PROPOSED DWELLING ACROSS LAND ADJACENT TO NUMBER 144 RESERVOIR ROAD, SURFLEET SEAS END, SPALDING, LINCOLNSHIRE

FLOOD RISK ASSESSMENT

JUNE 2026

REF: 2868/RE/02-22/01 REVISION A

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CONTRACT

Evans Rivers and Coastal Ltd has been commissioned by Infinity Developments Ltd to carry out a flood risk assessment for a proposed dwelling across land adjacent to number 144 Reservoir Road, Surfleet Seas End, Spalding, Lincolnshire.

QUALITY ASSURANCE, ENVIRONMENT AND HEALTH AND SAFETY

Evans Rivers and Coastal Ltd operates a Quality Assurance, Environmental, and Health and Safety Policy.

This project comprises various stages including data collection; hydrological and hydrogeological assessments; surface water drainage designs; and reporting. Quality will be maintained throughout the project by producing specific methodologies for each work stage. Quality will also be maintained by initiating internal quality procedures including the validation of third party deliverables; creation of an audit trail to record any changes made; and document control using a database and correspondence log file system.

To adhere to the Environmental Policy, data will be obtained and issued in electronic format and alternatively by post. Paper use will also be minimised by communicating via email or telephone where possible. Documents and drawings will be transferred in electronic format where possible and all waste paper will be recycled. Meetings away from the office of Evans Rivers and Coastal Ltd will be minimised to prevent unnecessary travel, however for those meetings deemed essential, public transport will be used in preference to car journeys.

The project will follow the commitment and objectives outlined in the Health and Safety Policy operated by Evans Rivers and Coastal Ltd. All employees will be equipped with suitable personal protective equipment prior to any site visits and a risk assessment will be completed and checked before any site visit. Other factors which have been taken into consideration are the wider safety of the public whilst operating on site, and the importance of safety when working close to a water source and highway. Any designs resulting from this project and directly created by Evans Rivers and Coastal Ltd will also take into account safety measures within a "designers risk assessment".

Report carried out by:

Rupert Evans, BSc (Hons), MSc, CEnv, C.WEM, MCIWEM, PISEP

DISCLAIMER

This report has been written and produced for Infinity Developments Ltd. No responsibility is accepted to other parties for all or any part of this report. Any other parties relying upon this report without the written authorisation of Evans Rivers and Coastal Ltd do so at their own risk.

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1. INTRODUCTION

1.1 Project Scope

1.1.1 Evans Rivers and Coastal Ltd has been commissioned by Infinity Developments Ltd to carry out a flood risk assessment for a proposed dwelling across land adjacent to number 144 Reservoir Road, Surfleet Seas End, Spalding, Lincolnshire.

1.1.2 It is understood that this Flood Risk Assessment will be submitted to the Planning Authority as part of a planning application. Specifically, this assessment intends to:

1) Consider the impacts of the 1 in 30 year, 1 in 100/200 year and 1 in 1000 year flood events in accordance with NPPF and including updated climate change allowances;

2) Review any literature and guidance specific to this area such as the SFRA;

3) Determine the extents of the aforementioned NPPF Flood Zones across the site, together with depths of floodwater and hazard;

4) Assess the risks to people and property and propose mitigation measures accordingly;

5) Review existing evacuation and warning procedures for the area;

6) Carry out an appraisal of flood risk from any other sources such as groundwater as required by NPPF;

7) Report findings and recommendations.

1.1.3 This assessment is carried out in accordance with the requirements of the National Planning Policy Framework (NPPF) dated 2025. Other documents which have been consulted include:

- DEFRA/EA document entitled *Framework and guidance for assessing and managing flood risk for new development Phase 2 (FD2320/TR2)*, 2005;
- Communities and Local Government 2007. *Improving the Flood Performance of New Buildings*. HMSO.
- DEFRA/EA document entitled *The flood risks to people methodology (FD2321/TR1),* 2006;
- EA *Supplementary Note on Flood Hazard Ratings and Thresholds for Development Planning and Control Purpose*, 2008;
- National Planning Practice Guidance – Flood Risk and Coastal Change.
- UK Government's climate change allowances guidance.
- Lincolnshire County Council Preliminary Flood Risk Assessment dated 2011.
- South East Lincolnshire Strategic Flood Risk Assessment (SFRA) dated March 2017.

2. DATA COLLECTION

2.1 To assist with this report, the data collected included:

- Ordnance Survey 1:10,000 street view map (Evans Rivers and Coastal Ltd OS licence number 100049458).
- 1:250,000 *Soil Map of Eastern England* (Sheet 4) published by Cranfield University and Soil Survey of England and Wales 1983.
- 1:625,000 *Hydrogeological Map of England and Wales*, published in 1977 by the Institute of Geological Sciences (now the British Geological Survey).
- Flood level/hazard data provided by the Agency in their response received 4th February 2022 (Appendix A).
- Filtered LIDAR data at 1m resolution.
- British Geological Survey, *Online Geology of Britain Viewer*.
- British Geological Survey, *Groundwater Susceptibility Map.*
- Environment Agency defence information via https://environment.data.gov.uk/asset-management/index.html

3. SITE CHARACTERISTICS

3.1 Existing Site Characteristics and Location

3.1.1 The site is located at land adjacent to number 144 Reservoir Road, Surfleet Seas End, Spalding, Lincolnshire. The approximate Ordnance Survey (OS) grid reference for the site is 527938 329353 and the location of the site is shown on Figure 1.

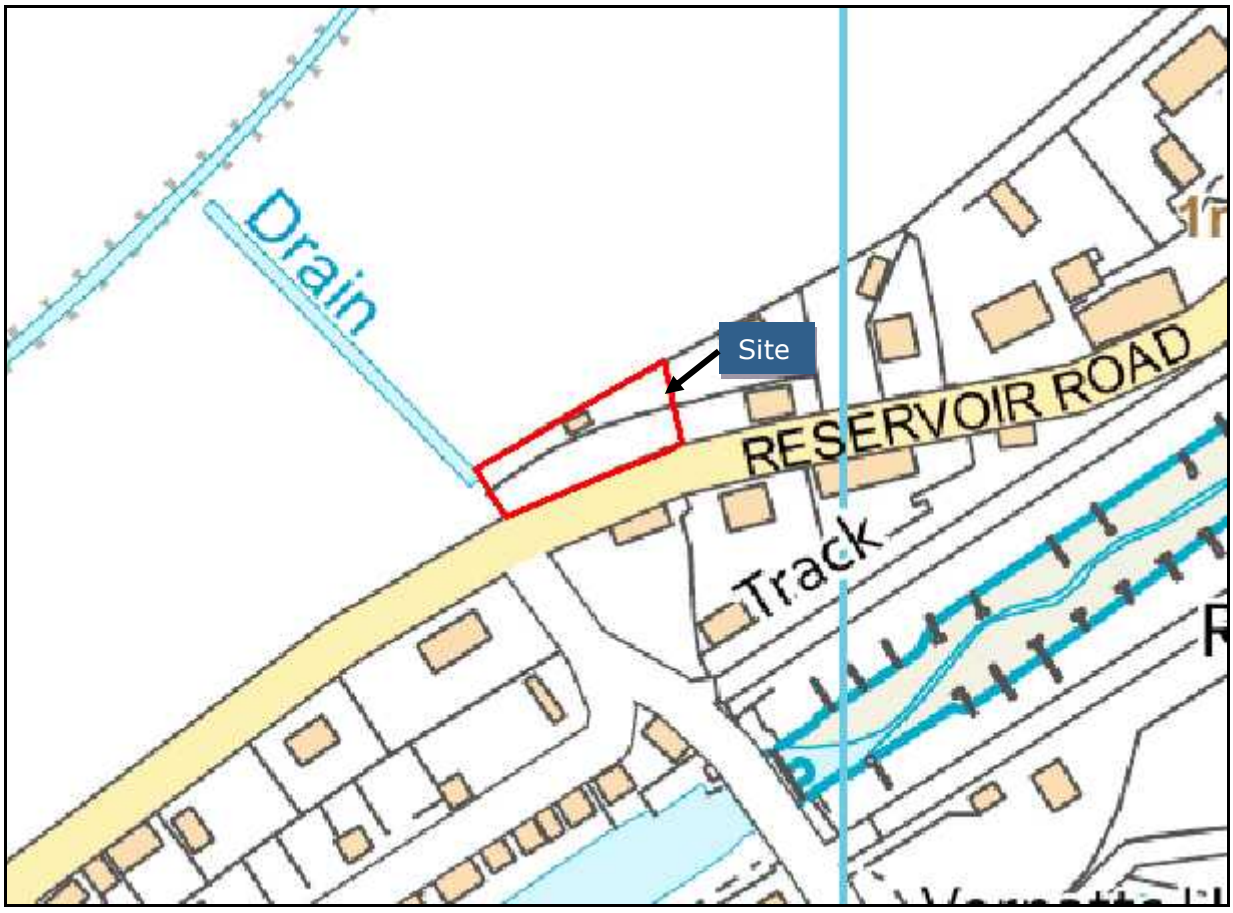


Figure 1: Site location plan (Source: Ordnance Survey)

3.1.2 The site comprises an area of undeveloped land off Reservoir Road which is located adjacent to the south eastern frontage of the site.

3.1.3 Filtered LIDAR data at 1m resolution has been obtained to determine and illustrate the topography of the site and surrounding area (Figure 2).

3.1.4 By reviewing the survey data, it can be seen that ground levels across the site fall steeply in a northerly direction. The area intended for the dwelling is set between 6.50m AOD and 7m AOD.



Figure 2: Filtered LIDAR survey data at 1m resolution where higher ground is denoted by red and orange colours and lower ground is denoted by blue colours

3.2 Site Proposals

3.2.1 It is the Client's intention to erect a new single-storey dwelling together with external parking area and garden area.

3.2.2 The finished ground floor level of the dwelling will be set 0.15m higher than existing ground levels and at 7.15m AOD. The site proposals are provided on Drawing Number 001, 002, 003 and 004A.

4. BASELINE INFORMATION

4.1 Flood Map for Planning

4.1.1 The DEFRA Flood Map for Planning and associated data was updated on 25th March 2025 (Figure 3) with pdf guidance entitled *Flood Zones Product Description.*

4.1.2 This map shows that the site is located mainly within Flood Zone 1 and partially within Flood Zone 2 and 3. The area intended for the proposed dwelling is set entirely within Flood Zone 1.

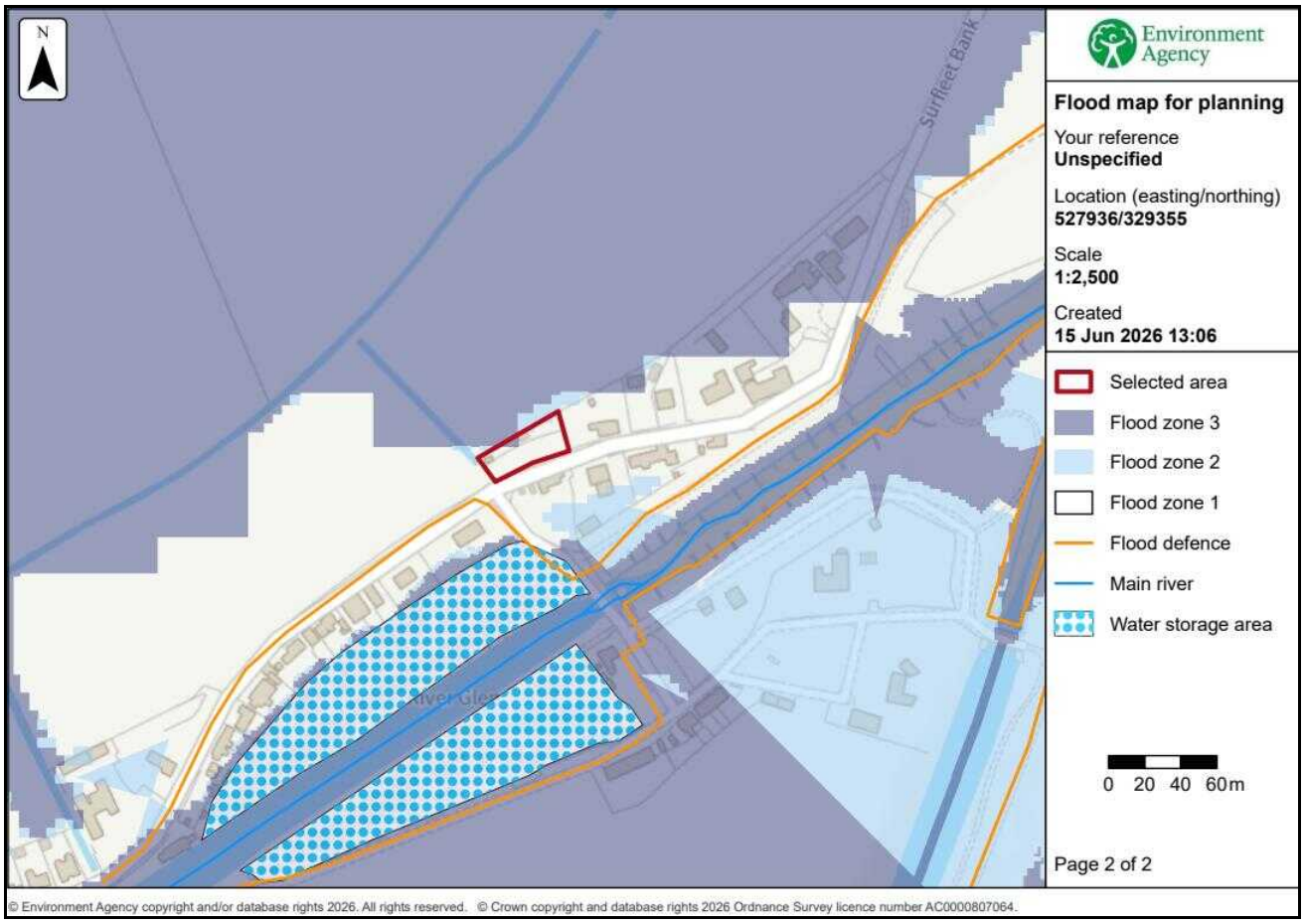


Figure 3: Flood Map for Planning

4.2 Flood Defences and Environment Agency Flood Levels

4.2.1 The Environment Agency flood defence information via https://environment.data.gov.uk/asset-management/index.html indicates that a flood defence embankment runs along the tidal reach of the River Glen located 68m south east of the site. The defence is in an adequate condition and set at 4.50m AOD.

4.2.2 Along the tidal reach of the River Welland downstream of the site, a flood defence embankment exists along the river which is in good condition.

4.2.3 In-channel fluvial flood data across the site and flood mapping has been provided by the Agency in their response received 4th February 2022 (Appendix A) and are summarised in Table 1.

Table 1: Fluvial flood level data

Node	1 in 30 year (mAOD)	1 in 100 year (mAOD)	1 in 100 year plus 20% climate change (mAOD)	1 in 1000 year (mAOD)	1 in 1000 year plus 20% climate change (mAOD)
GLEN 405	4.15	4.17	4.78	4.30	4.83

4.2.4 The UK Government's climate change allowances guidance states that the "Central" climate change allowance should be used in FRA's. For the Welland management catchment the climate change allowance is 17% up to year 2080s.

4.2.5 Therefore, when considering this scenario, the Agency's fluvial modelling includes a 1 in 100 plus 20% climate change allowance, which is higher than the required 17% and will give a more conservative climate change estimate.

4.2.6 The Agency has modelled tidal breaching of the River Welland defences and has provided the latest depth and hazard mapping which is discussed further in Chapter 5.

4.3 Flood Warning and Emergency Planning

4.3.1 The site is located within Environment Agency Flood Alert Area 055FWTWELL2 - Tidal flooding from the Left Bank of the River Welland, including Surfleet Seas End and Fosdyke.

4.3.2 Sites at risk of fluvial flooding could have a minimum of 2 hours warning before any of the levels of flood warning is issued.

4.3.3 The Environment Agency can issue each level of warning when necessary at least 12 hours prior to the next high tide or critical estimated peak surge tide (based on a model run which is reviewed every 6 hours).

4.3.4 Flood Alerts, Flood Warnings and Severe Flood Warnings are issued to residents and businesses within flood risk areas by the Agency's *Floodline Warnings Direct* (FWD) service. This system is managed by the Environment Agency and dials out a message to the recipient when a particular category of flood warning is being advised. The message is conveyed by a constant ringing of the telephone or can alternatively be communicated to mobile phones and computers. The system functions at all times, issuing flood warnings and alerts in conjunction with announcements on radio and other media. Owners and occupiers of dwellings or businesses thought to be at risk can sign up to the scheme. **The owners are encouraged to confirm details with the Agency and to sign up for these warnings.**

4.3.5 The various flood warning codes can be seen on Figure 4.



Figure 4: Flood warning codes (Source: Environment Agency)

4.3.6 It is understood that in the event of flooding, evacuation is managed by a multi-agency team in conjunction with the Police. The multi-agency team provides suitable premises for shelter, first aid, refreshments and possible transportation with consideration given to the elderly and vulnerable groups. It is essential that occupants produce robust Emergency Flood Plans to avoid putting themselves or emergency services at risk and that they do not rely solely on emergency services during the event.

