



**PROPOSED ADDITIONAL
CARAVAN UNITS AT THE
GOLDEN SANDS HOLIDAY
PARK, QUEBEC ROAD,
MABLETHORPE,
LINCOLNSHIRE**

FLOOD RISK ASSESSMENT

MARCH 2024

REPORT REF: 3412/RE/03-24/01

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CONTRACT

Evans Rivers and Coastal Ltd has been commissioned by Paul Robinson Partnership to carry out a flood risk assessment for additional caravan units at the Golden Sands Holiday Park, Quebec Road, Mablethorpe, 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; depth analysis; 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 providing specifications to third parties such as surveyors; 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".

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1. INTRODUCTION

1.1 Project Scope

1.1.1 Evans Rivers and Coastal Ltd has been commissioned by Paul Robinson Partnership to carry out a flood risk assessment for additional caravan units at the Golden Sands Holiday Park, Quebec Road, Mablethorpe, Lincolnshire.

1.1.2 It is understood that this Flood Risk Assessment will be submitted to the Planning Authority and Environment Agency (Agency, hereafter). Specifically, this assessment intends to:

- a) Consider the impacts of the 1 in 200 year and 1 in 1000 year flood events (inclusive of climate change), in accordance with NPPF;
- b) Review any literature and guidance specific to this area;
- c) Determine the extents of the aforementioned NPPF Flood Zones across the site, together with depths of floodwater and hazard;
- d) Assess the risks to people and property and propose mitigation measures accordingly;
- e) Review existing evacuation and warning procedures for the area;
- f) Carry out an appraisal of flood risk from any other sources such as groundwater as required by NPPF;
- g) 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 2023. 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.
- Humber Estuary Coastal Authorities Group Flamborough Head to Gibraltar Point Shoreline Management Plan dated 2010.
- Lincolnshire County Council Preliminary Flood Risk Assessment dated 2011.
- East Lindsey District Council Strategic Flood Risk Assessment dated 2017.

- East Lindsey District Council Strategic Flood Risk Assessment dated 2012.

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).
- British Geological Survey, *Online Geology of Britain Viewer*.
- 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).
- Product 6 flood level data and breach data provided by the Agency as ascii grid GIS files.
- Flood level/hazard data provided by the Agency (Appendix A)
- Filtered LIDAR data at 1m resolution.

3. SITE CHARACTERISTICS

3.1 Existing Site Characteristics and Location

3.1.1 The site is located at the Golden Sands Holiday Park, Quebec Road, Mablethorpe, Lincolnshire. The approximate Ordnance Survey (OS) grid reference for the site is 549581 386688 and the location of the site is shown on Figure 1. The site is within the administrative boundary of East Lindsey District Council.



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

3.1.2 The site comprises two vacant areas (Area A and Area B) of the Golden Sands Holiday Park as shown on Figure 1 and Drawing Number 8525-P01. The settlement of Mablethorpe is located south east and the Lincolnshire coastline and the North Sea beyond is located a short distance north east of the site.

3.1.3 The wider Golden Sands Holiday Park accommodates on-site facilities and caravan pitches. The site is served via the main access roads which run through the site and onto Quebec Road.

3.1.4 Filtered LIDAR data at 1m resolution has been obtained in order to illustrate the topography across the site and surrounding area (Figure 2).

3.1.5 The survey data indicates that ground levels across Area A and Area B are set at 2m 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 provide a total of four additional static caravan pitches. The occupancy period would be 1st March to 30th November.
- 3.2.2 The site layout can be seen on Drawing Number 8525-P02. The units will be managed by the Client as part of the wider holiday park.
- 3.2.3 Caravan floor levels will be set 450mm higher than existing ground levels and at approximately 2.45m AOD.
- 3.2.4 The caravans will remain as holiday-use only and hence a more-vulnerable use according to Annex 3 of the NPPF.

4. BASELINE INFORMATION

4.1 Environment Agency Flood Zone Map

- 4.1.1 The Environment Agency's Flood Zone Map (Figure 3) shows that the site is located within the NPPF defined Flood Zone 3a associated with the North Sea. The extent of the Flood Zone 3a 'High Probability' is defined as the 1 in 200 year return period tidal event in this case.
- 4.1.2 The extent of the flood zones do not take into account the presence of any formal flood defences, or other features which also act as informal flood defences.

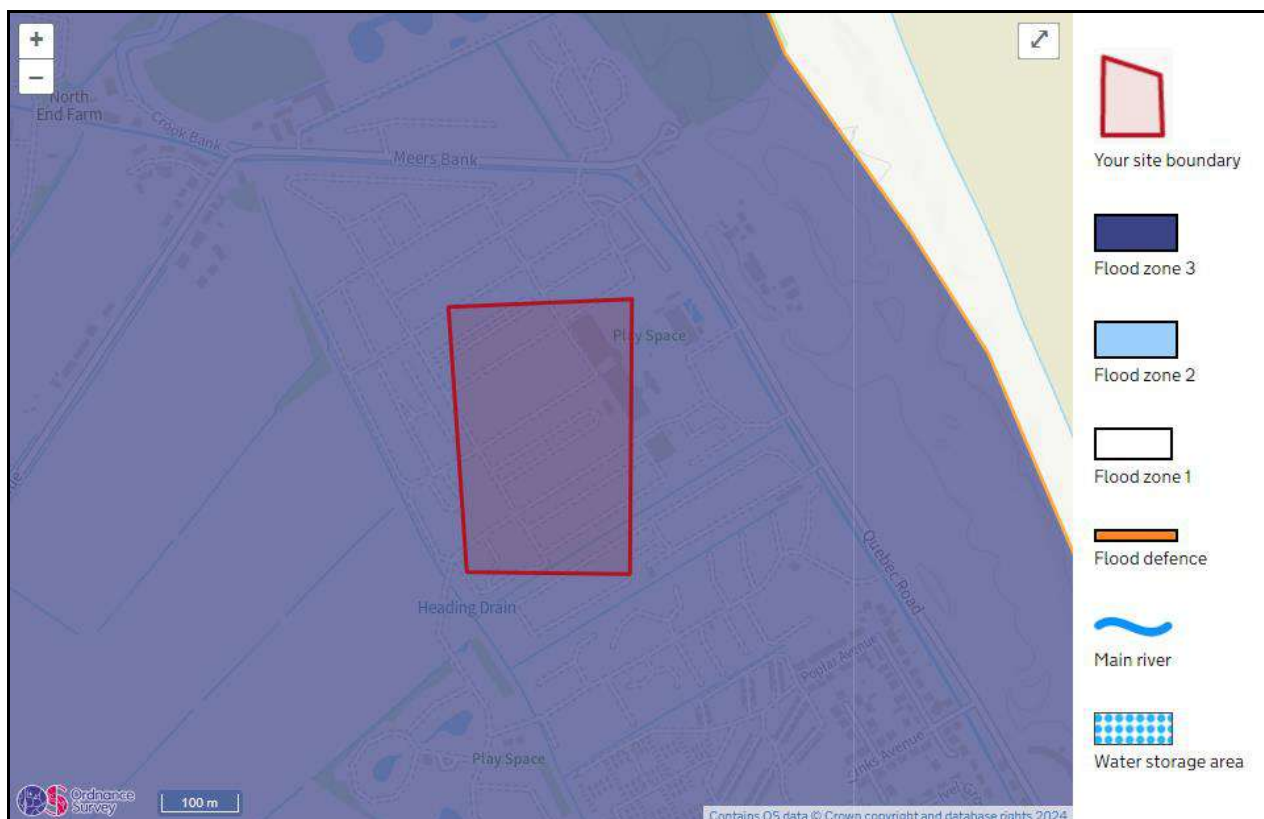


Figure 3: Environment Agency Flood Zone Map (Source: Environment Agency)

4.2 Flood Defences

- 4.2.1 The Environment Agency flood defence information via <https://environment.data.gov.uk/asset-management/index.html> indicates that the floodplain is protected from flooding by sea defences comprising concrete walls and embankments/dunes.
- 4.2.2 This area also benefits from the Saltfleet to Gibraltar Point Beach Management scheme which consists of the placement of 550,000 cu m of sand annually in key locations along the coastline. The scheme together with the defences provides a 1 in 200 year standard of protection.

4.3 Shoreline Management Plan

- 4.3.1 The *Humber Estuary Coastal Authorities Group – Flamborough Head to Gibraltar Point Shoreline Management Plan* dated 2010 (SMP hereafter) indicates that this part of the

coastal frontage is located within Policy Unit O: Viking Gas Terminal (Mablethorpe) to southern end of Skegness.

4.3.2 The SMP is an aspirational document which sets out the intent of the Coastal Authorities Group to make decisions consistent with policy aspirations.

4.3.3 The SMP states that the short term, medium term and long term policy (i.e. up to year 2105) is to 'Hold the Line'.

4.4 Environment Agency Flood Levels

4.4.1 Flood level/hazard data has been provided by the Agency (Appendix A).

4.4.2 Breach model results have been obtained as part of a Product 6 data request and a flood event analysis has been undertaken in Chapter 5 hereafter.

4.4.3 Breach data at locations E08, E11 and E12 are suitable for consideration at the site.

4.4.4 A review of the data indicates that the site is affected from a breach at locations E08, E11 and E12, and the flood level during the climate change 1 in 200 year event would be 4.01m AOD, 2.88m AOD and 2.99m AOD respectively.

4.4.5 At breach location E08 the flood level across the site is highest and the flood hazard across the site and evacuation route is also highest. The location of the breach is also the closest (i.e. close to the site entrance). Therefore, the results from breach location E08 have been taken forward.

4.4.6 Inspection of the Product 6 flood level results confirm that from a breach at E08 during the climate change 1 in 200 year event the flood level across the site would be 4.01m AOD. During the climate change 1 in 1000 year event the flood level could reach 4.10m AOD across the site.

4.5 Internal Drainage Board

4.5.1 The site is located within the Lindsey Marsh Internal Drainage Board (IDB) area and the closest IDB maintained watercourse is located along the eastern and western frontages of the holiday park.

4.5.2 Information from the IDB's *Policy Statement on Flood Protection and Water Level 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.

4.6 Flood Warning and Emergency Planning

4.6.1 The site is located within Environment Agency Flood Warning area 053FWTLINC3D - Wider area at risk of tidal flooding between Theddlethorpe and Huttoft.

4.6.2 The Environment Agency has a target to issue flood alerts and warnings 9 hours ahead of the peak of the high tide. However, overtopping can occur in advance of the high tide further reducing the warning time. There is no target lead time for issuing severe flood warnings as these are mostly issued after flooding has already begun. Flood alerts are only issued during daylight hours.

4.6.3 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 Flood Alert system operates during daylight hours, 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 must confirm details with the Agency and to sign up for these warnings.** The various flood warning codes can be seen on Figure 4.

Flood warnings - know what to do? Environment Agency

	FLOOD ALERT	PREPARE	<ul style="list-style-type: none">• Prepare a bag that includes medicines and insurance documents• Visit flood-warning-information.service.gov.uk
	FLOOD WARNING	ACT	<ul style="list-style-type: none">• Turn off gas, water and electricity• Move things upstairs or to safety• Move family, pets and car to safety
	SEVERE FLOOD WARNING	SURVIVE	<ul style="list-style-type: none">• Call 999 if in immediate danger• Follow advice from emergency services• Keep yourself and your family safe

floodsdestroy.campaign.gov.uk **FLOODS DESTROY OF PREPARING** Floodline on 0345 988 1188 #floodaware

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

5. COASTAL FLOOD RISK

5.1 Actual Risk

- 5.1.1 The Agency's overtopping maps in Appendix A together with the Product 6 information indicates that the site would not be affected by floodwater during the present day 1 in 200 year/1 in 1000 year event.
- 5.1.2 During the climate change 1 in 200 year event and climate change 1 in 1000 year event the data indicates that the depth across the site would be 1m-2m.
- 5.1.3 Therefore, the 'actual risk' of flooding as a result of overtopping is low during present day events and high during climate change events.

5.2 Residual Risk

- 5.2.1 The Agency has investigated the risk of flooding from a breach in the defences at various locations during the present day and climate change 1 in 200 year and 1 in 1000 year event. As discussed earlier the breach location which gives the most onerous results for the site and evacuation route are at E08.
- 5.2.2 Examination of the results from the Agency (Appendix A) shows that during the present day 1 in 200 year event and present day 1 in 1000 year event the flood depth across the site would be between 1m and 2m.
- 5.2.3 During the climate change 1 in 200 year event and climate change 1 in 1000 year event, the Agency's maps show that the flood depth across the site would be >2m.
- 5.2.4 Inspection of the Product 6 flood level results (Breach E08) confirm a peak flood level of 4.01m AOD during the present day 1 in 200 year event and 4.10m AOD during the present day 1 in 1000 year event.
- 5.2.5 As discussed earlier the caravan floor levels will be set 450mm higher than existing ground levels and at approximately 2.45m AOD.
- 5.2.6 Therefore, during the peak of the design climate change 1 in 200 year event and extreme climate change 1 in 1000 year event, the flood depth within the caravans could be 1.56m and 1.65m respectively.

5.3 Flood Event Analysis

- 5.3.1 Environment Agency breach model results at Breach E08 have been obtained as part of a Product 6 data request and the following event analysis has been carried out in order to provide further information relating to the characteristics of the flood event. The Product 6 data provided by the Agency, allows for a more detailed analysis to be undertaken whereby the entire modelled event can be viewed in stages as hourly timesteps.
- 5.3.2 The objective of this more detailed analysis is to provide the Council with an improved understanding relating to the time of onset of floodwater and access/egress.
- 5.3.3 The Tuflow files from the model were loaded into the SMS software so each timestep can be analysed to see what the flood hazard is across the surrounding area during the design climate change 1 in 200 year event.

5.3.4 It should be noted that the hazard ratings calculated by the Agency’s model was categorised in the SMS software into four degrees of flood hazard in accordance with Table 3.2 of *FD2321/TR1* and Table 4.2 of *FD2321/TR2*.

