



ENGINEERING

**Flood Risk Assessment
for the Proposed Change of Use
of the Existing G and M Tomlinson Farm Buildings
Off Cheal Road, Gosberton, Spalding, Lincolnshire
To Use as Two Residential Dwellings**

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3256 – FRA - March 2024

**Flood Risk Assessment
for the Proposed Change of Use
of the Existing G and M Tomlinson Farm Buildings
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1 Introduction

1.1 MTC Engineering (Cambridge) Limited has been asked to provide a Flood Risk Assessment in respect of the proposed change of use of the G and M Tomlinson Farm Buildings off Cheal Road, Gosberton, PE11 4JG, to provide two residential dwellings on behalf G & M Tomlinson.

1.2 This Flood Risk Assessment is based on the following information:-

1.2.1 Site survey by Gold Land Surveys.

1.2.2 Environment Agency Modelled and Historical Flooding Data.

1.2.3 Proposed layouts provided by the client.

1.2.4 South Holland District Council Strategic Flood Risk Assessment.

1.2.5 British Geological Survey information.

- 1.3 All the comments and opinions contained in this report including any conclusions are based on the information available to MTC Engineering (Cambridge) Limited during our investigations. The conclusions drawn could therefore differ if the information is found to be inaccurate, incomplete or misleading. MTC Engineering (Cambridge) Limited accept no liability should this prove to be the case, nor if additional information exists or becomes available with respect to this site.
- 1.4 MTC Engineering (Cambridge) Limited makes no representation whatsoever concerning the legal significance of its findings or any other matters referred to in the following report. Except as otherwise requested by the client, MTC Engineering (Cambridge) Limited are not obliged and disclaim any obligation to update the report for events taking place after the Assessment was undertaken.
- 1.5 This report is a Flood Risk Assessment relating to flooding and drainage issues associated with the proposed development. The information presented and conclusions drawn are based on statistical data and are for guidance purposes only. This report provides no guarantee against flooding of the study site or elsewhere, nor as to the absolute accuracy of water levels, flow rates and associated probabilities quoted.

2 Site Description

- 2.1 The Site is located on the northern side of Cheal Road to the south of Gosberton Risegate as shown by the site location plans provided in Appendix 1.
- 2.2 To the north the site is bound by open agricultural land.
- 2.3 To the east and west the site is bound by existing residential dwellings on the northern side of Cheal Road, with open agricultural land on the opposite side of the dwellings in both directions.
- 2.4 To the south the site is bound by Cheal Road, past which is open agricultural land.
- 2.5 The site is occupied by an area of concrete hardstanding at the frontage, with the existing agricultural building which occupies the majority of the site being set back approximately 12m from Cheal Road. An access track to the agricultural land to the rear runs along the eastern side of the building.
- 2.6 A topographic survey of the site is included in Appendix 2 and shows Cheal Road to have levels of 3.2 to 3.4m above Ordnance Datum (AOD) along the site frontage, with the concrete hardstanding at the front of the site rising from road levels at the frontage to the existing finished floor level of 3.55m AOD at the agricultural building.
- 2.7 A small field drain commences at the northwestern corner of the site and runs a short distance west before turning to run north through the agricultural land to the north of the site. Surface water from the existing impermeable area of the site discharges to this system.
- 2.8 There are no further drains in close proximity to the site although there is a network of small drains running through the surrounding agricultural land. The closest major watercourse is the River Welland which runs in a northeasterly direction about 5km southeast of the site at its closest point.

- 2.9 The Wash coastline is just over 18km northeast of the site at its closest point.
- 2.10 British Geological Survey Mapping indicates that the bedrock geology of the site is the Oxford Clay Formation, with a superficial geology of Tidal Flat Deposits of clay and silt also present. This type of underlying geology has a low permeability.

3 Sources of Potential Flood Risk

- 3.1 In accordance with The National Planning Policy Framework all forms of flood risk need to be considered in relation to any development.
- 3.2 The first form of flood risk to be considered in respect of The National Planning Policy Framework is fluvial flooding.
- 3.3 The Environment Agency Flood Risk Map for Planning (Appendix 3) indicates that the main body of the site lies in Flood Zone 1, but with a small area of Flood Zones 2 and 3 just encroaching onto the northwestern and southeastern corners of the site. The vast majority of South Holland District lies in Flood Zone 3 based upon the Environment Agency Map.
- 3.4 The South Holland District Council Map (Appendix 4) provides a different analysis of the area, taking in to account defences and factors such as the pumped drainage systems in the area and indicates that the site lies at a low to medium risk of flooding (dependent upon the various defences in the area).
- 3.5 The Environment Agency Flood Zones include both tidal and fluvial flood risk without allowance for defences, and as Rivers such as the River Welland are tidal, this far in land it is considered that in this instance the sites Flood Zone 3 boundary is primarily due to a tidal rather than fluvial flood event.
- 3.6 This is confirmed by the modelled flood data provided the Environment Agency (Appendix 4) confirms this showing that fluvial flood extents even in the most extreme modelled 1 in 1000 year plus 20% climate change on the River Welland remain a significant distance from the site and as such the site is not considered to be at risk of fluvial flooding from the River Welland.
- 3.7 The other small drains in the area do not have significant catchment areas, whilst the surrounding agricultural land is primarily lower than the site (as evidenced by the Flood

Zone 1 designation of much of the site with surrounding lower land shown as Flood Zone 3), thus any fluvial flood risk from the agricultural drainage systems would be to the lower lying surrounding land rather than the site itself.

- 3.8 The overall risk of fluvial flooding to the site is therefore considered to be low.
- 3.9 The second form of flood risk to be considered in respect of The National Planning Policy Framework is flooding from the sea.
- 3.10 The Environment Agency Flood Zones show the natural risk of tidal flooding without taking account of either climate change or defences.
- 3.11 The Strategic Flood Risk Assessment does however include residual flood hazard mapping for the South Holland District for a 1 in 100 year/1% event in 2115, with a copy provided in Appendix 5.
- 3.12 This confirms that the site is not considered to be at any risk from flooding or flood hazard in such an event.
- 3.13 The overall risk of tidal flooding to the site is therefore considered to be low.
- 3.14 The third form of flood risk to be considered in respect of The National Planning Policy Framework is flooding from land.
- 3.15 Intense rainfall, often of short duration, that is unable to soak into the ground or enter drainage systems can quickly run off land and result in local flooding. In developed areas, this flood water can be polluted with domestic sewage with foul sewer surcharge and overflow. Local topography and built form can have a strong influence on the direction and depth of flow. The design of development down to a micro level can influence or exacerbate this. Overland flow paths need to be taken into account in development to minimise the risk of flooding from overland flow.
- 3.16 Land in the vicinity of the site is relatively flat, and mainly permeable agricultural land

where significant overland flows are unlikely to develop, particularly as a network of surface water drains run through this area to pick up any flows occurring.

