FLOOD RISK ASSESSMENT FOR PROPOSED AGRICULTURAL DEVELOPMENT AT BANK HOUSE, DEAR LOVE GATE, LUTTON, SPALDING, LINCS.

FINAL REPORT

GEOFF BEEL CONSULTANCY

SEPTEMBER 2015

GCB/WARWICK

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CONTENTS

1.0 INTRODUCTION

2.0 LOCATION

3.0 THE SITE AND SEQUENTIAL TEST

4.0 EXISTING FLOOD ALLEVIATION MEASURES

5.0 POTENTIAL SOURCE OF FLOODING

6.0 EXTENT OF KNOWN FLOODING

7.0 PROBABILITIES AND TRENDS OF FLOODING

8.0 IMPACTS OF FLOODING

9.0 RESIDUAL RISKS – EXTREME EVENTS

10.0 CONCLUSIONS AND RECOMMENDATIONS

Fig 1 - Location Plan & Photos –
Julian Warwick drg. no. J013-PL 01A

Fig 2 - Environment Agency Flood Zone Map

Fig 3 - South Holland District Council Strategic Flood Risk Assessment Flood Zone Map – Residual Depth (2115)

Fig 4 - Environment Agency Tidal Hazard Mapping –
Depth, Hazard & Velocity for 1 in 200 year event (2115) –
CCN/2013/35491

Fig 5 - South Holland Internal Drainage Board District Plan

1.0 INTRODUCTION

1.1 A full planning application is to be made by Julian Warwick Architectural Design Consultant for proposed agricultural development on behalf of R G Barwell & Sons Ltd at Bank House, Dear Love Gate, Lutton, Spalding, Lincs.

1.2 A Flood Risk Assessment is required before the permitted development may commence and meet the requirements and general conditions contained in Paragraph 9 of the Technical Guide to the National Planning Policy Framework (NPPF) for approval by the Environment Agency.

The site, as situated, is located within a defended 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 in Flood Zone 1 of the South Holland District Council's Strategic Flood Risk Assessment Maps (2115).

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

1.3 Geoff Beel Consultancy was appointed on 17th September 2015 to undertake a Flood Risk Assessment.

2.0 LOCATION

2.1 The development site is located west of Lutton Bank at Bank House, Dear Love Gate, Lutton. The National Grid Reference of the central point of the development is TF 43552650.

2.2 The position and extent of the site is shown on Fig 1 – Location Plan & Photos 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 Maps and in Flood Zone 1 of the Council's Strategic Flood Risk Assessment Map (2115) as defended by the Internal Drainage Board system and the Lutton Bank secondary defence with a crest level of 5.7m aOD.

3.0 THE SITE AND SEQUENTIAL TEST

3.1 The site is part of an agricultural holding.

3.2 The area of development is approximately 100 sq. metres.

3.3 The proposed site layout consists the positioning of two caravans for seasonal agricultural workers in support of existing horticultural business.

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 and located in Flood Zone 1 of the Council's Strategic Flood Risk Assessment Map (2115).

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 South Holland Internal Drainage Board is protected by a combination of the River Welland tidal defences downstream of Spalding, the River Welland fluvial embankments as well as the River Nene tidal defences downstream of Foul Anchor.

4.2 The site and the surrounding land drains by gravity to a Board drain the Gedney Roman Bank Drain west of the site to the Lutton Leam and Lutton Leam Outfall to the tidal River Nene downstream of the West Lighthouse.

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

a) local blockages to IDB main drain system.
b) storm return period of 1 in 50 years being exceeded
c) overtopping and breaching of defences of the tidal River Nene

5.2 The probability of flooding from source a) is low due to the maintenance standards already achieved and managed by the IDB.

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 The flood embankments to the fluvial River Welland provide a 1 in 100 year return period level of protection in combination with the Crowland and Cowbit Washes. The flood embankments to the tidal River Welland and tidal River Nene provide a 1 in 200 year return period level of protection.