Table 1: Hazard to people categories (taken from Table 3.2 of *FD2321/TR1* and Table 4.2 of *FD2321/TR2*)

Hazard Rating	Degree of Flood Hazard	Description
< 0.75	Very low hazard	Caution "Flood zone with shallow flowing water or deep standing water"
0.75 – 1.25	Danger for Some	Dangerous for some (i.e. children) "Danger: Flood zone with deep or fast flowing water"
1.25 – 2.0	Danger for Most	Dangerous for most people (i.e. general public) "Danger: Flood zone with deep fast flowing water"
> 2.0	Danger for All	Dangerous for all "Extreme danger: flood zone with deep fast flowing water"

5.3.5 Based on the hazard data it is recommended that people evacuate the site via Quebec Road, Golf Road and Alford Road as shown on Figure 5 overleaf.

5.3.6 The Agency has subsequently stated in their response for other sites that the aim of the breach modelling is to understand the consequences of a breach from the peak of the tidal cycle. Measuring of the time taken for the land to be inundated starts from the peak of the tidal cycle following two initial tidal cycles (i.e. calculated from the model to be at timestep 136).

5.3.7 It should be noted that the model begins at timestep 110 and breach occurs at timestep 112. It can be assumed that timestep 136 (peak) is equivalent to hour 1, and that timestep 137 is therefore hour 2, and so on.

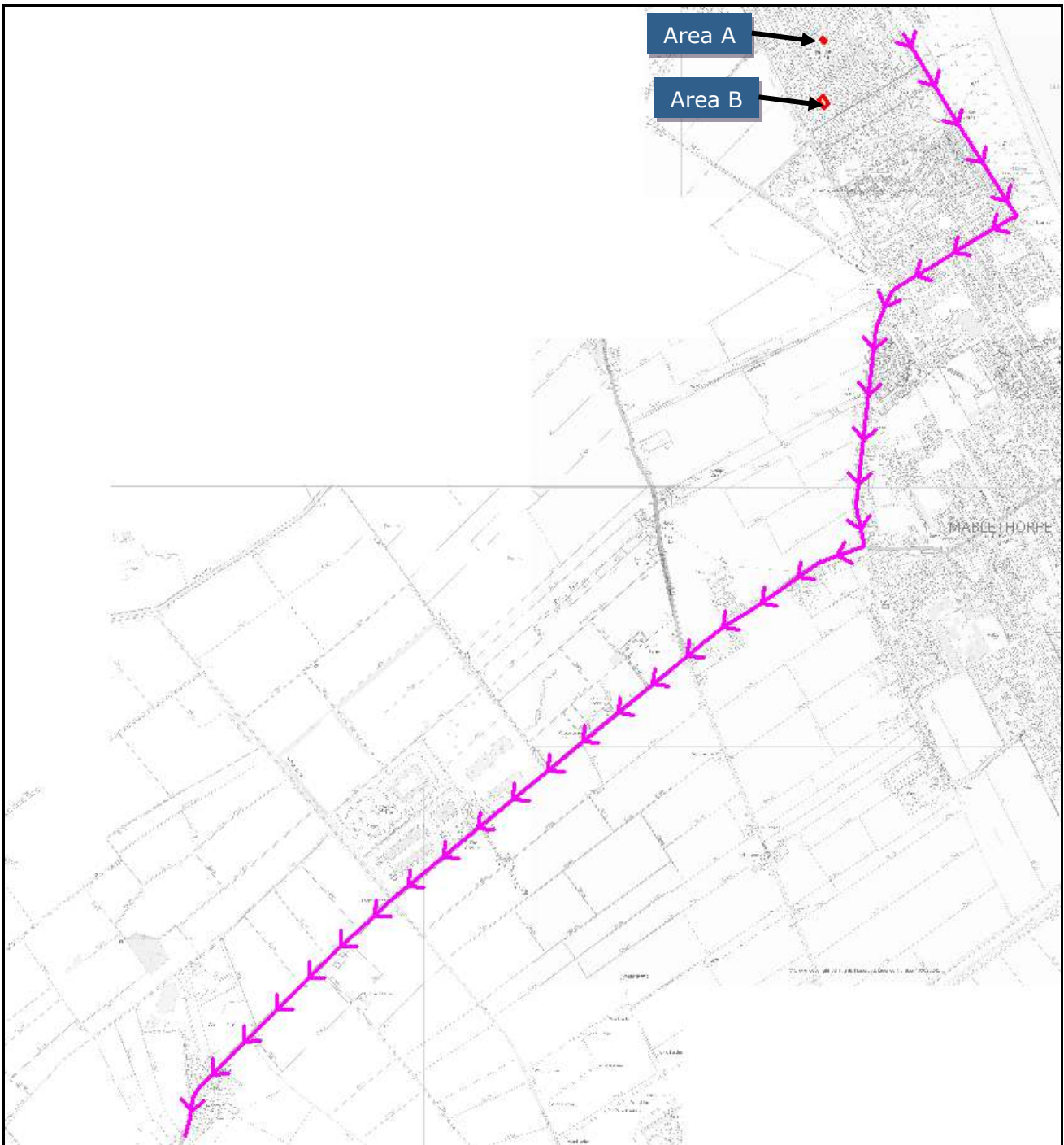


Figure 5: Proposed evacuation route

- 5.3.8 The data indicates that at the peak of the event (i.e. at timestep 136/hour 1) the results show that floodwater would have reached the site and evacuation route and that safe access/egress would not be available (Figure 6). The hazard along the evacuation route from the site entrance is a combination of *Dangerous for All*, *Dangerous for Most*, *Dangerous for Some* and *Very low* for 4.8 km after which the hazard remains *Very low*.
- 5.3.9 At timestep 140/hour 5 (Figure 7) the *Dangerous for All* hazard extends further from the site and for up to 3.4 km. At timestep 148/hour 13, the hazard along the evacuation route then mainly becomes *Dangerous for Most*.

5.3.10 Safe access/egress remains unavailable throughout the remainder of the event up to timestep 182/hour 47 (Figure 8).

5.3.11 At timestep 182/hour 47 the hazard along the evacuation route from the site entrance is a combination of *Dangerous for All*, *Dangerous for Most*, *Dangerous for Some* and *Very low* for 4.8 km after which the hazard remains *Very low* (i.e. similar to the hazard at the peak of the event at timestep 136/hour 1).