4.4 Internal Drainage Board

4.4.1 The site is located within the Welland and Deepings Internal Drainage Board (IDB) area (Surfleet catchment). The closest IDB controlled drainage ditch is located 118m north west of the site.

4.4.2 Information from the IDB's *Policy Statement on Water Level and Flood Risk Management* indicates that the IDB maintains the drainage network and more specifically water levels through the operation and maintenance of its pumping stations. The IDB's infrastructure, including its watercourses and pumping stations, is monitored by the IDB to ensure that their condition meet the standards of protection sought and improvement works are carried out where appropriate and necessary.

5. FLUVIAL FLOOD RISK

5.1 Table 2 shows the flood depth and hazard across the site. Although a hazard rating is not provided by the Agency, in order to determine the flood hazard at the site the hazard categories outlined in Table 13.1 of *FD2320/TR2* (Figure 5 below), which is defined by the depth and velocity of the floodwater and the ability of people to evacuate once flooding occurs, has been used (assuming 0.5 m/s velocity). It should be noted that the white cells shown on Figure 5 denote a *Very low* hazard.

Table 13.1 Danger to people for different combinations of depth and velocity

Velocity (m/s)	Depth of flooding (m)											
	0.05	0.10	0.20	0.30	0.40	0.50	0.60	0.80	1.00	1.50	2.00	2.50
0.00												
0.10												
0.25												
0.50												
1.00												
1.50												
2.00												
2.50												
3.00												
3.50												
4.00												
4.50												
5.00												

Key:
- Danger for some
- Danger for most
- Danger for all

(Source Table 13.1 of FD2320/TR2)

Figure 5: Hazard Classification

Table 2: Flood levels and depths during fluvial events

Location	1 in 30 year	1 in 100 year	1 in 100 year plus 20% climate change	1 in 1000 year	1 in 1000 year plus 20% climate change
GLEN 405	4.15m AOD	4.17m AOD	4.78m AOD	4.30m AOD	4.83m AOD
Flood Depth (m) at site based on proposed ground floor level of 7.15m AOD.	0	0	0	0	0
	Very low hazard				
	Dangerous for Some				
	Dangerous for Most				
	Dangerous for All				

5.2 The results in Table 2 and Agency's mapping in Appendix A indicates that the proposed ground floor and the site will be set above all modelled flood levels thus providing safe (dry) refuge during all events.

6. TIDAL FLOOD RISK

6.1 The Agency has investigated the impacts of breaching of the River Welland defences and provided flood extents, depths and hazard (Appendix A) at the site as part of their response received 4th February 2022.

6.2 The Agency's maps in Appendix A indicate that the site and Reservoir Road would not be affected by floodwater during the present day 1 in 200 year event and present day 1 in 1000 year event.

6.3 The data in Appendix A shows that if the defences breached during the climate change 1 in 200 year event and climate change 1 in 1000 year event, the depth of floodwater across this area would range between 0m and 0.25m. The flood level is estimated to be 6.75m AOD. The hazard would be *Dangerous for Some* and *Dangerous for Most.*

7. FLUVIAL FLOOD RISK MITIGATION AND EVACUATION

7.1 Reducing Exposure to the Hazard

7.1.1 In order to assess and reduce the exposure to the hazard and the vulnerability to the hazard after the site has been developed, the guidance outlined in the DCLG/DEFRA/EA document entitled *Flood Risk Assessment Guidance for New Development Phase 2*; *Flood Risks to People, Phase 2*; *Improving the Flood Performance of New Buildings* has been consulted.

7.1.2 Paragraph 004 of the NPPF Planning Practice Guidance states that the first preference is to avoid flood risk by raising floor levels above the design flood level.

7.1.3 As discussed in Chapter 5, the site and proposed ground floor level will be above all modelled fluvial flood levels thus complying with the NPPG. The finished floor level will be set 2.37m higher than the design flood level of 4.78m AOD.

7.1.4 Furthermore, when considering tidal climate change breach events, Chapter 6 indicates that the flood level across the site would be 6.75m AOD, and therefore the proposed floor level will be set 0.40m higher than the flood level.

7.1.5 Safe dry refuge will be provided at all times.

7.2 Reducing Vulnerability to the Hazard

7.2.1 It is understood that the police and other emergency services will assist in the evacuation to rest centres operated by the Council. People at the site will need to make a judgment themselves with regards to the flood hazard if evacuation is attempted and not solely rely on the emergency services.

7.2.2 It is recommended that the occupants liaise with the Agency in order to register with the Agency's Flood Warnings Direct service and ensure that they are aware of the flood risk so that they have the option to evacuate upon receipt of a *Flood Warning* or upon the instruction of the emergency services.

7.2.3 The occupants should develop a *Family Flood Plan*. Further guidance is offered in the Environment Agency's guidance document entitled *What to do before, during and after a flood*. The *Family Flood Plan* should consider, for example, information about vital medication needed and a *Flood Kit*.

7.2.4 A *Flood Kit* is a useful precautionary measure especially if evacuation from the site is prolonged. The kit should be stored in an accessible location to ensure that it is not affected by floodwater. The contents should also be checked every 6 months and items replaced if necessary.

7.2.5 It may be sensible to compile two *Flood Kit's* to suit each eventuality. For example, a smaller kit could be compiled which would allow the occupants to carry it during evacuation. A larger kit could also be compiled which included additional food and beverage items in case of ongoing refuge within the property. Both kits should contain the necessary items as suggested below.

1. Important documents
2. Torch and batteries
3. Mobile phone (fully charged)
4. First-aid kit

5. Wind-up radio
6. Important telephone numbers
7. Bottled water
8. Non-perishable food provisions
9. Rubber Gloves and wellington boots
10. Medication or information relating to medication and its location
11. Blankets, warm clothes
12. Essential toiletries
13. Camera to record any damage
14. Emergency cash

Table 3: Flood Event Action Plan

Environment Agency Flood Warning Code	What to do!	Evacuate?
Flood Alert (Flooding Possible. Be aware/prepared! Watch Out).  	• Monitor flood risk through media and Floodline Warnings Direct. • Locate family members and inform them of risk. If away from the site make assessment on risk if considering returning to site (i.e. how long it will take to return etc). • Check flood kit, check occupants, check pets – BE PREPARED in case the situation gets worse.	Not necessary. Occupants can evacuate themselves if they feel unsafe providing that they make a judgement in relation to any external flood hazard. Take flood kit, occupants and pets with you.
Flood Warning (Flooding of homes, businesses and main roads is expected. Act now!).  	• Maintain communication through Floodline Warnings Direct and the media. • Begin to implement Flood Plan. • Consider advice given from emergency services/Environment Agency. • Check insurance, Check flood kit, Check Pets. • Check alternative accommodation arrangements.	Occupants can evacuate themselves if they feel unsafe providing that they make a judgement in relation to any external flood hazard. Take flood kit, occupants and pets with you. No formal evacuation or rest centre set-up will be undertaken at this warning level, however, if flooding is experienced across the area emergency services will rescue people.
Severe Flood Warning (Severe flooding is expected. Imminent danger to life and property. Act now!).	• Leave site immediately if not already done so. • Take flood kit, occupants and pets with you. • Follow advice given by Emergency Services and Council.	Leave site according to advice given by Emergency Services and Council. Take flood kit, occupants and pets with you.

		
Warnings no longer in force (No further flooding is expected in the area. Be careful).	• Return to site upon instruction from emergency services and assess any damage. • Contact insurance company depending on damage caused. • Beware of flood debris. • Do not touch sources of electricity. • Arrange for utilities to reconnect services. • Do not dispose of damaged property until your insurance company has agreed.	Not applicable, however site may be uninhabitable. Return to site upon instruction from emergency services as floodwater may not have receded.

7.3 Vulnerable Groups

7.3.1 The occupants at the site may include vulnerable groups such as elderly people, those with sensory or physical disabilities, minority ethnic groups, or the infirm. Priority will need to be given to these people during the flood event.

7.3.2 Vulnerable groups should be identified by the occupants and priority should be given to these groups during the event.

7.4 Safe Access/Egress

7.4.1 The Agency's mapping in Appendix A shows that during all fluvial modelled flood events there would be safe access/egress along Reservoir Road.

7.4.2 During tidal climate change events, the Agency's breach hazard mapping in Appendix A shows that there would largely be a *Very low* hazard along Reservoir Road.

7.5 Insurance

7.5.1 The Association of British Insurers (ABI) published a guidance document in 2012 entitled *Guidance on Insurance and Planning in Flood Risk Areas for Local Planning Authorities in England*.

7.5.2 The ABI guidance sets out the requirements of the insurance industry when considering flood risk and insurability of the property. The guidance suggests that properties should be protected for flood events up to the 1 in 100 year event in order to access insurance at a competitive price.

7.5.3 The guidance also states that insurers would of course prefer to cover properties which are not at risk of flooding, however, for those properties which are at risk of flooding insurers would prefer that the properties are raised above the flood level, over resistance measures which prevent floodwater from entering the building, or resilience measures which allows floodwater to enter the building.

7.5.4 The proposed floor level will be set above the climate change 1 in 1000 year flood level, therefore, the ABI's requirement of protection during a climate change 1 in 100 year event will be exceeded and there will be a good chance of the property being insured at a competitive rate.

8. OTHER SOURCES OF FLOODING

8.1 Groundwater Flooding

Soil and Geology at the Site

8.1.1 It can be seen from the various soil and hydrogeological data, listed in Section 2, that the soil types and geology across the site comprise clay and silt.

Groundwater Flooding Potential at the Site

8.1.2 The PFRA shows that the site is located across an area with a negligible groundwater flooding risk.

8.1.3 The 'Check the long term flood risk for an area in England' at https://www.gov.uk/check-long-term-flood-risk states that flooding from groundwater is unlikely in this area.

8.2 Surface Water Flooding and Sewer Flooding

Flood Map for Planning – Surface Water Spatial Planning Extents

8.2.1 Prior to May 28th 2026, the DEFRA Risk of flooding from surface water (RoFSW) map accessed at https://www.gov.uk/check-long-term-flood-risk was used to inform pluvial/surface water flood risk.

8.2.2 However, it is now confirmed from the Environment Agency's Flood and Coastal Risk Management (FCRM) division (https://www.tcpa.org.uk/resources/new-national-flood-and-coastal-erosion-risk-information/) that on May 28th 2026 new guidance was issued, which advises that in order to consider climate change to 2125, and subsequently the lifetime of most development, the surface water maps added to the Flood Map for Planning at https://flood-map-for-planning.service.gov.uk/ should now be used.

8.2.3 Further details are provided in the supporting pdf guidance entitled *Surface Water Spatial Planning - Product Description*. The dataset can be viewed at https://flood-map-for-planning.service.gov.uk/ and the raw GIS data is available to download via the DEFRA Data Services Platform at https://environment.data.gov.uk/.

8.2.4 The supporting pdf guidance states that the datasets are created by combining best available flood models, including locally produced detailed flood model information from the LLFA's, and national flood modelling. Flooding to a depth of <75mm is removed because most land is covered by some water as rain falls across the area and very shallow floodwater is generally unlikely to prevent access or cause flooding to properties.

8.2.5 The DEFRA Data Services Platform states that these datasets show the extent of land at risk of flooding from surface water to a defined annual exceedance probability (AEP) or chance of flooding each year, taking into account the possible effects of climate change.

8.2.6 The datasets include:

- Flood Map for Planning – Surface Water Spatial Planning Extents – present day
- Flood Map for Planning – Surface Water Spatial Planning Depths – present day
- Flood Map for Planning – Surface Water Spatial Planning Extents – climate change
- Flood Map for Planning – Surface Water Spatial Planning Depths – climate change

8.2.7 The total extent datasets include the following scenarios:

- 0.1% AEP (1 in 1000)
- 1% AEP (1 in 100)
- 3.3% AEP (1 in 30)

8.2.8 The depth datasets show extent of flooding to the following depth bands:

- Up to 150mm
- 150-300mm
- 300-600mm
- 600-900mm
- 900-1200mm
- 1200-2300mm
- Over 2300mm

8.2.9 It is understood from the DEFRA Data Services Platform that climate change scenarios have been produced to indicate the predicted impacts of climate change on future flood risk. The climate change allowances are based on the latest UK Climate Projections (UKCP18) from the Met Office, using the Representative Concentration Pathway (RCP) 8.5.

8.2.10 The 'Upper End' for the 2070s epoch (2061-2125) has been used for the climate change scenarios to support long-term planning and development decisions.

8.2.11 The Flood Map for Planning therefore indicates that the proposed dwelling would be located outside of all modelled present day events and climate change 1 in 1000 year event (Figure 6 and 7).

8.2.12 Safe access/egress is available at all times.

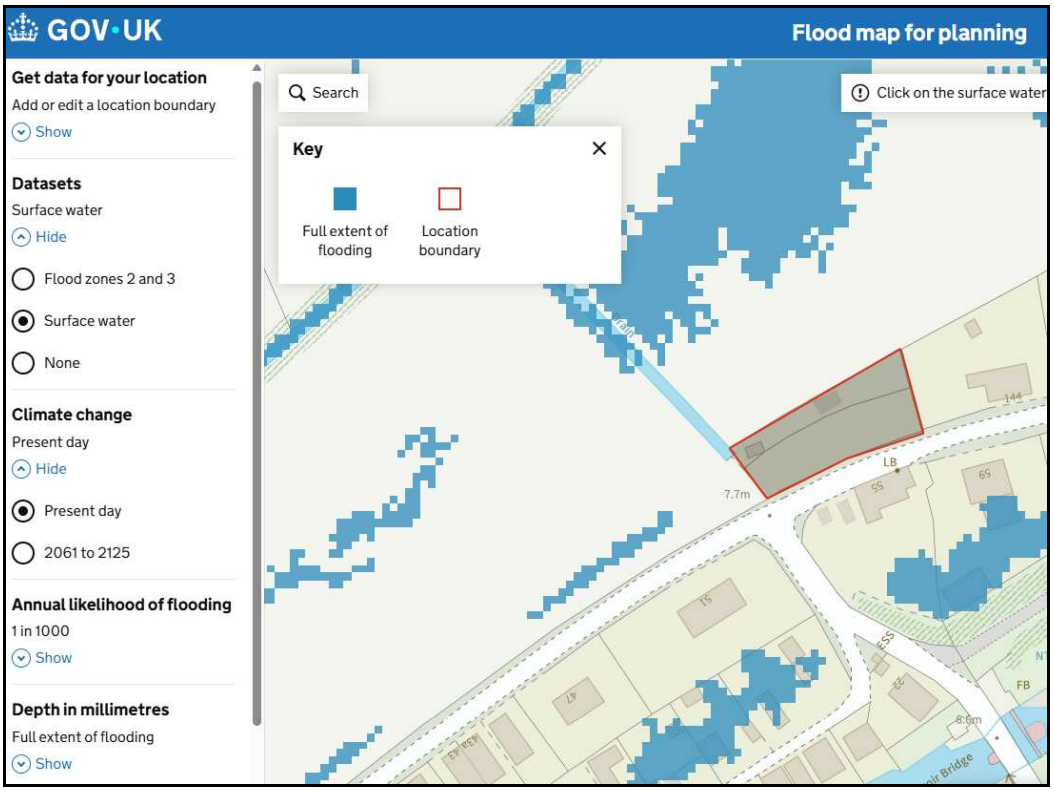


Figure 6: Flood Map for Planning present day 1 in 1000 year surface water flood extent from https://flood-map-for-planning.service.gov.uk/

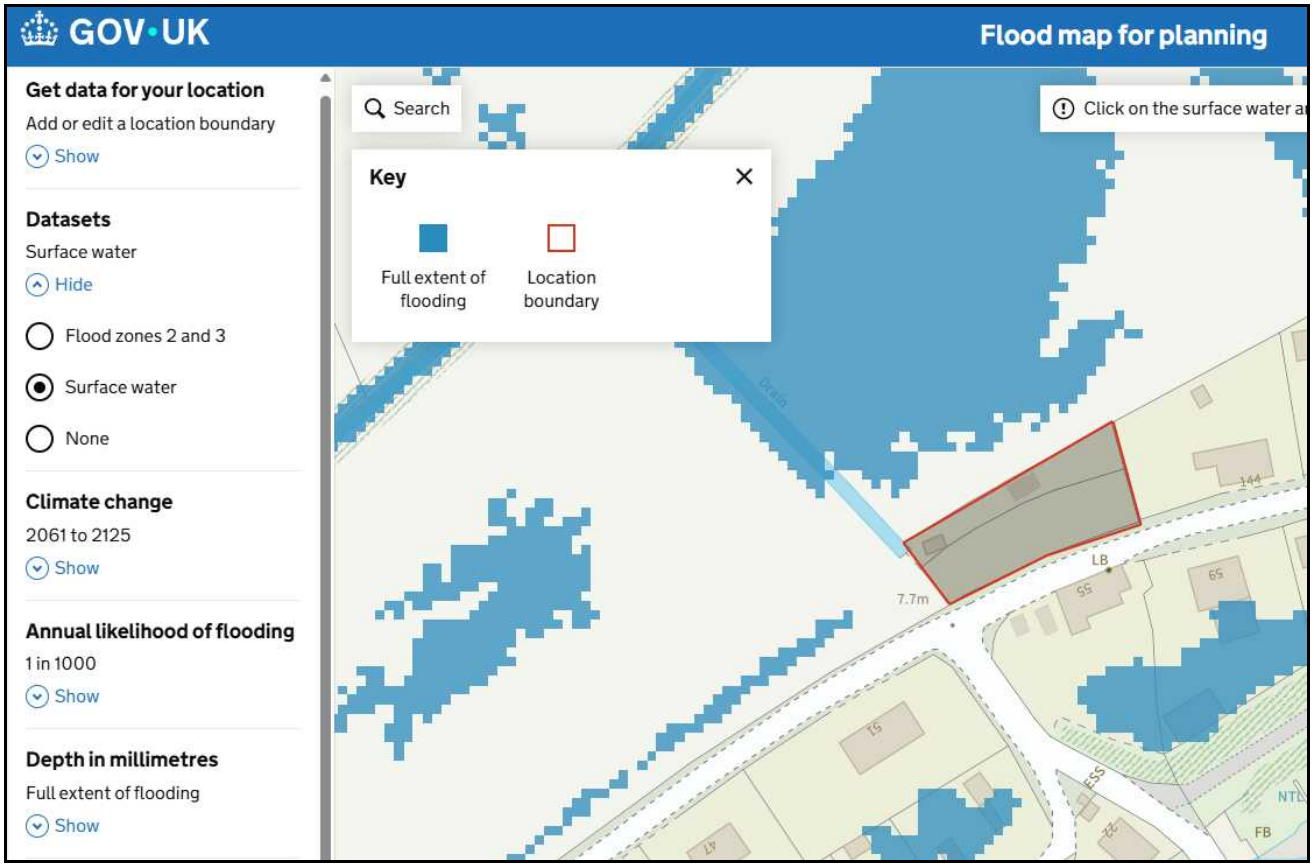


Figure 7: Flood Map for Planning climate change 1 in 1000 year surface water flood extent from https://flood-map-for-planning.service.gov.uk/

8.3 Reservoirs, Canals And Other Artificial Sources

8.3.1 The failure of man-made infrastructure such as flood defences and other structures can result in unexpected flooding. Flooding from artificial sources such as reservoirs, canals and lakes can occur suddenly and without warning, leading to high depths and velocities of flood water which pose a safety risk to people and property.