5.4 Soakaway drainage to BRE365 design requirements and Building Regulation approval will be installed.

5.5 More recent Tidal Hazard Mapping produced by the Environment Agency is shown in Fig 4 of this assessment.

The site is shown to be flooded to a depth of between 0.5 – 1.0m if a breach occurred to the River Nene tidal defences and the Lutton Bank also breached and it is necessary to mitigate against this remote risk.

Finished floor level has been raised 500mm above existing ground floor level and the development is only intended for seasonal occupation i.e. low risk period for flooding to occur.

5.6 The developer should ensure that the eventual occupiers of the farm holding are sufficiently aware of the risk of flooding and the standard of the existing defences. The Environment Agency provides a Flood Warnings Service which includes Flood Warning Codes and uses direct warning methods where the risks and impacts of flooding are high. Indirect warnings are provided to all flood risk areas, even those a low risk of flooding. The main method is media broadcasts via local radio and also by television.

In addition to direct ad indirect food warnings, the Environment Agency operates a 24 hour a day Floodline Service providing advice and information on flooding by contacting 0845 988 1188 and the occupiers of the farm holding should register with the Floodline Direct Warnings Service to receive any future flood warnings.

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 fluvial 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 above existing ground level will be appropriate for the design life of the development (i.e. 60 years).

8.0 IMPACTS OF FLOODING

8.1 No significant impacts of flooding are anticipated.

8.2 Floor levels of the development will be at 500mm above existing ground level which together with the seasonal accommodation will offer 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. It is intended to provide soakaway drainage to BRE365 design requirement and building Regulations approval.

8.5 Safe and dry access/egress is available to the site from Lutton Bank with carriageway level at 5.70m aOD in a southerly direction to Long Sutton.

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 Wash and River Nene tidal defences.

9.2 The site is within Flood Zone 1 according to NPPF classification with 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 for years 2002 and 2115 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.

9.4 As a result of the Strategic Flood Risk Assessment; the South Holland Main Drain and associated IDB main drains have been determined as providing protection against a 1 in 100 year return period event both in years 2002 and 2115.

9.5 The development site has been identified outside of any Flood Risk Zone from the South Holland Main Drain and associated IDB main drain or the River Nene.

10.0 CONCLUSIONS AND RECOMMENDATIONS

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

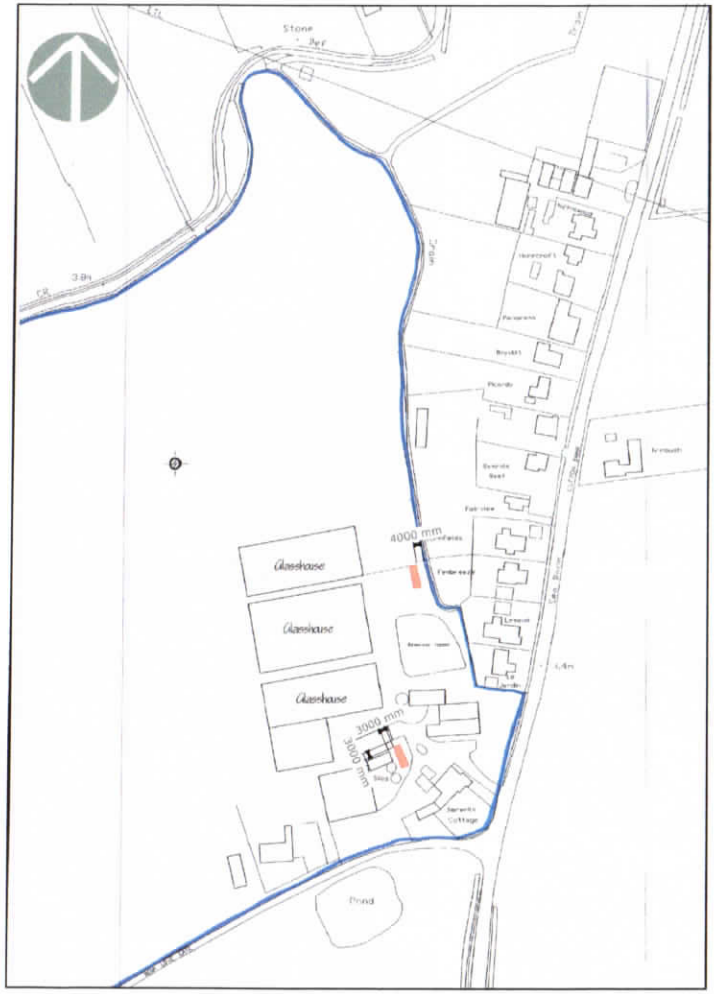
- The proposed development is not in a Functional Floodplain. It is located in the Passive Floodplain protected by The Wash and River Nene tidal defences to a 1 in 200 year return period, (0.5%)