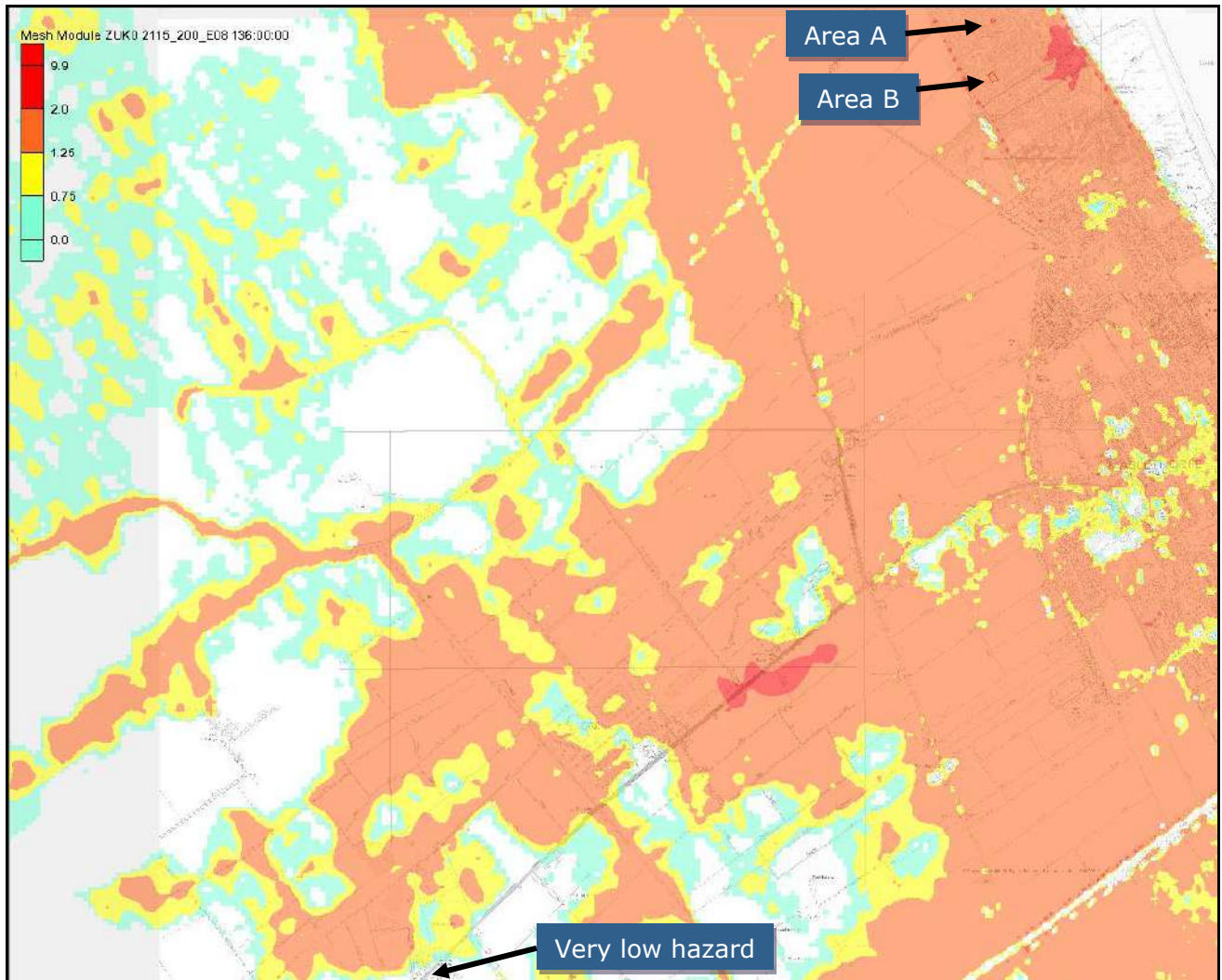


Figure 6: 200yrCC breach event at timestep 136/hour 1 showing hazard

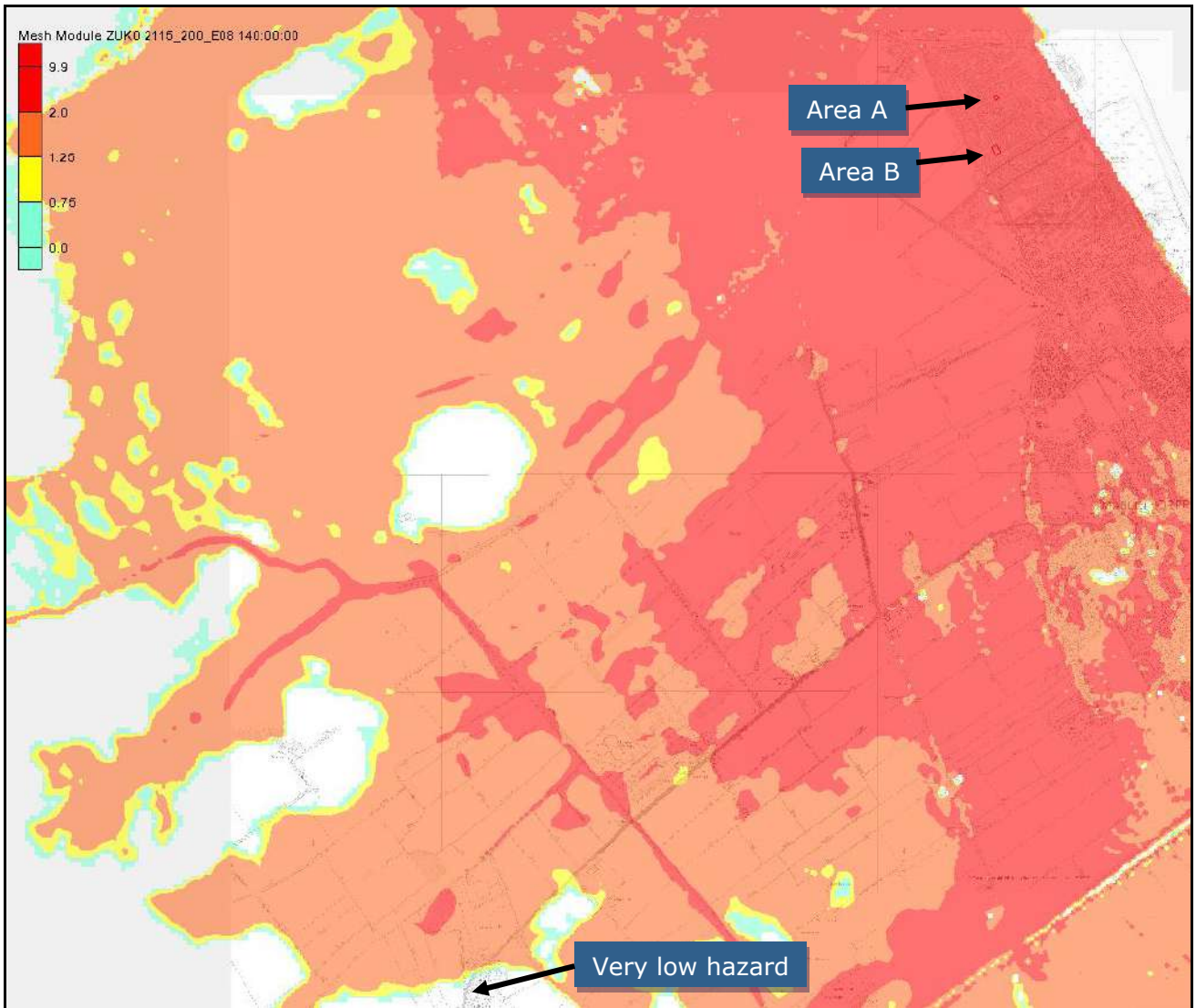


Figure 7: 200yrCC breach event at timestep 140/hour 5 showing hazard

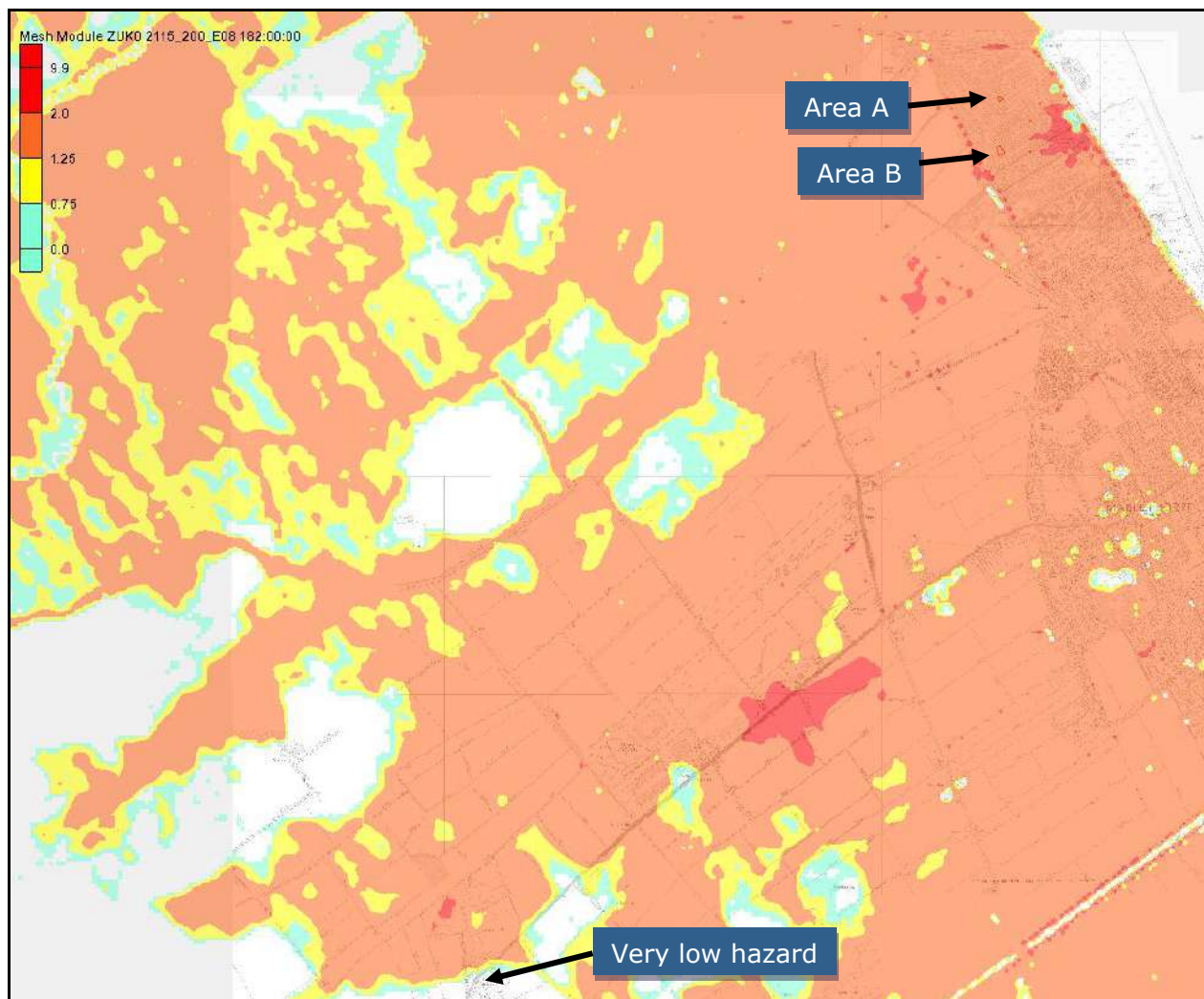


Figure 8: 200yrCC breach event at timestep 182/hour 47 showing hazard

Emergency Services

5.3.12 The DEFRA/EA document FD2321/TR1 and FD2321/TR2 suggests that heavier vehicles such as fire engines become unstable in 0.9m of still water and this value reduces as the velocity increases.

5.3.13 By consulting the depth model files provided by the Agency and categorising the results to show the critical 0.9m depth, it can be seen that at the peak (i.e. timestep 136/hour 1), it would not be safe for emergency services accessing the site even though parts of the evacuation route would be safe (Figure 9).

5.3.14 At timestep 182/hour 47 (Figure 10) it would also not be safe for emergency services accessing the site even though parts of the evacuation route would be safe.

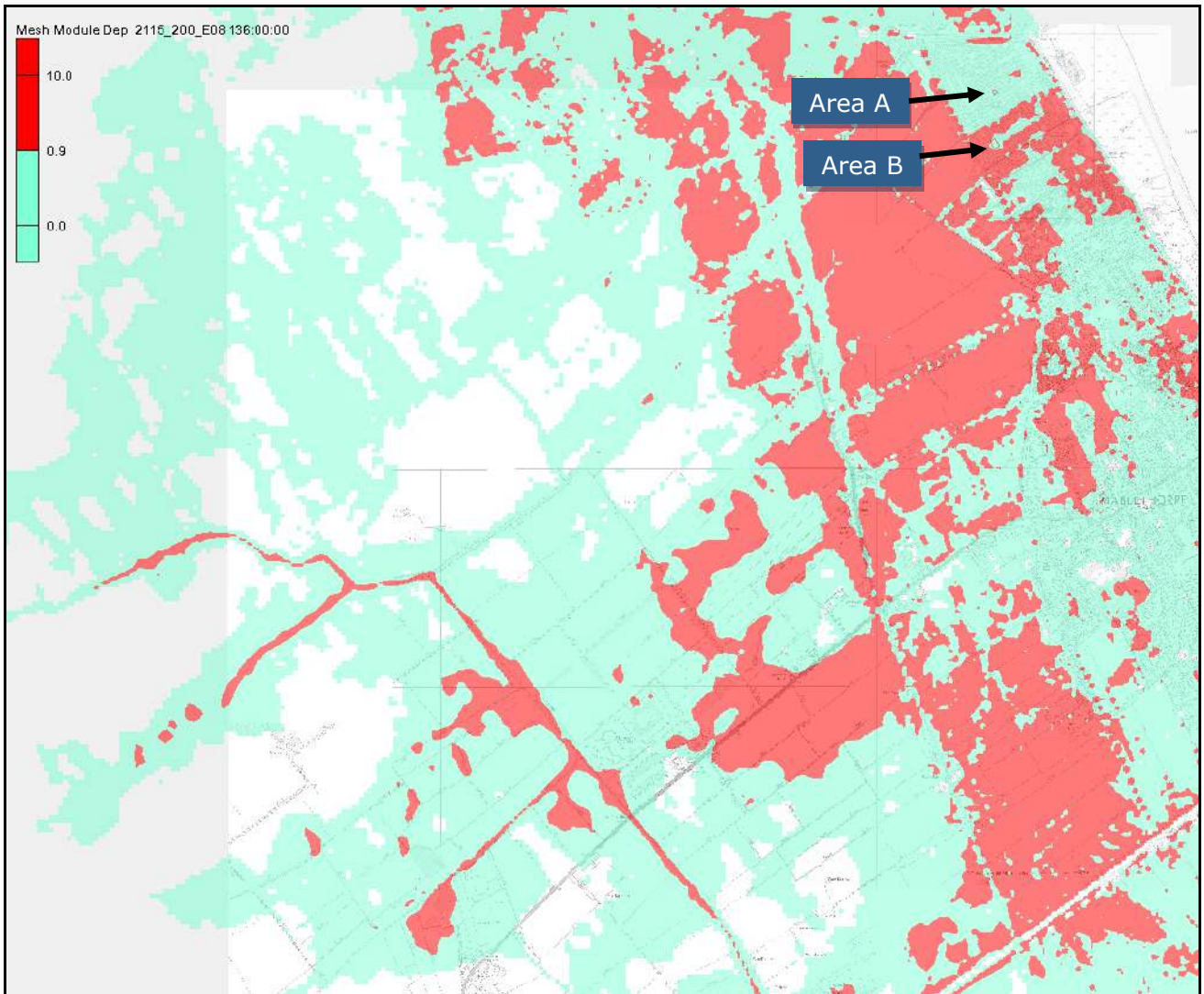


Figure 9: Areas safe for emergency services in blue during 200yrCC breach event at timestep 136/hour 1

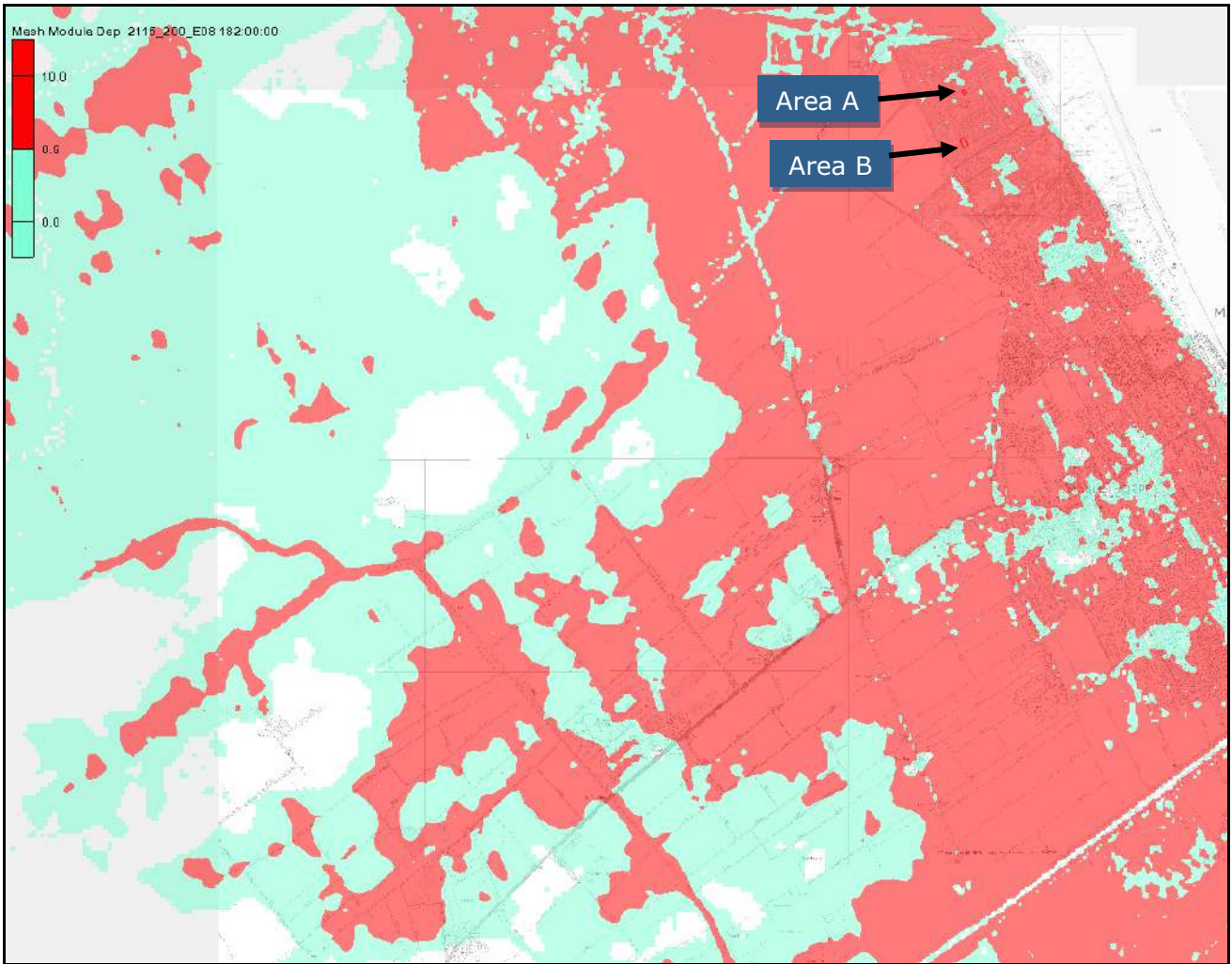


Figure 10: Areas safe for emergency services in blue during 200yrCC breach event at timestep 182/hour 47

Summary

- The preferred evacuation route away from the site is via Quebec Road, Golf Road and Alford Road.
- Safe access/egress for people is not available during the peak of the event.
- The model does not extend past timestep 182/hour 47 and the remaining flood hazard is largely *Dangerous for Most* along the evacuation route. People would need to travel 4.8 km to reach very low hazard areas.
- Emergency services cannot safely access the site after the peak of the event.

5.4 Internal Drainage Board

5.4.1 It is understood from the IDB's *Policy Statement on Flood Protection and Water Level Management* and SFRA that the IDB seeks to maintain a general standard capable of providing flood protection with prevent damage to properties more often than once in 75 years and provides 600mm freeboard to agricultural land in a 1 in 10 year event.

- 5.4.2 The Board will aim to provide a higher standard of protection of 1 in 100 years where there are urban areas or critical infrastructure. A continuous asset maintenance programme ensures that the Board's assets are kept in optimum condition.
- 5.4.3 Therefore, it is considered that there is a low risk of flooding to the site from the IDB drainage network and that the risk from the North Sea will be more significant.

6. COASTAL FLOOD RISK MITIGATION AND EVACUATION

6.1 Reducing Exposure to the Hazard

- 6.1.1 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 Risks to People, Phase 2; Improving the Flood Performance of New Buildings*; and the DCLG document entitled *PPS 25: Development and Flood Risk Practice Guide*, has been consulted in addition to the Agency's guidance note entitled *Flood minimises the risk – Your caravan/camping site is in a flood risk area, practical advice on keeping you and your visitors safe in a flood*.
- 6.1.2 There is a high 'actual risk' of flooding from overtopping during climate change events.
- 6.1.3 Inspection of the Product 6 breach flood level model results (Breach E08) confirm a maximum flood level of 4.01m AOD across the site during the climate change 1 in 200 year event and 4.10m AOD during the climate change 1 in 1000 year event.
- 6.1.4 As discussed earlier the caravan floor levels will be set 450mm higher than existing ground levels and at approximately 2.45m AOD.
- 6.1.5 Therefore, during the peak of the design climate change 1 in 200 year event and extreme climate change 1 in 1000 year event, the flood depth within the caravans could be 1.56m and 1.65m respectively.
- 6.1.6 In accordance with the East Lindsey Standing Advice there should be flood resilience measures 300mm above the flood level (i.e. to 4.31m AOD). As the floodwater rises it is likely that floodwater will begin to flow into the caravans. Under these circumstances, the inside water level would become similar to the outside water level. Any differential depth is therefore not expected to be significant. A *Water Entry Strategy* should be adopted to assist with reducing the differential depth and to preserve the structural integrity of the caravans.