8.3.2 The 'Check the long term flood risk for an area in England' at https://www.gov.uk/check-long-term-flood-risk states that flooding from reservoirs is unlikely in this area.

9. CONCLUSIONS

- It is the Client's intention to erect a new single-storey dwelling together with external parking area. The finished ground floor level of the dwelling will be set 0.15m higher than existing ground levels and at 7.15m AOD.

- This site is located within Flood Zone 1.

- The fluvial climate change (20%) 1 in 100 year flood level has been estimated to reach 4.78m AOD. The fluvial climate change 1 in 1000 year flood level is 4.83m AOD.

- When considering tidal climate change breach events, the flood level has been estimated to be 6.75m AOD.

- The proposed floor level will be set above all modelled fluvial and tidal climate change flood levels thus providing safe dry refuge and no internal flooding.

- A warning and evacuation strategy has been developed within this assessment. It is proposed that the occupants register with the Agency's *Flood Warnings Direct* and prepare a *Family Flood Plan*.

- Safe access/egress can be achieved during the peak of the fluvial event and largely during the tidal breach event.

- It is considered that there is a low risk of groundwater flooding at the site from underlying deposits.

- The site is shown to be outside of all modelled present day surface water flood events and climate change 1 in 1000 year event.

10. BIBLIOGRAPHY

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iv. DEFRA/EA document entitled *The flood risks to people methodology (FD2321/TR1),* 2006;

v. DEFRA/Jacobs 2004. *Strategy for Flood and Coastal Erosion Risk Management: Groundwater Flooding Scoping Study (LDS), Final Report, Volumes 1 and 2*.

vi. EA *Supplementary Note on Flood Hazard Ratings and Thresholds for Development Planning and Control Purpose*, 2008

vii. Institute of Geological Sciences 1977. *Hydrogeological Map of England and Wales,* 1:625,000. NERC.

viii. Lincolnshire County Council Preliminary Flood Risk Assessment dated 2011.

ix. South East Lincolnshire Strategic Flood Risk Assessment (SFRA) dated March 2017.

APPENDIX A – EA FLOOD DATA

Environment Agency

Our ref: CCN-2022-247687

Rupert Evans
rupert.evans@evansriversandcoastal.co.uk

Date: 03/02/2022

Dear Rupert Evans

Provision of Flood Risk Information for Reservoir Road, Surfleet

Thank you for your request to use 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.

1. Flood Map

The attached map includes the current Flood Map for your area. The Flood 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 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 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. Historic Flood Event Outlines

A copy of the Historic Flood Extent Map showing the extent of previous recorded flooding in your area is attached. The map shows Surfleet Reservoir stored water in 1998. It is also known to have stored water on other occasions, most notably in 1994, 2000, 2009 and 2013. This only covers information we hold and it is possible other flooding may have occurred which other organisations, such as the Local Authority or Internal Drainage Boards, may have records.

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

4.1 Fluvial Defence Information

The Surfleet Reservoir which is a fluvial flood storage reservoir is designed to contain fluvial flood water when discharge from the River Glen is tide-locked. It is classified as **Flood Zone 3b** Functional Floodplain. This zone comprises land where water has to flow or be stored at times of flood.

Refer to paragraph 3 for details of any ongoing capital projects to reduce the flood risk to this site.

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.

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 fluvial hazard mapping.

5. Tidal Flood Risk Information

5.1 Tidal Defence Information

The existing tidal defences protecting this site consist of earth embankments.

They are in good 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.

Refer to paragraph 3 for details of any ongoing capital projects to reduce the flood risk to this site.

5.2 Tidal Flood Levels

The attached data sheets show our current best estimate for extreme tide levels.

Please read the information notes on the data sheets.

5.3 Tidal 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 along the full coastal / tidal floodplain, except the tidal Witham Haven in Boston (upstream of Hobhole) where only breaching and not overtopping has been modelled and the tidal River Welland upstream of Fosdyke Bridge where neither breaching nor overtopping are available.

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

The attached maps show the maximum values of flood depth, velocity and hazard rating (danger to people) resulting from breaching of the defences at specific locations for the scenarios below. For some locations the breach mapping also includes flooding from overtopping if this is expected in that scenario. The location of modelled tidal breaches is shown on a separate attached map.

5.3.1 Tidal Hazard Mapping - Breaches

- Year 2006 0.5% (1 in 200) chance
- Year 2006 0.1% (1 in 1000) chance
- Year 2115 0.5% (1 in 200) chance
- Year 2115 0.1% (1 in 1000) chance

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. 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 Rachael Storey using the email address below.

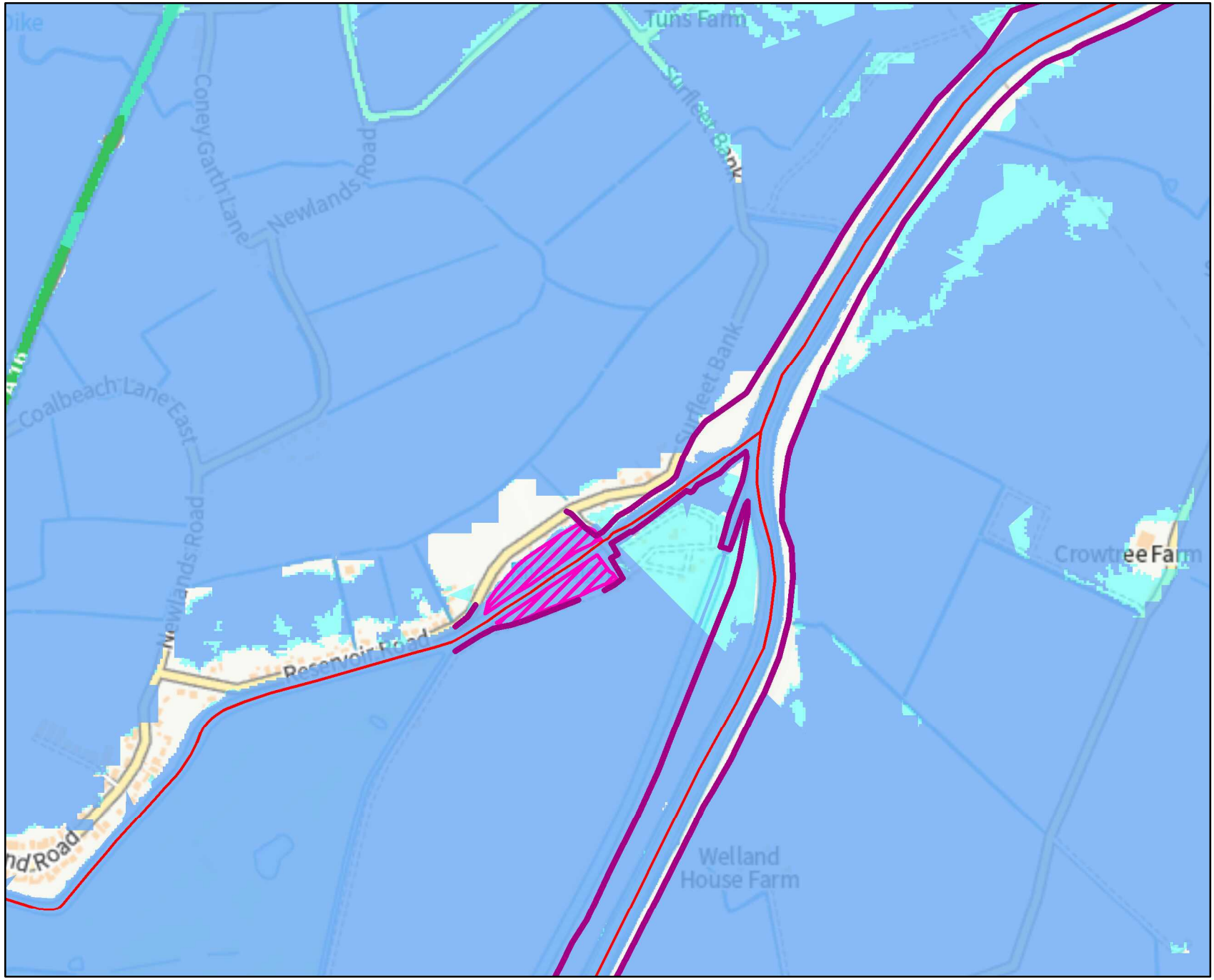
Yours sincerely,



for Alastair Windler
Weland and Nene Partnerships and Strategic Overview Team Leader
e-mail PSOWN@environment-agency.gov.uk

Enc.
Flood Map
Historic Flood Event Outlines Map
Modelled Node Points Map
Modelled Fluvial Levels and Flows Data Sheet
Modelled Flood Extent Maps
Tidal Level Data Sheets - Map and Tables
Tidal Breach Points – Locations Map
Hazard Mapping – Breaching

Flood Map centred on TF 27983 29367 - created February 2022 [Ref: CCN-2022-247687]



Environment Agency

Scale 1:10,000

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Legend

- Main River
- Raised Defences
- Flood Storage Area
- 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.

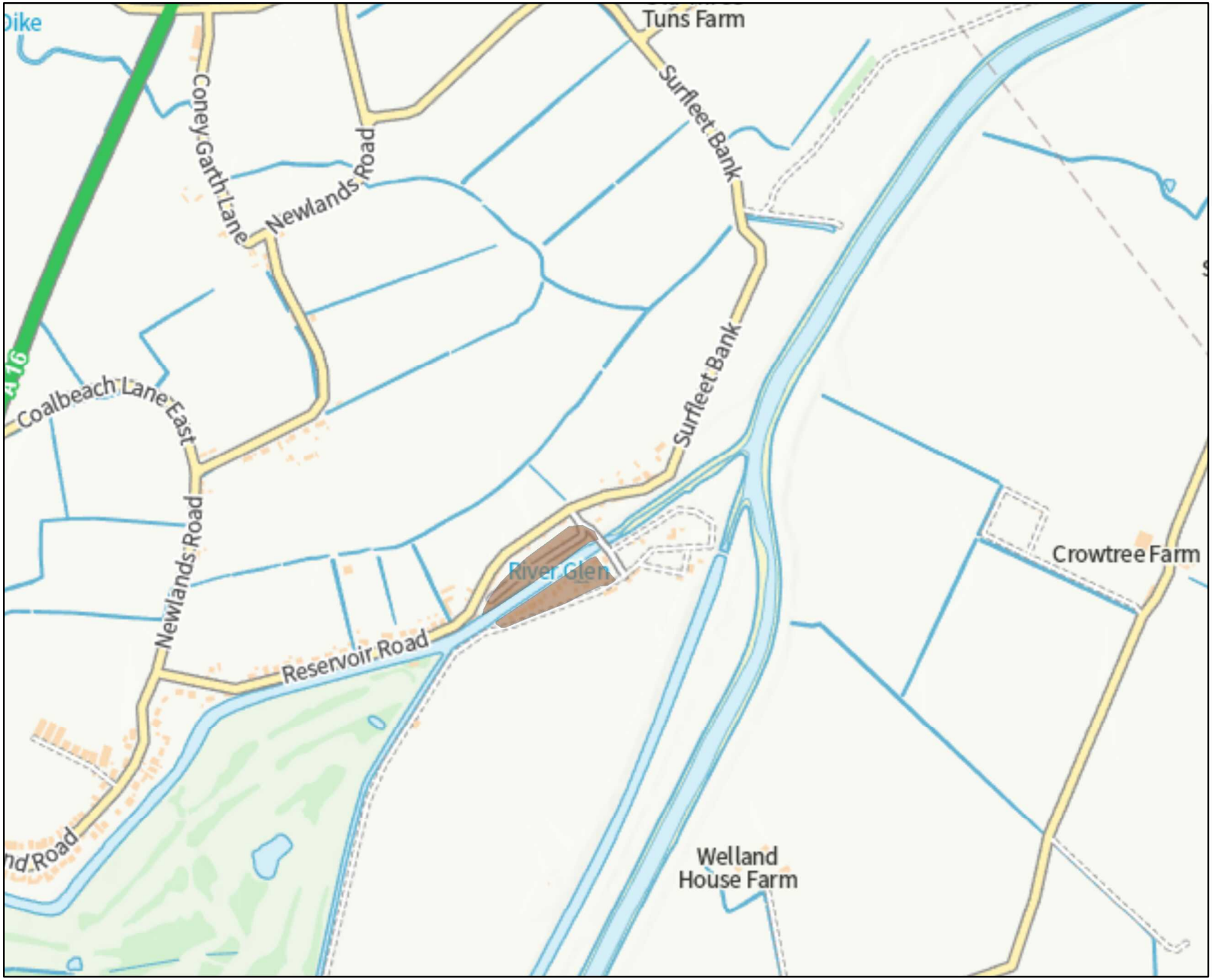
- or from a river by a flood that has a 1% (1 in 100) or greater chance of happening each year.

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.