- 3.17 This is confirmed by the Environment Agency surface water flood map does not indicate any significant surface water flood risk at the site and the overall risk to the site from surface water flooding is considered to be low.
- 3.18 The fourth form of flood risk to be considered in accordance with The National Planning Policy Framework is flooding from rising groundwater.
- 3.19 Groundwater flooding occurs when water levels in the ground rise above surface elevations. It is most likely to occur in low lying areas underlain by permeable rocks (aquifers). These may be extensive, regional aquifers, such as chalk or sandstone, or may be localised sands and river gravels in valley bottoms underlain by less permeable rocks. Water levels below the ground rise during wet winter months, and fall again in the summer as water flows out into rivers. In very wet winters, rising water levels may lead to the flooding of normally dry land.
- 3.20 Geological Mapping indicates the site to be underlain by a bedrock geology of the Ampthill Clay Formation, with a superficial geology of Tidal Flat Deposits of clay and silt also present.
- 3.21 This type of underlying geology has a low permeability and there would be no significant groundwater present likely to give rise to flooding in the vicinity of the site.
- 3.22 The fifth form of flood risk to be considered in accordance with the National Planning Policy Framework is the risk of flooding from blocked, overloaded, or burst sewers and water mains.
- 3.23 There are no sewers or water mains likely to give rise to a significant risk of flooding to the site particularly given that the hardstanding at the frontage rises above Cheal Road thus any such flooding occurring on the road would not come onto the site.

- 3.24 The last form of flood risk to be considered in accordance with the National Planning Policy Framework is flooding from reservoirs, canals or other artificial sources.
- 3.25 There are no significant artificial sources of flood risk in the vicinity of the site and it is not considered that the site is at any significant risk of flooding from any artificial source as confirmed by artificial source mapping.

4 The Proposed Development

- 4.1 The proposal involves the change of use of the existing agricultural barn at the site to provide two residential dwellings, with a copy of the proposed site layout provided in Appendix 6.
- 4.2 As detailed in Section 3 it is not considered that there are any significant risks of flooding to the site.
- 4.3 With the finished floor level of the agricultural building being set at 3.55m AOD, which is about 250mm above road levels at the frontage of the site, it is not considered that any raising of the ground floor level is required, particularly as no sleeping accommodation is provided at ground floor level.
- 4.4 The existing external falls in level away from the building should however be maintained post change of use to ensure that any surface flows in the event of a failure of drainage systems or occurring for any other reason will not flow towards the building or pond in the vicinity of access points.
- 4.5 Given the finished floor level and low risk of flooding to the site from any source of flood risk it is not considered that any specific flood resilient or resistant construction is required in this instance.
- 4.6 Safe access will be maintained to the proposed dwellings even in a 1 in 100 year event in 2115 based upon the Strategic Flood Risk Assessment Hazard Mapping, with this route being east along Cheal Road, then north along Baffen's Lane, and west along Hedgefield Hurn to the B1397.
- 4.7 No flood storage compensation is required both as the site is not at risk of fluvial flooding and as this is a change of use that will not increase built footprint at the site.
- 4.8 As a change of use there will be no significant impact upon surface water drainage at the site, however to provide benefit where reasonably practicable any external areas of

hardstanding that are replaced as part of the proposed change of use will use permeable paving to reduce discharge rates and improve discharge quality. Should any further surface water drainage information be required this can be secured by appending appropriate planning conditions to any approval granted.

5 Assessment

- 5.1 The proposal involves the change of use of an existing agricultural building off Cheal Road, to the south of Gosberton Risegate to provide two residential dwellings
- 5.2 The proposed residential use is classified as a “more vulnerable” use.
- 5.3 The site is shown as being primarily in Flood Zone 1 on the Environment Agency Flood Map for Planning, thus “more vulnerable” development is appropriate without requiring either a Sequential Test or Exception Test, whilst in any case change of use applications are exempt from both tests under Paragraph 174 and Footnote 60 of the National Planning Policy Framework.
- 5.4 All the sources of flood risk to the proposed development have been considered in Section 3, and it is not considered that the site is at any significant risk of flooding.
- 5.5 Subject to the existing finished floor level being maintained (or increased) and external falls away from the building being maintained post development, no flood resistant or resilient construction is required.
- 5.6 Safe access will be maintained from the dwellings in a 1 in 100 year tidal event in 2115 based upon Strategic Flood Risk Assessment mapping.
- 5.7 There will be no increase to surface water discharge rates from the site and no impact upon flood storage volumes, thus the proposal will not have any adverse impact upon the off site risk of flooding.
- 5.8 The proposed development is adequately protected against flooding, will be safe for occupants, and will not increase the off-site risk of flooding.

6 Conclusion

- 6.1 The proposal involves the change of use of an existing G & M Farm Building off Cheal Road, Gosberton to use as two residential dwelling.
- 6.2 The proposed development is not at any significant risk of flooding from any source, will be safe for occupants, and will not increase the off-site risk of flooding
- 6.3 As such there are no flood risk or drainage related grounds on which to object to the proposed change of use.

