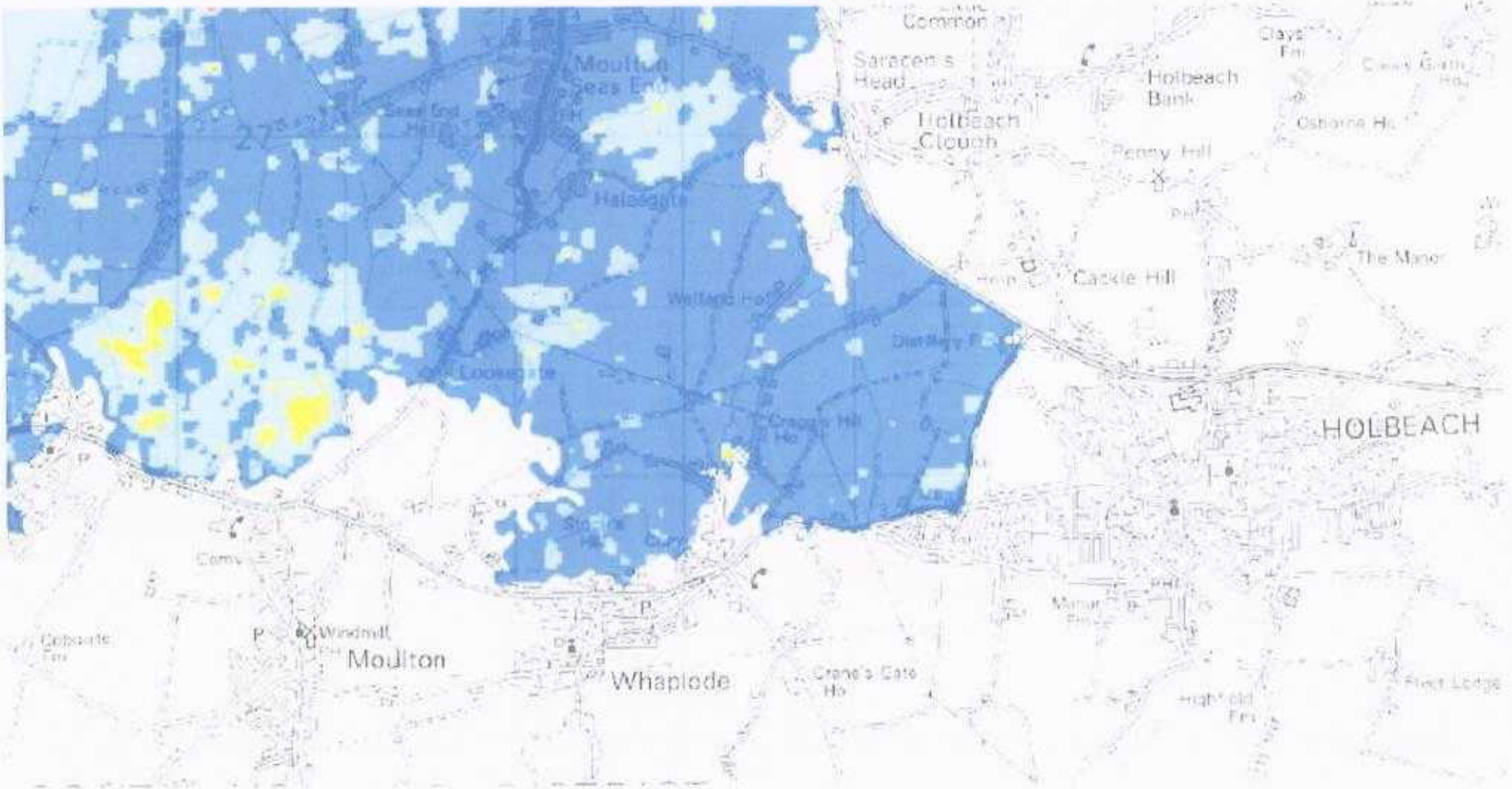
X: 533,294;Y: 325,161 at scale 1:10,000

Other maps | Data search | Text only version

Map legend

Click on the map to see what Flood Zone (National Planning Policy Guidance definition) the proposed development is in