- The site is in Flood Zone 1 with the actual risk of site flooding from any Environment Agency river system being very low (less than 0.5%). The site has been identified in Flood Zone 1 of the South Holland District Council's Strategic Flood Risk Assessment Maps.

- 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.

- On site rainwater from the development will be discharged via soakaways to BRE 365 design requirement and Building Regulations approval.

- Finished floor levels of the caravans have been raised 500mm above existing ground level and will only be occupied for seasonal working.



LOCATION PLAN

PLANNING DESIGN STATEMENT

My client wishes to apply for temporary accommodation for seasonal workers for his nursery business. This business has seen growth over the years with several applications coming through the Planning department for glasshouses, wind turbine etc. all of which have been approved.

On occasion over several years stretching back maybe 10 or so it has been required to employ additional hands in the form of seasonal workers to help with the workload especially as the firm grew. Obviously the business is now of a size when seasonal workers are required on a regular yearly basis and therefore accommodation is required on site for the extra staff on a more permanent basis.

My client would like to place 2 static caravans in the positions shown in red on the location plan for seasonal workers. The size of the caravans are 11m x 4m and stands 2.5m high.

The time period for the seasonal work is from the beginning of March till the end of November.

The type of caravan is shown in the pictures.







PROPOSED 2NO SEASONAL WORKERS ACCOMMODATION (STATIC CARAVANS) TO BANK HOUSE DEAR LOVE GATE LUTTON PE12 9LL for R G BARWELL & SONS LTD

DO NOT SCALE FROM THIS DRAWING

A	ONE OF THE CARAVANS POSITION ALTERED	15/9/15

PLANS

1/1250 | SEP 2015

J013- PL 01A

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Environment Agency

Enter a postcode or place name: Lutton Leam, Lincolnshire Go

Other topics for this area... Flood Map for Planning (Rivers and Sea)

Flood Map for Planning (Rivers and Sea)