APPENDIX 1

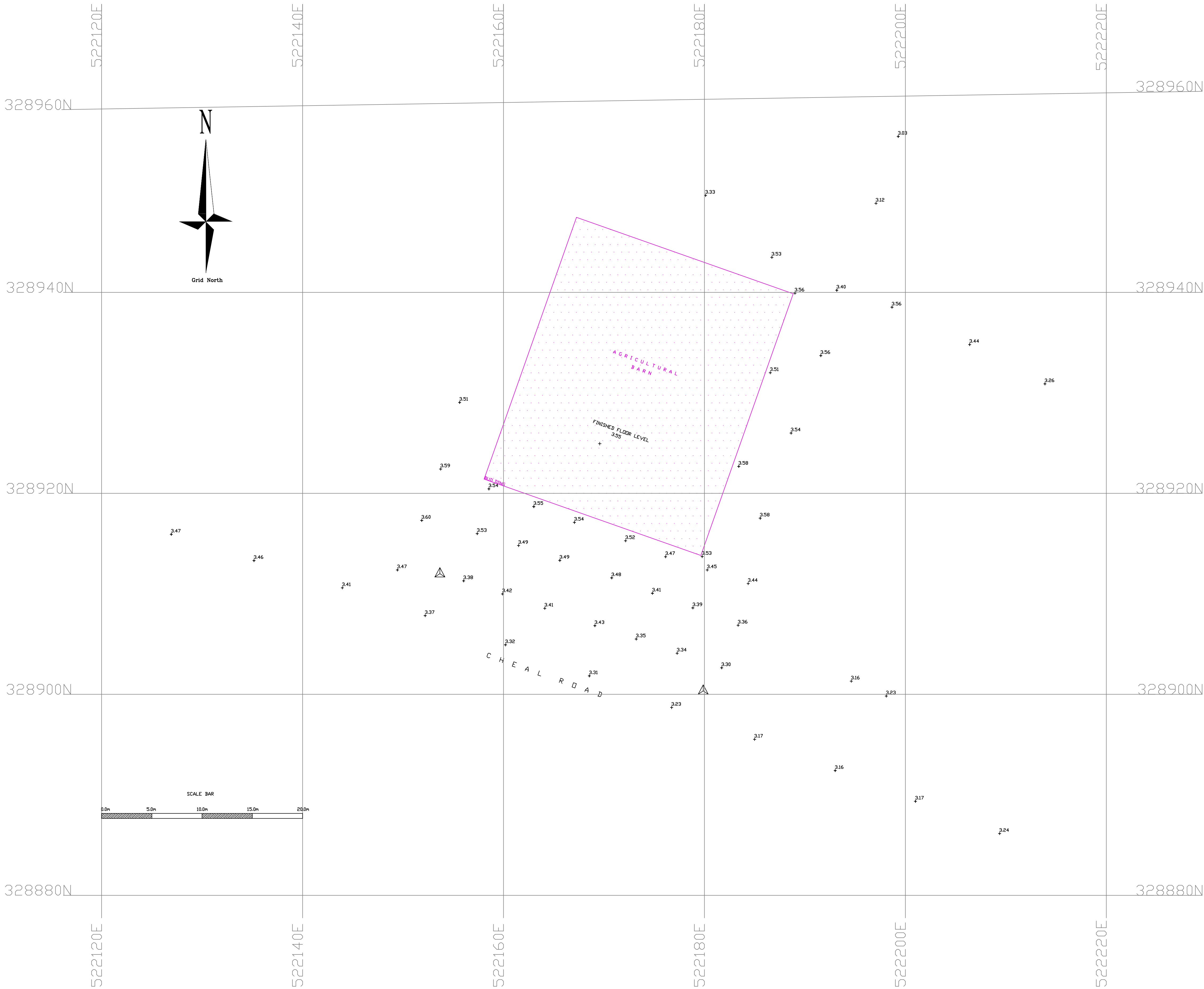
SITE LOCATION PLANS





APPENDIX 2

TOPOGRAPHIC SURVEY



NOTES

The data used for the computation of the horizontal and vertical control for this survey was recorded using our survey grade GNSS receivers. This data was provided by Leica Geosystems Smartnet RTK correction service. Therefore primary survey control is based on OSGB36(15)

A scale factor of 1 has been applied to this survey which has been based on station 1 and referenced to station 2 therefore this grid is related to but not on National Grid and should be treated as arbitrary.

Plotting on paper may lead to a variety of scaling risks/errors due to paper stretching or inaccurate plotter settings etc. Therefore any dimensions scaled from a paper reproduction of this survey should be treated with caution. This drawing must be used in conjunction with all other relevant documentation.

The depiction of a wall, fence or hedge does not necessarily represent a legal boundary. It is the clients responsibility to confirm legal boundaries with the vendor.

Unless previously agreed, all services existing on site have been surveyed apart from where access is restricted by vehicles or other significant obstructions.

If applicable, manhole covers will be lifted unless this significantly obstructs the flow of traffic or vehicular access. Manhole will not be lifted if this were to present any health & Safety risk to staff or the public. Irreplaceable or cracked covers will not be lifted. All pipe directions are indicative only and have not been proved unless specifically instructed. For safety reasons, pipe sizes and directions are estimated from above ground and are therefore approximate values.

All drawing units, levels and dimensions are in metres, unless otherwise stated.

STANDARD BOUNDARIES	STREET SERVICES
BF FENCE CLF CHAIN LINK BWF BARBED WIRE PWF POST & WIRE GP GATEPOST IR IRON RAILING PT GATE POST	LP LAMPPOST NP NAME SIGN/PLATE TS TRAFFIC SIGNAL RS ROAD SIGN BB BOLLARD HR HAND RAIL CB CRASH BARRIER BS BUS STOP
SURFACES	
RED ROAD EDGE (NON KERBED) DK FOOTPATH DK DRAIN KERB	CB BT CALL BOX BTX BT ABOVE GROUND BOX BTM BT MANHOLE TP BT TELEGRAPH POLE CATV CABLE TELEVISION EY ELECTRICITY POLE
	DRAINAGE
KO KERB OUTLET TK TRACK KERB	MHS MANHOLE MHT MANHOLE MC MANHOLE CP CATCH PIT VP VENT PIPE

GOLD LAND SURVEYS
CHRIS GOLD
LAND SURVEYOR/SETTING OUT ENGINEER

25 CHRIST CHURCH CLOSE
STAMFORD, LINCS,
PE9 1HS

T: 07711848607
E: ckgold75@gmail.com

TOPOGRAPHICAL SURVEY OF BARN
AND SURROUNDING LEVELS
TO ASSIST WITH FRA.

Revisions			
A			
B			
C			
Drawing No: G-CHEAL ROAD-12022024		Revision	Sheet
SURVEYOR: CK.GOLD		DATE 21/02/2024	
CLIENT			SCALE
M T C			1: 200
			SHEET SIZE
			A1

APPENDIX 3

ENVIRONMENT AGENCY FLOOD MAP FOR PLANNING

Flood map for planning

Your reference
<Unspecified>

Location (easting/northing)
522176/328928

Created
29 Mar 2024 16:01

Your selected location is in flood zone 3, an area with a high probability of flooding.

This means:

- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see www.gov.uk/guidance/flood-risk-assessment-standing-advice)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2022 OS 100024198. <https://flood-map-for-planning.service.gov.uk/os-terms>

Flood map for planning

Your reference
<Unspecified>

Location (easting/northing)
522176/328928

Scale
1:2500

Created
29 Mar 2024 16:01

-  Selected area
-  Flood zone 3
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Water storage area

0 20 40 60m

APPENDIX 4

ENVIRONMENT AGENCY MODELLED FLOOD DATA

Mike Brindley
mbrindley@mtcengineering.co.uk

Our ref: CCN-2024-345685

Date: 07/02/2024

Dear Mike,

Provision of Flood Risk Information for Cheal Road, Gosberton.

Thank you for your request for our flood risk information for the above site. The information is set out below and attached. It is important you read any contextual notes on the maps provided.

If you are preparing a Flood Risk Assessment (FRA) for this site, please note this information may not be sufficient by itself to produce an adequate FRA to demonstrate the development is safe over its lifetime. Additional information may be required to carry out an appropriate assessment of all risk, such as consequence of a breach in defences.

We aim to review our information on a regular basis, so if you are using this data more than twelve months from the date of this letter, please contact us again to check it is still valid.

Please read the letter in full as the information covered has been updated in **June 2023**.

1. Flood Map for Planning

The attached map includes the current Flood Map for Planning for your area. The map indicates the area at risk of flooding, **assuming no flood defences exist**, for a flood with a 0.5% chance of occurring in any year for flooding from the sea, or a 1% chance of occurring for fluvial (river) flooding. It also shows the extent of the Extreme Flood Outline which represents the extent of a flood with a 0.1% chance of occurring in any year, or the highest recorded historic extent if greater.

In some locations, such as around the fens and the large coastal floodplains, showing the area at risk of flooding assuming no defences may give a slightly misleading picture in that if there were no flood defences, water would spread out across these large floodplains. This flooding could cover large areas of land but to relatively shallow depths and could leave pockets of locally slightly higher land as isolated dry islands. It is important to understand the actual risk of the flooding to these dry islands, particularly in the event of defence failure.