- Flood Map for Planning (Rivers and Sea)
- Main River Line
- Other national environmental organisations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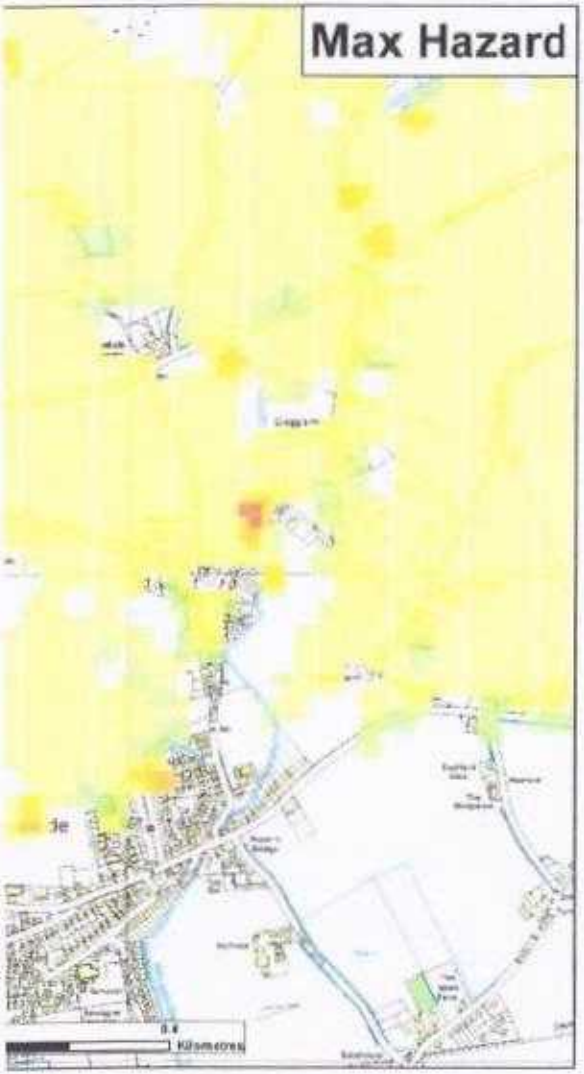