6.2 Reducing Vulnerability to the Hazard



- 6.2.1 The site will be managed by the Client as part of the wider Golden Sands Holiday Park and the flood response will therefore form part of the flood response for the wider site. It is understood that the police and other emergency services will assist in the evacuation to rest centres operated by the Council.
- 6.2.2 It is highly likely that holiday-makers will either cancel their holiday or leave the area early and return home. Site management should also notify visitors who have not yet reached the site about the dangers.
- 6.2.3 According to the Agency's guidance note on caravan and camping sites dated 2008; the site operators have a duty of care to the occupants under the Occupiers' Liability Act 1957. It is recommended that the site operators liaise with the Agency in order to register with the Agency's Flood Warnings Direct and ensure that they are aware of the flood risk so that they evacuate upon receipt of a *Flood Warning*. Furthermore, signs and information plaques should be located regularly across the site.
- 6.2.4 It is recommended that a *Business Flood Plan* is developed. Formal training would also be required and the plan would include information on what to do when receiving a flood warning, together with evacuation procedures and routes. Flood wardens (possibly duty managers) would be responsible for co-ordinating the closing of the site. Staff checklists

would also be useful to prioritise procedures. It may be prudent to act during the early warning stages in order to provide sufficient time to evacuate people, and to implement the flood action plan.

- 6.2.5 Additionally, as part of the *Business Flood Plan* all visitors with critical needs would have the opportunity to make these known at reception for prioritised evacuation in the event of a flood.
- 6.2.6 Any Flood Plan should be practiced regularly in order to minimise the risk to people at the site (i.e. similar to a fire drill). If time permits, it may be possible to move vehicles out of the flood risk area.
- 6.2.7 A *Flood Kit* is a useful precautionary measure especially if evacuation from the site is prolonged and many hours after the flood event. The *Flood Kit* includes items such as:
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
 11. Blankets, warm clothes
 12. Camera to record any damage
 13. Emergency cash
- 6.2.8 Suitably trained staff would need to convey flood warning information and emergency procedures to occupants should such an event occur. All site personnel and contracted night security services may also be required to be familiar with the flood action plan implemented at the site. Appropriate signage across the site (i.e. exits and assembly points) should be installed wherever possible. Meetings could also be arranged with the site management and the occupants to discuss the emergency procedures and how they could be improved or adapted to include individual cases.
- 6.2.9 Information packs should be distributed to all occupants at the site, possibly upon arrival, detailing their responsibilities during a flood event. This will reduce the levels of stress and anxiety for people at the site. Table 2 includes additional information about what can be done in the event of a flood.

Table 2: Flood Event Action Plan

Environment Agency Flood Warning Code	What to do!	Evacuate?
<p>Flood Alert (Flooding Possible. Be aware/prepared! Watch Out).</p> 	<ul style="list-style-type: none"> • Monitor flood risk through media and Floodline Warnings Direct. • Locate family members and employees and inform them of risk. If away from the site make assessment on risk if considering returning to site (i.e. how long it 	<p>Not necessary.</p> <p>Occupants can evacuate themselves if they feel unsafe providing that they make a judgement in relation to any external</p>

	will take to return etc).	flood hazard. Take flood kit, occupants and pets with you.
<p>Flood Warning (Flooding of homes, businesses and main roads is expected. Act now!).</p> 	<ul style="list-style-type: none"> • Maintain communication through Floodline Warnings Direct and the media. • Begin to implement Flood Plan. • Consider advice given from emergency services/Environment Agency. • Check alternative accommodation arrangements. 	<p>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.</p> <p>People who do not evacuate should reside across site.</p> <p>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.</p>
<p>Severe Flood Warning (Severe flooding is expected. Imminent danger to life and property. Act now!).</p> 	<ul style="list-style-type: none"> • Leave site immediately if not already done so. • Take flood kit, occupants and pets with you. • Follow advice given by Emergency Services and Council. 	<p>Leave site according to advice given by Emergency Services and Council. Take flood kit, occupants and pets with you.</p> <p>If evacuation cannot be undertaken, people should reside across site with <i>flood kit</i> and maintain communication with the emergency services.</p>
<p>Warnings no longer in force (No further flooding is expected in the area. Be careful).</p>	<ul style="list-style-type: none"> • 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 	<p>Not applicable, however site may be uninhabitable.</p> <p>Return to site upon instruction from emergency services as floodwater may not have receded.</p>

	<p>services.</p> <ul style="list-style-type: none"> Do not dispose of damaged property until your insurance company has agreed. 	
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6.3 Vulnerable Groups

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

6.3.2 Vulnerable groups should be identified by site management. Priority should be given to these groups as it may be advisable to evacuate these people first if possible.

6.4 Safe Access/Egress

6.4.1 The flood event analysis in Section 5.3 above indicates that:

- The preferred evacuation route away from the site is via Quebec Road, Golf Road and Alford Road.
- Safe access/egress for people is not available during the peak of the event.
- The model does not extend past timestep 182/hour 47 and the remaining flood hazard is largely *Dangerous for Most* along the evacuation route. People would need to travel 4.8 km to reach very low hazard areas.
- Emergency services cannot safely access the site after the peak of the event.

6.4.2 The robust flood response plan will ensure that the site remains at a lower risk of damage and people evacuate the site during the early warning stages. Furthermore, as the site may not always be at full capacity, this will also reduce the exposure to the hazard.

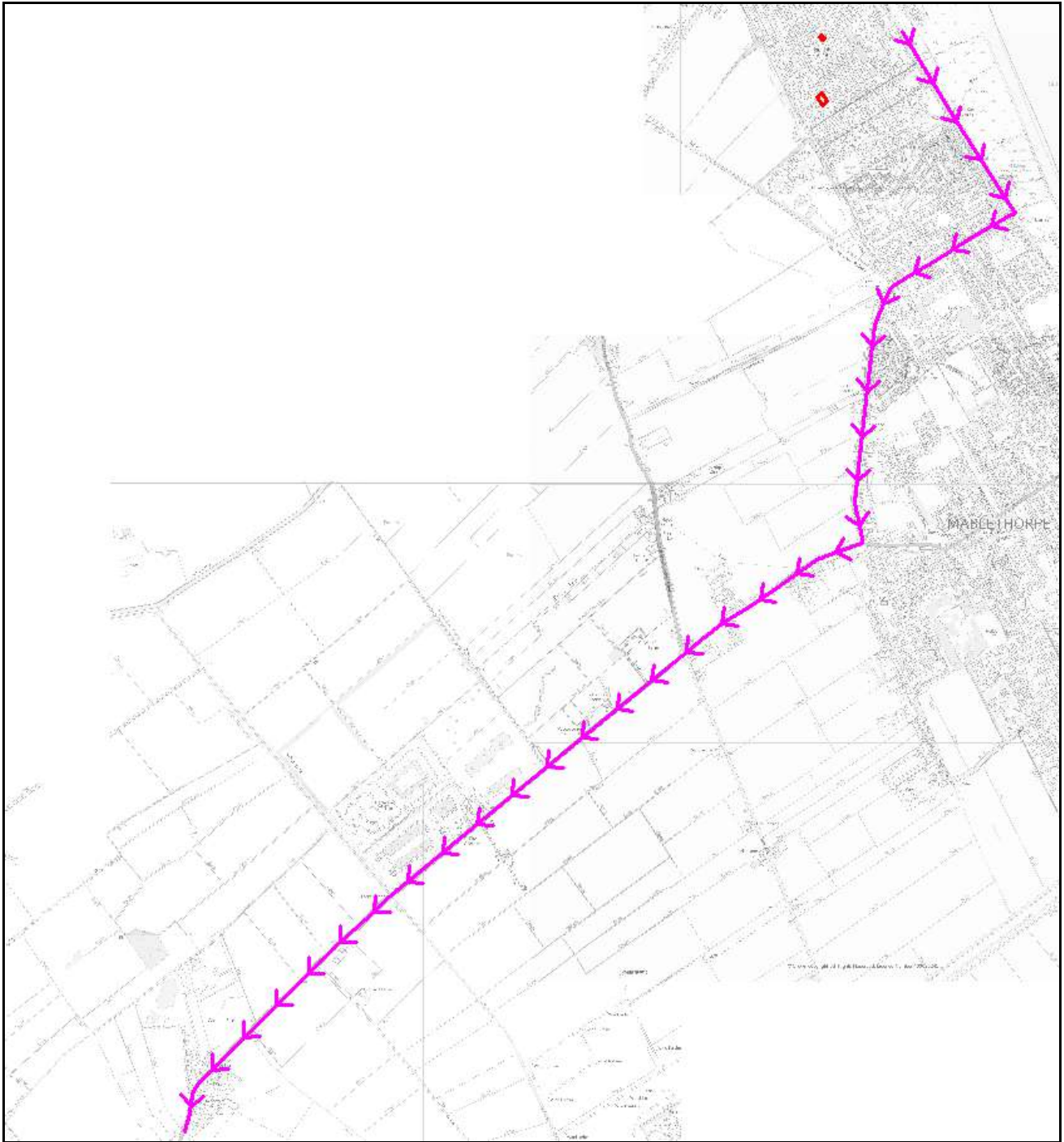


Figure 11: Proposed evacuation route

7. OTHER SOURCES OF FLOODING

7.1 Groundwater Flooding

- 7.1.1 In order to assess the potential for groundwater flooding during higher return period rainfall events, the Jacobs/DEFRA report entitled *Strategy for Flood and Coastal Erosion Risk Management: Groundwater Flooding Scoping Study*, published in May 2004, was consulted, together with the guidance offered within the document entitled *Groundwater flooding records collation, monitoring and risk assessment (ref HA5)*, commissioned by DEFRA and carried out by Jacobs in 2006.

Soil and Geology at the Site

- 7.1.2 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

- 7.1.3 There have been no recorded groundwater flood events across the area between 2000 and 2003, as indicated by the Jacobs study. The PFRA shows that Mablethorpe is located across an area with a negligible groundwater flooding risk.
- 7.1.4 It is unlikely that during periods of prolonged or heavy rainfall the water table will have the capacity to rise and breach the ground surface, particularly due to the cohesive content of the soil.
- 7.1.5 It is therefore likely that the less permeable soils will reduce the recharge potential of the water table below the site as there will be a high buffering effect on infiltrating surface water. As surface water is also managed over a large scale and the soil types have a low infiltration capacity, the site is at low risk from groundwater flooding.

7.2 Surface Water Flooding and Sewer Flooding

- 7.2.1 Surface water and sewer flooding across urban areas is often a result of high intensity storm events which exceed the capacity of the sewers thus causing them to surcharge and flood. Poorly maintained sewer networks and blockages can also exacerbate the potential for sewer flooding.
- 7.2.2 The Agency's Surface Water Flooding Map (Figure 12) indicates that across the site there is a very low risk (i.e. chance of flooding less than 1 in 1000 years).

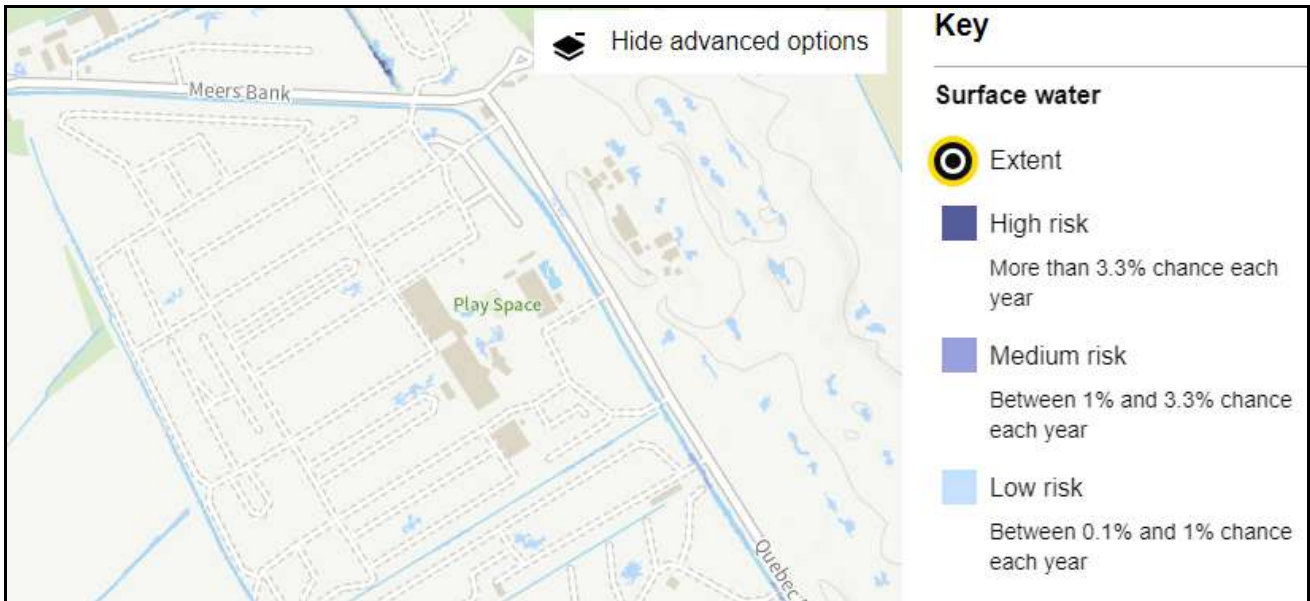


Figure 12: Environment Agency Surface Water Flooding Map (Source: Environment Agency)

7.3 Reservoirs, Canals And Other Artificial Sources

- 7.3.1 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.
- 7.3.2 The Environment Agency’s “Risk of flooding from reservoirs” map suggests that the site is not at risk from reservoirs or other artificial sources.