The Flood Map for Planning also shows the location of formal raised flood defences and flood storage reservoirs. It represents areas at risk of flooding for present day only and does not take account of climate change.

The Flood Map for Planning only indicates the extent and likelihood of flooding from rivers or the sea. It should also be remembered flooding may occur from other sources such as surface water sewers, road drainage, etc.

2. Recorded Flood Outlines

With regards to the history of flooding I can advise we do not have any records of flooding in this area. It is possible recent flooding may have occurred which we are currently investigating, therefore this information may be subject to change. It is possible other flooding may have occurred which other risk management authorities, such as the Lead Local Flood Authority (ie top tier council) or Internal Drainage Board (where they exist) have responsibility.

Please note, our Recorded Flood Outlines do not reflect the latest (October 2023-present) flood incidents. Due to the scale of the events, it will take time to gather the information and verify the extent of the flooding before we are able to provide this information.

3. Schemes in the area

There are no ongoing capital projects to reduce or sustain the current flood risk to this site.

4. Fluvial Flood Risk Information

The site may be at risk from main rivers in the form of residual risk due to the failure of flood management infrastructure such as a breach of a raised flood defence. You may need to undertake further assessment of this residual risk using the data provided.

The site may also be at risk from local ordinary watercourses for which other risk management authorities, such as the Lead Local Flood Authority (ie top tier council) or Internal Drainage Board (where they exist) have responsibility.

4.1 Fluvial Defence Information

The existing fluvial defences reducing the risk of flooding from main river to this site consist of earth embankments. They are in fair condition and reduce the risk of flooding (at the defence) to a 1% (1 in 100) chance of occurring in any year. We inspect these defences routinely to ensure potential defects are identified.

4.2 Fluvial Modelled Levels and Flows

Available modelled fluvial flood levels and flows for the model nodes shown on the attached map are set out in the data table attached. This data is taken from the model named on the data table, which is the most up-to-date model currently available.

Please note these levels are “in-channel” levels and therefore may not represent the flood level on the floodplain, particularly where the channel is embanked or has raised defences.

Our models may not have the most up to date climate change allowances. In time we will update our models for the latest allowances. You should refer to '[Flood risk assessments: climate change allowances](#)' to check if the allowances modelled are appropriate for the type of development you are proposing and its location. You may need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.

4.3 Fluvial Modelled Flood Extents

Please find attached a map showing available modelled flood extents, taking into account flood defences, for your area. This data is taken from the model named on the map, which is the most up-to-date model currently available.

In some cases the flood extents shown may not be from main river, but may be from other sources such as IDB lowland drainage networks.

4.4 Fluvial Hazard Mapping

For certain locations we have carried out modelling to map the maximum values of flood depth, velocity and hazard rating (danger to people) resulting from overtopping and / or breaching of defences at specific locations for a number of scenarios.

At present this information is available for fluvial flood risk in Northampton, Lincoln, Wainfleet and some isolated rural locations.

The number of locations we have this information for is expected to increase in time.

At present this site is not covered by any Environment Agency hazard mapping.

Detailed Hazard Mapping is available within the 2017 Update of South Holland Strategic Flood Risk Assessment. This can be downloaded via the following link:

<http://www.southeastlincslocalplan.org/water/>

5. Tidal Flood Risk Information

This site is not considered to be at risk from tidal flooding.

6. Development Planning

If you would like local guidance on preparing a flood risk assessment for a planning application, please contact our Sustainable Places team at LNplanning@environment-agency.gov.uk. It will help if you mention this data request and attach your site location plan.

We provide free preliminary advice; additional/detailed advice, review of draft FRAs and meetings are chargeable at a rate set to cover our costs, currently £100 (plus VAT) per hour of staff time. Further details are available on our website at

<https://www.gov.uk/guidance/developers-get-environmental-advice-on-your-planning-proposals>.

General advice on flood risk assessment for planning applications can be found on GOV.UK at <https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications>

Climate change will increase flood risk due to overtopping of defences. Please note, unless specified otherwise, the climate change data included has an allowance for 20% increase in flow. Updated guidance on how climate change could affect flood risk to new development - 'Flood risk assessments: climate change allowances' was published on GOV.UK in **July 2021**. The appropriate updated climate change allowance should be applied in a Flood Risk Assessment.

You should also consult the Strategic Flood Risk Assessment produced by your local planning authority.

7. Data Licence and Other Supporting Information

We respond to requests for recorded information we hold under the Freedom of Information Act 2000 (FOIA) and the associated Environmental Information Regulations 2004 (EIR).

This information is provided in accordance with the Open Government Licence which can be found here: <http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

Further information on flood risk can be found on the GOV.UK website at:
<https://www.gov.uk/browse/environment-countryside/flooding-extreme-weather>

8. Other Flood Risk Management Authorities

The information provided with this letter relates to flood risk from main river or the sea. The Flood Map for Surface Water can be viewed at <https://www.gov.uk/check-long-term-flood-risk>

Additional information may be available from other risk management authorities, such as the Lead Local Flood Authority (ie top tier council) or Internal Drainage Board (where they exist).

I hope we have correctly interpreted your request. If you have any queries or would like to discuss the content of this letter further please contact Christopher using the email address below and quoting our CCN reference number above.

