

Lincolnshire County Council

**Reroofing and Temporary
Building at
Long Sutton Library**

FLOOD RISK ASSESSMENT

Report No: 5094/01

Issue: 01

Date: June 2021

By: **N Cullen**
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0. EXECUTIVE SUMMARY

- 0.1. The proposed development is the replacement of an existing roof and provision of a temporary building for use as a library for a six month period. The development is located at Long Sutton Library, Trafalgar Square, Long Sutton, Spalding PE12 9HB.
- 0.2. The site and the surrounding area lies within flood risk zone 3. Fluvial and tidal flooding are the primary flood risk source. The tidal River Nene is approximately 5.6km to the south east and The Wash 7km to the north-east. The land in the area is low lying drained fenland with local and Internal Drainage Board drains close to the site.
- 0.3. Although the development is in flood zone 3, the government Long Term Flood Risk is given as low (less than 1% risk of flooding). If flood defences are taken into account no flooding from overtopping should occur up to 2115. Flooding as a result could occur of a 0.5% chance as a result of a breach of defences will not occur at present but by the year 2115 but breach mapping indicates a level of up to 0.9m. The site is therefore not considered to be at risk of a breach now or during the 6 month use of the building.
- 0.4. There is a low risk of surface water flooding, with the flood map showing the site lies within the mapping band of 0 to 300mm depth. The depth at the building location has been estimated at 100mm.
- 0.5. The mobile unit also benefits from floor levels being 450mm above ground level putting it over 300mm above surface water levels. As the building will only be in use for 6 months there will be no risk of flooding from a breach. .
- 0.6. The building use is less vulnerable and therefore considered appropriate in flood zone 3. There would be a loss of benefit to the local community if library services were moved elsewhere during the period of the library roof replacement.
- 0.7. The temporary building is to be located on an existing car park and therefore there is no increase in impermeable area on the site, and no increase in the potential for surface water flooding on the site or in the surrounding area as a result of this development.

1. INTRODUCTION

- 1.1. This report has been prepared in support of a planning application for the reroofing of the existing Long Sutton Library, and to provide a temporary library building whilst the works are undertaken. The aim of the report is to consider the risk of flooding from both fluvial and tidal sources and the impact of the proposed development on the existing site and the surrounding area.

2. APPLICATION SITE

- 2.1. The proposed site is located at Long Sutton Library, Trafalgar Square, Long Sutton, Spalding PE12 9HB and which is within the South Holland District Council administrative area. The Ordnance Survey grid reference for the site is TF42962301. A location map of the development is contained within Appendix A. The proposed development is the replacement of an existing roof and provision of a temporary building for use as a library for a six month period.
- 2.2. The total area of the site is approximately 0.16 hectares of which approximately 90% is paved or roof area.
- 2.3. The site consists of the existing library building, external disabled access ramps, and hardstanding areas (car parking). There are residential dwellings to the north and east, and public highways to the south and west. The surrounding land is generally flat with a slight rise in ground level to the east. The ground level at the location of the temporary building is 2.7m AOD.
- 2.4. The finished floor level of the building is approximately 450mm above existing ground levels.
- 2.5. The nearest main river maintained by the Environment Agency is the tidal River Nene approximately 5.6km to the east. The Environment Agency also maintains the sea defences of The Wash, the nearest location being 7km to the north-east.
- 2.6. The site is within the South Holland IDB area. The board maintains several watercourses which drain away from the site, the nearest being approximately 300m away.

3. FLOOD RISK ANALYSIS

Historic Flooding

- 3.1. The UK Government historic flooding dataset shows no recorded flooding to have occurred in the vicinity of the site. The dataset records data after 1946.

Fluvial and Tidal Flooding

- 3.2. The government Long Term Flood information website gives the risk of flooding from rivers or sea as Low. Low has a risk of flooding of between 0.1% and 1% each year. The presence of flood defences has been taken into account.
- 3.3. The Environment Agency Flood Map shows that the site is within flood risk zone 3 with a 0.5% chance of flooding from the sea, or a 1% chance of fluvial flooding occurring in any one year. This assumes no flood defences or protection exists.
- 3.4. Applying the Flood Risk Vulnerability Classification in accordance with Table 2 of the National Planning Policy Framework (NPPF) Technical Guidance, the proposed development is classified as 'Less Vulnerable'. In Table 3 of the guidance, Flood Risk Vulnerability and Flood Zone 'compatibility' for a development of this nature is "appropriate".

- 3.5. Hazard mapping carried out by the Environment Agency shows that the site is not currently (yr 2006) within an inundation zone should a tidal breach occur.
- 3.6. By the year 2115 it is estimated that flood waters of up to 0.25m would occur in the area of the proposed development based on a 0.5% (1 in 200) annual chance with a maximum velocity of 0.0-0.3 m/s. The maximum hazard is described as "Low". The Hazard Maps are contained within Appendix B.
- 3.7. The Environment Agency has advised that the site will not be affected by flooding from overtopping of the defences for present day (2006) and climate change (2115), and also for breach of the defences for the present day.

Modelled Breach Scenarios				
Year	Scenario Annual Chance	Max hazard	Max Depth Zones (m)	Max Velocity Range (m/s)
2006	0.5% (1 in 1000)	Not affected		
2115	0.5% (1 in 200)	Between 1.25 & 2.0. "Danger for Some"	0.5 to 1.0m	0 to 0.3
2115	0.1% (1 in 1000)	Greater than 0.75 "Danger for All"	1.0m	0 to 0.3

The flood level has been estimated at between 3.6m and 3.7m AOD from the 2115 0.5% breach map. This would be a flood depth of between 0.8 and 0.9m.

- 3.8. The tidal flood levels as shown on the map (see appendix B) are set out in the table below.

Location	Annual Exceedance Probability – Maximum Water Levels (mODN)	
	1% (1 in 100)	0.5% (1 in 200)
Wisbech	5.66	5.78
West Lighthouse	5.86	6.01

Still water tidal levels (2006 base data) obtained from the Environment Agency show that for a 1:200 event the tidal level at flood level for the River Nene would be 5.78m at Wisbech and 6.01m at West Lighthouse (outfall to The Wash) for a 1 in 200 year annual chance. At the nearest point on the River to the site the level would be approximately 5.9m. The still water tidal levels are contained within Appendix B. The levels do not allow increase in sea level due to climate change. However this is included in the breach analysis used for the Flood Hazard Maps.

- 3.9. The tidal defences protecting the site and the surrounding area are in a fair condition and provide protection against a flood event with a 0.67% (1 in 150) chance of occurring in any year.

Strategic Flood Risk Assessment

- 3.10. In order to meet the requirements of PPS25 South Holland District Council commissioned Royal Haskoning to prepare a Strategic Flood Risk Assessment. The final report was published in January 2010. An update to the report has since been published in 2016 to meet the requirements of NPPF and since incorporated into the South East Lincolnshire SFRA.

- 3.11. The residual flood risk maps within the SFRA show Flooding extents which take into account of the presence of flood defences. The 2115 (0.5%) maps appear identical to the Environment Agency hazard maps. No risk of flooding was shown to occur at the present day. The residual flood extent map 2115 (0.5% tidal), shows the flood risk to be “High”
- 3.12. The risk from secondary sources of flooding (i.e. IDB drainage systems and sewers) is assessed as Medium. The findings reflect the protection afforded to the area by the flood defences and the extensive organised system of lowland IDB drains.

Surface Water Flooding

- 3.13. The government data shows that there is a low chance (0.1 and 1% annual chance) of flooding of between zero and a maximum of 300mm depth within the area of the temporary building. As the building is on the very edge of the zone, and allowing for the car park slope over the width of the building, the maximum depth of surface water would not be expected to exceed 100mm.

Flooding from other Sources

- 3.14. The Government flood map for reservoir flooding shows that there is no risk of flooding from reservoirs.
- 3.15. As the proposed development is to be located on an existing car park there is no change in the impermeable area on the site and consequently no change in surface water run-off from the site.