Lutton Leam, Lincolnshire at scale 1:20,000

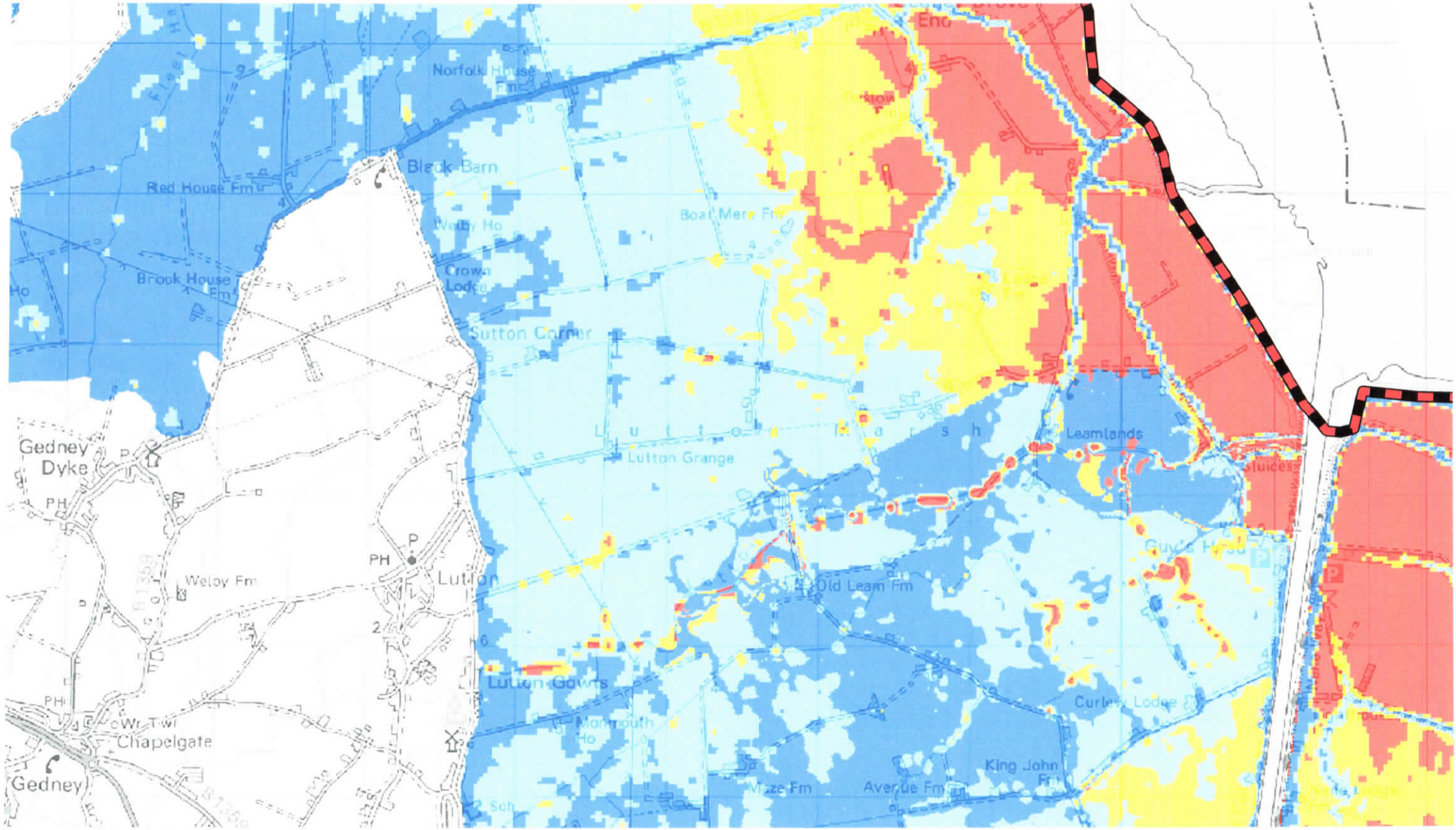
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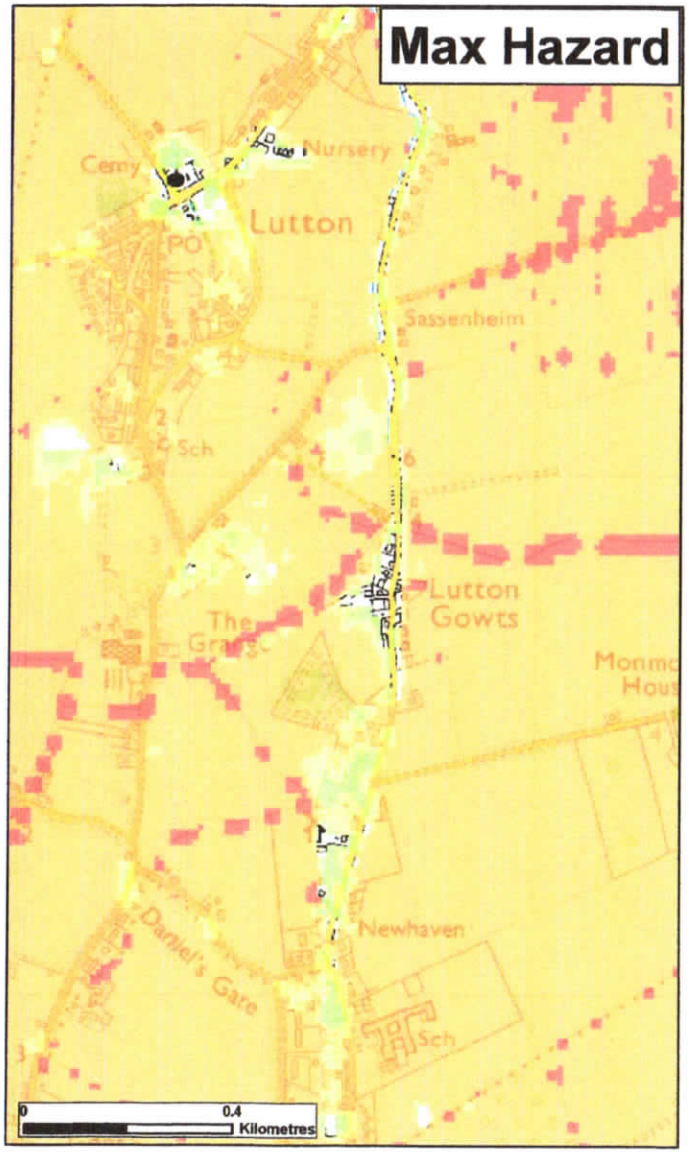
Map legend