Yours sincerely,

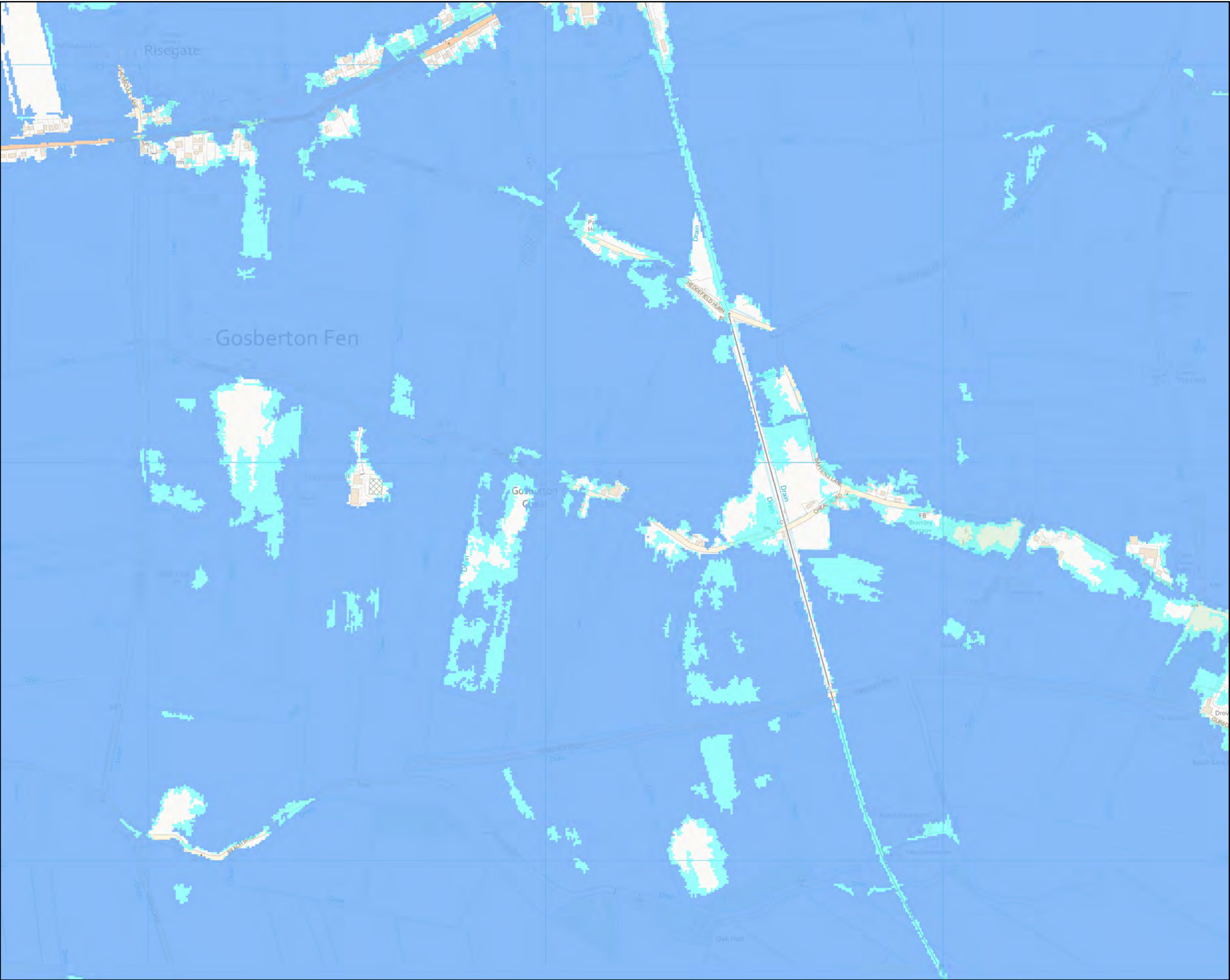


+44 7385226602

for Ben Thornely
Area Flood and Coastal Risk Manager
e-mail PSOWN@environment-agency.gov.uk

Enc.
Flood Map for Planning
Modelled Node Points Map
Modelled Fluvial Levels and Flows Data Sheet
Modelled Flood Extent Maps
Tidal Level Data Sheets - Map and Tables

Flood Map centred on TF 22174 28929 - created February 2024 [Ref: CCN-2024-345685]



Scale 1:10,000



- Legend**
- Main Rivers
 - Raised Defences
 - Flood Storage Areas
 - Areas at Risk of Flooding from Rivers or the Sea
 - Extreme Flood Outline

Dark blue shows the area that could be affected by flooding, either from rivers or the sea, if there were no flood defences. This area could be flooded:

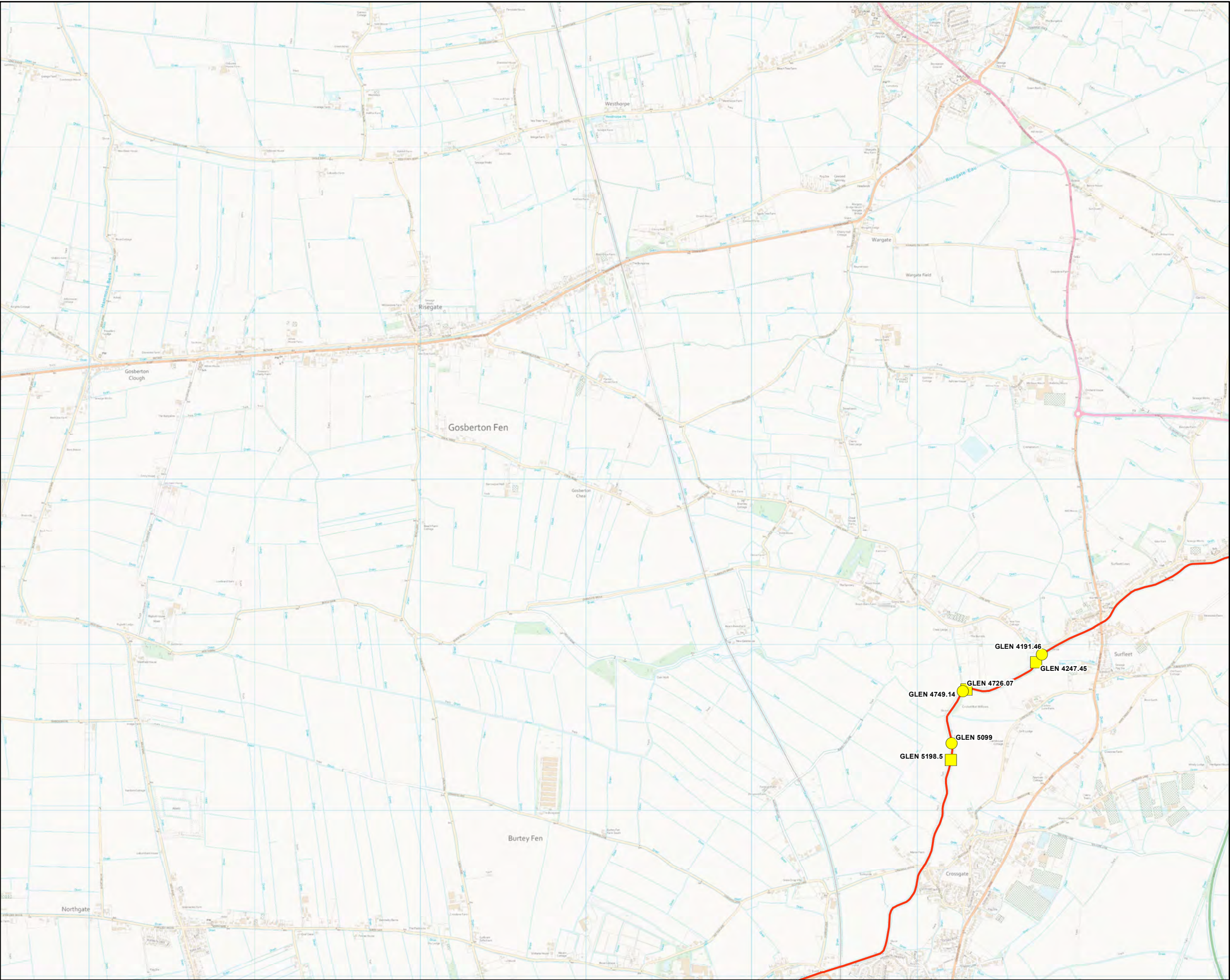
- from the sea by a flood that has a 0.5% (1 in 200) or greater chance of happening each year.
- or from a river by a flood that has a 1% (1 in 100) or greater chance of happening each year.

Light blue shows the extent of the Extreme Flood Outline, which represents the extent of a flood event with a 0.1% chance of occurring in any year, or the highest recorded historic extent if greater.