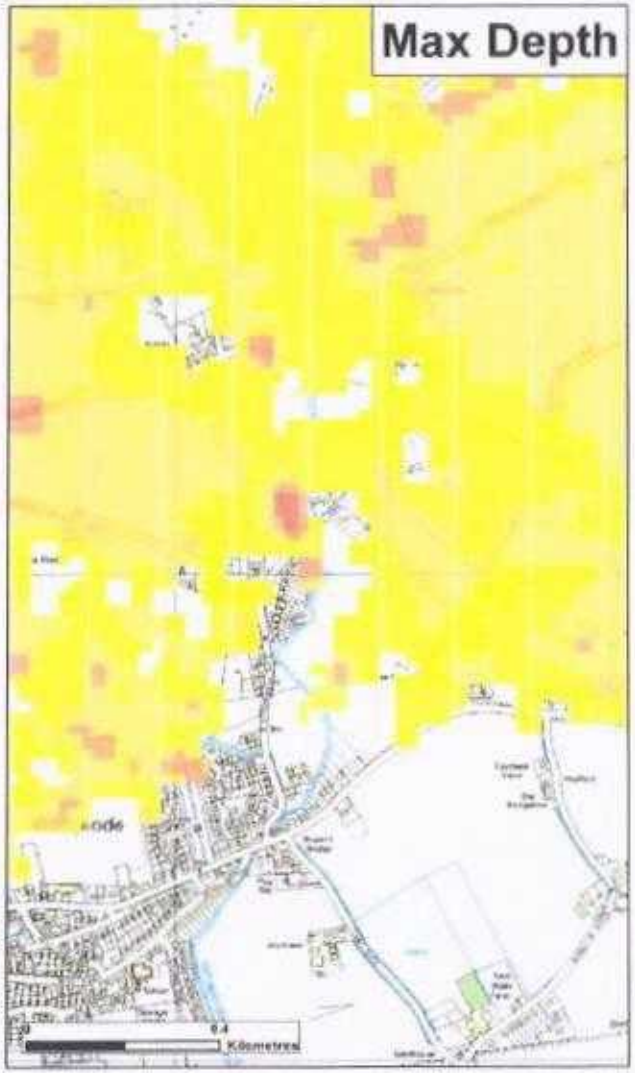
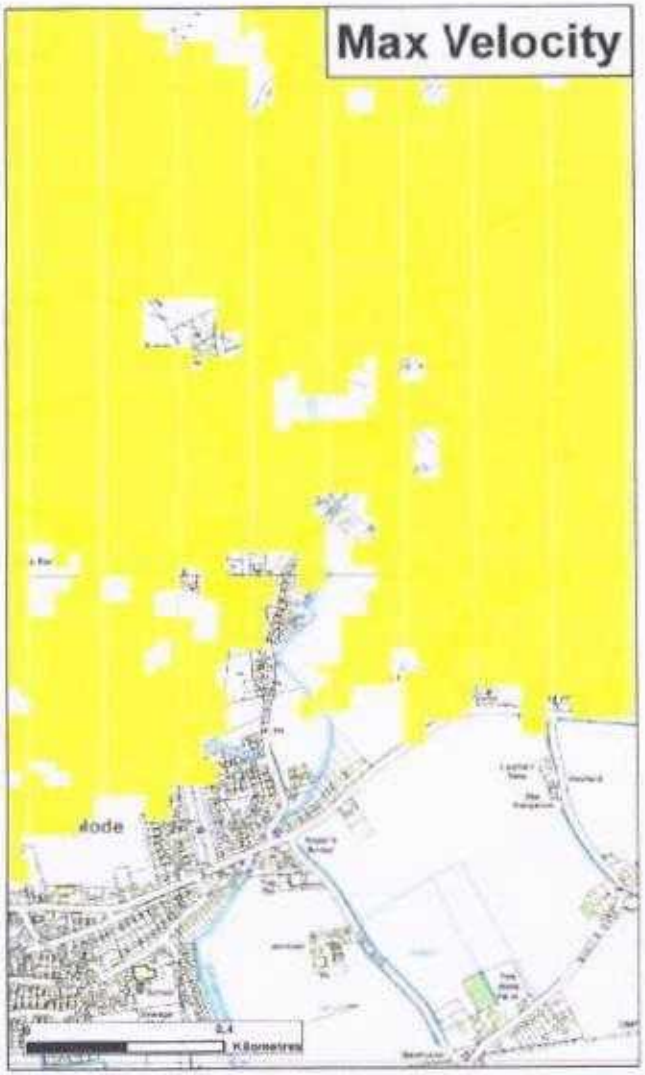
Saracen's Head
Holbeach Clough
Holbeach Bank
Penny Hill
Halesgate
Cackle Hill
The Manor
HOLBEACH
Moulton
Whaplode
Crane's Gate Ho
Westmill