8. CONCLUSIONS

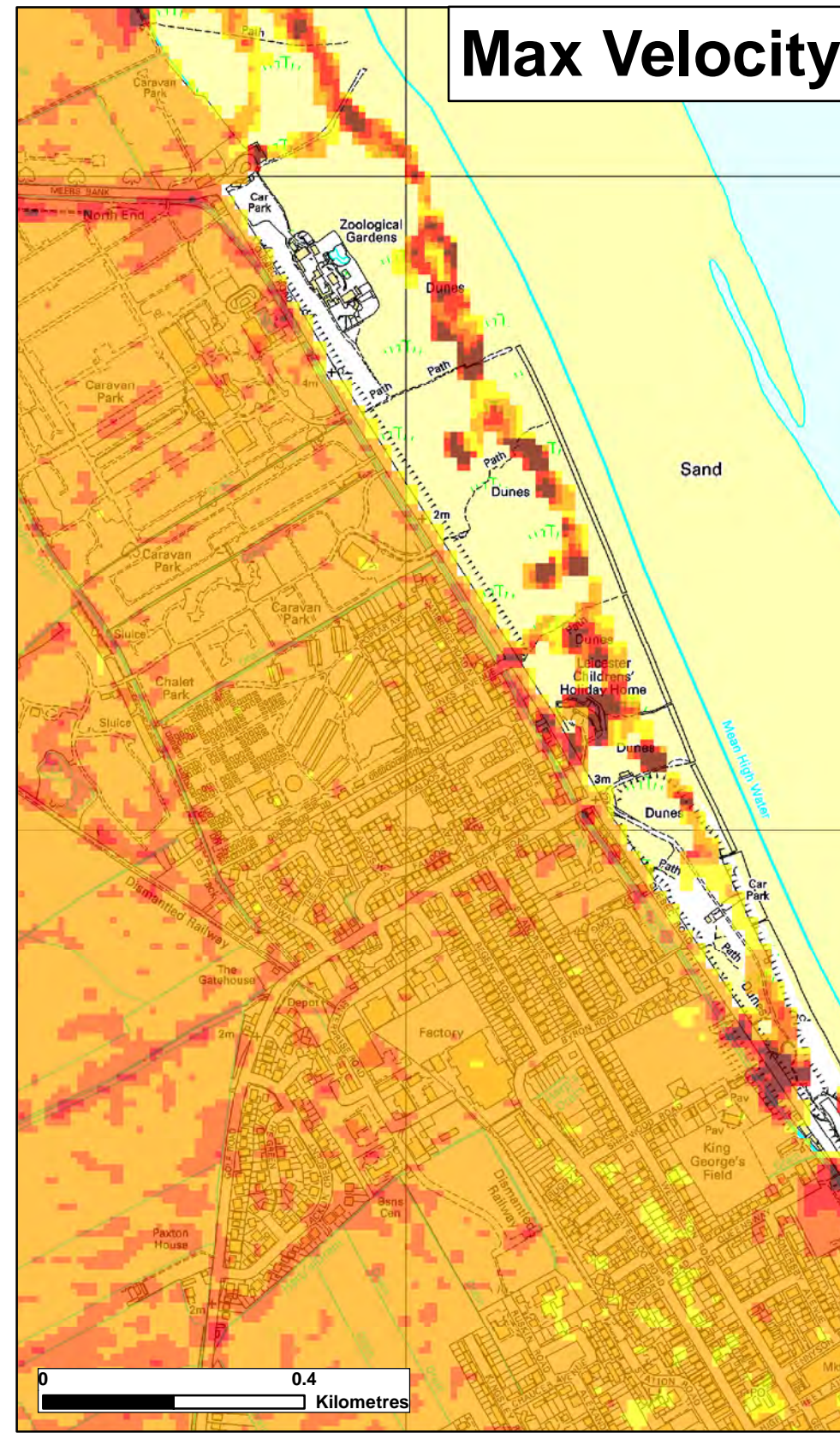
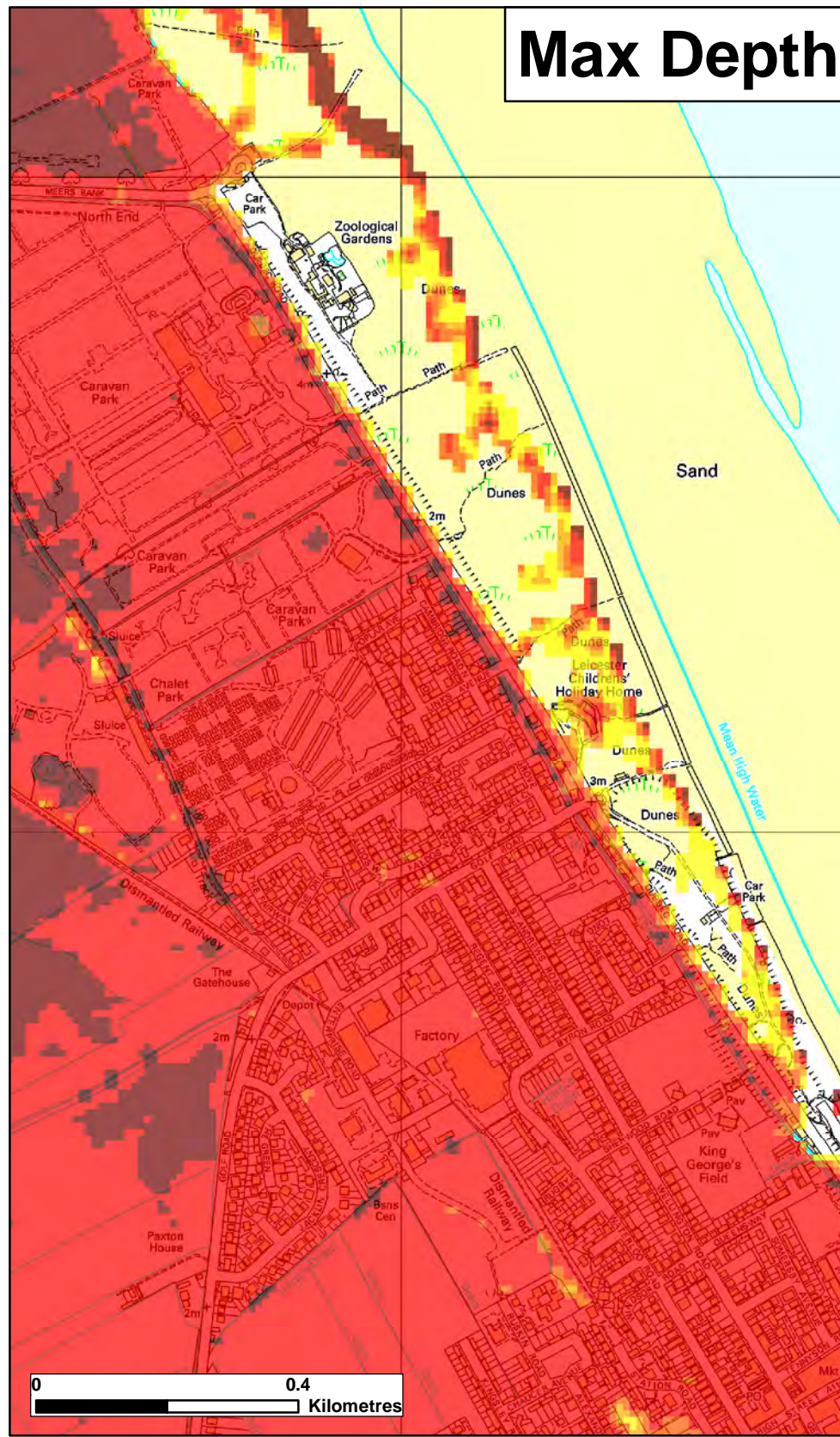
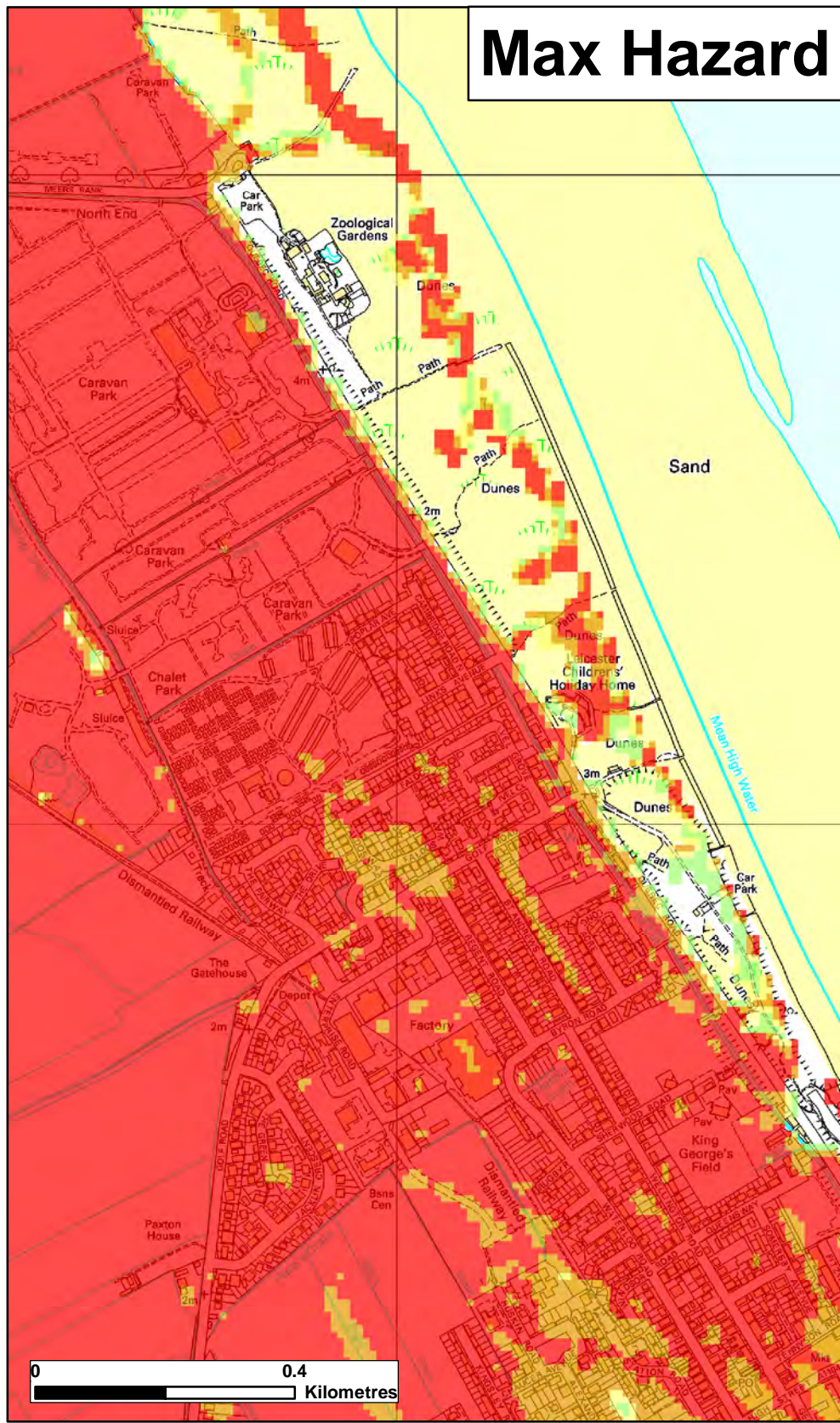
- The site is located within the NPPF Flood Zone 3a from a tidal event in the North Sea.
- There is a high 'actual risk' of flooding from overtopping during climate change events.
- Inspection of the Product 6 breach flood level model results (Breach E08) confirm a maximum flood level of 4.01m AOD across the site during the climate change 1 in 200 year event and 4.10m AOD during the climate change 1 in 1000 year event.
- As discussed earlier the caravan floor levels will be set 450mm higher than existing ground levels and at approximately 2.45m AOD.
- Therefore, during the peak of the design climate change 1 in 200 year event and extreme climate change 1 in 1000 year event, the flood depth within the caravans could be 1.56m and 1.65m respectively.
- In accordance with the East Lindsey Standing Advice there should be flood resilience measures 300mm above the flood level (i.e. to 4.31m AOD). As the floodwater rises it is likely that floodwater will begin to flow into the caravans. Under these circumstances, the inside water level would become similar to the outside water level. Any differential depth is therefore not expected to be significant. A *Water Entry Strategy* should be adopted to assist with reducing the differential depth and to preserve the structural integrity of the caravans.
- A warning and evacuation strategy has been developed within this assessment. It is proposed that the site operators register with the Agency's *Flood Warnings Direct* and prepare a *Business Flood Plan*.
- The preferred evacuation route away from the site is via Quebec Road, Golf Road and Alford Road. Safe access/egress for people is not available during the peak of the event. The model does not extend past timestep 182/hour 47 and the remaining flood hazard is largely *Dangerous for Most* along the evacuation route. People would need to travel 4.8 km to reach very low hazard areas. Emergency services cannot safely access the site after the peak of the event.
- The robust flood response plan will ensure that the site remains at a lower risk of damage and people evacuate the site during the early warning stages. Furthermore, as the site may not always be at full capacity, this will also reduce the exposure to the hazard.
- Additionally, as part of the *Business Flood Plan* all visitors with critical needs would have the opportunity to make these known at reception for prioritised evacuation in the event of a flood.
- There is a low risk of groundwater flooding and a very low risk of surface water flooding.