4. SEQUENTIAL AND EXCEPTION TEST

- 4.1. Applying the Flood Risk Vulnerability Classification in accordance with Table 2 of the National Planning Policy Framework (NPPF) Technical Guidance, the proposed development is classified as ‘Less Vulnerable’. In Table 3 of the guidance, Flood Risk Vulnerability and Flood Zone ‘compatibility’ for a development of this nature an Exception Tests is not required.
- 4.2. The site is protected by tidal flood defences on the River Nene and The Wash. There is currently no risk of fluvial or tidal flooding due to the presence of flood defences, even if a breach occurs. The building will be temporary, and removed before future climate change would result in any risk of flooding to the site.
- 4.3. With regard to a Sequential Test the benefit to the community would not be realised if the Library was temporarily relocated to a different locality away from the existing site. As tidal flooding is not considered a risk during the period that the building would be present there would be no benefit from relocating.
- 4.4. There is a low risk of surface water flooding at the building location, and the building is on the edge of this extent, and therefore the depth is considered to be less than 100mm. The building floor level is also raised 450mm above ground level.
- 4.5. The temporary development will not increase the impermeable area and therefore there will not be an increase in flood risk elsewhere as a direct result of this development.

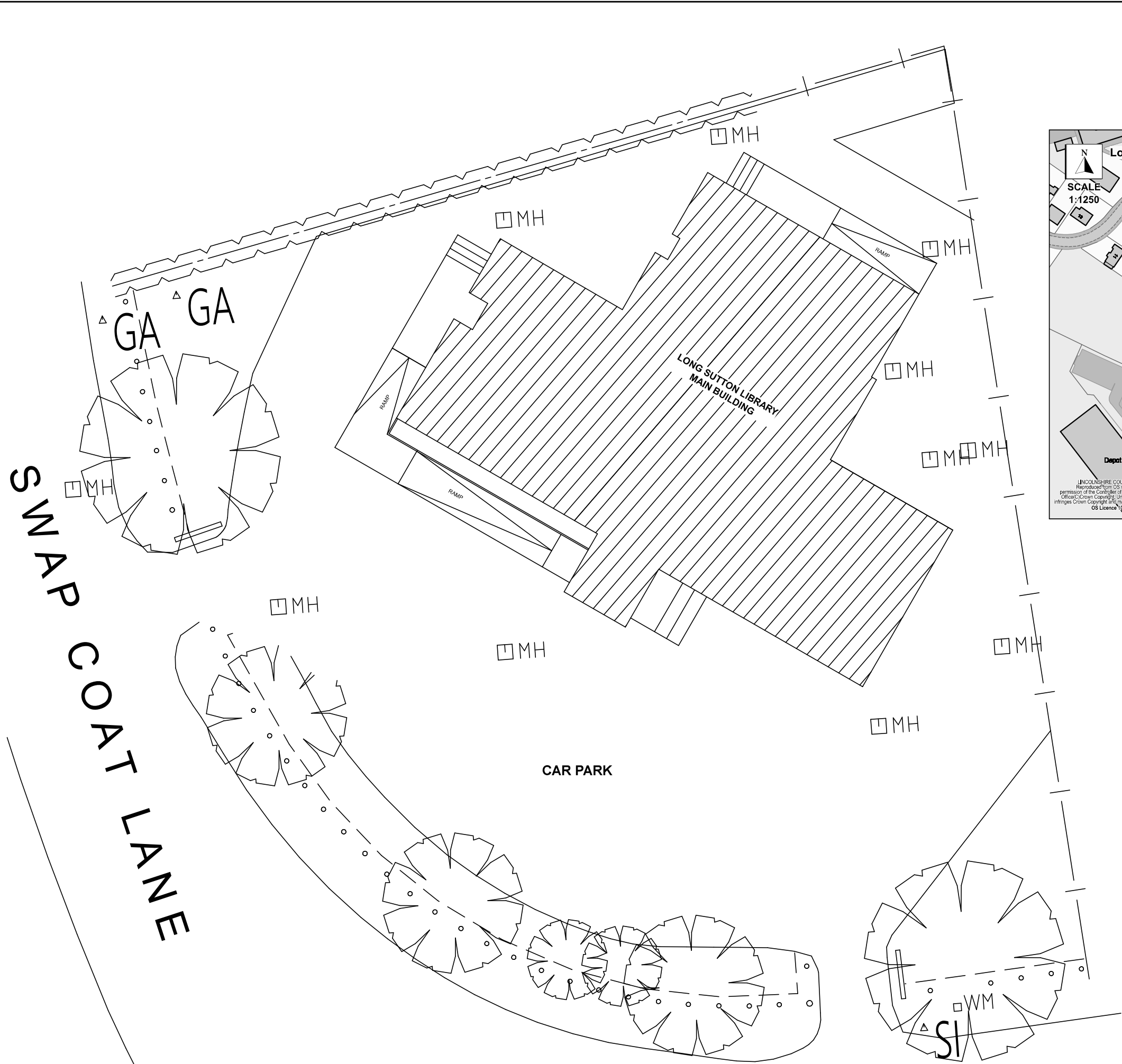
- 4.6. The proposed building is of a temporary 'Portakabin' construction and therefore if any flood damage was to occur the building would simply be replaced. Therefore due to the short period of intended use and very low risk of any flooding the proposed development satisfies the criteria of both the Sequential and Exception Test in accordance with NPPF.

5. CONCLUSIONS

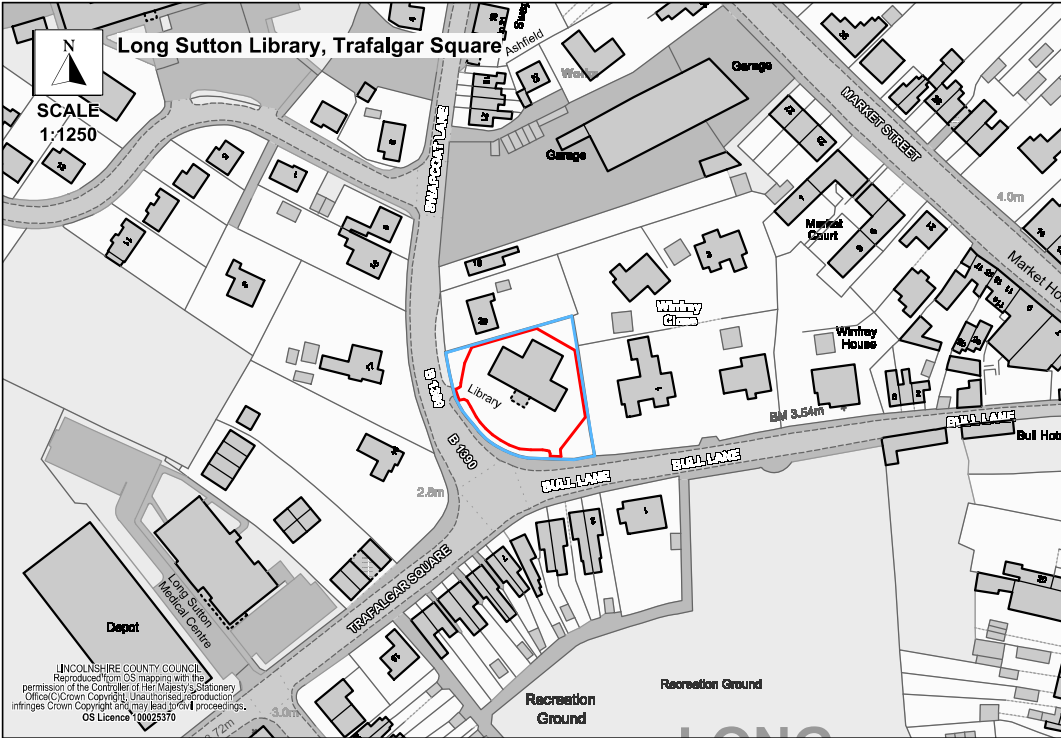
- 5.1. The proposed development is within a flood risk zone 3 and falls within the 'More Vulnerable' uses of land. Table 3 of NPPF indicates that for a development of this nature Sequential and Exception Tests are required. The majority of the South Holland District Council area lies within a fluvial and tidal flood area due to its low ground levels relative to tidal and fluvial flood water levels. The development is a renewal of an existing mobile unit which supplements the existing educational buildings. Areas of lower flood risk are too remote from the school site to be appropriate and practical for its intended use. As the community benefit of the development cannot be realised in a site remote from the school the proposed development satisfies both the Sequential and Exception Test in accordance with NPPF.
- 5.2. The site benefits from protection from flooding by flood defences. The site is currently not at risk of tidal flooding should a breach or overtopping of flood defences occur. By 2115 flooding (0.5% risk) as a result of a breach is predicted to occur, and has been estimated at up to 0.8m depth within the site. As the development is temporary no tidal flooding would be expected during the temporary period. There is a low risk of surface water flooding, but this is not expected to exceed 100mm. The floor levels of the temporary building will be 450mm above ground level.
- 5.3. As the proposed development is the renewal of an existing unit located on an area of drained hardstanding there is no increase in impermeable area on the site and therefore no increase in the potential for surface water flooding on the site or in the surrounding area as a result of this development.
- 5.4. It is recommended that the Library should sign onto the Environment Agency Floodline Warnings Service (<https://www.gov.uk/sign-up-for-flood-warnings>) if they have not done so already. A flood evacuation plan should also be prepared.