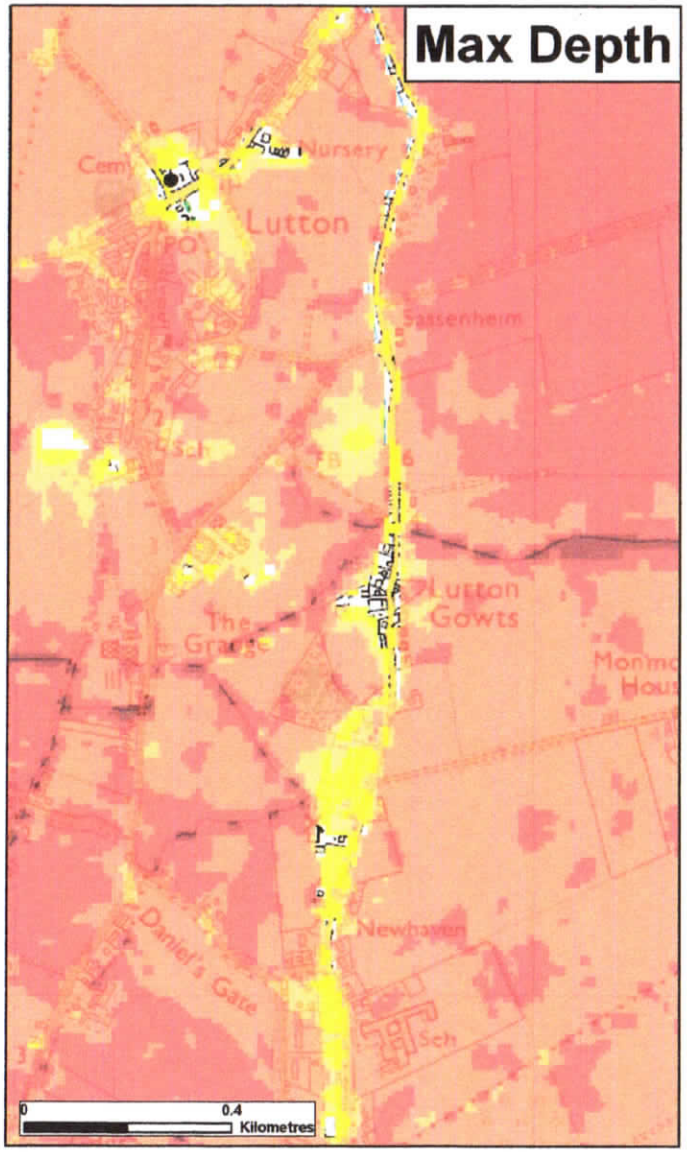
Click on the map to see what Flood Zone (National Planning Policy Guidance definitions) the proposed development is in.