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APPENDIX A – EA FLOOD DATA



Max Hazard (Flood Risk to People : FD2320)	
	Less than 0.75 (Low Hazard)
	Between 0.75 and 1.25 (Danger for Some)
	Between 1.25 and 2.0 (Danger for Most)
	Greater than 2.0 (Danger for All)

Max Depth (m)	
	0 - 0.25
	0.25 - 0.50
	0.50 - 1.0
	1.0 - 2.0
	2.0 +


Max Velocity (m/s)	
	0 - 0.3
	0.3 - 1.0
	1.0 - 1.5
	1.5 - 2.5
	2.5 +

The map is based on computer modelling of simulated overtopping of the main coastal defences for specific tidal scenarios. It does not include overtopping along the following tidal rivers which are currently being investigated: Witham Haven (upstream of Hobhole), and Welland (upstream of Fosdyke Bridge)

The map only considers the consequences of overtopping of the defences, and does not show the possible consequences of breaches of the tidal defences. Separate maps of the flood extent from just breaching of the defences are available.

For future climate change scenarios it is assumed that defences remain at 2006 heights.

These maps do not replace the flood zone maps used in the National Planning Policy Framework (NPPF)



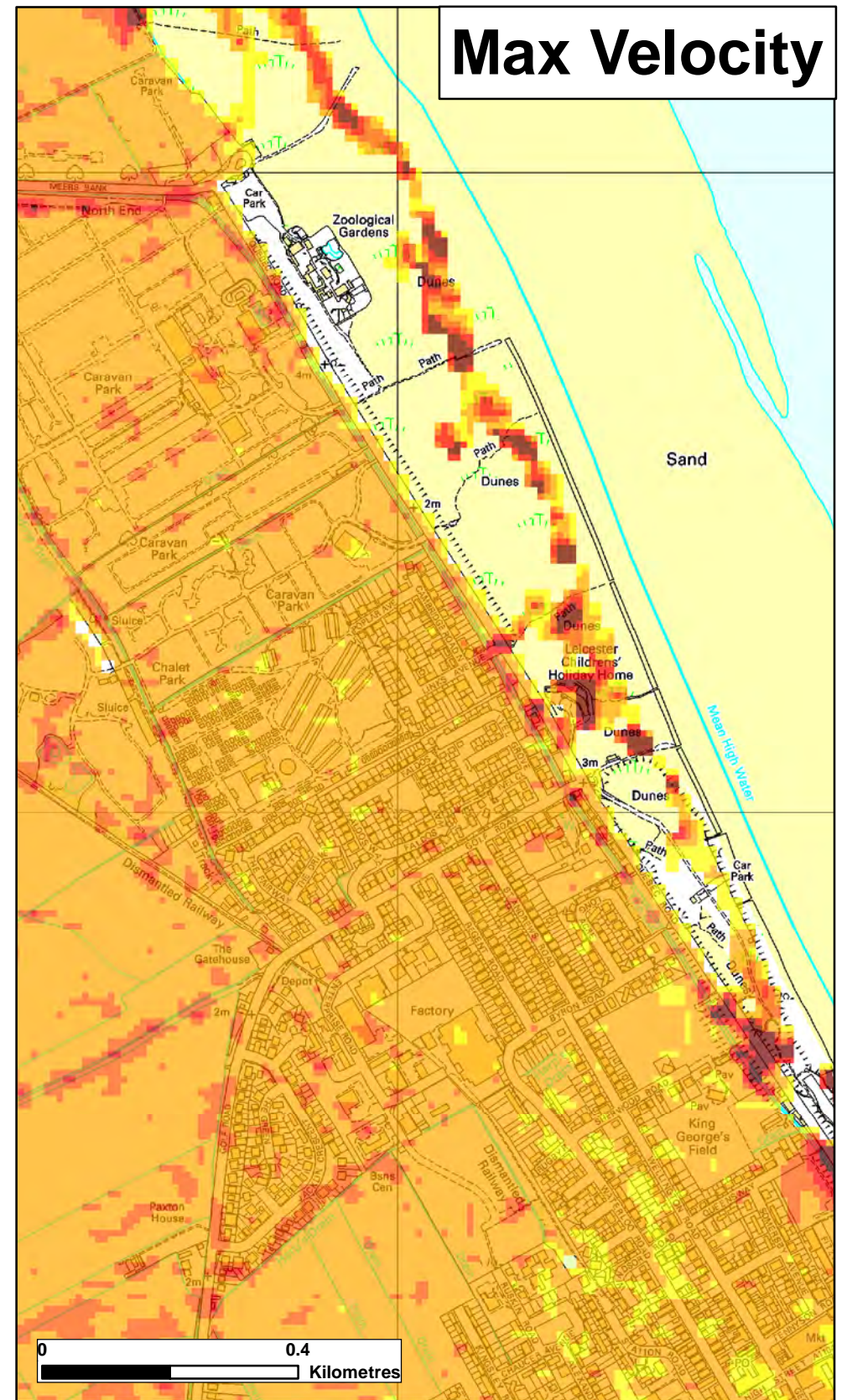
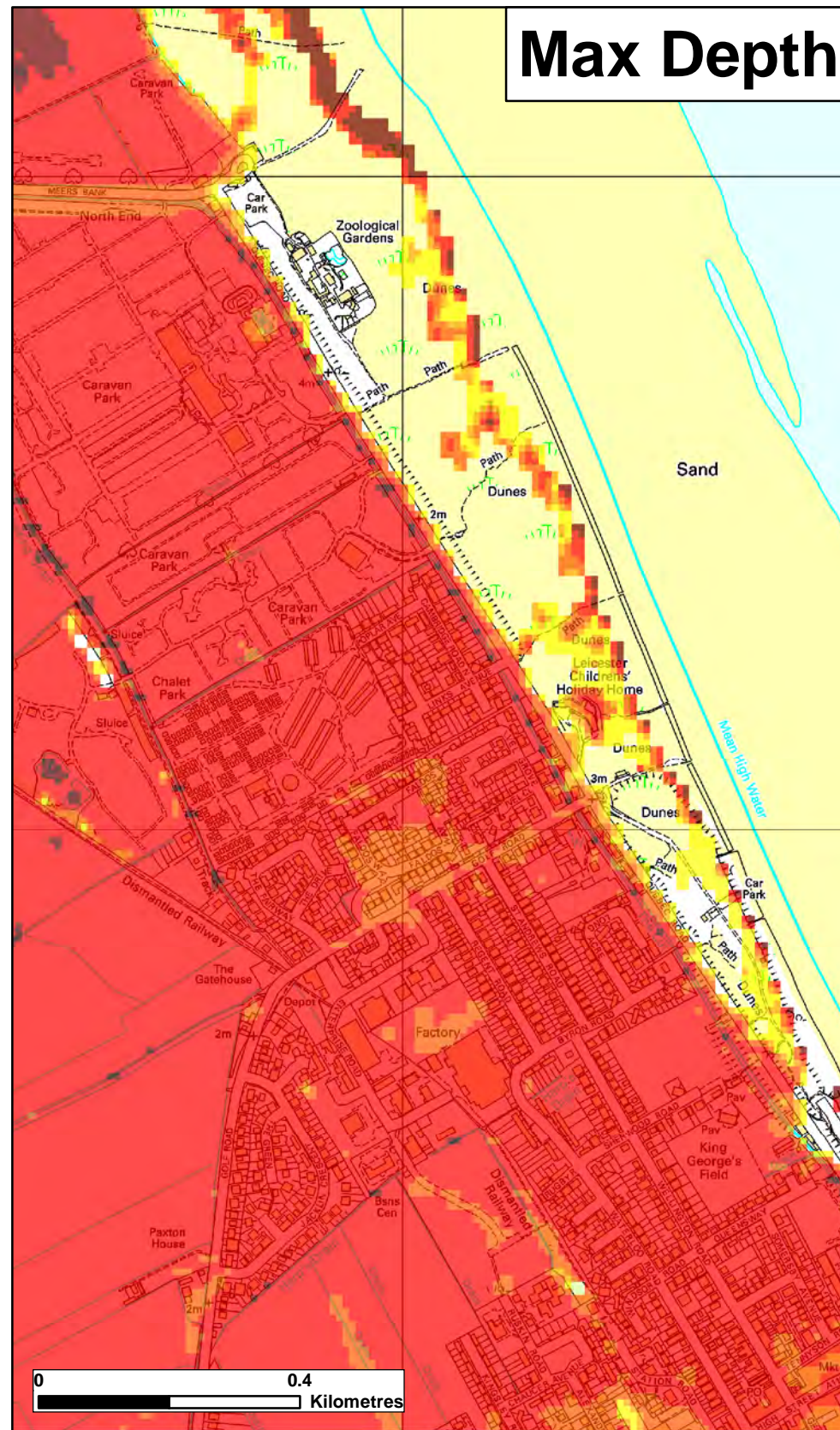
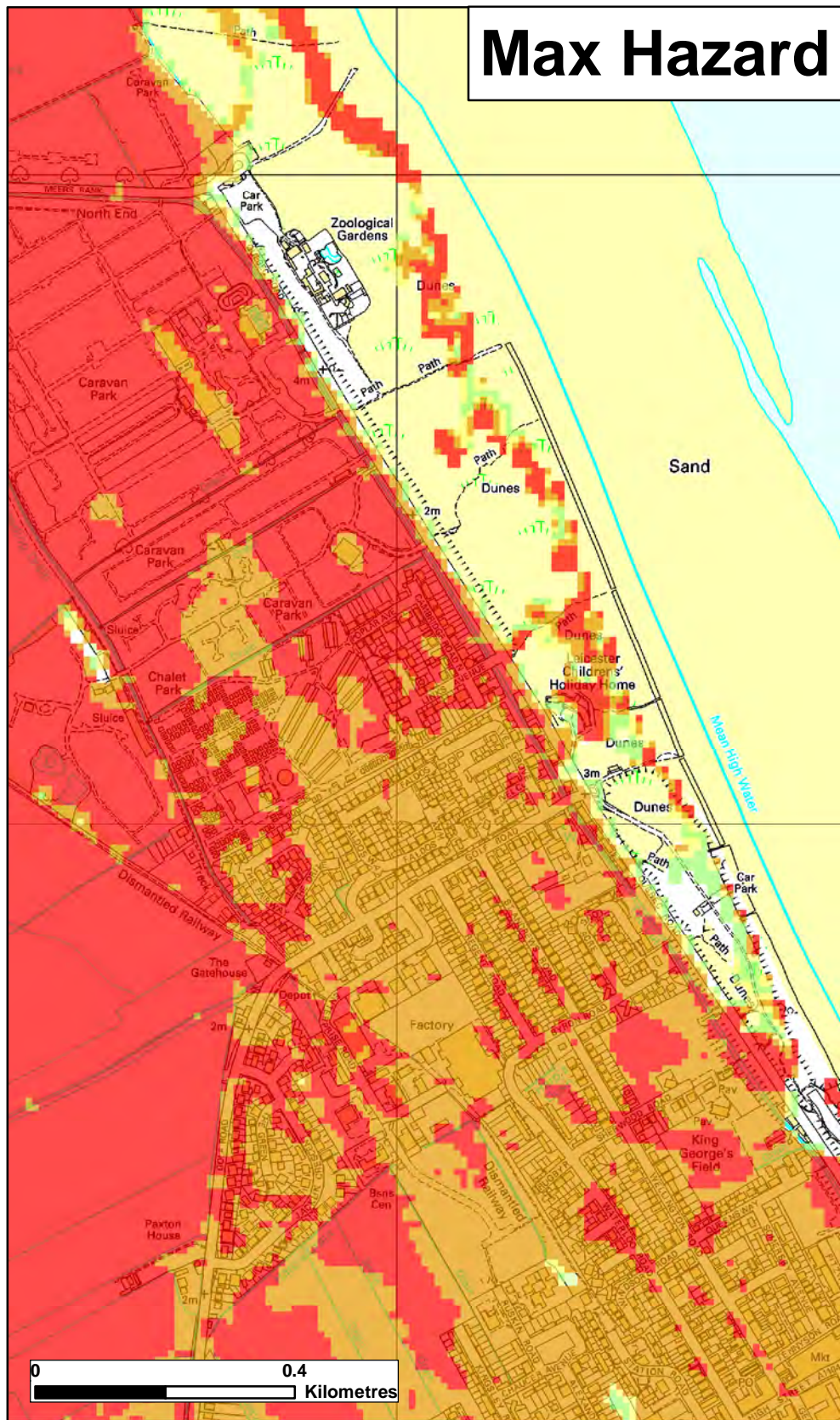
**Lincolnshire and Northamptonshire
Tidal Overtopping Hazard
Mapping**

Map Centred on TF5004386168

Date Printed	November 2015	Scenario year	2115	Scenario Annual Chance	0.1% (1 in 1000)	CCN Number	CCN-2015-40256
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Max Hazard	
(Flood Risk to People : FD2320)	
	Less than 0.75 (Low Hazard)
	Between 0.75 and 1.25 (Danger for Some)
	Between 1.25 and 2.0 (Danger for Most)
	Greater than 2.0 (Danger for All)

Max Depth (m)	
	0 - 0.25
	0.25 - 0.50
	0.50 - 1.0
	1.0 - 2.0
	2.0 +


Max Velocity (m/s)	
	0 - 0.3
	0.3 - 1.0
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	1.5 - 2.5
	2.5 +