6. APPENDIX A –PLANS

<u>Drawing No.</u>	<u>Rev</u>	<u>Title</u>
33077-104-DBS-01-GF-DR-B-0001	P01	Location of Works
33077-104-DBS-01-GF-DR-B-0002	P01	Site Plan as Proposed
33077-104-DBS-01-GF-DR-B-0003	P01	Cabin Floor Plan

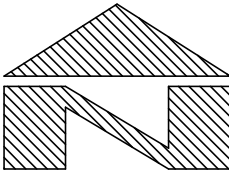


SITE PLAN AS EXISTING @ 1:100



LOCATION PLAN @ 1:1250

LONG SUTTON LIBRARY
TRAFALGAR SQUARE
LONG SUTTON
PE12 9HD



NOTES

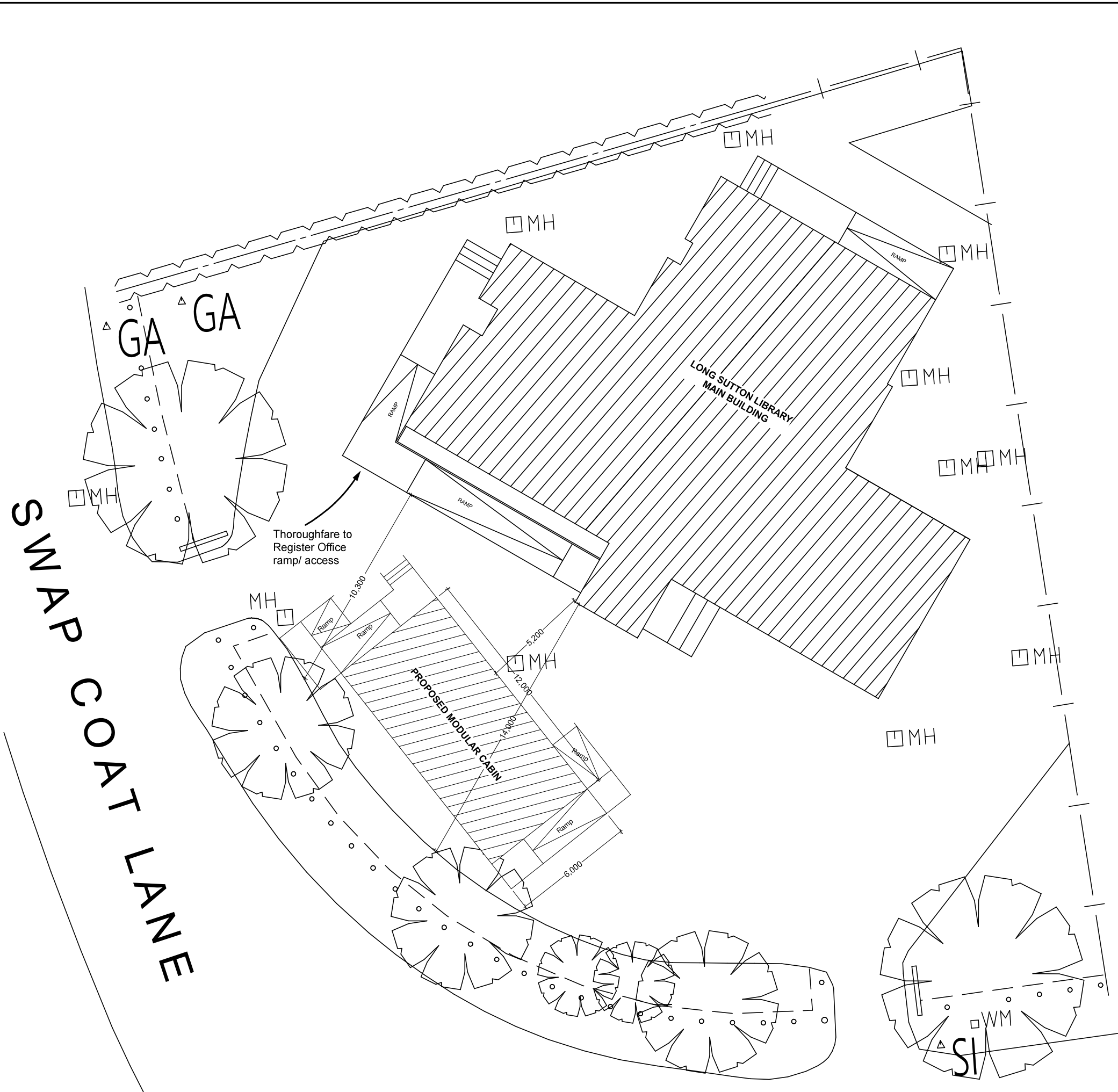
This Drawing is presented to Lincolnshire County Council in respect of Long Sutton Library and may not be used or relied upon by any other person or by the Client in relation to any other matters not covered specifically by the scope of this drawing. Notwithstanding anything to the contrary contained in the drawing, Kier Construction is obliged to exercise reasonable skill, care and diligence in the performance of services required by Lincolnshire County Council and Kier Construction shall not be liable except to the extent that it has failed to exercise reasonable skill, care and diligence and this drawing shall be read and construed accordingly.

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Rev	Details	Author & Date	Checked & Date	Approved & Date
S2	Issued For Information	TP	14/06/21	

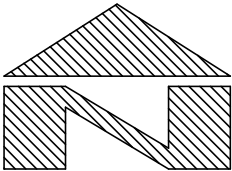


Issuing Office KIER BUSINESS SERVICES, LINCOLN 2nd Floor, County Offices, Newland, Lincoln, LN1 1YL Tel: +44 (0)1522 555555 (Option 3)				
Internal Project Number 10006887/ 104				
Client Lincolnshire County Council				
Project name Replace Roof Covering at Long Sutton Library				
Drawing Title LOCATION OF WORKS				
Scale As stated	Original Size A1	RBA Stage Stage 4		
Date of First Issue June 2021	Author TP	Checked	Approved	Status S2
Drawing Number 33077-104-DBS-01-GF-DR-B-0001				Rev. P01
Project Originator Volume Level Type Role Number				