★ Modelled Breach Locations

Max Hazard

- Less than 0.75 (Low Hazard)
- Between 0.75 and 1.25 (Danger for Some)
- Between 1.25 and 2.0 (Danger for Most)
- Greater than 2.0 (Danger for All)

Max Depth (m)

- 0 - 0.25
- 0.25 - 0.50
- 0.50 - 1.0
- 1.0 - 1.5
- 1.5 +

Max Velocity (m/s)

- 0 - 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- 1.5 - 2.5
- 2.5 +

ed	October 2016	Scenario year	2115	Scenario Annual Chance	0.5% (1 in 200)	CCN Number	CCN-2016-22462

This map shows the level of flood hazard to people (called a hazard rating) if our flood defences are breached at certain locations, for a range of scenarios. The hazard rating depends on the depth and velocity of floodwater, and maximum values of these are also mapped.

The map is based on computer modelling of simulated breaches at specific locations. Each breach has been modelled individually and the results combined to create this map. Multiple breaches, other combinations of breaches, different sized tidal surges or flood flows may all give different results.

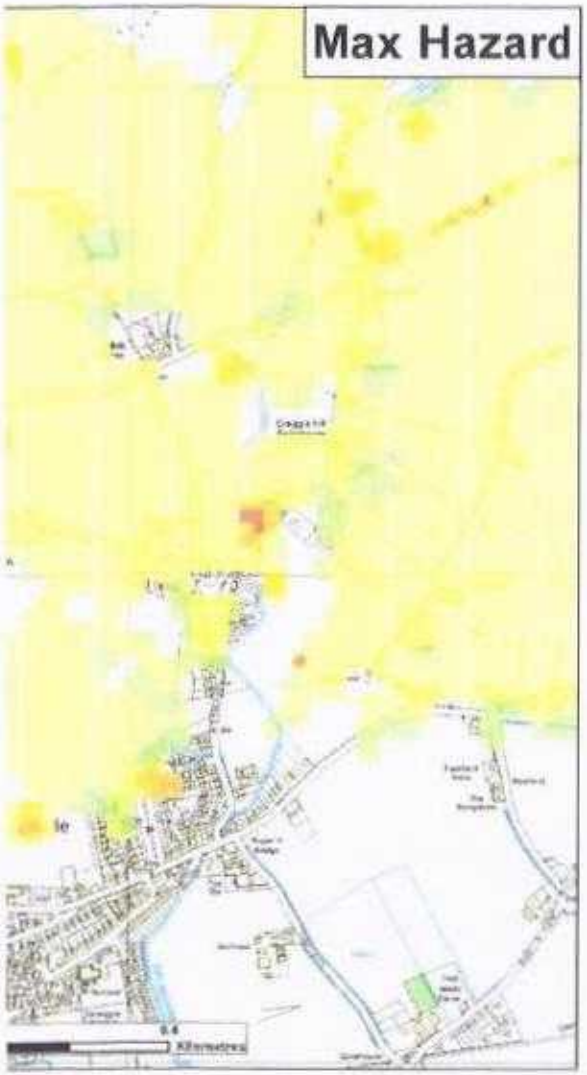
The map only considers the consequences of a breach; it does not make any assumption about the likelihood of a breach occurring. The likelihood of a breach occurring will depend on a number of different factors, including the construction and condition of the defences in the area. A breach is less likely where defences are of a good standard, but a risk of breaching remains.

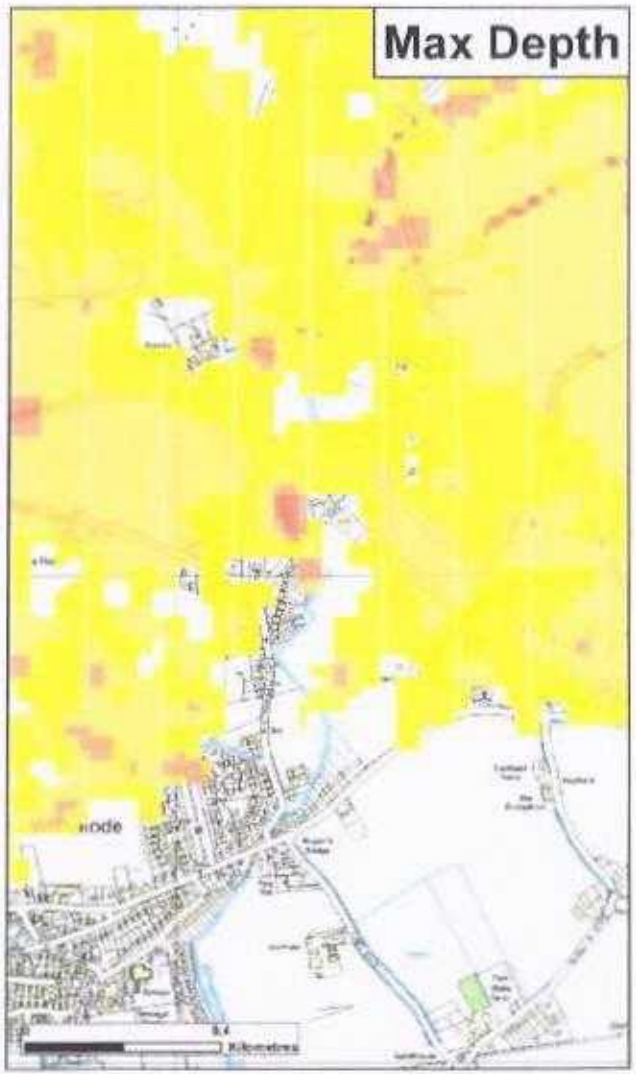
General Enquiries No. 03708 506 506 Weekday Daytime calls cost 5p plus up to 6p per minute from BT Weekend Unlimited, Mobile and other providers' charges may vary.