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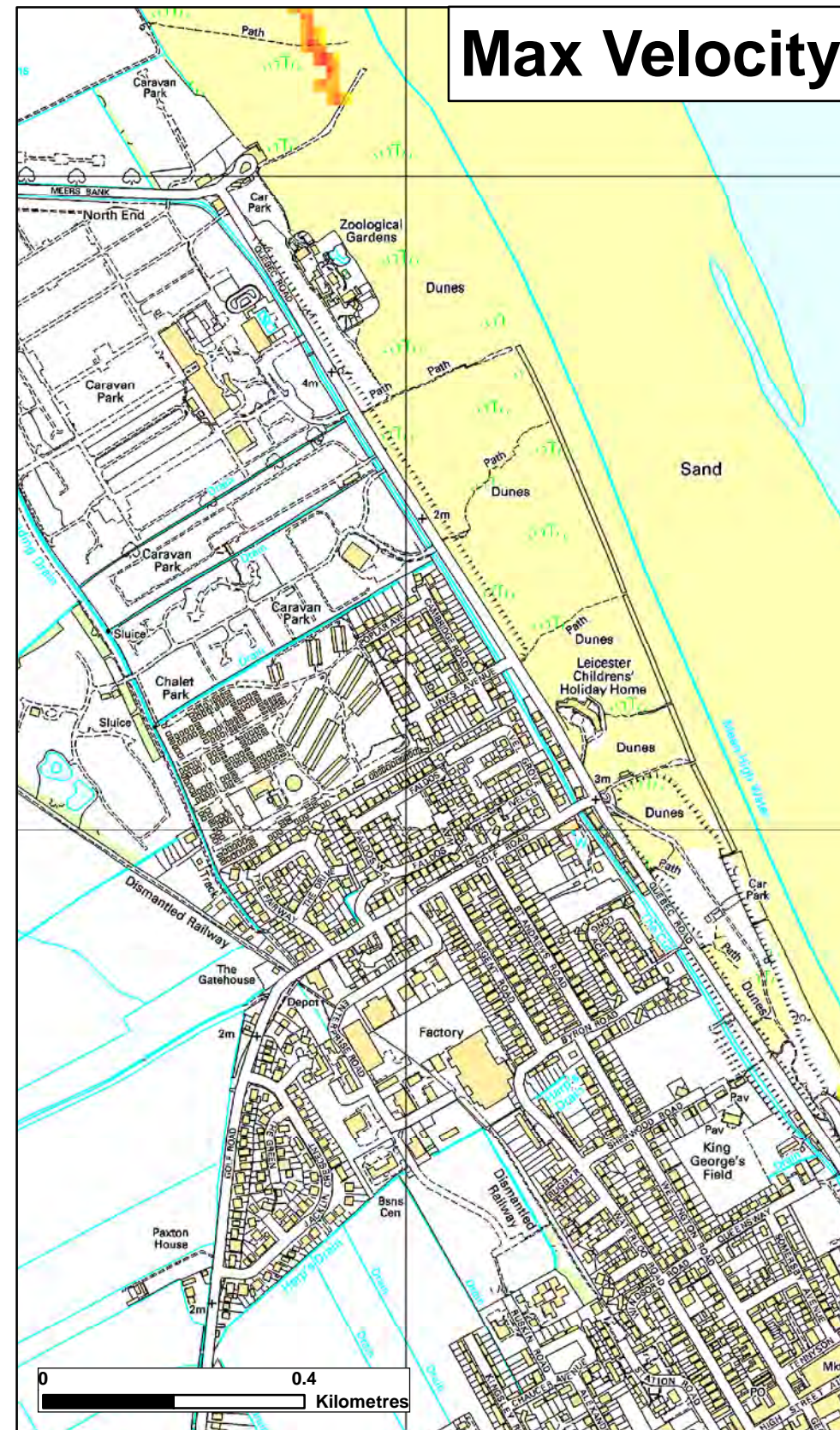
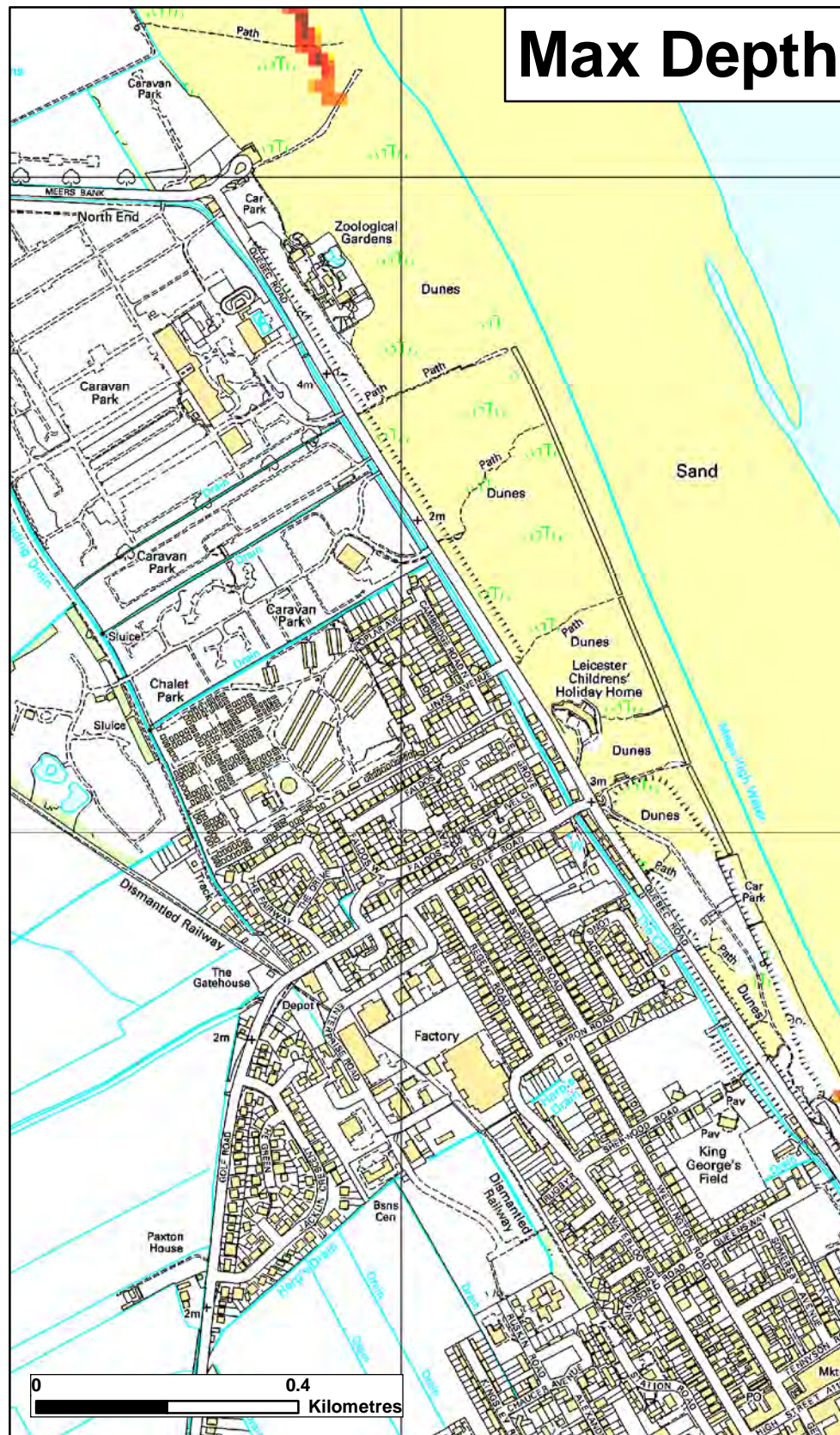
Lincolnshire and Northamptonshire Tidal Overtopping Hazard Mapping

Map Centred on TF5004386168

Date Printed	November 2015	Scenario year	2115	Scenario Annual Chance	0.5% (1 in 200)	CCN Number	CCN-2015-40256
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Max Hazard (Flood Risk to People : FD2320)		Max Depth (m)		Max Velocity (m/s)	
	Less than 0.75 (Low Hazard)		0 - 0.25		0 - 0.3
	Between 0.75 and 1.25 (Danger for Some)		0.25 - 0.50		0.3 - 1.0
	Between 1.25 and 2.0 (Danger for Most)		0.50 - 1.0		1.0 - 1.5
	Greater than 2.0 (Danger for All)		1.0 - 2.0		1.5 - 2.5
			2.0 +		2.5 +


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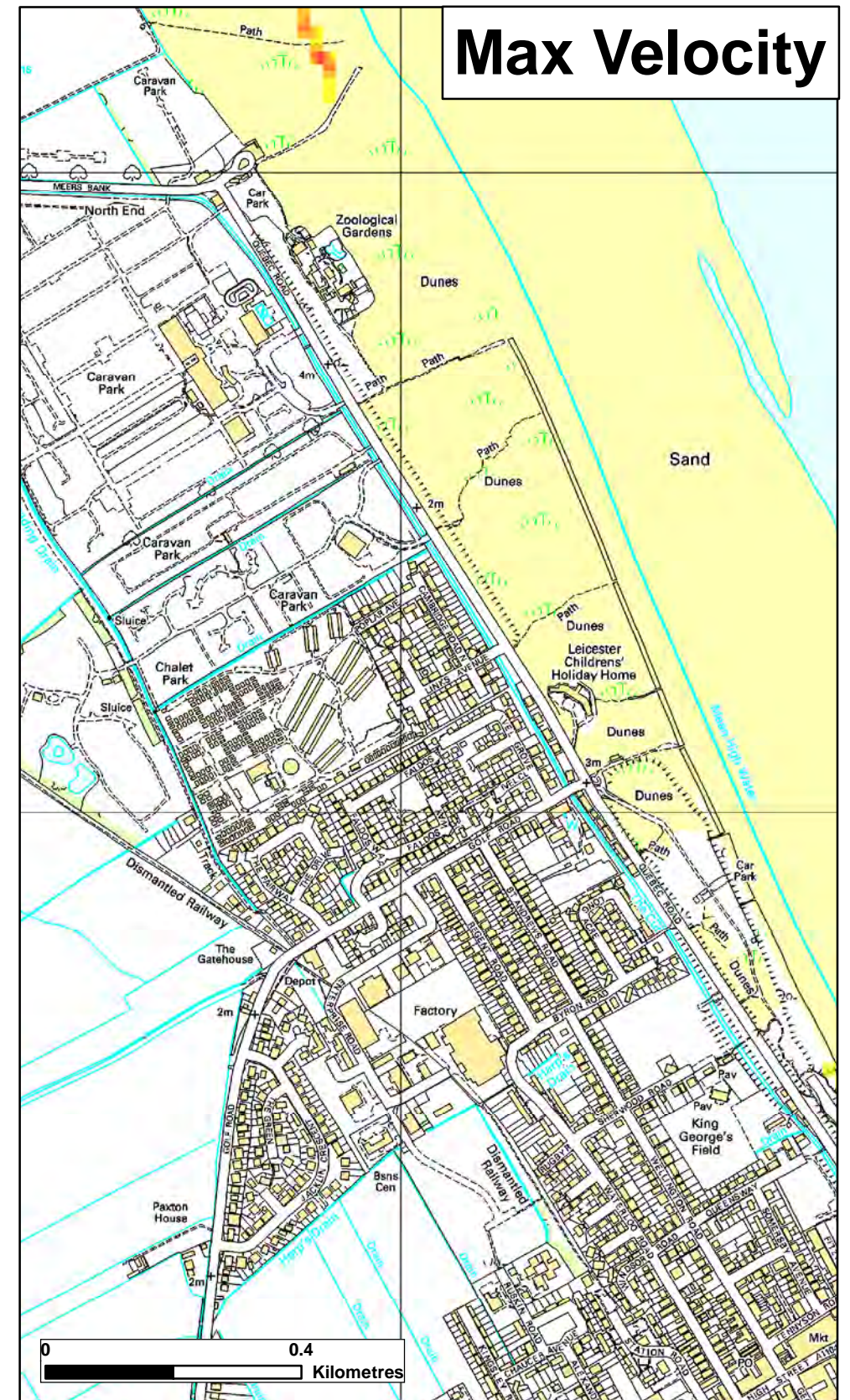
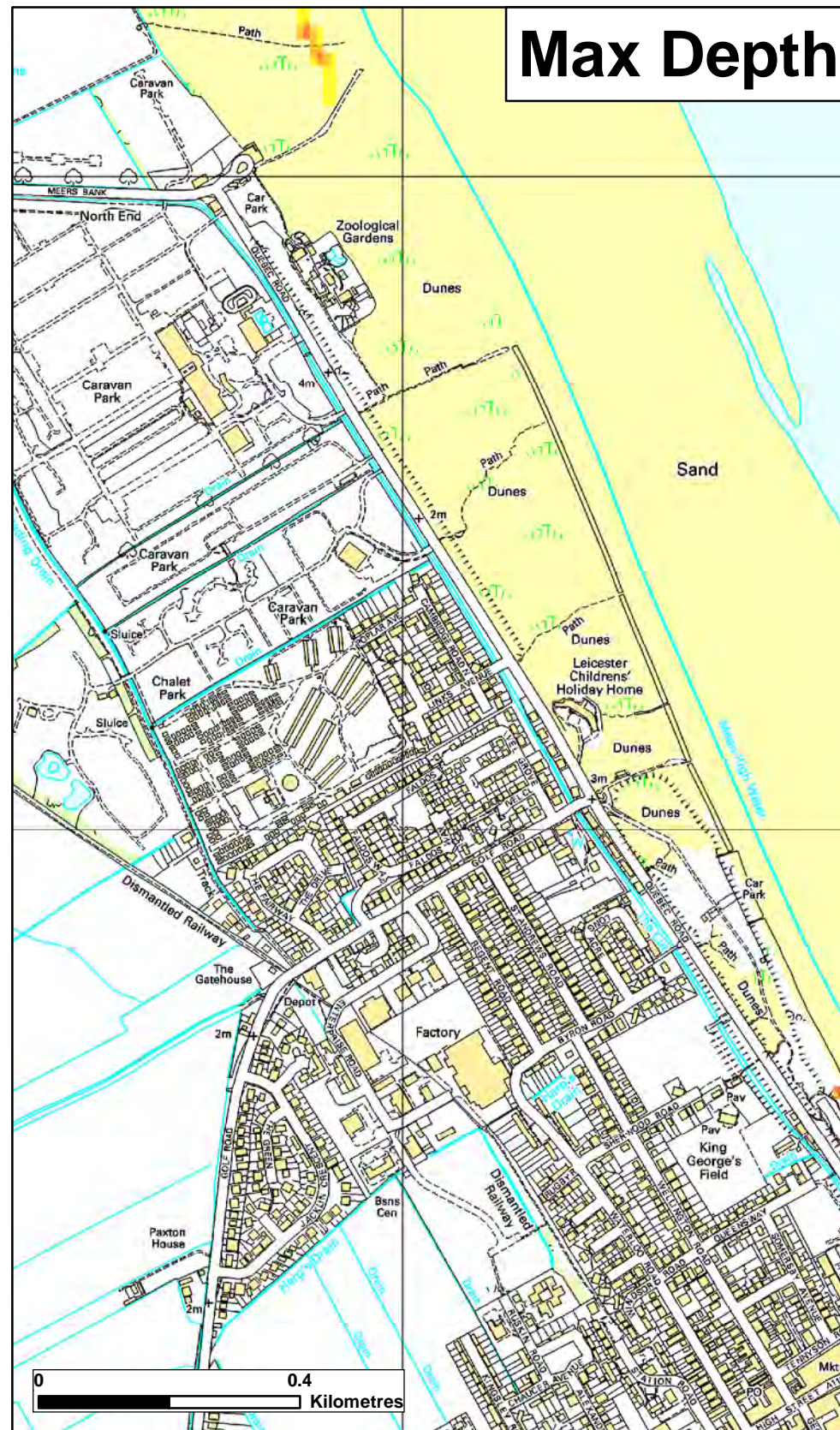
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**Lincolnshire and Northamptonshire
Tidal Overtopping Hazard
Mapping**