SITE PLAN AS PROPOSED @ 1:100

LONG SUTTON LIBRARY
TRAFALGAR SQUARE
LONG SUTTON
PE12 9HD



NOTES

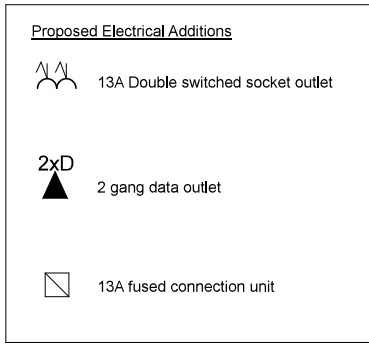
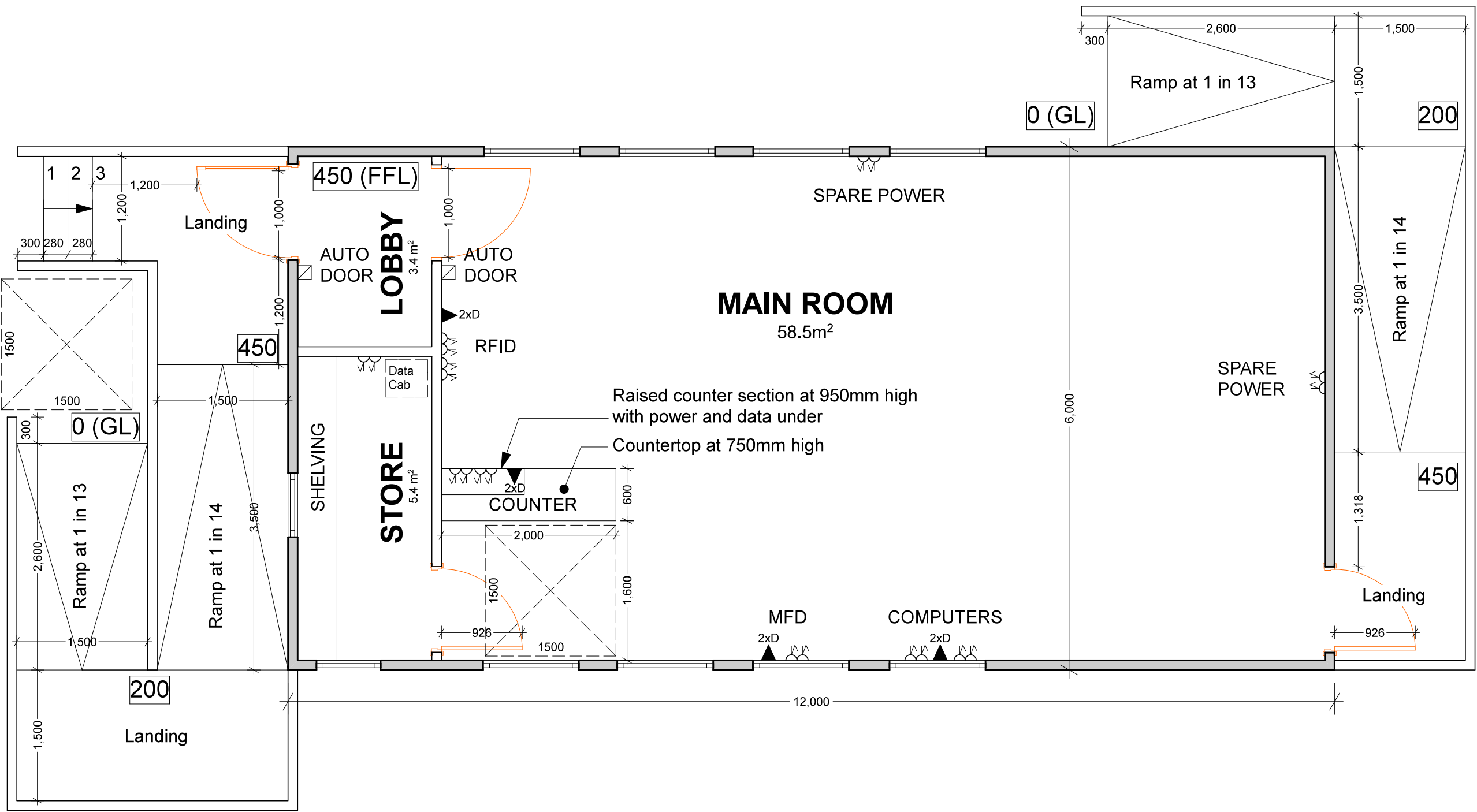
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SD	Issued For Information	TP	14/06/21		
Rev	Date	Author & Date	Checked & Date	Approved & Date	



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Internal Project Number 10006887/ 104					
Client Lincolnshire County Council					
Project name Replace Roof Covering at Long Sutton Library					
Drawing Title SITE PLAN AS PROPOSED					
Scale 1:100	Original Size A1	RBSA Stage Stage 4			
Date of First Issue June 2021	Author TP	Checked	Approved		
Drawing Number 33077-104-DBS-01-GF-DR-B-0002					Status S2
Project Originator Volume Level Type Role Number					Rev. P01



CABIN FLOOR PLAN AS PROPOSED @ 1:25

NOTES

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S2	Issued For Information	TP		
P03	(Landing enlarged at top step)	17/06/21		
S2	Issued For Information	TP		
P02	(Cabin FFL and ramp layout revised)	16/06/21		
S2	Issued For Information	TP		
P01		14/06/21		

Rev	Details	Author & Date	Checked & Date	Approved & Date
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Issuing Office KIER BUSINESS SERVICES, LINCOLN 2nd Floor, County Offices, Newland, Lincoln, LN1 1YL Tel: +44 (0)1522 555555 (Option 3)				
Internal Project Number 10006887/ 104				
Client Lincolnshire County Council				
Project name Replace Roof Covering at Long Sutton Library				
Drawing Title CABIN FLOOR PLAN AS PROPOSED				
Scale 1:25	Original Size A1	RBSA Stage Stage 4		
Date of First Issue June 2021	Author TP	Checked	Approved	
Drawing Number 33077-104-DBS-01-GF-DR-B-0003				Status S2
Project Originator Volume Level Type Role Number				Rev. P03

7. APPENDIX B – FLOOD RISK DATA

Environment Agency Flood Data

(Data issued April 2019 and confirmed as current by Environment Agency 19th May 2021).

Data includes:

Explanatory Letter

Flood Map

Tidal Level Location Map

Tidal Water levels

Tidal Hazard Mapping Breach Locations

Flood Hazard Map – Modelled Breaches 2115 0.5% (1 in 200)

2115 0.1% (1 in 1000)

Neil Cullen
ncullen@sghconsulting.co.uk

Our ref: CCN/2019/123264

Date: 15 April 2019

Dear Neil

Provision of Flood Risk Information for Trafalgar Square, Long Sutton

Thank you for your request to use our flood risk information in the development of the Flood Risk Assessment (FRA) for the above site. The information is set out below and attached. It is important you read any contextual notes on the maps provided.

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.

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.

History of Flooding

With regards to the history of flooding I can advise we do not have any records of flooding in this area. It is possible other flooding may have occurred we do not have records for, and other organisations, such as the Local Authority or Internal Drainage Boards, may have records.

Tidal Flood Risk Information

Tidal Defence Information

The tidal defences protecting this site consist of earth embankments. They are in fair condition and reduce the risk of flooding (at the defence) to a 0.67% (1 in 150) chance of occurring in any year. We inspect these defences routinely to ensure potential defects are identified.

Tidal Flood Levels

The attached table shows our current best estimate for extreme tide levels. Levels for the Humber Estuary have an assessment date of 2014, with others having an assessment date of 2006, which should be used in any consideration of future increases due to climate change.

Modelled 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. Hazard mapping is also 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.

Hazard Mapping – Breaching

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.

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

Your site is not affected by breaching of the defences for the present day (2006) scenarios.

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 Inplanning@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 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 February 2016. 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.

Supporting Information

Please see the Standard Notice or licence for details of permitted use. The Standard Notice can be found at the link below.

<http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

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).

Further information on flood risk can be found on the GOV.UK website at:

<https://www.gov.uk/browse/environment-countryside/flooding-extreme-weather>

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 your Lead Local Flood Authority (i.e. county council or unitary authority) or, where they exist, the Internal Drainage Board.

Further Contact

I hope we have correctly interpreted your request. If you are not satisfied with our response to your request for information, you can contact us within two calendar months to ask for our decision to be reviewed.