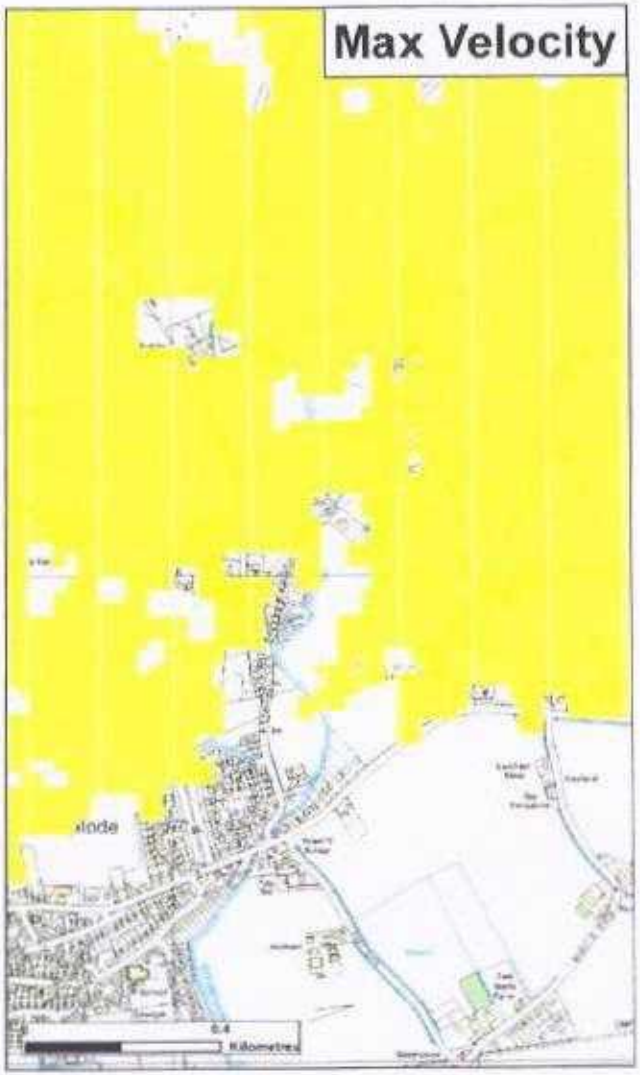
Environment Agency

Lincolnshire and Northamptonshire Tidal Breaching Hazard Mapping

Map Centre(or TF 33291 25074







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- 1.0 - 1.5
- 1.5 +

Max Velocity (m/s)

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- 1.0 - 1.5
- 1.5 - 2.5
- 2.5 +

ed	October 2016	Scenario year	2115	Scenario Annual Chance	0.1% (1 in 1000)	CCN Number	CCN-2016-22462