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Historic Flood Map centred on TF 27983 29367 - created February 2022 [Ref: CCN-2022-247687]



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Scale 1:10,000

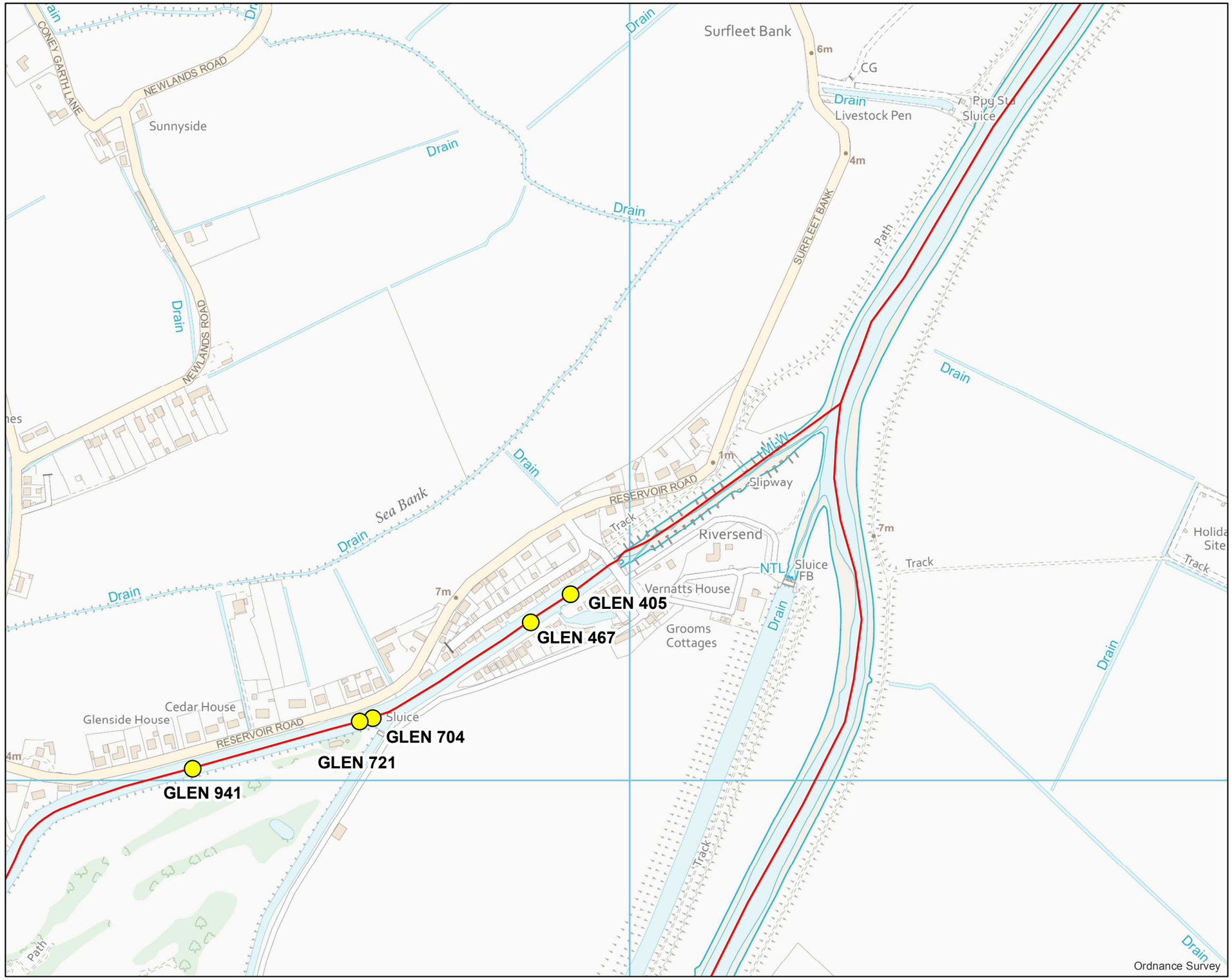
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Legend

Easter 1998 on the River Glen at Surfleet

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Node Map Levels centred on TF 27983 29367 - created February 2022 [Ref: CCN-2022-247687]



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Scale 1:5,000

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Legend

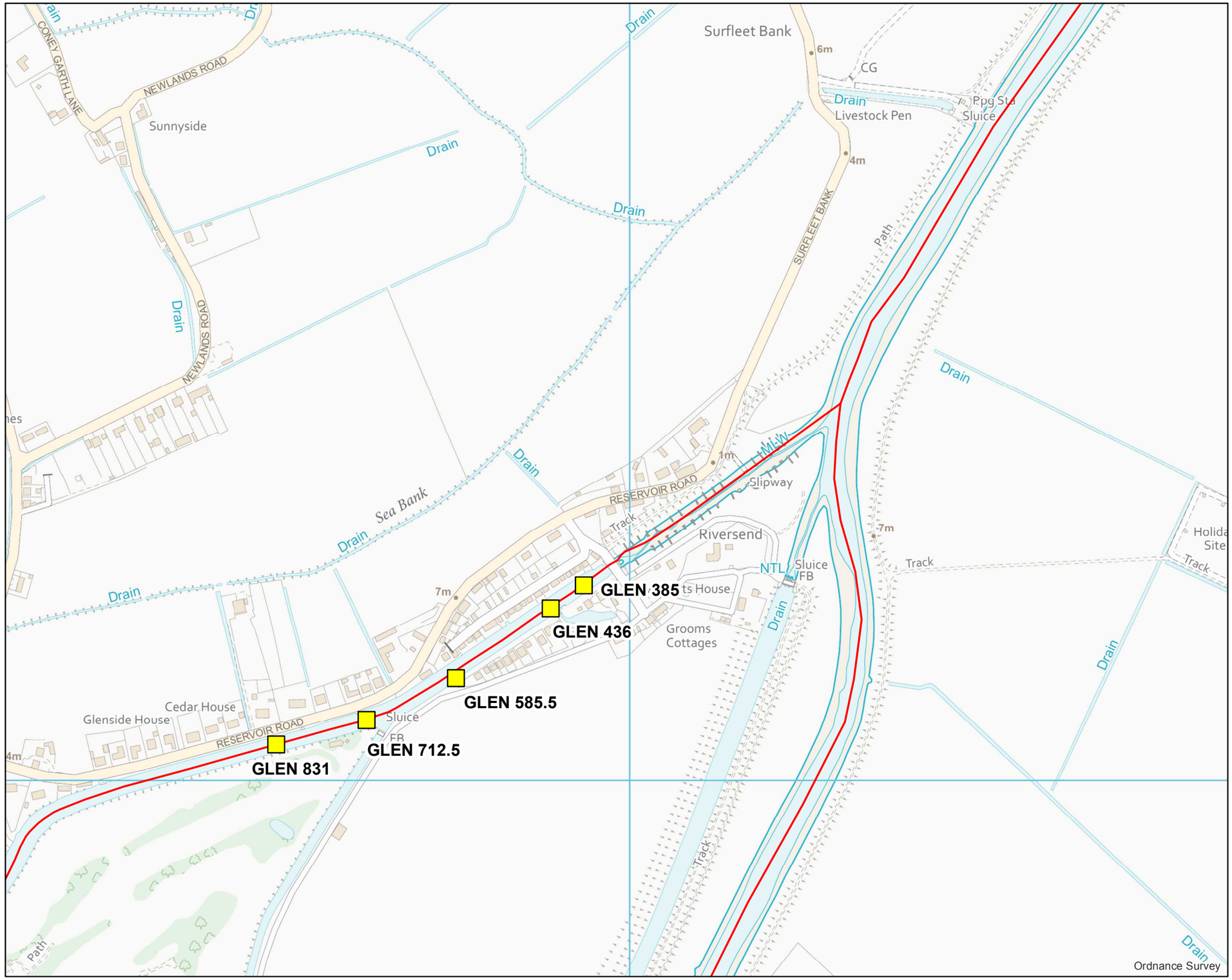
- Modelled Levels
- Main River

Created by the Partnerships and Strategic Overview Team, Kettering

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Node Map Flows centred on TF 27983 29367 - created February 2022 [Ref: CCN-2022-247687]



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Scale 1:5,000

N

Legend

- Modelled Flows
- Main River

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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).

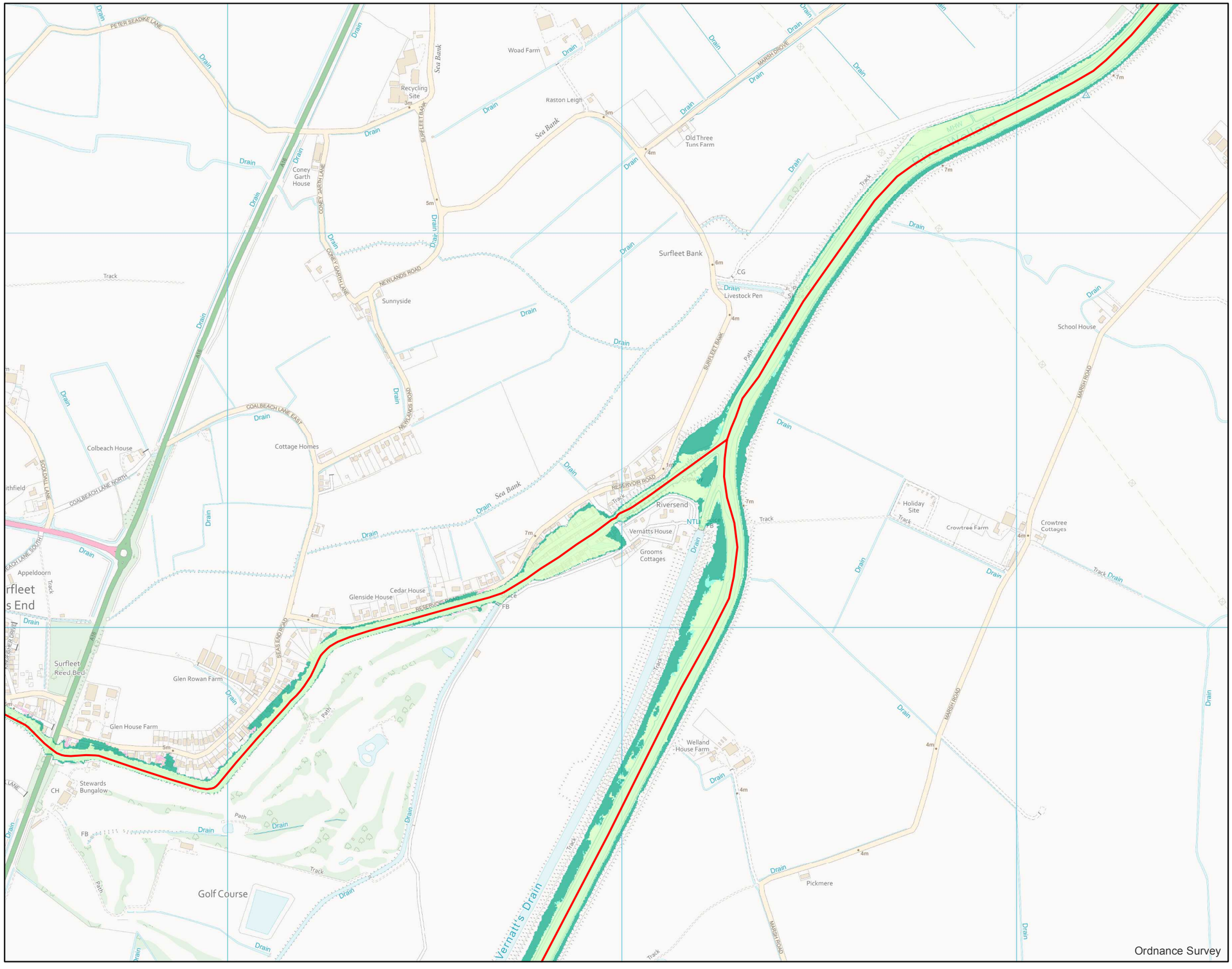
			Annual Exceedance Probability - Maximum Water Levels (mODN)											
Node Label	Easting	Northing	50% (1 in 2)	20% (1 in 5)	10% (1 in 10)	5% (1 in 20)	3.33% (1 in 30)	2% (1 in 50)	1.33% (1 in 75)	1% (1 in 100)	1% (1 in 100) inc 20% Climate Change	0.5% (1 in 200)	0.1% (1 in 1000)	0.1% (1 in 1000) inc 20% Climate Change
GLEN 405	527926	329235	3.90	4.04	4.13	4.19	4.15	4.16	4.17	4.17	4.78	4.22	4.30	4.83
GLEN 467	527875	329200	3.90	4.04	4.13	4.19	4.15	4.16	4.17	4.17	4.78	4.22	4.30	4.83
GLEN 704	527675	329079	3.91	4.04	4.13	4.19	4.16	4.17	4.18	4.18	4.78	4.22	4.31	4.83
GLEN 721	527659	329075	3.91	4.04	4.13	4.19	4.16	4.17	4.18	4.18	4.78	4.22	4.31	4.83
GLEN 941	527448	329015	3.91	4.04	4.13	4.20	4.17	4.18	4.18	4.19	4.78	4.22	4.32	4.83

Fluvial Flood Flows (m^3/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 (m^3/s).

			Annual Exceedance Probability - Maximum Flows (m^3/s)											
Node Label	**Easting**	**Northing**	**50% (1 in 2)**	**20% (1 in 5)**	**10% (1 in 10)**	**5% (1 in 20)**	**3.33% (1 in 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 385	527942	329247	62.24	64.05	65.48	67.66	68.41	68.80	69.29	70.75	81.51	71.42	80.70	90.23
GLEN 436	527900	329218	61.17	63.09	64.30	66.85	67.59	67.27	68.12	70.35	80.17	70.69	79.46	88.86
GLEN 585.5	527780	329130	58.71	60.86	62.61	64.73	65.42	64.89	65.93	65.92	77.20	68.97	76.89	85.97
GLEN 712.5	527667	329077	54.83	56.98	58.81	60.90	61.63	61.09	62.15	62.26	73.34	65.23	73.13	82.15
GLEN 831	527553	329046	53.90	56.07	57.98	60.02	60.79	60.25	61.32	61.55	72.47	64.44	72.34	81.32

Modelled Flood Extents (with defences)
Map centred on TF 27983 29367- created February 2022 [Ref: CCN-2022-247687]



Environment Agency

Scale 1:10,000

N W E S

Modelled Flood Extents (with defences)

- Main River
- 5% (1 in 20) Fluvial Event
- 1% (1 in 100) Fluvial Event
- 1% (1 in 100) Fluvial Event inc Climate Change
- 0.1% (1 in 1000) Fluvial Event
- 0.1% (1 in 1000) Fluvial Event inc Climate Change

Created by the Partnerships & Strategic Overview Team, Kettering

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



Environment Agency

Scale 1:550,000

N W E S

▲ East Coast and Wash

See seperate data sheet for predicted flood levels

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East Coast and Wash: Immingham to the West Lighthouse

201□ Coastal Flood Boundar□ E□tre□ e Sea Levels

CFB Ref	Locatio□	Easti□g	□orthi□g	Annual Chance □1 i□ □□ of Tide Level i□ metres OD□																	
				1			10			50			100			200			□00			1000		
				Confidence Bound			Confidence Bound			Confidence Bound			Confidence Bound			Confidence Bound			Confidence Bound			Confidence Bound		
				2□5□	50□	□□5□	2□5□	50□	□□5□	2□5□	50□	□□5□	2□5□	50□	□□5□	2□5□	50□	□□5□	2□5□	50□	□□5□	2□5□	50□	□□5□
□□□□	I□ □ingha□	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
□□□0	Ha□orough 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
□□□□	Gri□s□□	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
□□0□	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
□□10	Tetne□	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
□□1□	Donna □ook	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
□□2□	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
□□42	Bo□grift	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
□□□□	Gi□raltar 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
□□□2□14	Ho□hole	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
□□□2□□	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
□□□2□5	Fosd□ke 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
400□	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	-	-	-	-	-	-	-
□	Wis□ech	546110	309940	-	4.83	-	-	5.25	-	-	5.53	-	-	5.66	-	-	5.78	-	-	-	-	-	-	-
□	Dog□in□a□ Dou□let	527200	299287	-	3.67	-	-	4.00	-	-	4.22	-	-	4.32	-	-	4.42	-	-	-	-	-	-	-

See next page for notes

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(i.e. numbers beginning with 01 or 02)

Email: enquiries@environment-agency.gov.uk
www.gov.uk/environment-agency

East Coast and Wash: Immingham to the West Lighthouse

201□ Coastal Flood Boundar□ E□tre□ e 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://deframetadata.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

- The data is based on CFB 2018 data for Boston Barrier site, capped at 5.3mAOD to reflect use of the barrier.
- 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://deframetadata.com/geonetwork/srv/eng/catalog.search#/metadata/84a5c7c0-d465-11e4-b0bd-f0def148f590

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^ **Modelled Breach Locations**

0 3.5 7 14 Kilometres

This map indicates the location of where we have modelled the consequence of breaches in the defences along the coastline and tidal rivers. We have mapped the the maximum values of Hazard Rating (Danger to People), Depth and Velocity.

We have not assumed that all breaches occur at the same time, but have modelled each breach individually and overlaid the results to find the maximum values.

Our modelling only considers the consequences of a breach, it does not make any assumption about the likelihood of a breach occurring. Our defences generally provide a good standard of flood defence but a risk of breaching remains.

Please contact the Environment Agency for information on how these maps are used in the management of flood risk.