If you have any queries or would like to discuss the content of this letter further please contact Sarah Curl using the details below.

Yours sincerely,

p.p.

Alastair Windler

Partnerships and Strategic Overview Team Leader - Welland and Nene

Direct dial 020 302 53535

Direct e-mail PSOWN@environment-agency.gov.uk

Enc.

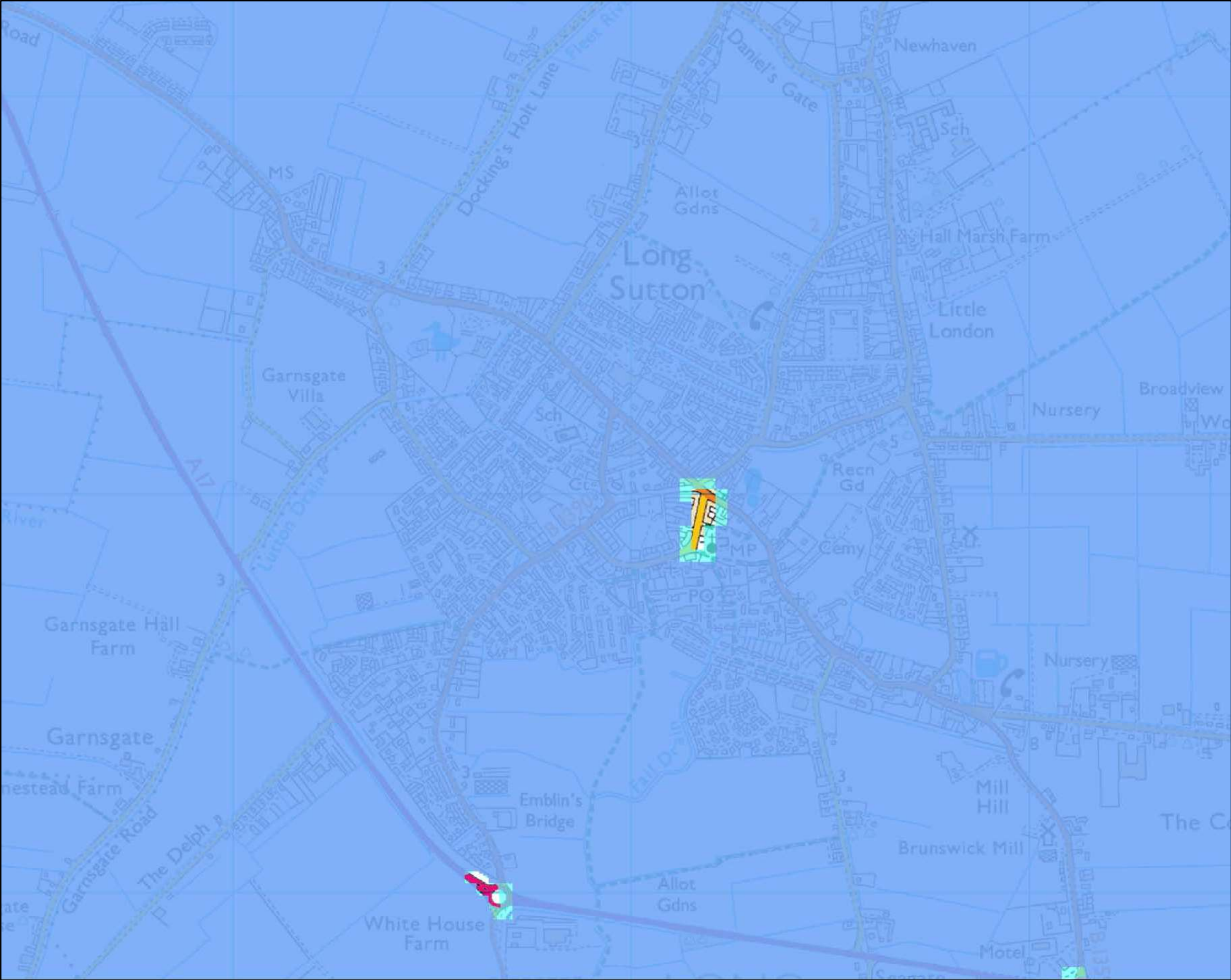
Flood Map

Estimated Tide Levels

Tidal Breach Locations Map

Hazard Mapping – Breaching (2 maps)

Flood Map centred on TF 42964 23010 - created April 2019 [Ref: CCN-2019-123264]



Scale 1:10,000



- Legend**
- Main River
 - Raised Defences
 - Flood Storage Areas
 - Area 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