These two colours show the extent of the natural floodplain if there were no flood defences or certain other manmade structures and channel improvements. Sites outside the two extents, but behind raised defences, may be affected by flooding if the defences are overtopped or fail.

Created by the Partnerships and Strategic Overview Team, Kettering

Modelled Nodes Map centred on TF 22174 28929 - created February 2024 [Ref: CCN-2024-345685]



Scale 1:24,000



- Legend**
- Modelled Nodes - Levels
 - Modelled Nodes - Flows
 - Main Rivers

Created by the Partnerships and Strategic Overview Team, Kettering

Datasheet [Ref: CCN-2024-345685]
Model Name: Welland Glen
Model Date: 2016

Fluvial Flood Levels (mODN)

The fluvial flood levels for the model nodes shown on the attached map are set out in the table below. They are measured in metres above Ordnance Datum Newlyn (mODN).

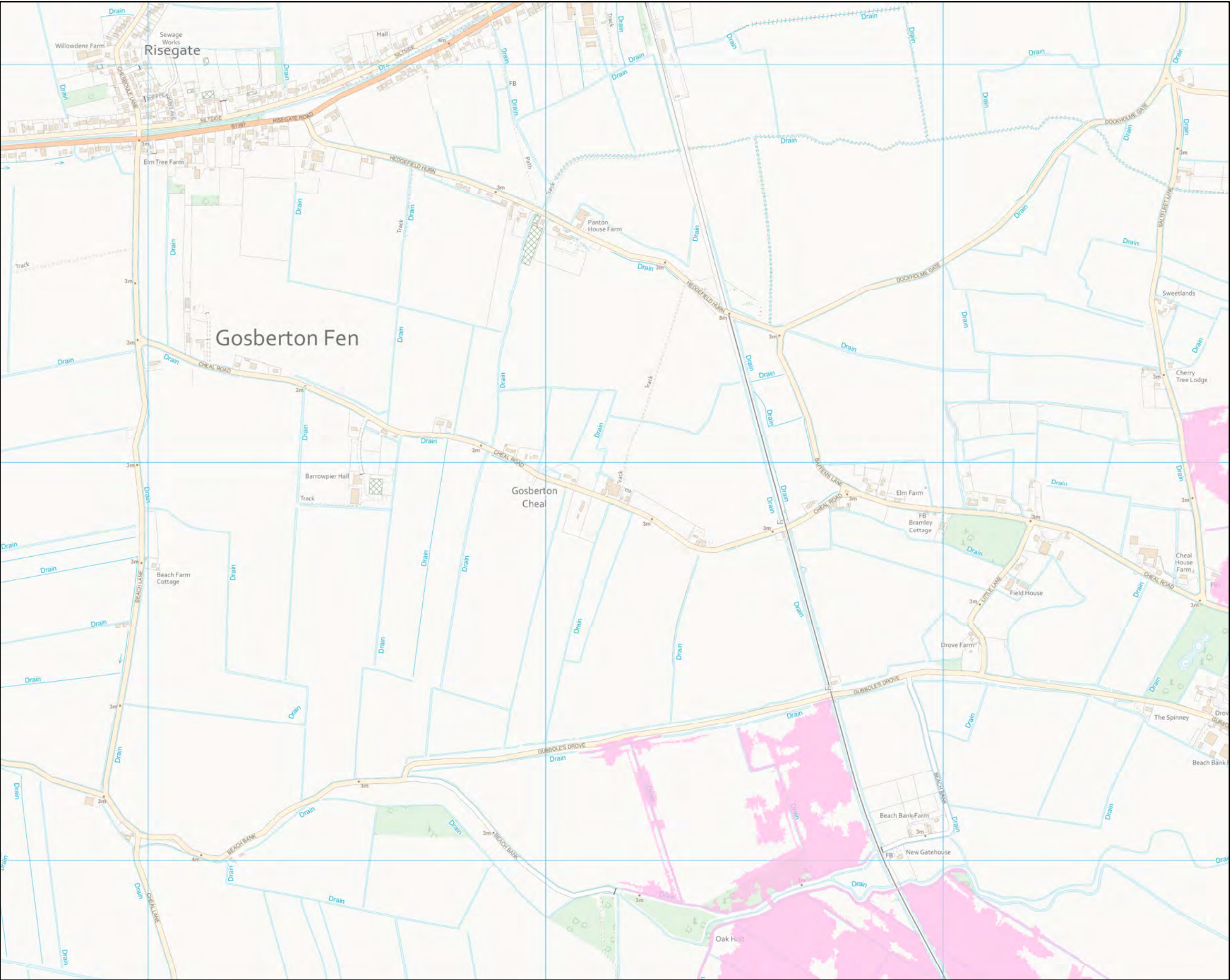
			Annual Exceedance Probability - Maximum Water Levels (mODN)											
Node Label	Easting	Northing	50% (1 in 2)	20% (1 in 5)	10% (1 in 10)	5% (1 in 20)	3.33% (1in 30)	2% (1 in 50)	1.33% (1 in 75)	1% (1 in 100)	1% (1 in 100) inc 20% Climate Change	0.5% (1 in 200)	0.1% (1 in 1000)	0.1% (1 in 1000) inc 20% Climate Change
GLEN 4191.46	524753	327939	3.97	4.12	4.19	4.24	4.23	4.25	4.25	4.27	4.78	4.32	4.40	4.81
GLEN 4749.14	524276	327721	3.97	4.12	4.21	4.27	4.24	4.27	4.28	4.29	4.78	4.33	4.42	4.81
GLEN 5099	524209	327404	3.97	4.12	4.21	4.28	4.25	4.28	4.30	4.30	4.79	4.34	4.43	4.83

Fluvial Flood Flows (m³/s)

The fluvial flood flows for the model nodes shown on the attached map are set out in the table below. They are measured in metres cubed per second (m³/s).

			Annual Exceedance Probability - Maximum Flows (m³/s)											
Node Label	Easting	Northing	50% (1 in 2)	20% (1 in 5)	10% (1 in 10)	5% (1 in 20)	3.33% (1in 30)	2% (1 in 50)	1.33% (1 in 75)	1% (1 in 100)	1% (1 in 100) inc 20% Climate Change	0.5% (1 in 200)	0.1% (1 in 1000)	0.1% (1 in 1000) inc 20% Climate Change
GLEN 4247.45	524719	327894	32.01	34.85	36.36	38.44	39.22	40.01	41.00	41.35	50.79	44.40	53.16	60.27
GLEN 4726.07	524297	327730	30.02	32.83	34.46	36.52	37.43	38.25	38.89	39.56	48.28	42.67	51.37	58.38
GLEN 5198.5	524204	327305	28.41	31.52	33.21	35.41	36.06	36.89	37.55	38.20	46.59	41.34	50.22	57.39

Modelled Flood Extents (with defences) Model: Welland Glen (2016)
centred on TF 22174 28929 - created February 2024 [Ref: CCN-2024-345685]