General Enquiries No: 03708 506 506.
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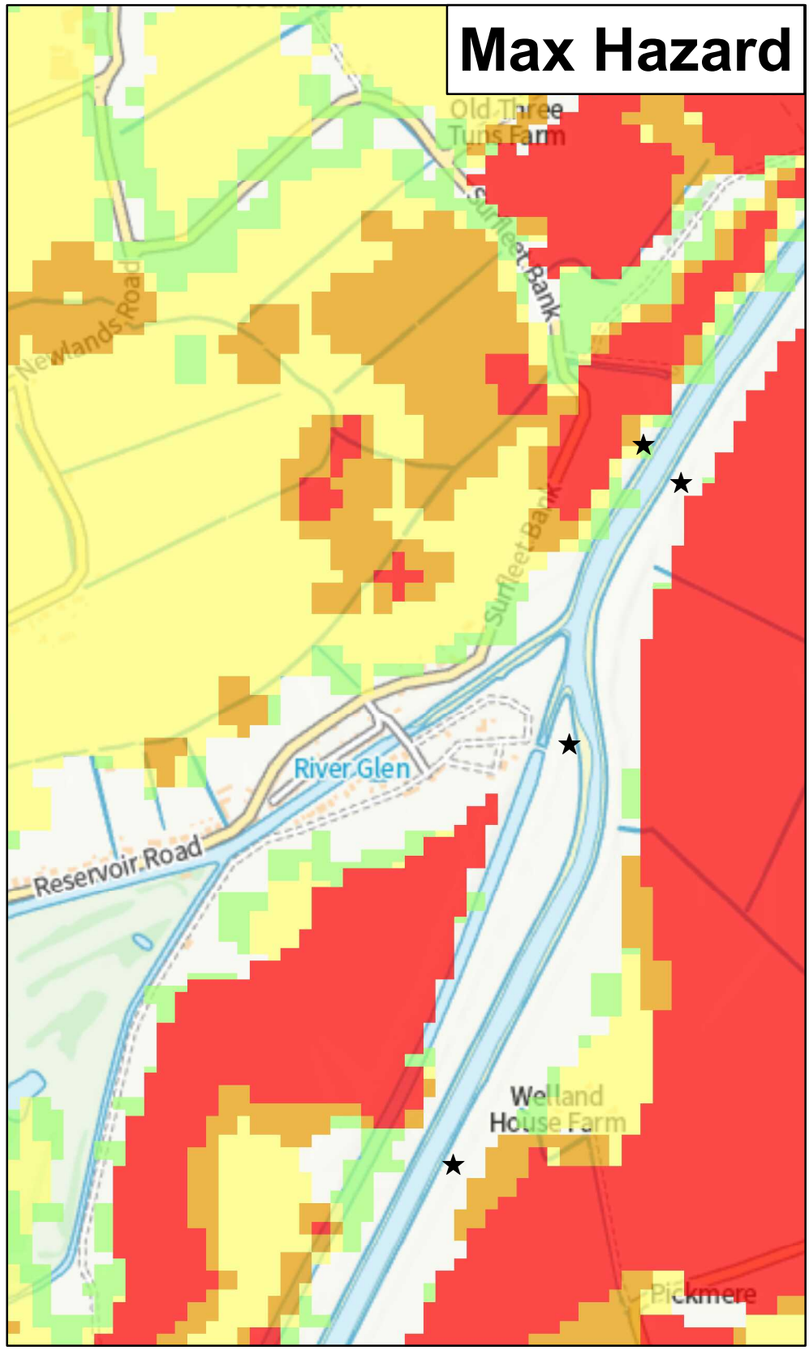
Environment Agency

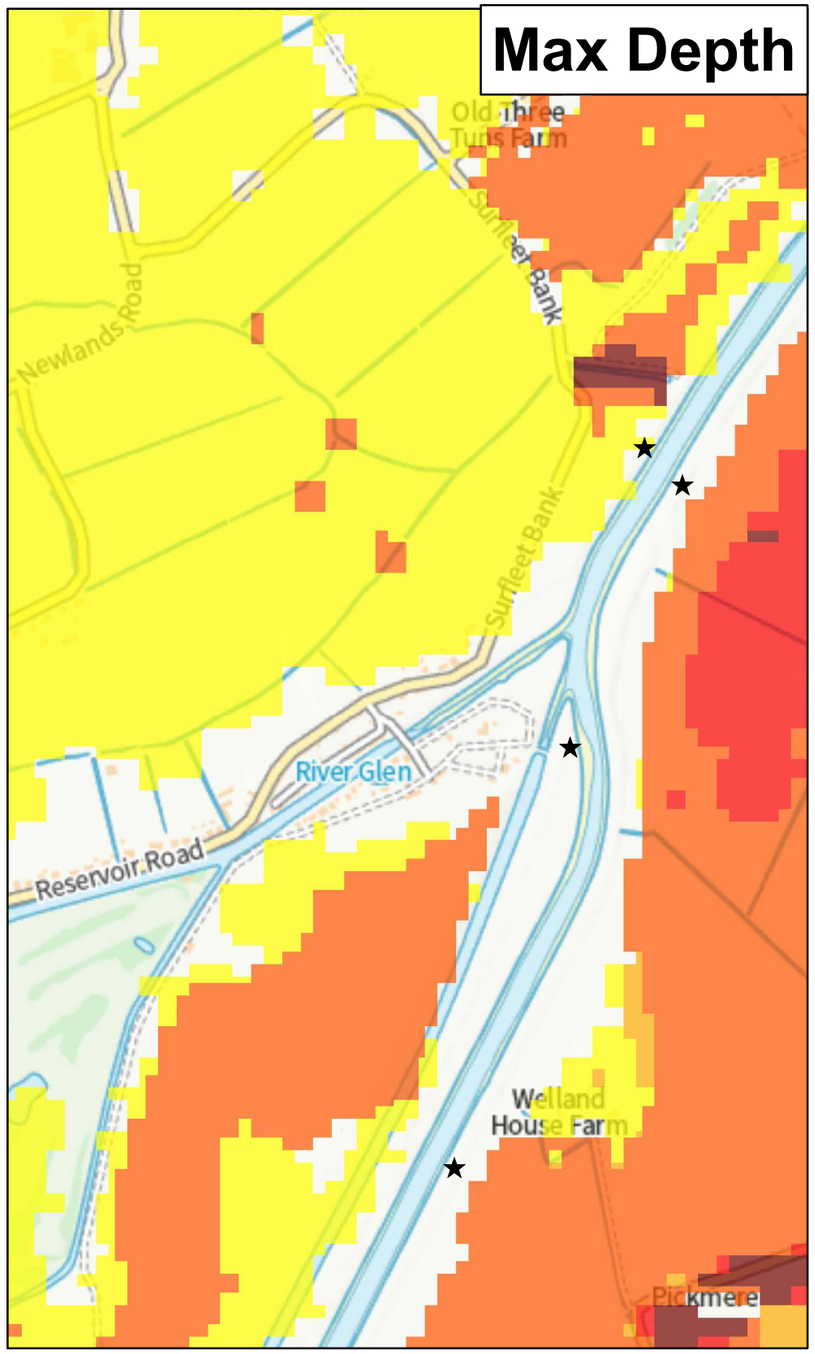
Produced by the Partnership and Strategic Overview Team, Lincoln
General Enquiries No: 03708 506 506

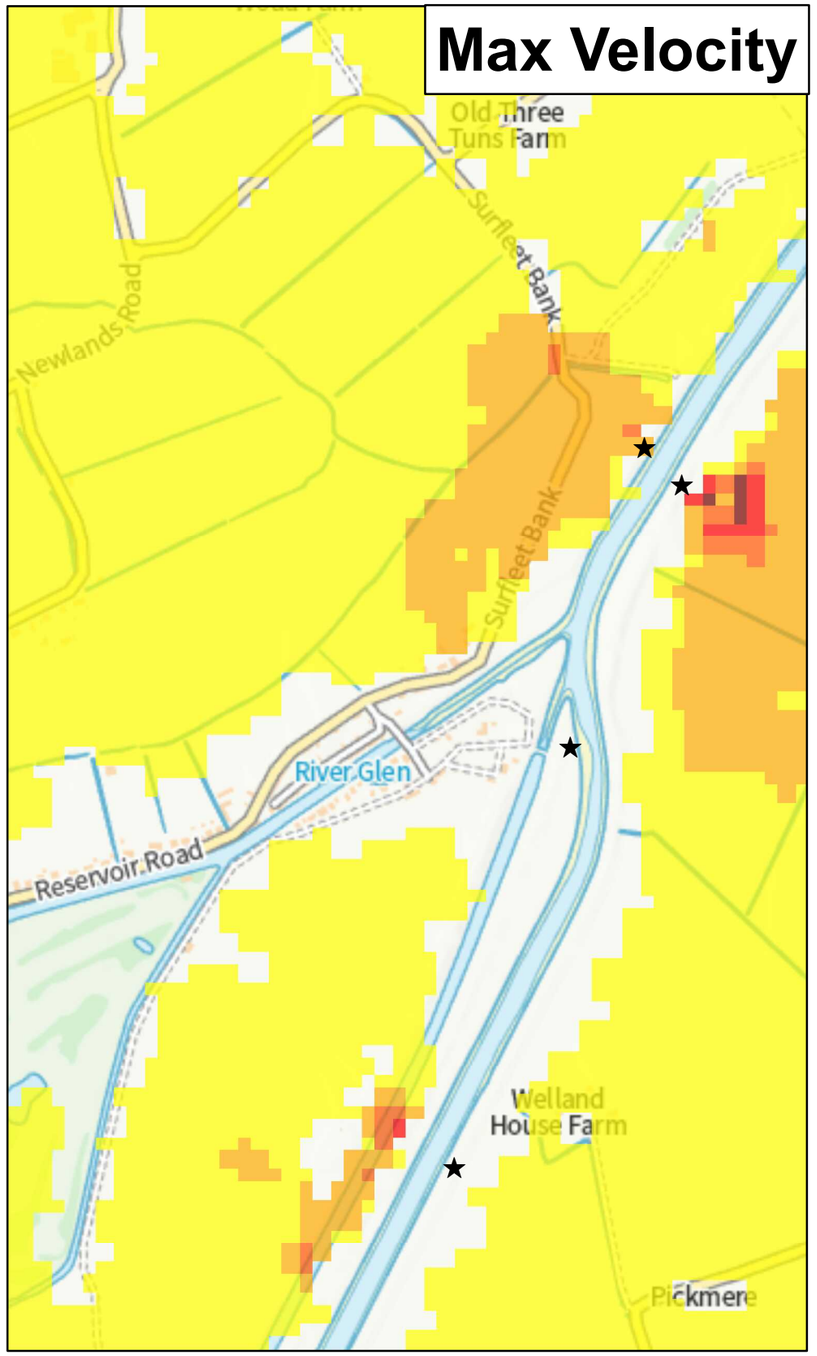
□orthern Area Tidal Hazard Mapping

Location of Modelled Breaches

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

Max Hazard

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Max Depth (m)

- kÇÇahmp
- khmÇÇahpk
- khpkÇÇDhk
- l hkÇÇDhq
- l hqÇa

Max Velocity (m/s)

- kÇÇahn
- khmÇÇDhk
- l hkÇÇDhp
- l hpÇÇ©hp
- mhpÇa

Date Printed	cÉÄ mkmm	Scenario year	mkkq	Scenario Annual Chance	khpU bi Çã©hkkc	CCN Number	`` k gmkmmg mor qsr

qÜëÇa ~éÇaÜçï ëÇÜÉÇaëï ÉáÇÑ©ç¢ÇÜ~ò~êÇÇç¢ÇéÉçéáÉÇÐ•~æÉÇ>©Ü~ò~êÇÇ~íåÖ¤ÇÇÑÇï ëÇ©ç¢ÇÇÉÑ©åÉëÇ>ÉÇÐÉ~ÅÜÉÇ>íO ÅÉëã~åÇa¢Å~íç¢åëfÇ©ç¢ëÇ>Ça~åÇÉçÑÇÐÅÉå~êç¢ëhÇÇÜÉÜ~ò~êÇÇ~íåÖÇÇÉéÉåÇëÇÇåÜÜÉÇÇÉéíÜ>åÇÇÉáç¢åÇÇ©ÉáÇÅáóÇÑÇ©ç¢ ~íÉëfO ~åÇÇa ~ñãa ì ã Ü~à ÉëÇÑÇÜÉëÉÇ>ëÉÇ>æÇÇa ~éëÉÇhO

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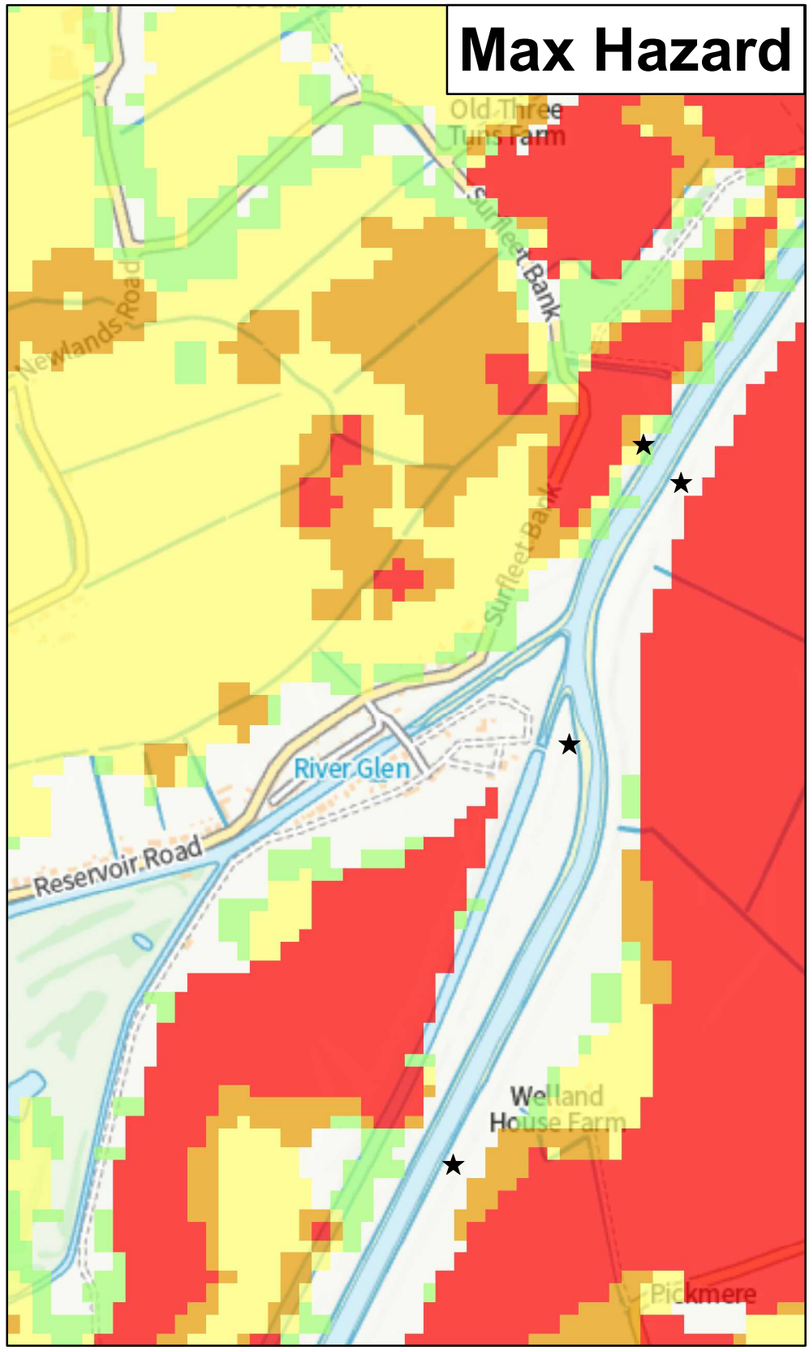
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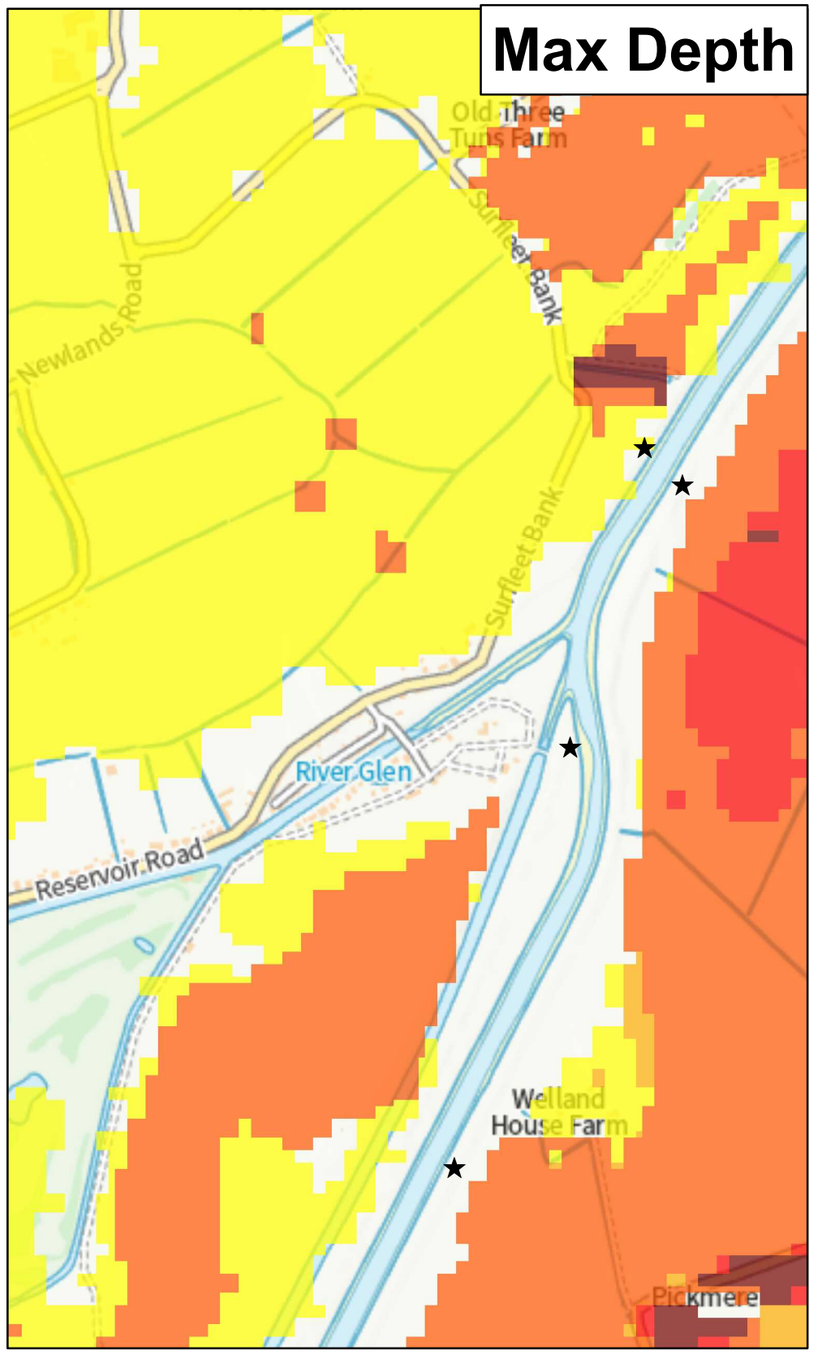
Environment Agency