Lincolnshire & Northamptonshire Area

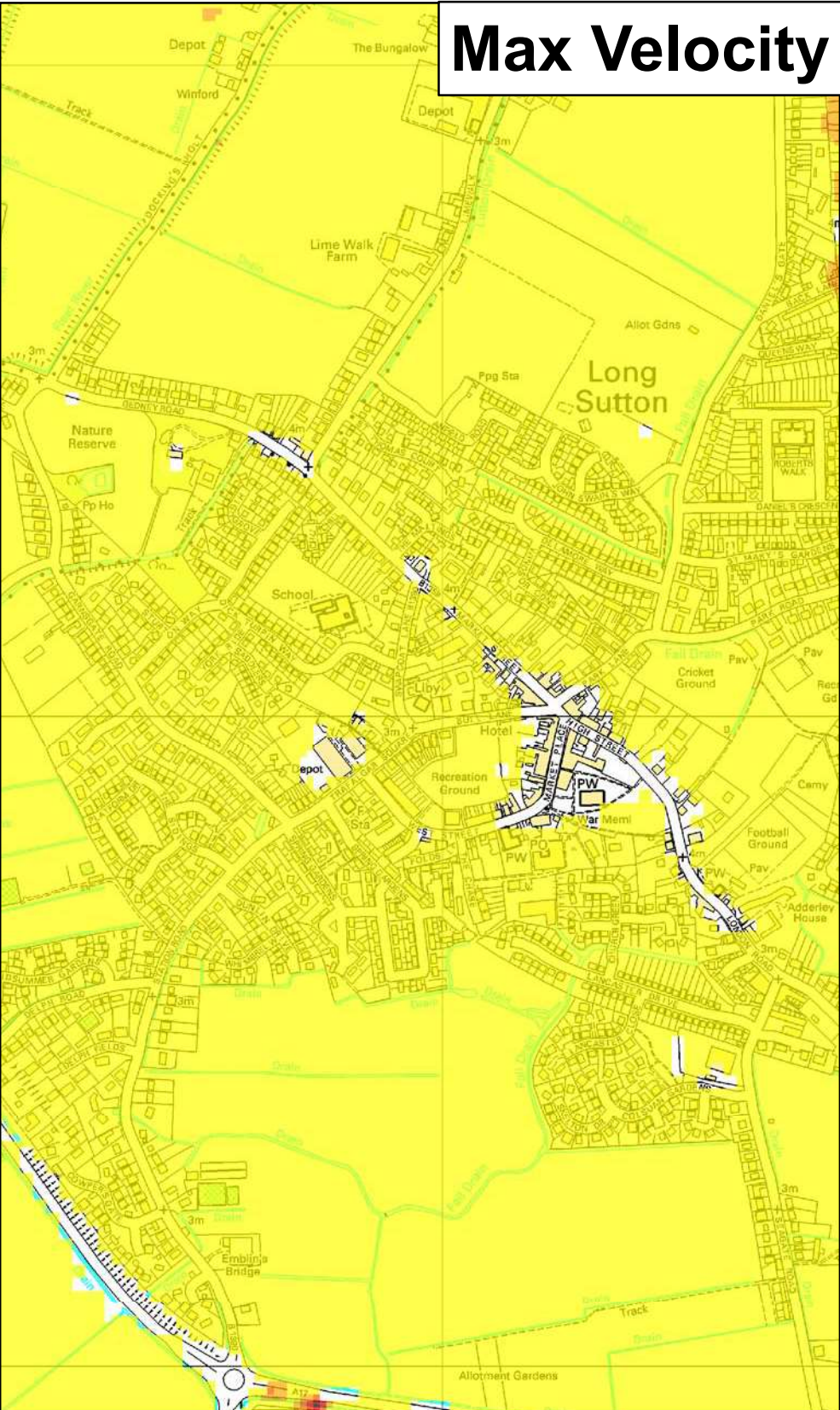
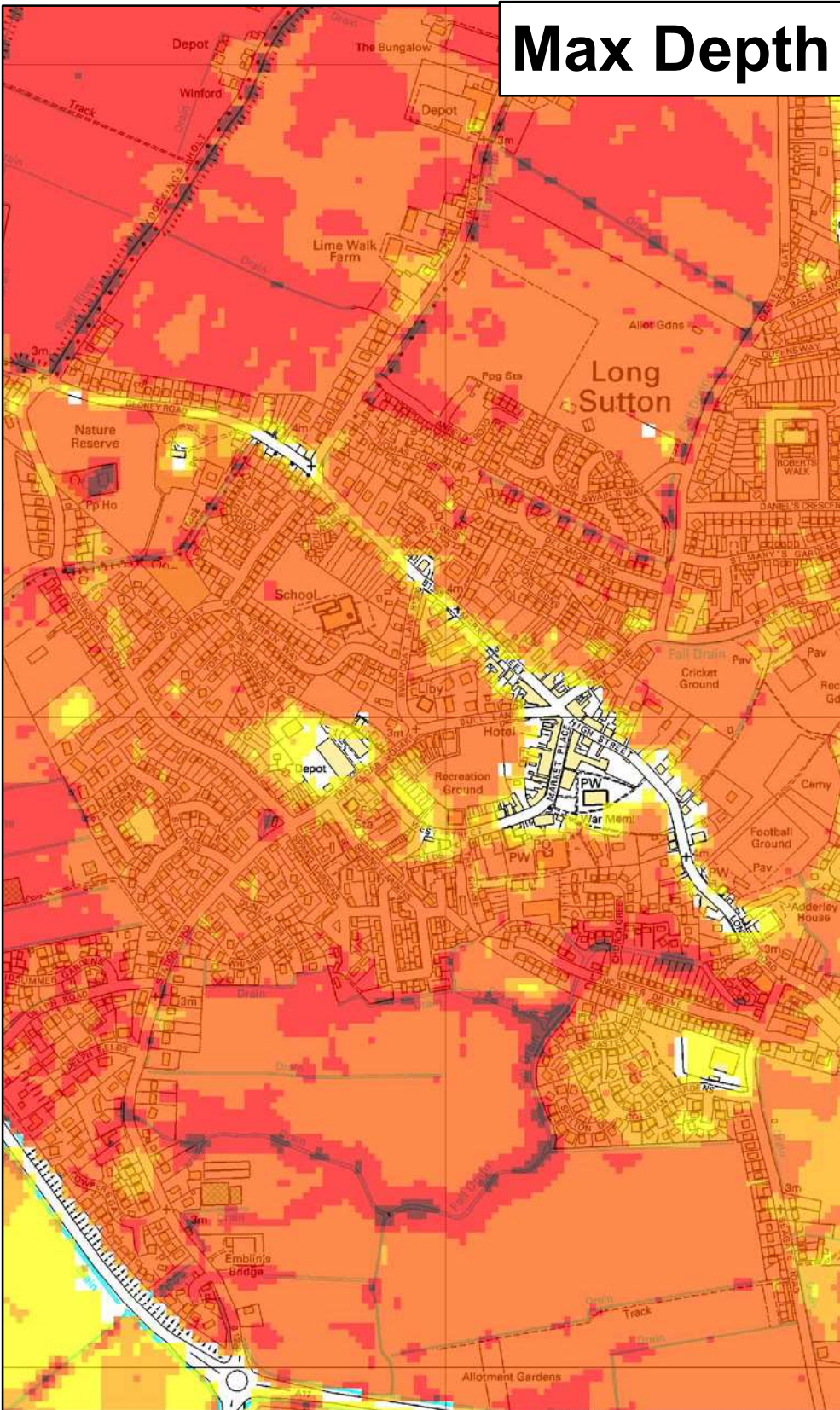
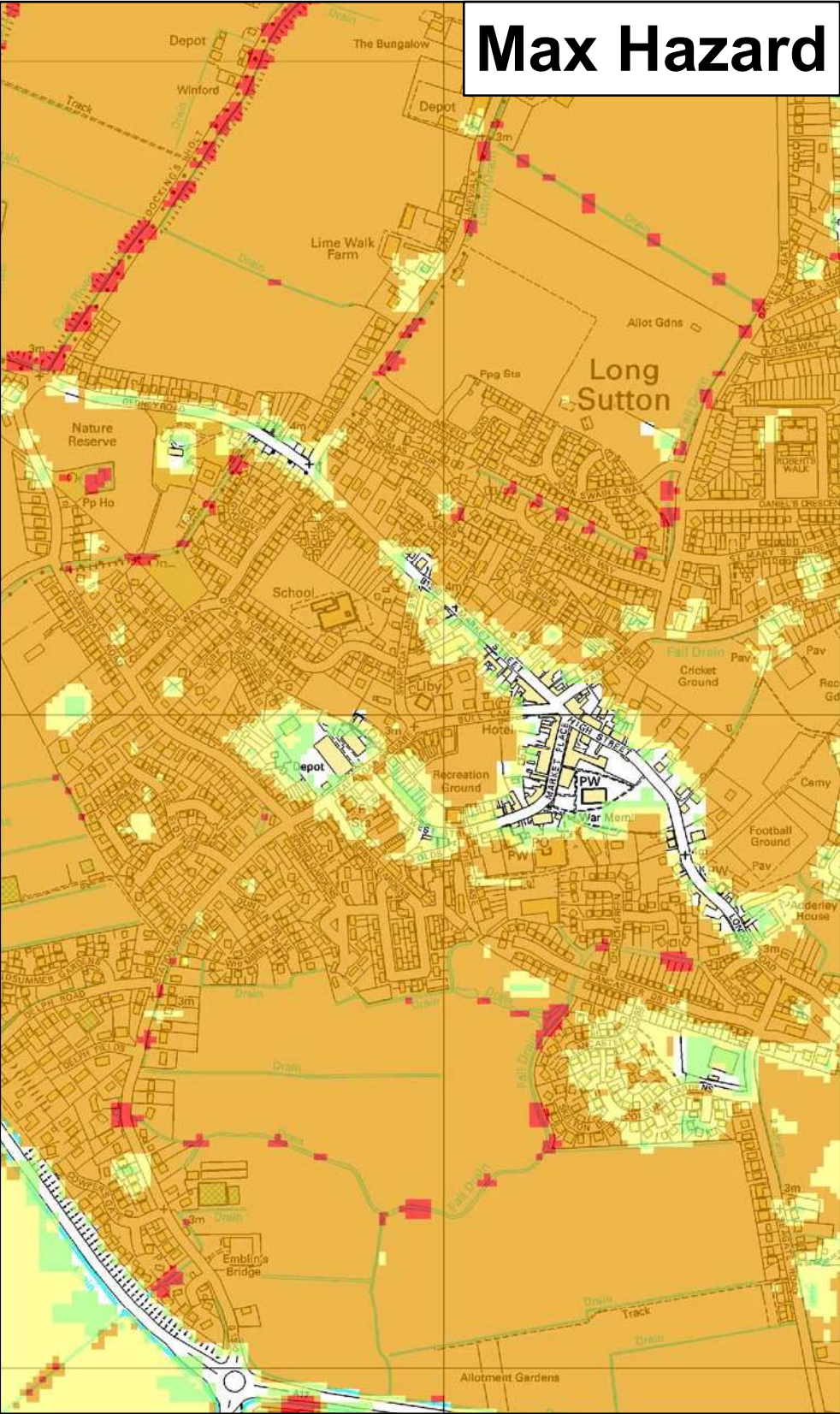


Tidal Water Levels for the South Humber, East Coast and The Wash

The table below shows still water levels for locations, from the above location map, around the South Humber Estuary, East Coast and The Wash. It is important to note the following:

- The base date for the data is 2014 for the South Humber and 2006 for the East Coast and The Wash.
- The data 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.
- The water level quoted is the 'Best Estimate' water level. Depending on the use of the data it may be necessary to carry out sensitivity testing. Upper and Lower 95% confidence bandings are available upon request.
- Levels for other annual chance scenarios are available if required.