Scale 1:10,000



- Legend**
- Main Rivers
 - 3.33% (1 in 30) fluvial event
 - 1% (1 in 100) fluvial event
 - 1% (1 in 100) inc 20% climate change fluvial event
 - 0.1% (1 in 1000) fluvial event
 - 0.1% (1 in 1000) inc 20% climate change fluvial event

Created by the Partnerships and Strategic Overview Team,
Kettering

East Coast and Wash - 2018 Coastal Flood Boundary [CFB] Dataset

Key Node Points



Scale 1:550,000



▲ East Coast and Wash

See separate data sheet for predicted flood levels

Created by the Partnerships and Strategic Overview Team, Lincoln

East Coast and Wash: Immingham to the West Lighthouse

2018 Coastal Flood Boundary Extreme Sea Levels

CFB REF	LOCATION	EASTING	NORTHING	ANNUAL CHANCE (1 IN X) OF TIDE LEVEL IN METRES ODN																						
				1			10			50			100			200			300			1000				
				Confidence Bound			Confidence Bound			Confidence Bound			Confidence Bound			Confidence Bound			Confidence Bound			Confidence Bound				
				2.5%	50%	97.5%	2.5%	50%	97.5%	2.5%	50%	97.5%	2.5%	50%	97.5%	2.5%	50%	97.5%	2.5%	50%	97.5%	2.5%	50%	97.5%	2.5%	50%
3888	Immingham	520440	417625	4.16	4.17	4.19	4.50	4.53	4.62	4.73	4.80	5.00	4.83	4.93	5.19	4.93	5.06	5.41	4.98	5.14	5.55	5.15	5.38	6.01		
3890	Haborough Marsh	522100	416512	4.14	4.15	4.17	4.48	4.51	4.60	4.70	4.77	4.97	4.80	4.90	5.16	4.90	5.03	5.38	4.94	5.10	5.51	5.11	5.34	5.97		
3898	Grimsby	529295	413162	3.98	3.99	4.01	4.31	4.34	4.43	4.53	4.60	4.80	4.61	4.71	4.97	4.71	4.84	5.19	4.74	4.90	5.31	4.88	5.11	5.74		
3906	Buck Beck	534709	407369	3.87	3.88	3.90	4.19	4.23	4.31	4.41	4.50	4.68	4.50	4.61	4.86	4.61	4.75	5.10	4.64	4.82	5.22	4.80	5.05	5.66		
3910	Tetney	538035	405537	3.85	3.86	3.89	4.17	4.22	4.30	4.40	4.50	4.67	4.49	4.61	4.86	4.60	4.75	5.10	4.63	4.82	5.21	4.80	5.06	5.66		
3918	Donna Nook	544641	401997	3.82	3.83	3.86	4.14	4.19	4.27	4.38	4.48	4.65	4.47	4.60	4.85	4.58	4.74	5.10	4.63	4.82	5.22	4.81	5.08	5.68		
3928	Saltfleet	549131	393360	3.78	3.79	3.82	4.11	4.16	4.26	4.36	4.46	4.64	4.47	4.59	4.86	4.57	4.74	5.11	4.63	4.83	5.25	4.83	5.11	5.74		
3942	Boygrift	555131	380860	3.72	3.74	3.77	4.06	4.11	4.22	4.33	4.43	4.65	4.43	4.57	4.87	4.56	4.73	5.13	4.62	4.83	5.28	4.85	5.15	5.82		
3968	Gibraltar Point	557652	356181	4.16	4.17	4.20	4.51	4.56	4.67	4.76	4.85	5.08	4.85	4.97	5.27	4.94	5.10	5.49	4.99	5.18	5.63	5.14	5.41	6.09		
3992_14	Hobhole	535990	340116	4.96	4.97	5.01	5.40	5.44	5.56	5.66	5.76	5.98	5.78	5.90	6.20	5.88	6.04	6.44	5.92	6.11	6.57	6.03	6.31	6.99		
	Grand Sluice*	532366	344510	4.93	4.94	4.98	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3		
3992_9	Boston Barrier	532754	342852	4.93	4.94	4.98	5.41	5.45	5.57	5.73	5.83	6.05	5.85	5.97	6.27	5.93	6.09	6.49	5.94	6.13	6.59	5.98	6.26	6.94		
3992_5	Fosdyke Bridge	531886	332234	4.87	4.88	4.92	5.31	5.35	5.47	5.58	5.68	5.90	5.71	5.83	6.13	5.82	5.98	6.38	5.87	6.06	6.52	6.01	6.29	6.97		
4008	West Lighthouse	550094	329971	4.87	4.88	4.91	5.21	5.26	5.37	5.46	5.56	5.78	5.56	5.68	5.98	5.66	5.82	6.21	5.71	5.90	6.35	5.86	6.14	6.81		
-	Marsh Road	525988	324065	-	5.04	-	-	5.44	-	-	5.73	-	-	5.85	-	-	5.98	-	-	-	-	-	-	-		
-	Wisbech	546110	309940	-	4.83	-	-	5.25	-	-	5.53	-	-	5.66	-	-	5.78	-	-	-	-	-	-	-		
-	Dog-in-a-Doublet	527200	299287	-	3.67	-	-	4.00	-	-	4.22	-	-	4.32	-	-	4.42	-	-	-	-	-	-	-		

See next page for notes

2018 Coastal Flood Boundary Extreme Sea Levels

NOTES:

The following notes apply to all CFB sites (ie all on table excluding Marsh Road, Wisbech, Dog-in-a-Doublet)

- The base date for the data is 2017.
- The levels are still water levels. Depending on the use of the data it may be necessary to consider wave heights and / or joint probability analysis of water level and other variables.
- Levels for other annual chance probabilities are available if required.
- For additional information relating to the 2018 Coastal Flood Boundary Extreme Sea Levels or to access the full dataset for the above sites or intermediate locations refer to the Defra Metadata Catalogue at <https://deframetadadata.com/geonetwork/srv/eng/catalog.search#/metadata/84a5c7c0-d465-11e4-b0bd-f0def148f590>