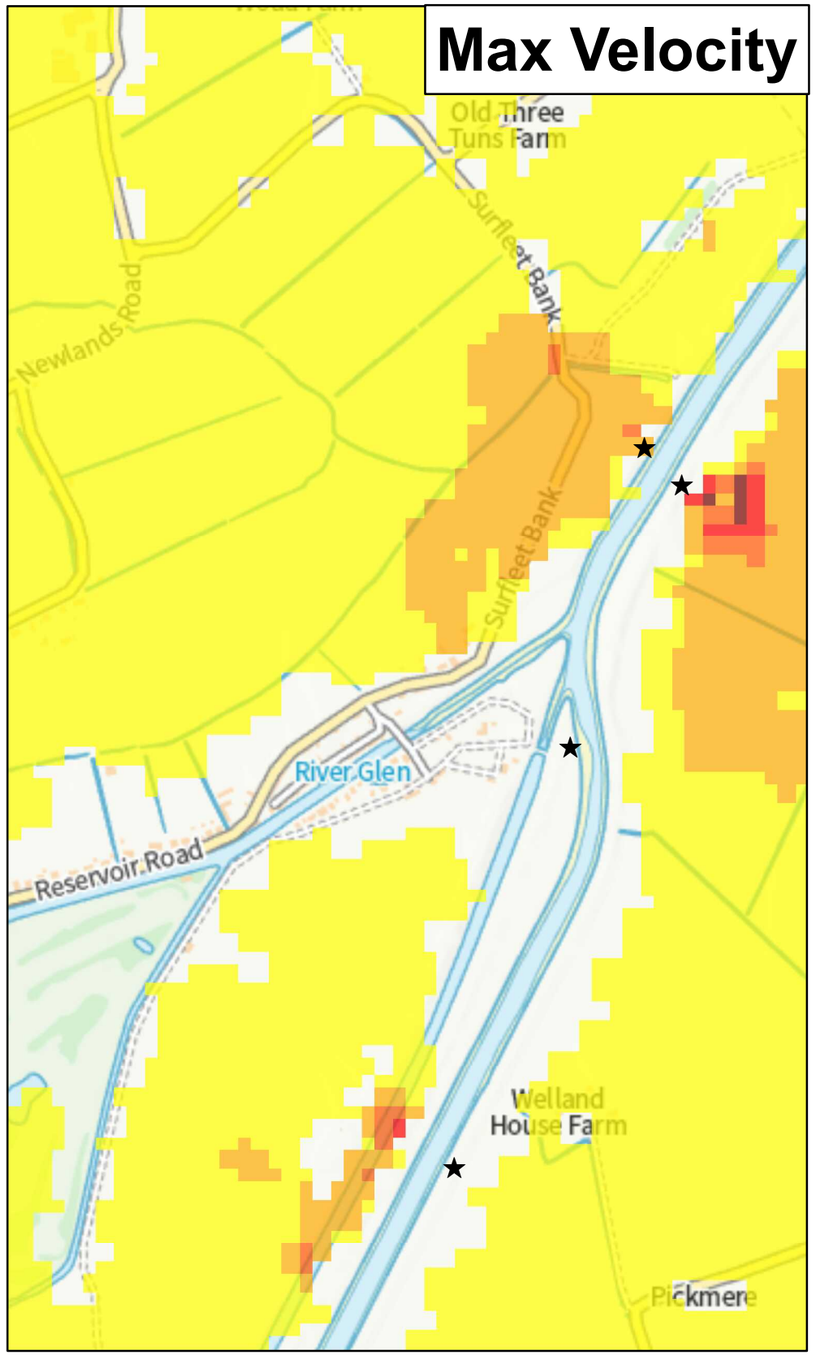
Lincolnshire and Northamptonshire Tidal Breaching Hazard Mapping

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« Ç>åí ëç¢åã ÉåíÇÜÉÅÅóÇ¢çéóëãÜÜíÇ>åÇÜÇÇ¢ëÇÇ¢~í~Å~ëÉÇëãÜÜíëÇ©kkmmÇ>
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★ **Modelled Breach Locations** - see also the accompanying plan "Location of Modelled Breaches"

Max Hazard

Max Depth (m)

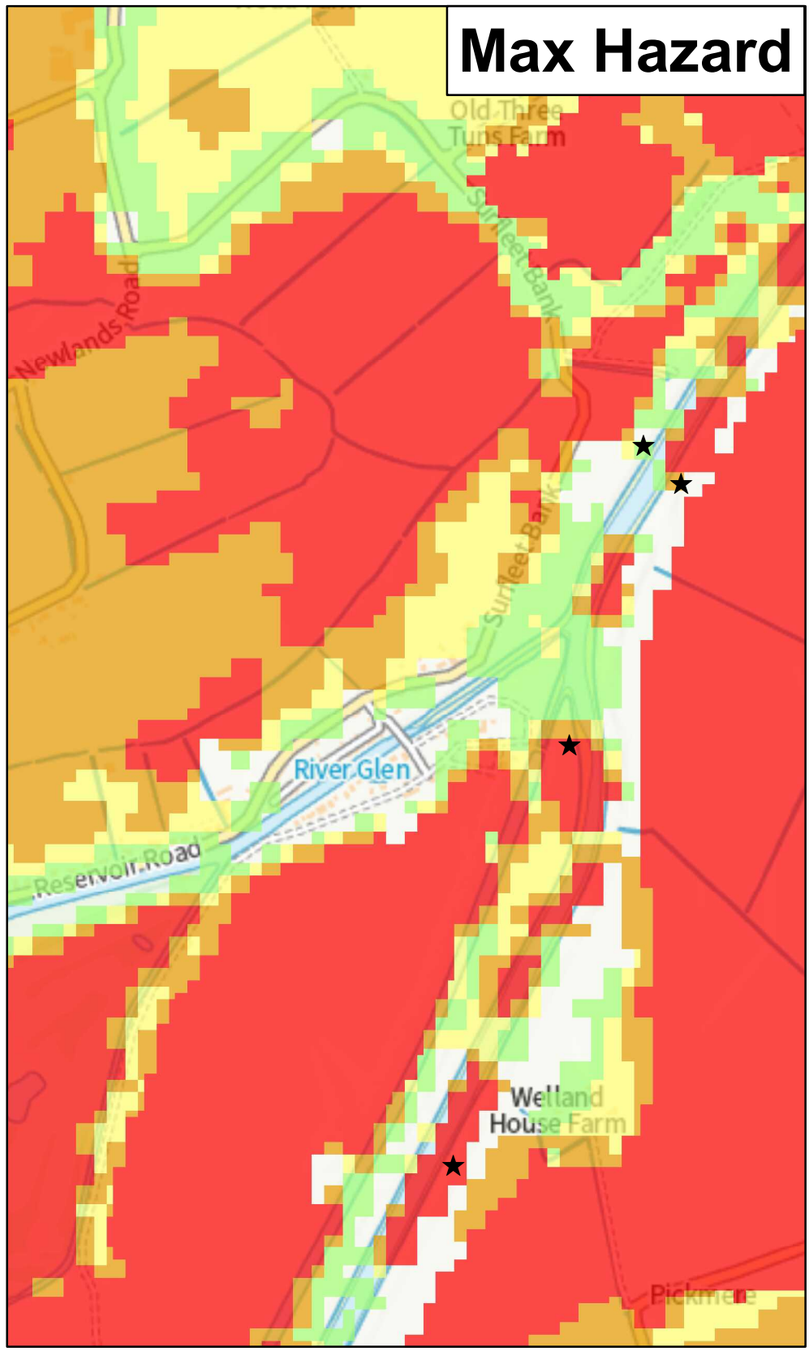
Max Velocity (m/s)

Date Printed		Scenario year		Scenario Annual Chance		CCN Number	

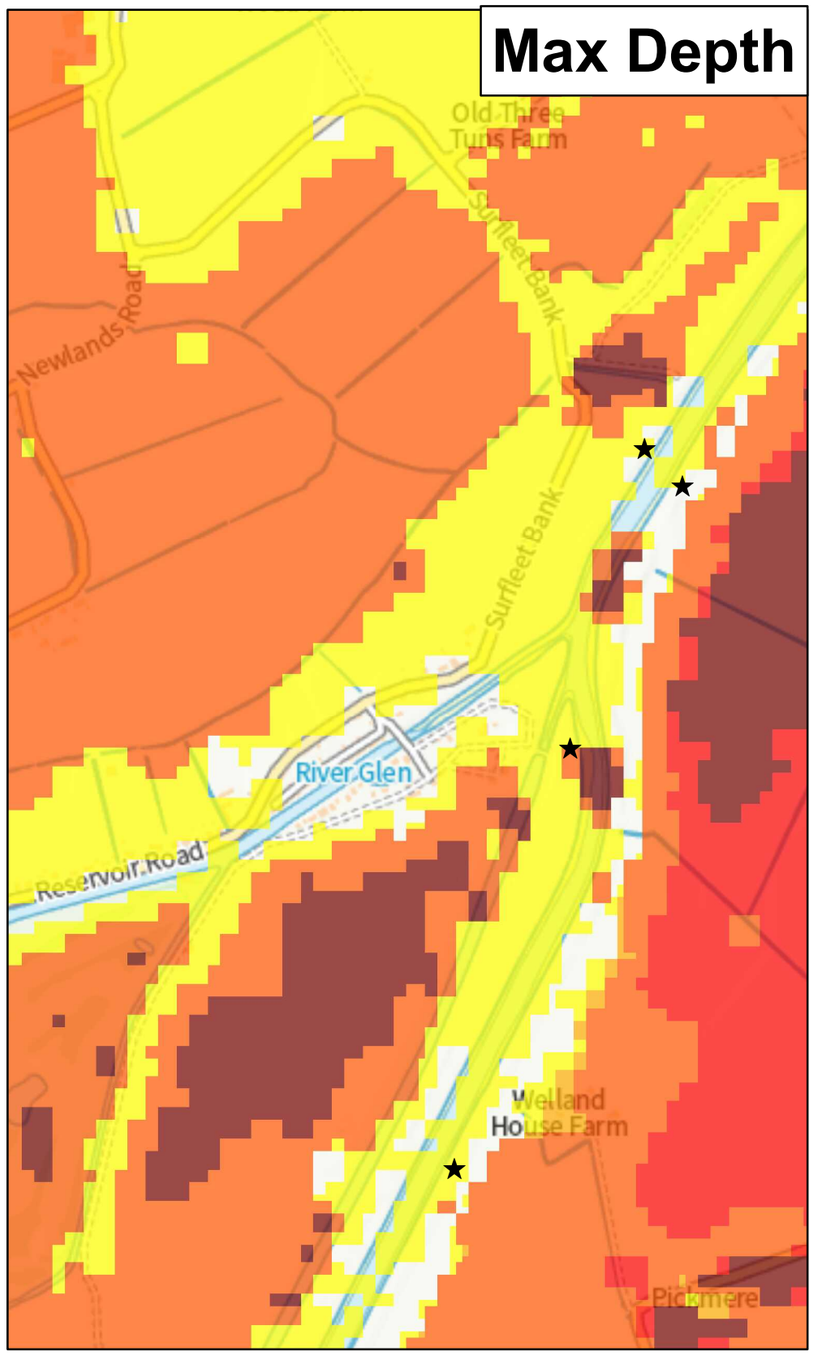
Environment Agency

Lincolnshire and Northamptonshire Tidal Breaching Hazard Mapping

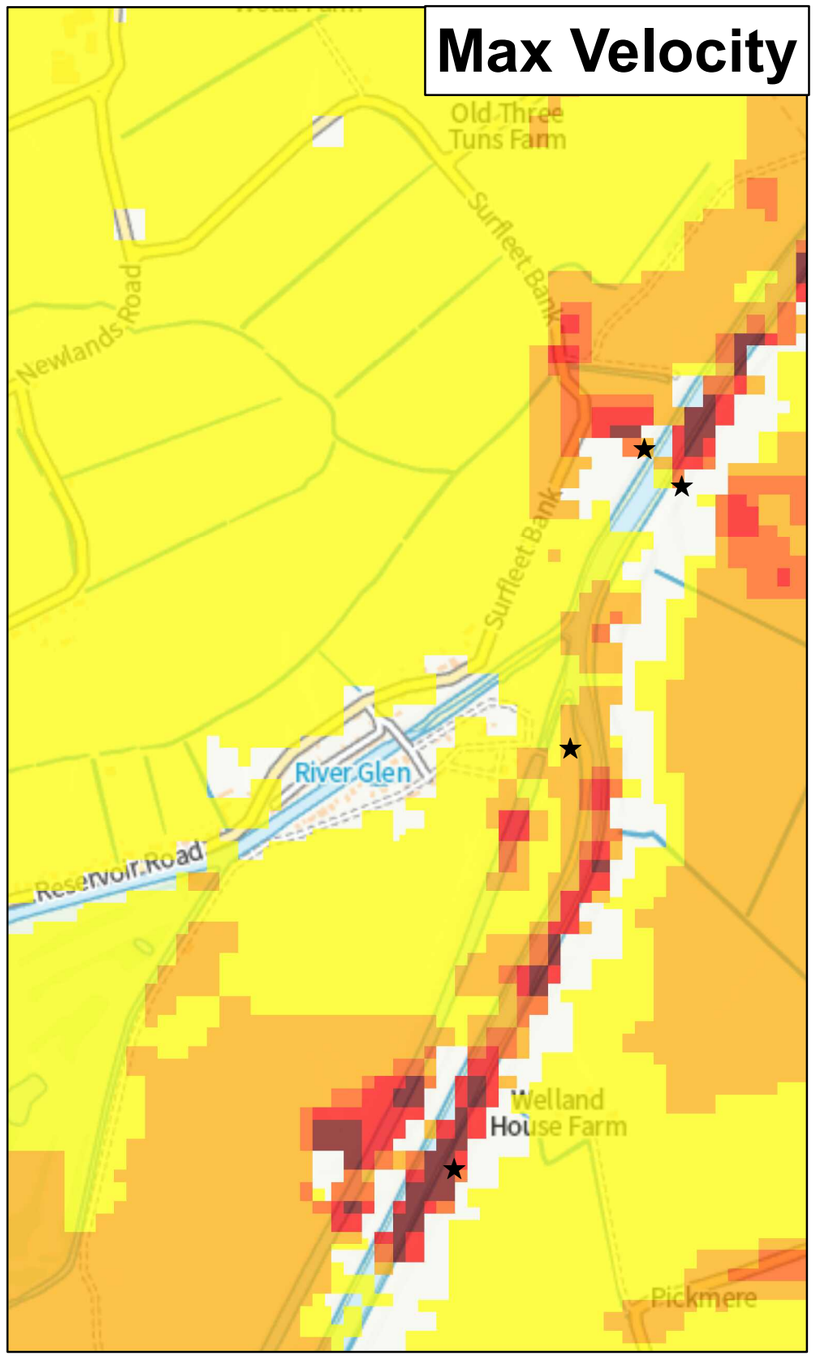
Max Hazard



Max Depth



Max Velocity



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

Max Hazard	Max Depth (m)	Max Velocity (m/s)
i Éëëû~åQhr p bi çï Q ~ò~ëÇc	kQQhmp	kQQhn
_Éîï ÉÉåQhr pO~åÇQhmp ba ~åÇÉëQtëQ çã Éc	khmQQhpk	khmQDhk
_Éîï ÉÉåQhmpO~åÇQmk ba ~åÇÉëQtëQ çéic	khpkQQDhk	lhkQDhp
d ëÉ~íÉëQÛ~åQmk ba ~åÇÉëQtëO äc	lhkQDhq	lhpQQmp
	lhqQe	mpQe