Ref	Location	Easting	Northing	Annual Chance (1 in x) of Tide Level					
				metres ODN					
				1	10	50	100	200	1000
HUMBER									
H030	Tetney	535420	403180	3.94	4.29	4.56	4.69	4.82	5.15
H050	Buck Beck	532700	406580	4.03	4.36	4.62	4.74	4.87	5.18
H060	Grimsby	527878	411346	4.10	4.43	4.70	4.82	4.95	5.27
H080	Haborough Marsh	520790	415740	4.26	4.61	4.88	5.01	5.14	5.47
H090	Immingham	519141	417449	4.26	4.61	4.88	5.01	5.14	5.47
H100	South Killingholme	518700	417120	4.41	4.77	5.05	5.18	5.32	5.66
H130	North Killingholme	516530	420000	4.51	4.87	5.15	5.28	5.42	5.77
H150	East Halton	514450	422870	4.59	4.96	5.25	5.39	5.53	5.89
H170	Goxhill	511970	425440	4.67	5.04	5.34	5.47	5.61	5.95
H200	New Holland	508020	424330	4.87	5.26	5.55	5.68	5.81	6.12
H210	Barrow Haven	506380	422620	4.92	5.31	5.60	5.73	5.86	6.17
H220	Ferriby	497550	421150	5.04	5.42	5.67	5.77	5.86	6.04
H230	Winterton	493420	422830	5.14	5.51	5.74	5.83	5.90	6.02
H250	Blacktoft	484247	424190	5.25	5.62	5.83	5.90	5.96	6.04
H270	Goole	474857	422960	5.46	5.85	6.07	6.15	6.21	6.29
East Coast									
~	Great Eau	545500	393800	3.80	4.19	4.46	4.57	4.69	4.96
~	Boygrift	553300	379800	3.84	4.24	4.53	4.65	4.77	5.05
~	Burgh Sluice	555190	358620	4.26	4.45	4.76	4.90	5.03	5.34
Wash									
~	Hobhole	536610	339940	4.82	5.30	5.64	5.78	5.93	6.27
~	Lawyers Sluice	540750	334550	4.84	5.32	5.66	5.80	5.95	6.29
~	West Lighthouse	549150	325750	4.88	5.37	5.71	5.86	6.01	6.35
~	Grand Sluice	532400	344500	4.88	5.33	5.65	5.78	5.93	~
~	Fosdyke Bridge	531700	332200	4.91	5.38	5.71	5.85	5.99	~
~	Marsh Road	526000	324000	5.04	5.44	5.73	5.85	5.98	~
~	Wisbech	546100	310000	4.83	5.25	5.53	5.66	5.78	~
~	Dog In Doublet	527300	299300	3.67	4.00	4.22	4.32	4.42	~



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

Max Hazard	Max Depth (m)	Max Velocity (m/s)
(Flood Risk to People : FD2320)		
Less than 0.75 (Low Hazard)	0 - 0.25	0 - 0.3
Between 0.75 and 1.25 (Danger for Some)	0.25 - 0.50	0.3 - 1.0
Between 1.25 and 2.0 (Danger for Most)	0.50 - 1.0	1.0 - 1.5
Greater than 2.0 (Danger for All)	1.0 - 1.6	1.5 - 2.5
	1.6 +	2.5 +