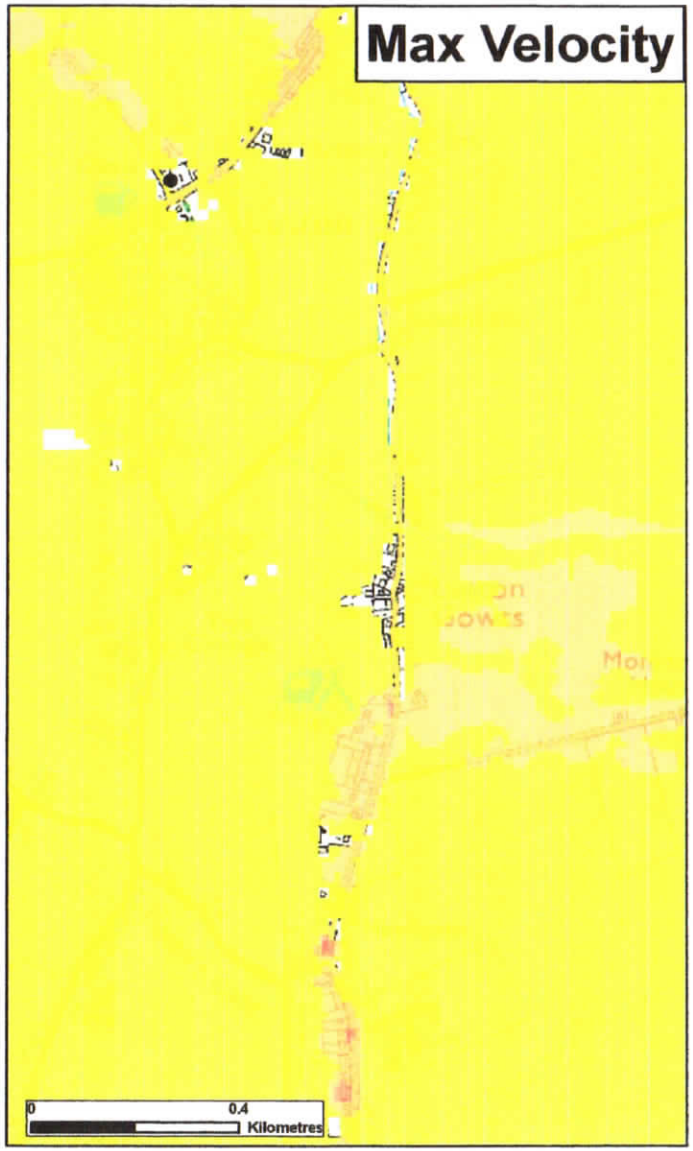
- Flood Map for Planning (Rivers and Sea)
  - Flood Zone 3
  - Flood Zone 2
  - Flood defences (Not all may be shown*)
  - Areas benefiting from flood defences (Not all may be shown*)
- Main River Line
  - Main River Line
- Other national environmental organisations
  - Natural Resources Wales Area of responsibility
  - Scottish Environment Protection Agency Area of responsibility




Norfolk House Fm
Black Barn
Red House Fm
Brook House Fm
Crown Lodge
Sutton Corner
Boat Mere Fm
Lutton Grange
Lutton Marsh
Leamlands
sluices
Gedney Dyke
PH
Weloy Fm
Lutton
Old Leam Fm
Lutton Gowts
Curlew Lodge
Monmouth Ho
Chapelgate
Gedney
Maze Fm
Avenue Fm
King John Fm
Eno







★ **Modelled Breach Locations** - see also the accompanying plan "Location of Modelled Breaches"

Max Hazard (Flood Risk to People : FD2320)	Max Depth (m)	Max Velocity (m/s)
Less than 0.75 (Low Hazard)	0 - 0.25	0 - 0.3
Between 0.75 and 1.25 (Danger for Some)	0.25 - 0.50	0.3 - 1.0
Between 1.25 and 2.0 (Danger for Most)	0.50 - 1.0	1.0 - 1.5
Greater than 2.0 (Danger for All)	1.0 - 2.0	1.5 - 2.5
	2.0 +	2.5 +

Date Printed	November 2013	Scenario year	2115	Scenario Annual Chance	0.5% (1 in 200)

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.