Date Printed	cÉÄ mkmm	Scenario year	mlIp	Scenario Annual Chance	khpU bi Qåa Qmkkc	CCN Number	``kgmkmmg mor qsr

qÜëQ ~éQåëÜçï ëQÜÉQëï ÉáQÑQçÇQÛ~ò~êÇQçQëÉçéáÉQÅ~äÉÇO~ÛQ~ò~êÇQ~íåÖQQÑQï ëQçÇQÉÑëåÉëO~ëQÉQÅ~ÅÜÉÇO íO ÅÉëí~åQQÅ~íáçåëfQçëQ~åÇÉçQëQÅÉå~êáçëHQQÜÉÛ~ò~êÇQ~íåÖQQÉéÉåÇëQçåQÜÉQÇéíÜQåÇQÉáçåëQÑQçÇï ~íÉëfO ~åÇQ ~ñãï ì ã Q~à ÉëQÑQÜÉëÉQ~ëÉQ~äçQ ~éëÉÇHO

qÜÉQ ~éQëQÅ~ëÉÇQçåQÇã éì íÉëQ çÇÉäëÅQçQëQ ì ä~íÉÇQÑÉ~ÅÜÉëQ~íQëÉÅåëQçÅ~íáçåëHQ~ÅÜQÑÉ~ÅÜÛ~ëQÑÉÉåO ã çÇÉäÉÇQåÇáçQ ~äüQåÇQÜÉQëÉëì äëQçã ÄåÉÇQçQëÉ~íÉQÜëQ ~éHQ ì äëëÉQÑÉ~ÅÜÉëfQíÜÉëQçã Äåë~íáçåëQÑQ ÄëÉ~ÅÜÉëfQçÑÑÉÉåíQëQÉÇQçQ~äQì ëQÉëQçëQÑçQçÇQï ëQ ~óQ~äüQëÉQçÑÑëÉåíQëëì äëh

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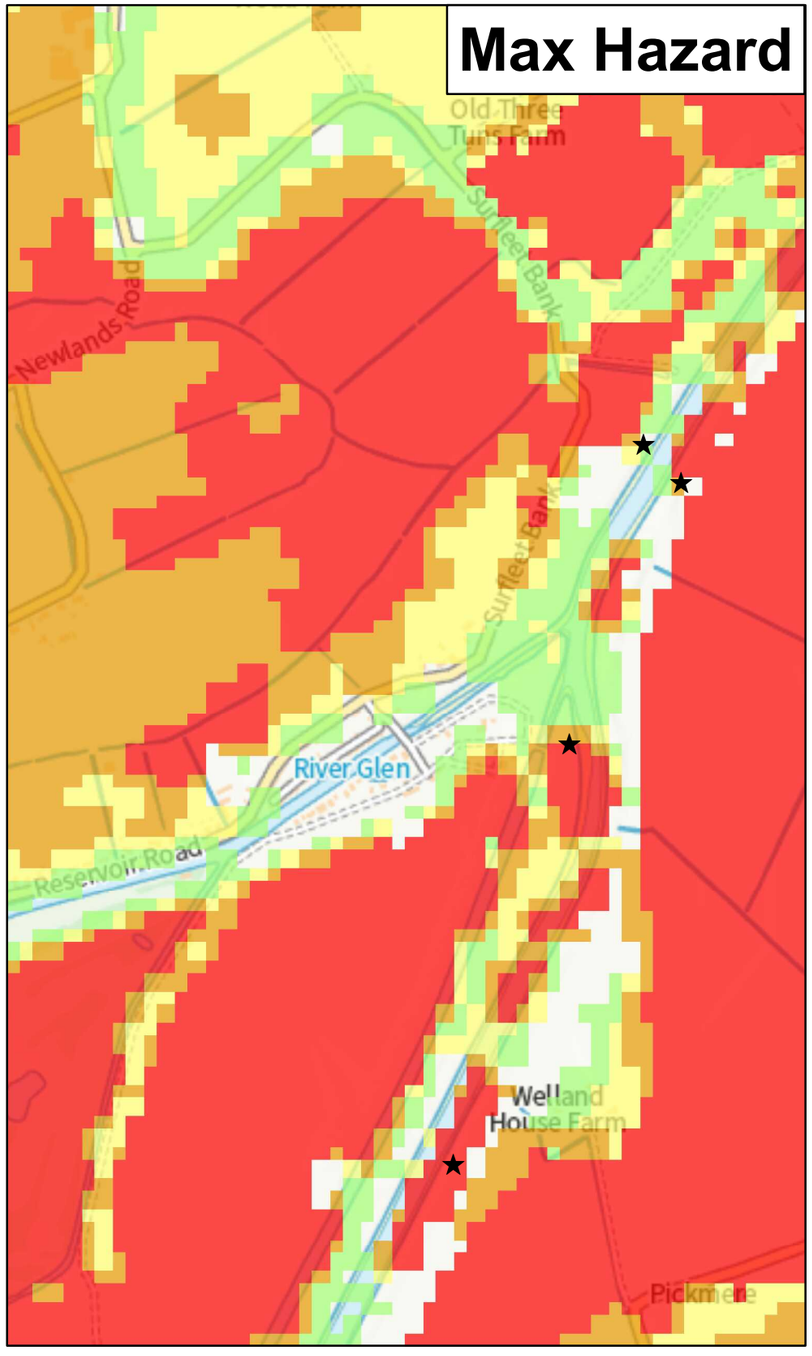
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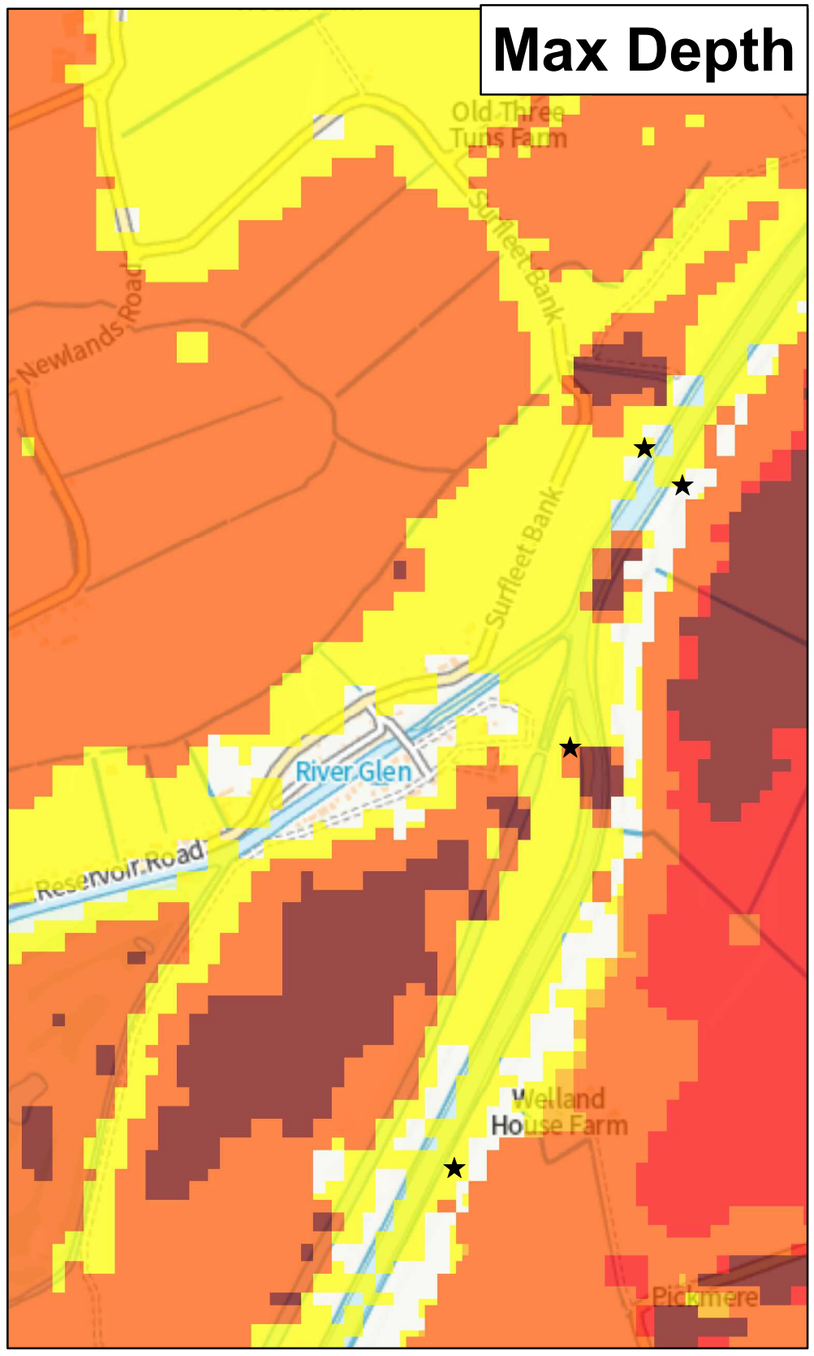
Environment Agency

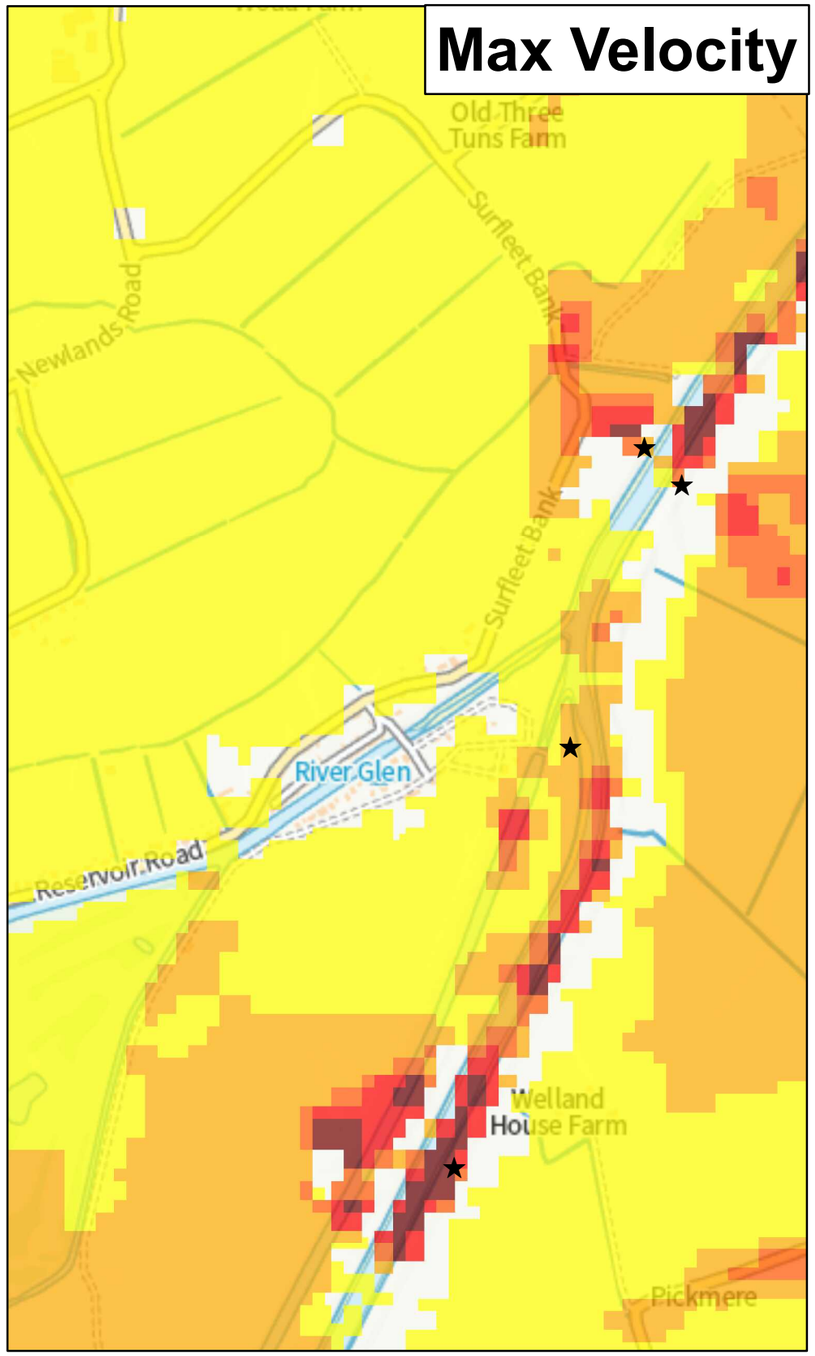
Lincolnshire and Northamptonshire Tidal Breaching Hazard Mapping

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« O ëçï åO çéóëëQÜíQåÇQç~í~Å~ëÉQëQÜíÉQëkmmHQ ëçã~åÄÉQ ì ã ÉóQkkkmol t sh







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

Max Hazard

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- bï çï Ö e ~ò~êÇc
- _ÉïÏ ÉÉåÖhr pOåÇÖhmp ba ~åÖÉëÖ¶êÖ çã Éc
- _ÉïÏ ÉÉåÖhmpOåÇÖrrk ba ~åÖÉëÖ¶êÖ çëïc
- d ëÉ~íÉëÖÜ–åÖrrk ba ~åÖÉëÖ¶êÖ æc

Max Depth (m)

- kÇØhmp
- khmpØhpk
- khpkØhk
- lhkØhq
- lhpØe

Max Velocity (m/s)

- kÇØhn
- khnØhk
- lhkØhp
- lhpØmp
- mpØe

Date Printed	cÉÄ mknnm	Scenario year	mll p	Scenario Annual Chance	khl U bl Øâ0kkkc	CCN Number	`` k gmkmmg mor qsr

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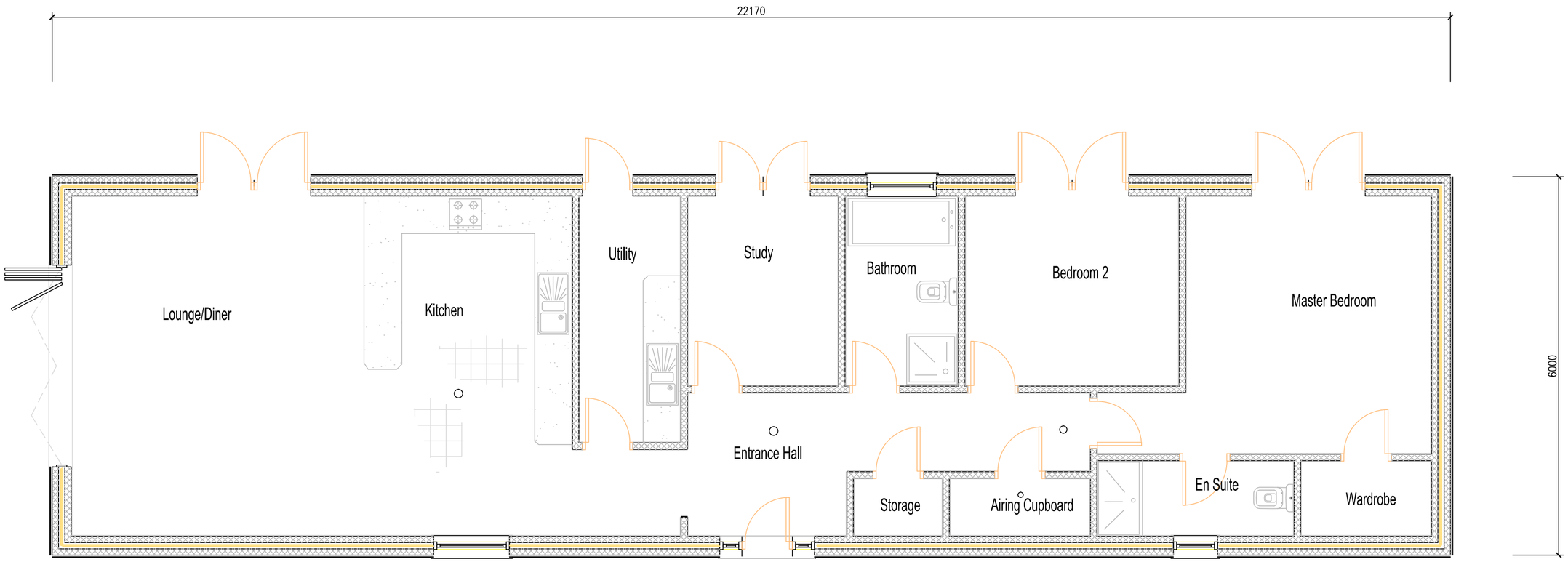
Environment Agency