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

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

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

Date Printed April 2019

Scenario year 2115

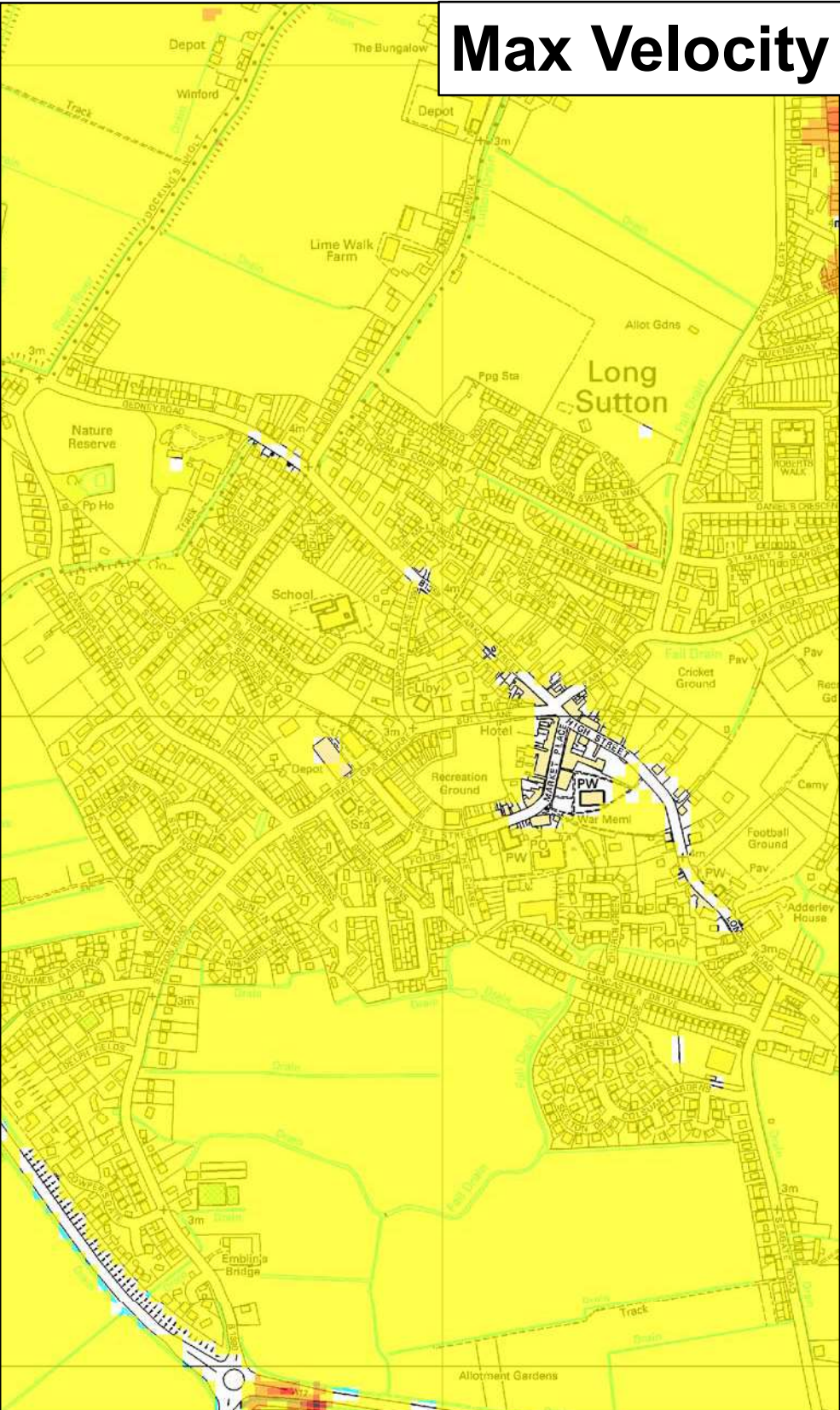
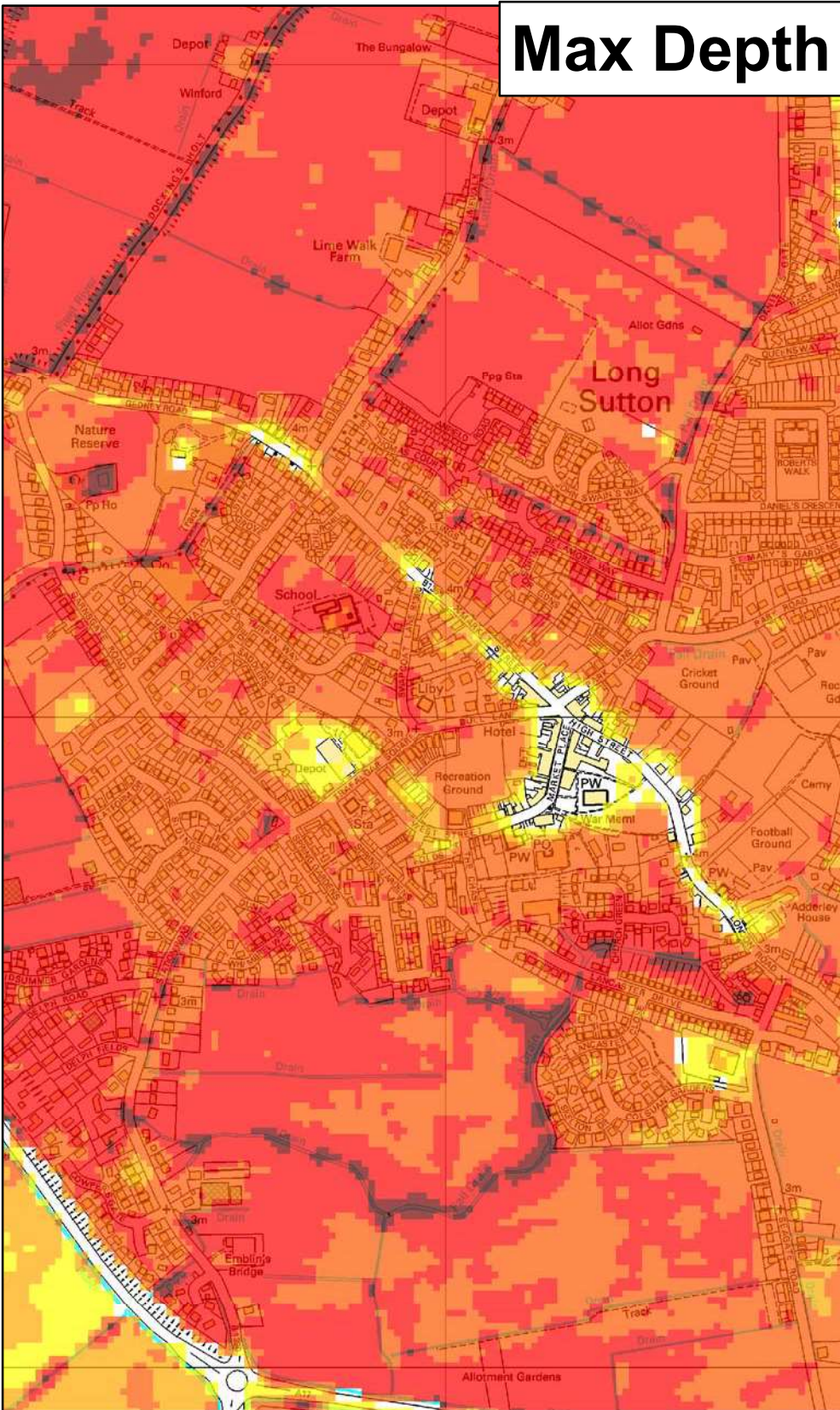
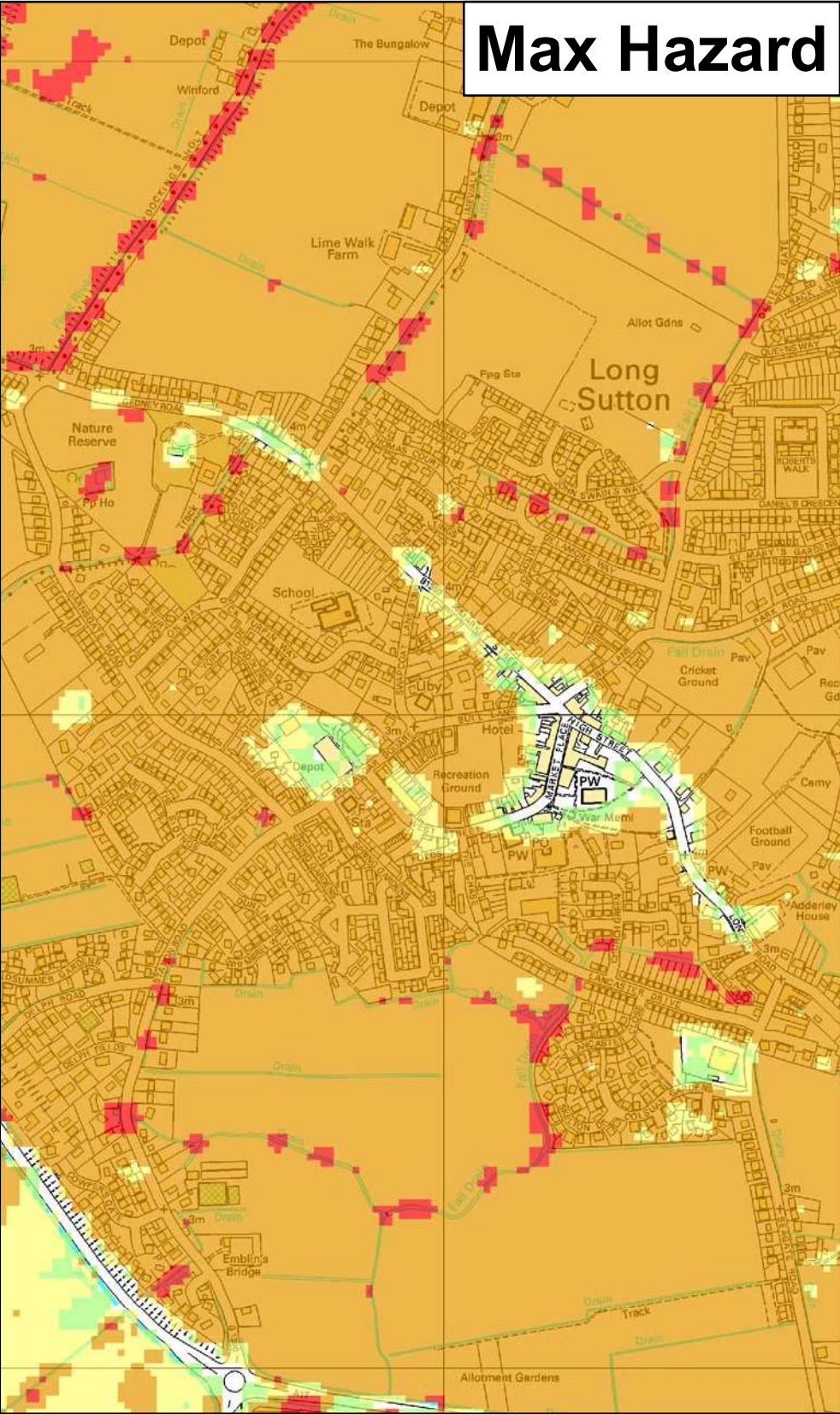
Scenario Annual Chance 0.5% (1 in 200)

CCN Number CCN-2019-123264

Lincolnshire and Northamptonshire Tidal Breaching Hazard Mapping

Map Centred on TF 42964 23010

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Date Printed April 2019

Scenario year 2115

Scenario Annual Chance 0.1% (1 in 1000)

CCN Number CCN-2019-123264

Lincolnshire and Northamptonshire Tidal Breaching Hazard Mapping

Map Centred on TF 42964 23010

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Surface Water Flood Risk

Select the type of flood risk information you're interested in. The map will then update.

Flood risk

Low risk: depth

Location

Enter a place or postcode



Surface water flood risk: water depth in a low risk scenario

Flood depth (millimetres)

- Over 900mm
- 300 to 900mm
- Below 300mm