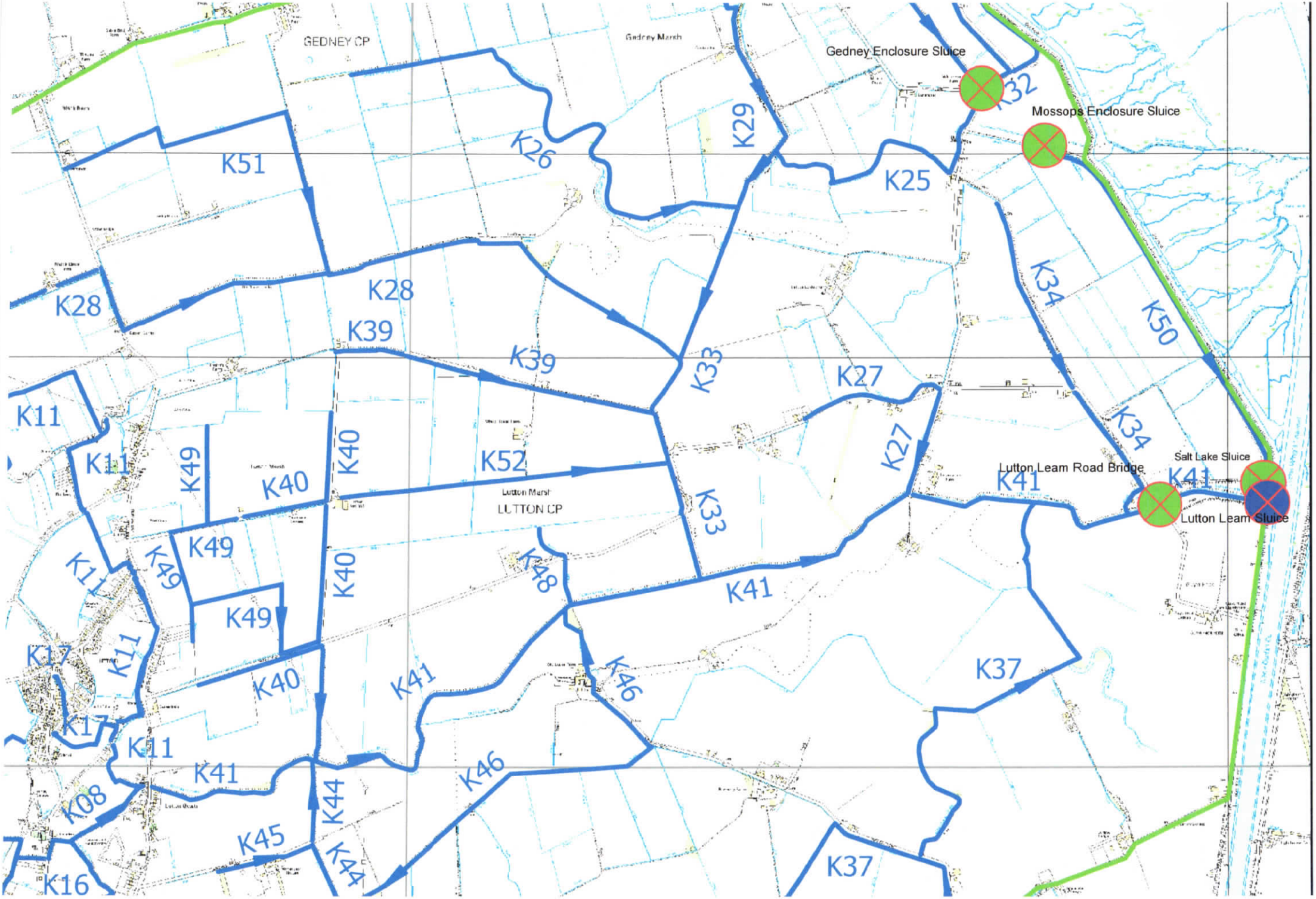
General Enquiries No: 03708 506 506. Weekday Daytime calls cost 5p plus up to 6p per minute from BT Weekend Unlimited. Mobile and other providers' charges may vary

Environment Agency

Northern Area Tidal Breach Hazard Mapping

Map Centred on TF 43633 24805

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GEDNEY CP
Gedney Marsh
Gedney Enclosure Sluice
Mossops Enclosure Sluice
K32
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Lutton Marsh
LUTTON CP
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Salt Lake Sluice
Lutton Leam Road Bridge
K41
Lutton Leam Sluice
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