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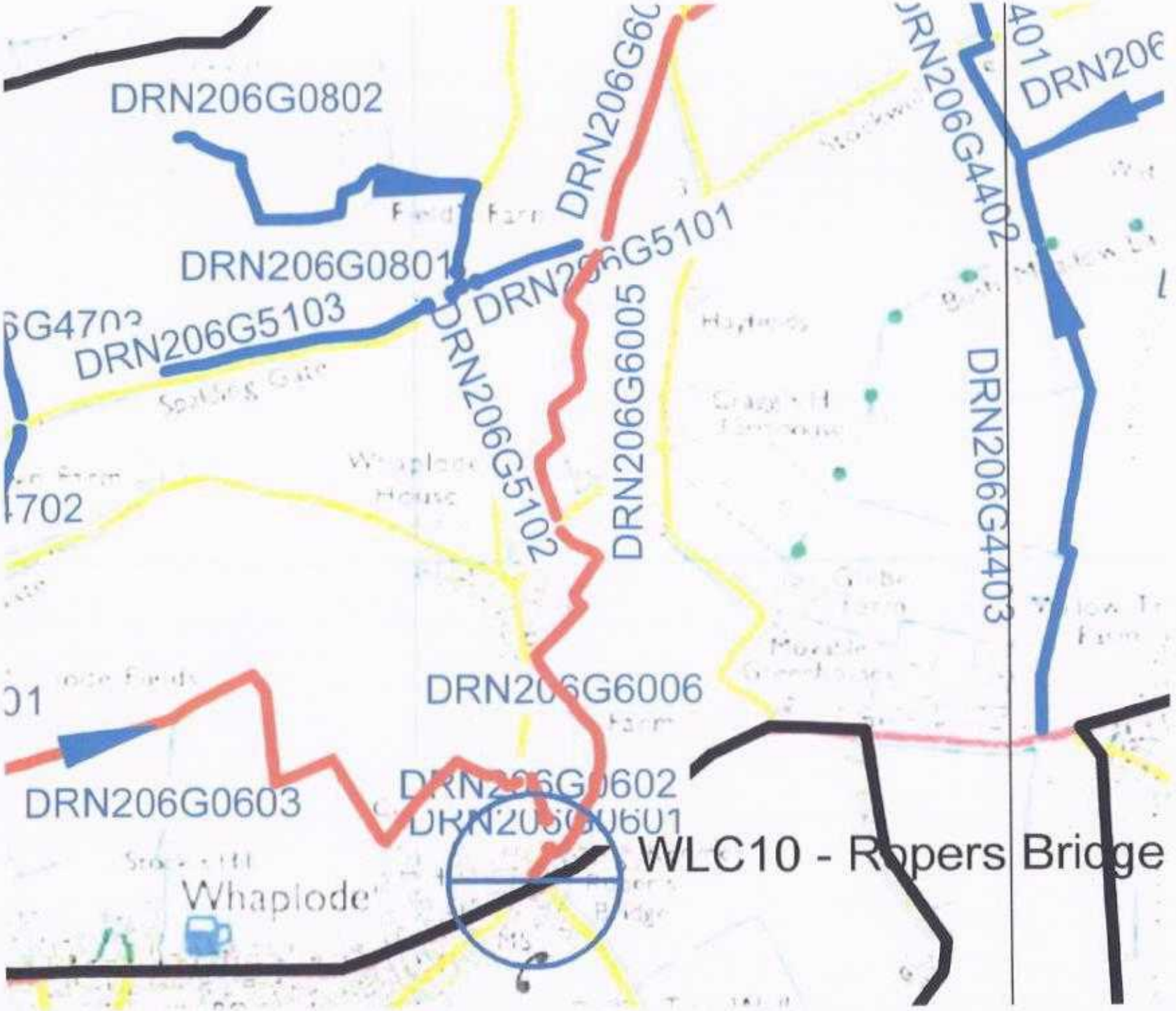
Environment Agency

Lincolnshire and Northamptonshire Tidal Breaching Hazard Mapping

Map Centred on TF 33291 20974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DRN206G6006
DRN206G0603
Whaplode
WLC10 - Ropers Bridge

Porter, Karen

From: grmerchant.arch.cons@gmail.com on behalf of G R MERCHANT <gr.merchant@btconnect.com>
Sent: 26 October 2016 09:12
To: _planningadvice
Subject: H23-1064-16
Attachments: Flood Risk Assessment.pdf

Dear Planning

RESIDENTIAL DEVELOPMENT
OFF STOCKWELL GATE, WHAPLODE
D & R PROPERTY SERVICES LTD

With reference to the above and your invalid letter dated 25th October please find attached Flood Risk Assessment as requested.

Regards
Hannah

G R Merchant Ltd
01406 490800

FILE COPY

G R Merchant Ltd
Unit 4 Wrights Mews
12a Park Road
Holbeach
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PE12 7EE

SOUTH HOLLAND DISTRICT COUNCIL

Council Offices
Priory Road
Spalding
Lincolnshire
PE11 2XE

Admin 01775 764723
DC Officers 01775 764703
facsimile 01775 762937

planningadvice@sholland.gov.uk
www.sholland.gov.uk

25th October 2016

Dear Sirs

TOWN AND COUNTRY PLANNING ACT 1990
OUTLINE PERMISSION

Reference: H23-1064-16
Proposal: Residential development
Location: Off Stockwell Gate Whaplode Spalding
Applicant: D & R Property Services Ltd

APPLICATION INVALID UNDER REGULATION 4

I am writing with reference to your recently submitted application and advise you that the application cannot be registered because it is currently considered to be invalid.

We will require the following before the application can be progressed:

As the site is in Flood Zone 3 a site specific Flood Risk Assessment is required.

Please return a copy of this letter with your reply to enable us to deal with the application without further delay. The application will remain on hold until we are in receipt of the above information. If returning information by email, please email planningadvice@sholland.gov.uk and include a copy of this invalidation letter in your response.

If you have any queries regarding the contents of this correspondence please contact our administration team on 01775 764723 quoting the above reference number.

Yours faithfully

South Holland District Council
Planning Department