Lincolnshire and Northamptonshire Tidal Breaching Hazard Mapping

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DRAWINGS



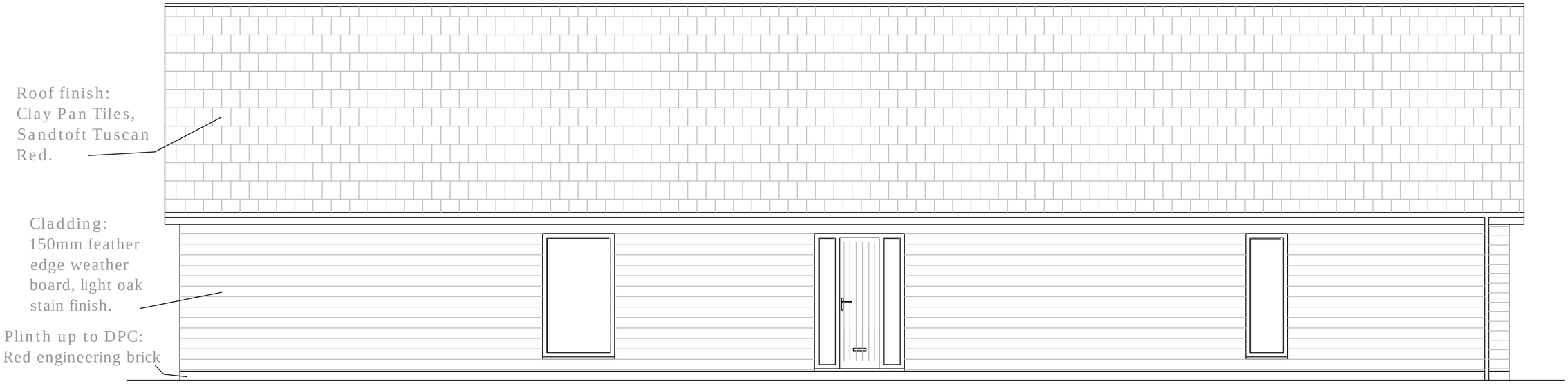
PROPOSED GROUND FLOOR PLAN 1:50

1:50 0 1 2 3 4 5 6 7

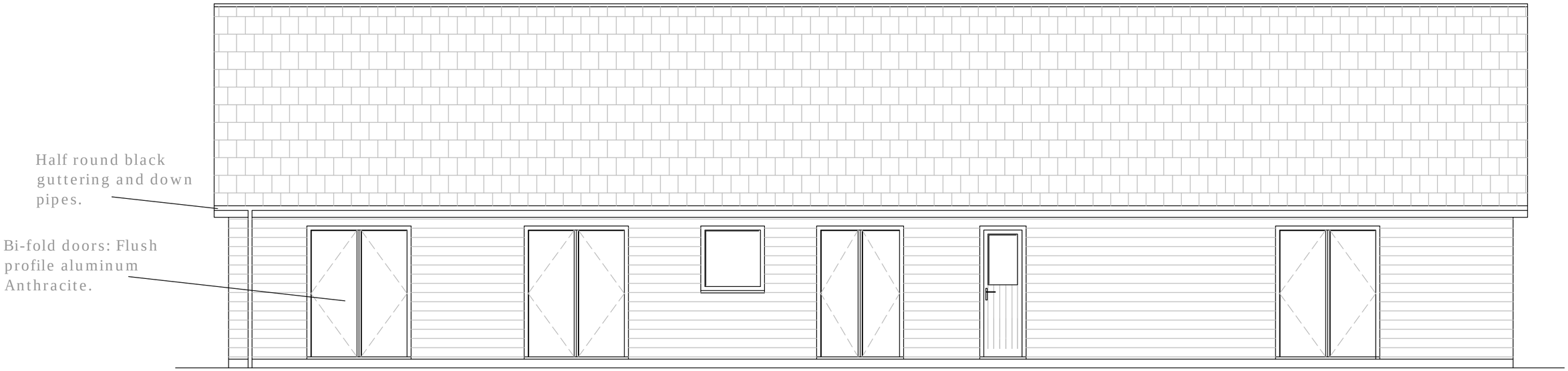
M.A.P.design
Architectural Services
Email: tonymap1@yahoo.co.uk
Tel: 07711537799

Project: Proposed new dwelling
Address:land adjacent to 144 Reservoir Road
Surfleet, Seas End, Spalding PE11 4DH

Drawn: TP	**Scale: 1:50**
Revision:	**Proposed floor plan 001** Paper size: A2



PROPOSED FRONT ELEVATION 1:50



PROPOSED REAR ELEVATION 1:50

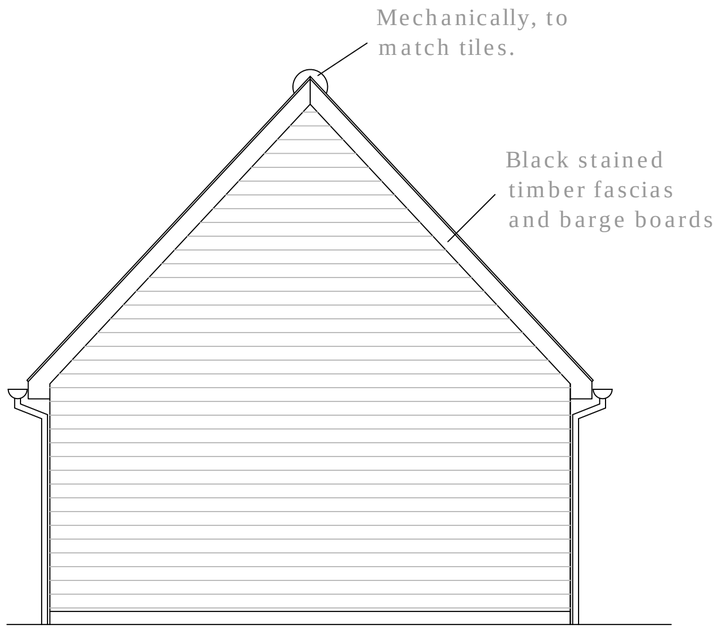
See flood risk assessment for final slab levels of dwelling. Must be above the 0.1% breach depth in the 2115 scenario, paths and driveway will be permeable. The dwelling itself will meet the construction anti-flood measures

1:50 0 1 2 3 4 5 6 7

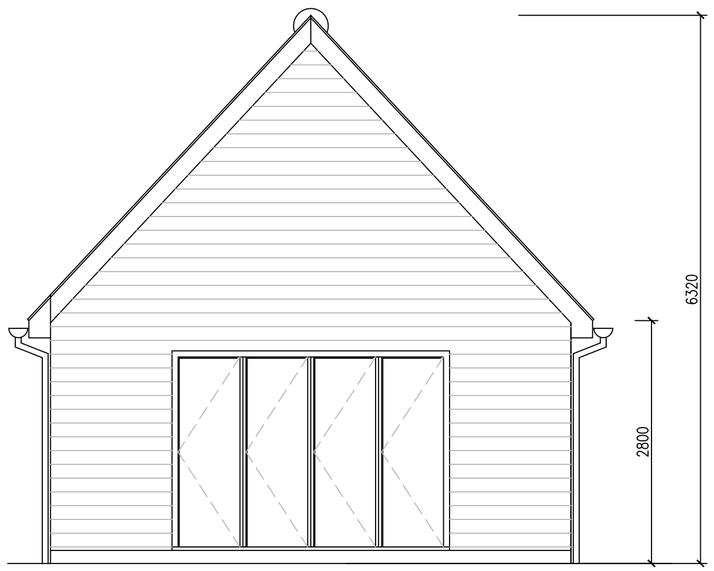
M.A.P.design
Architectural Services
Email: tonymap1@yahoo.co.uk
Tel: 07711537799

Project: Proposed new dwelling
Address:land adjacent to 144 Reservoir Road Surfleet, Seas End, Spalding PE11 4DH

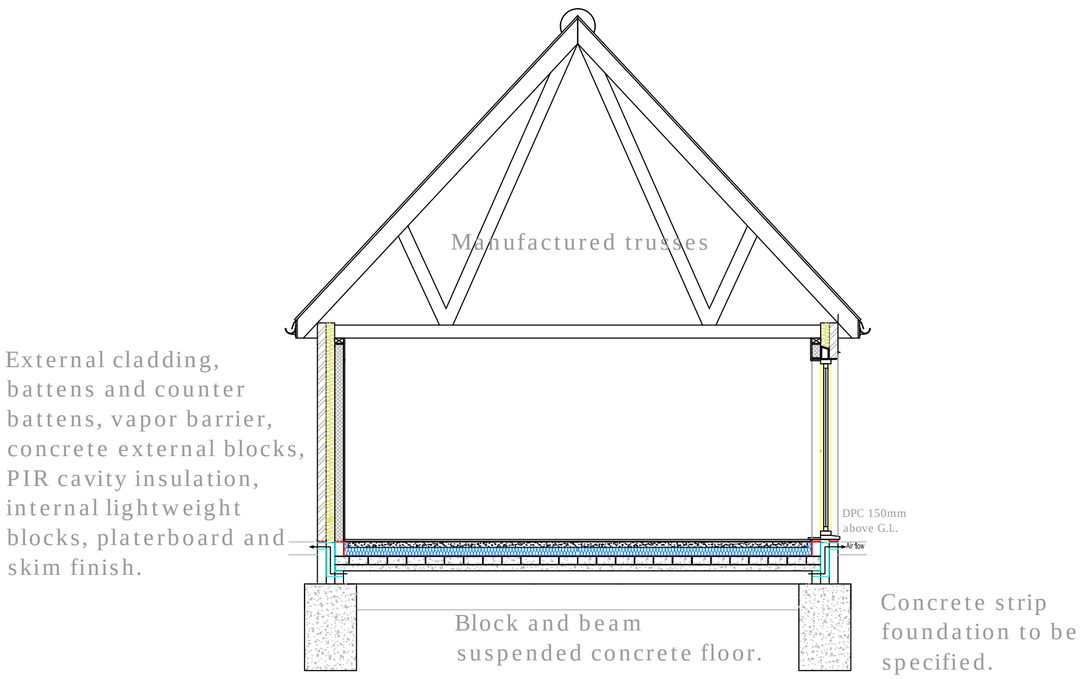
Drawn: TP	**Scale: 1:50**
Revision:	**Proposed elevations 002** Paper size: A2



PROPOSED SIDE ELEVATION 1:50



PROPOSED SIDE ELEVATION 1:50



SECTIONAL ELEVATION ON A-A

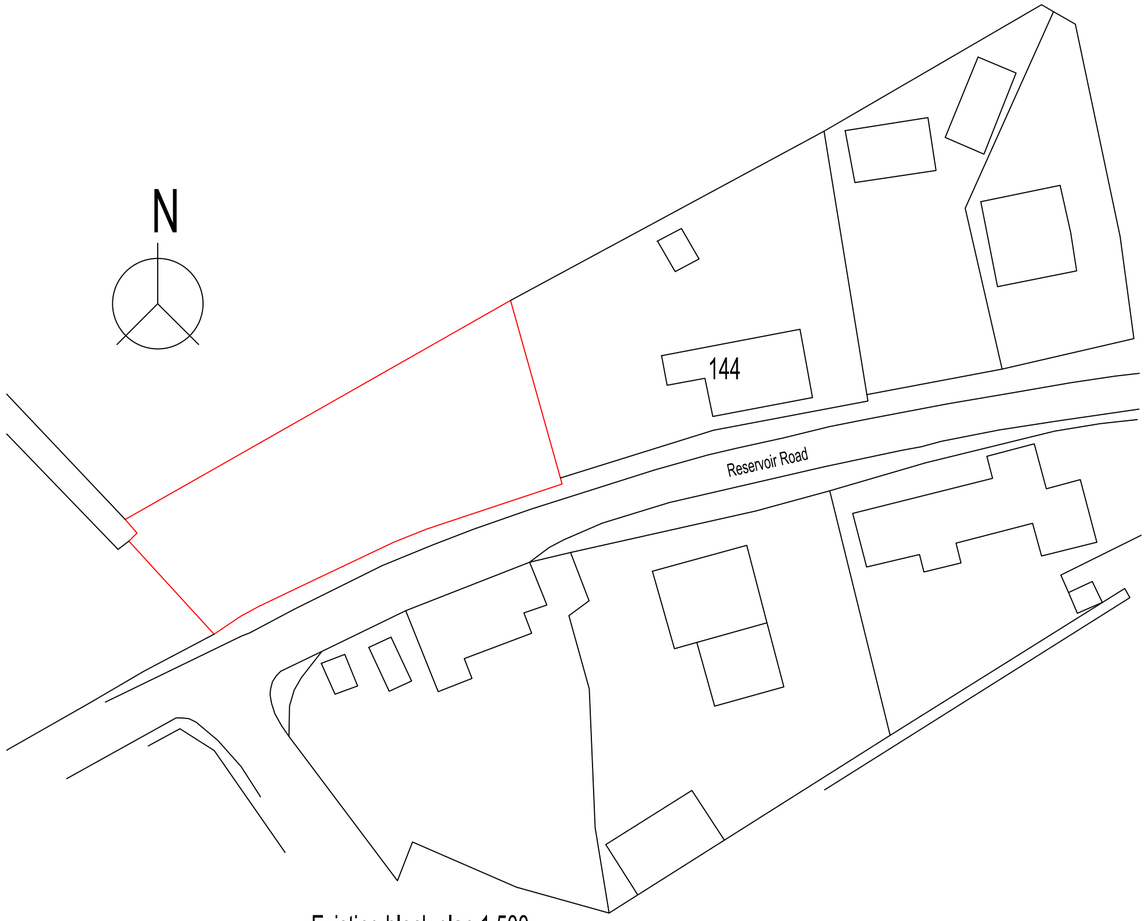
SCALE 1:50

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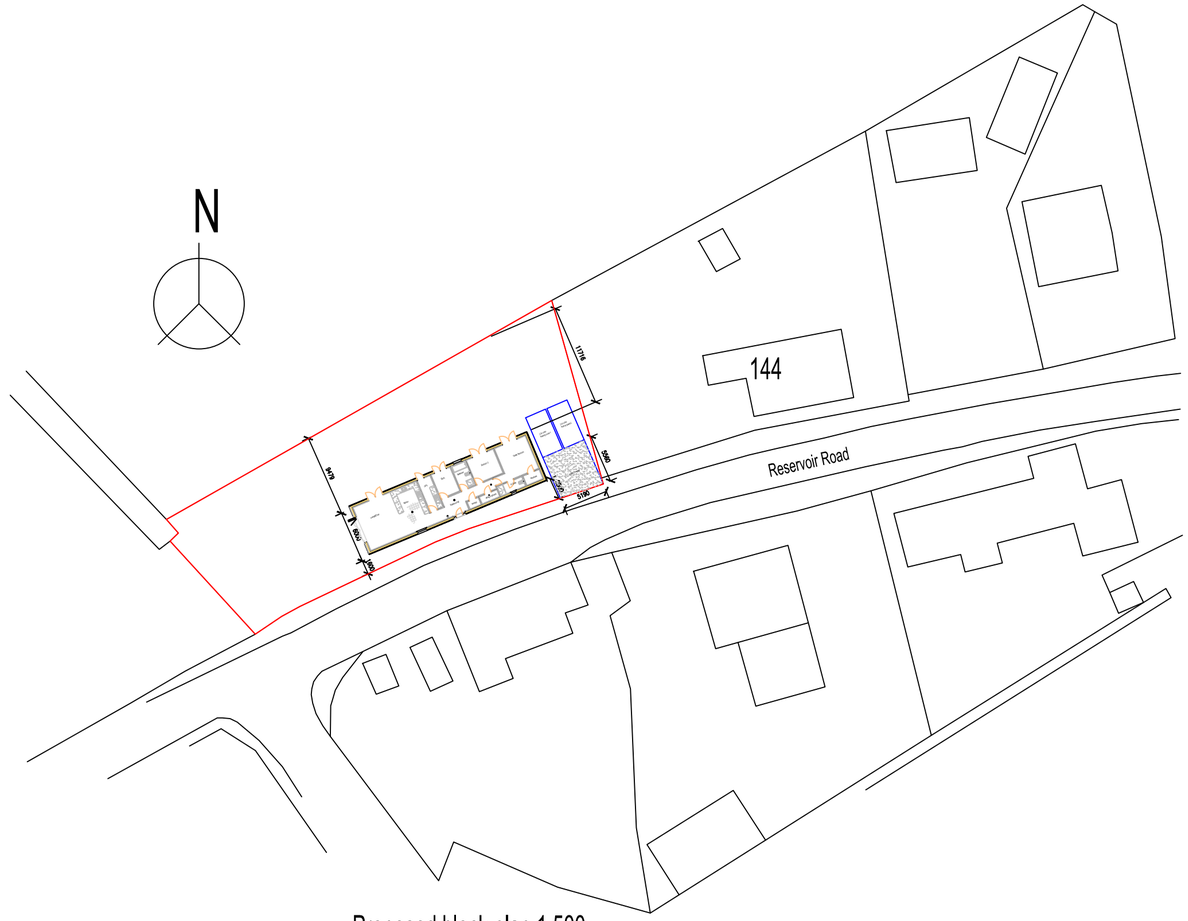
M.A.P.design
Architectural Services
Email: tonymap1@yahoo.co.uk
Tel: 07711537799

Project: Proposed new dwelling
Address:land adjacent to 144 Reservoir Road
Surfleet, Seas End, Spalding PE11 4DH

Drawn: TP	**Scale: 1:50**
Revision:	**Proposed elevations 00** ☐ **Paper size: A2**



Existing block plan 1:500



Proposed block plan 1:500

1:500 1 2 3 4 5 6 7 8 9 10 20

M.A.P.design
Architectural Services
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Project: Proposed new dwelling
Address:land adjacent to 144 Reservoir Road
Surfleet, Seas End, Spalding PE11 4DH

Drawn: TP
Revision: A

Scale: 1:500
Block Plans Proposed 004
Paper size: A2


EVANS
Rivers and Coastal