The following notes apply to all Marsh Road, Wisbech, Dog-in-a-Doublet

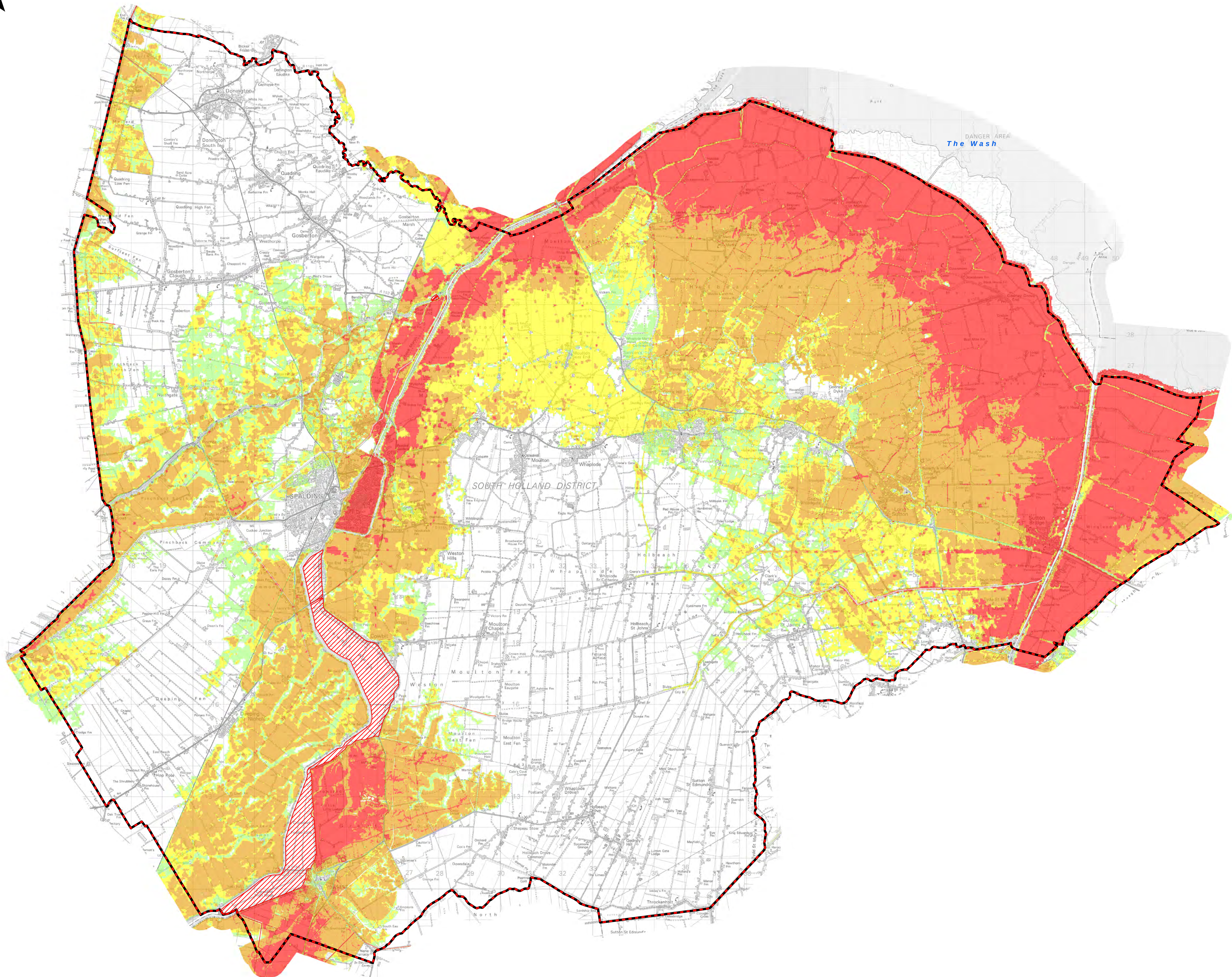
- The base date for the data is 2006
- The levels are still water levels. Depending on the use of the data it may be necessary to consider wave heights and / or joint probability analysis of water level and other variables.
- Levels for other annual chance probabilities are available if required.
- These levels will be updated as their respective tidal river models are updated.

The following notes apply to Grand Sluice

- Grand Sluice remains the tidal limit for the River Witham.
- The data is based on CFB 2018 data for Boston Barrier site, capped at 5.3mAOD to reflect use of the barrier which raises for tides above this level.
- The base date for the data is 2017
- The levels are still water levels. Depending on the use of the data it may be necessary to consider wave heights and / or joint probability analysis of water level and other variables.
- For additional information relating to the 2018 Coastal Flood Boundary Extreme Sea Levels or to access the full dataset for the above sites or intermediate locations refer to the Defra Metadata Catalogue at <https://deframetadadata.com/geonetwork/srv/eng/catalog.search#/metadata/84a5c7c0-d465-11e4-b0bd-f0def148f590>

APPENDIX 5

STRATEGIC FLOOD RISK ASSESSMENT FLOOD RISK MAPPING



NOTES

1. The potential flooding consequences shown on this map primarily relate to flooding from the sea and main rivers taking into account the presence of current flood risk management measures such as flood defences.
2. This update only included new flood risk information from River Welland (Fluvial), River Glen (Fluvial) and Tidal hazard mapping (River Welland, River Nene and the Wash sea defences). No new information from the Internal Drainage Boards and associated systems was used for this update.
3. In addition to the potential flood extents shown on this map, there may be shallow flooding in low-lying rural areas
4. The consequences designated as being a Residual Risk arise from direct overtopping of defences, where this would occur, together with breach failure which is assumed could occur at any point along the defences.
5. Functional Floodplain encompasses areas where water is intended to flow or be stored in times of flood.
6. Land outside South Holland District is not considered.
7. This map shows the extents only of the flooding probability bands relevant to the map Title

Map Legend

Max Hazard	
(Flood Risk to People : FD2320)	
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)	
Functional Floodplain	
South Holland District Boundary	

2	Feb 17	Modelling and Mapping Update
1	Dec 16	Modelling and Mapping Update
REV	DATE	REMARKS

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SOUTH HOLLAND DISTRICT COUNCIL
COUNCIL OFFICES
PRIORITY ROAD
SPALDING
LINCOLNSHIRE
PE11 2XE

UPDATE OF STRATEGIC FLOOD RISK ASSESSMENT

Residual Flood Hazard District - Year 2115 1% Fluvial / 0.5% Tidal Event Probability

DATE OF ISSUE: Feb 2017	REV NO: 2
SCALE: 1 : 60,000 @ A1	MAP NO:

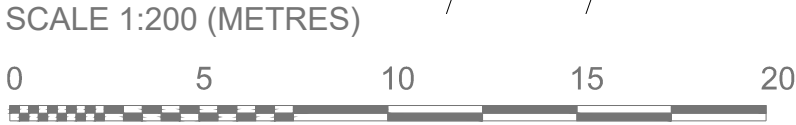
APPENDIX 6

PROPOSED SITE LAYOUT



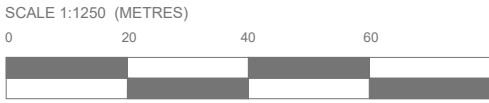
Proposed Block Plan

1:200 @ A1



Location Plan 1:1250 @ A 1

Area = 1294m2



Legend

- Proposed new hedgerow
- Bin Storage
- Grass
- Pavours
- Proposed 1.4m high post & rail fence
- Gravel
- Grey Tarmac
- Proposed 1.6m high fencing
- Indian Sandstone patio slabs

REV	DATE	BY	REVISION NOTES
			Suite 2, Clare Hall, St Ives Business Park, Parsons Green, St Ives, Cams, PE27 4WY
			
			PROJECT Barn adj. Ebenezer House, Cheal Road, Gosberton, Spalding, Lincolnshire, PE11 4JG
			CLIENT Mr Parker
			DRAWING TITLE Site Location Plan and Proposed Block Plan
			DRAWN BY LJ
			SCALE 1:200 1:1250 @ A1
			DATE 15/05/24
			DWG. No. 24-03-100
			REV.