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Date Printed	November 2015	Scenario year	2006	Scenario Annual Chance	0.1% (1 in 1000)	CCN Number	CCN-2015-40256
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Max Hazard (Flood Risk to People : FD2320)		Max Depth (m)		Max Velocity (m/s)	
	Less than 0.75 (Low Hazard)		0 - 0.25		0 - 0.3
	Between 0.75 and 1.25 (Danger for Some)		0.25 - 0.50		0.3 - 1.0
	Between 1.25 and 2.0 (Danger for Most)		0.50 - 1.0		1.0 - 1.5
	Greater than 2.0 (Danger for All)		1.0 - 2.0		1.5 - 2.5
			2.0 +		2.5 +

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Environment Agency

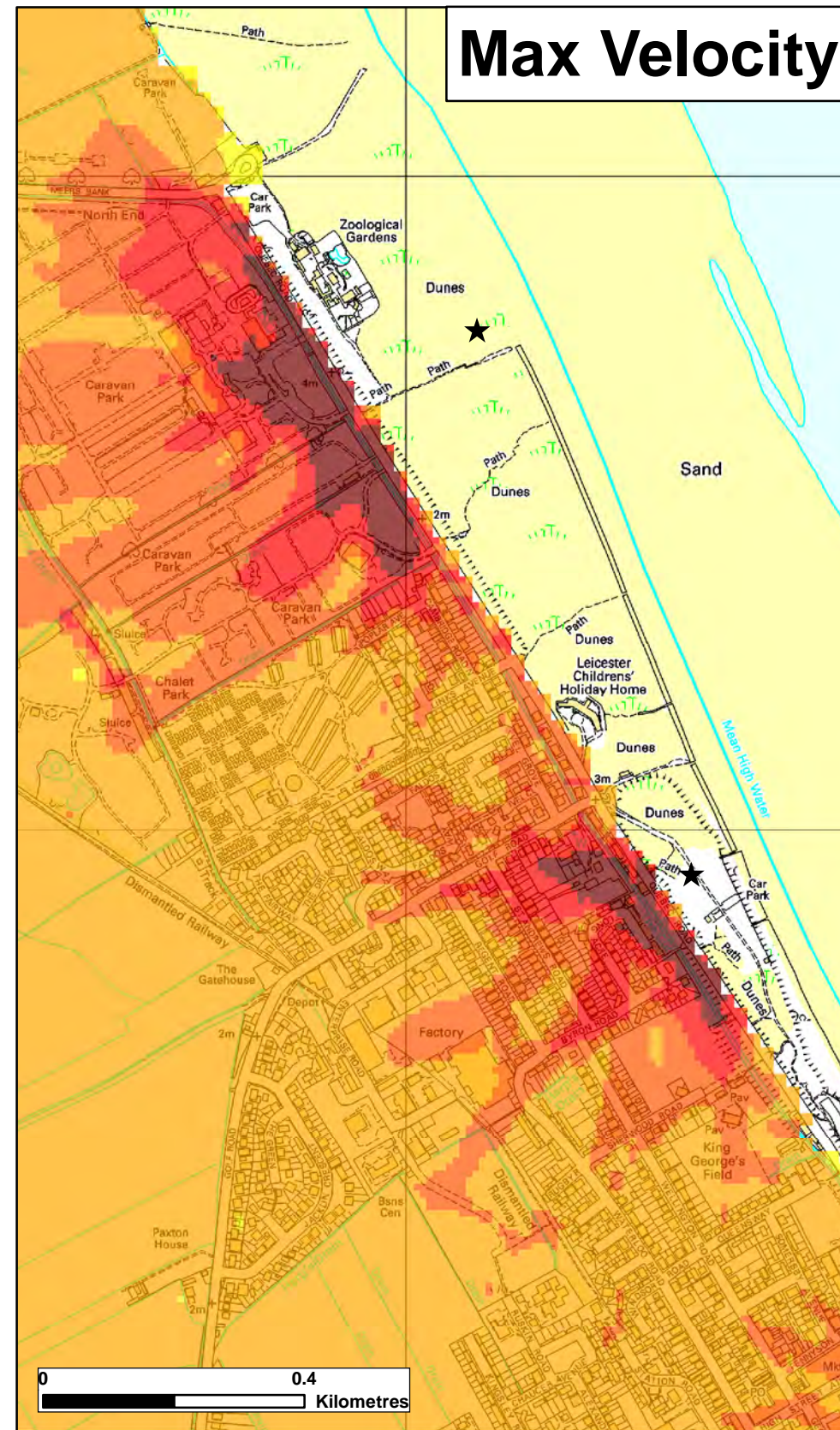
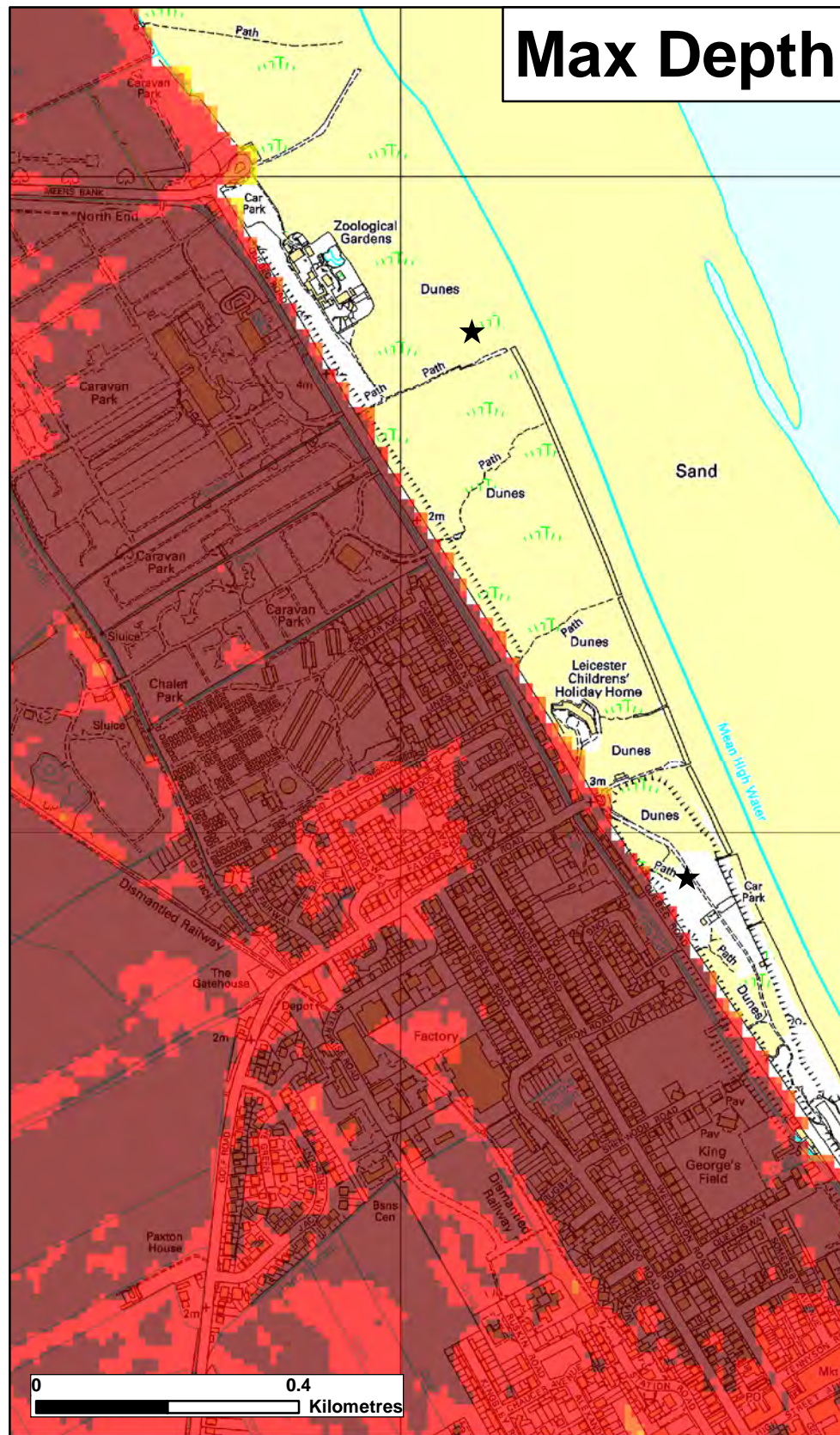
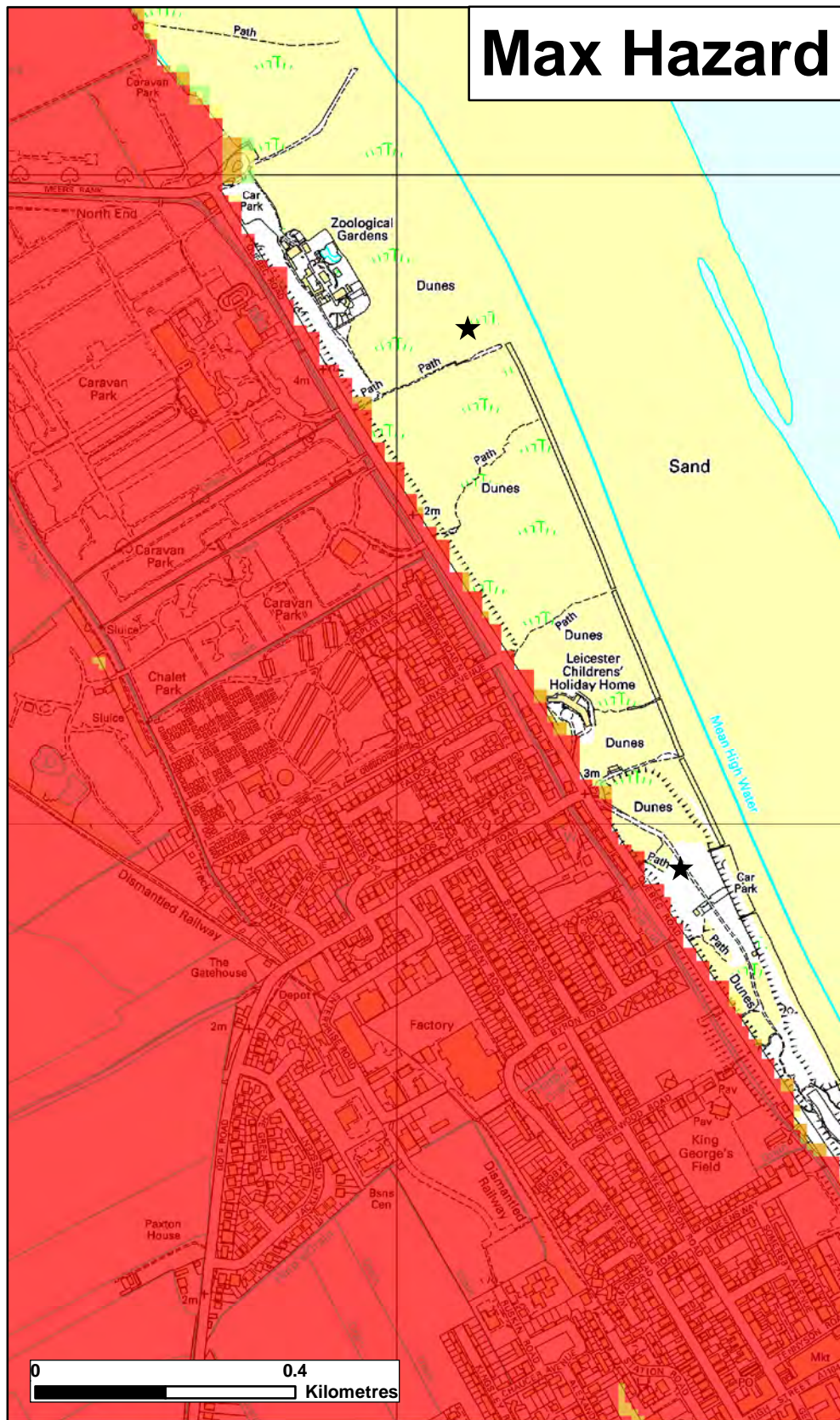
**Lincolnshire and Northamptonshire
Tidal Overtopping Hazard
Mapping**

Map Centred on TF5004386168

Date Printed	November 2015	Scenario year	2006	Scenario Annual Chance	0.5% (1 in 200)	CCN Number	CCN-2015-40256
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★ Modelled Breach Locations - see also the accompanying plan "Location of Modelled Breaches"							
Max Hazard (Flood Risk to People : FD2320)		Max Depth (m)		Max Velocity (m/s)			
	Less than 0.75 (Low Hazard)		0 - 0.25		0 - 0.3		
	Between 0.75 and 1.25 (Danger for Some)		0.25 - 0.50		0.3 - 1.0		
	Between 1.25 and 2.0 (Danger for Most)		0.50 - 1.0		1.0 - 1.5		
	Greater than 2.0 (Danger for All)		1.0 - 2.0		1.5 - 2.5		
			2.0 +		2.5 +		
Date Printed	November 2015	Scenario year	2115	Scenario Annual Chance	0.1% (1 in 1000)	CCN Number	CCN-2015-40256

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.

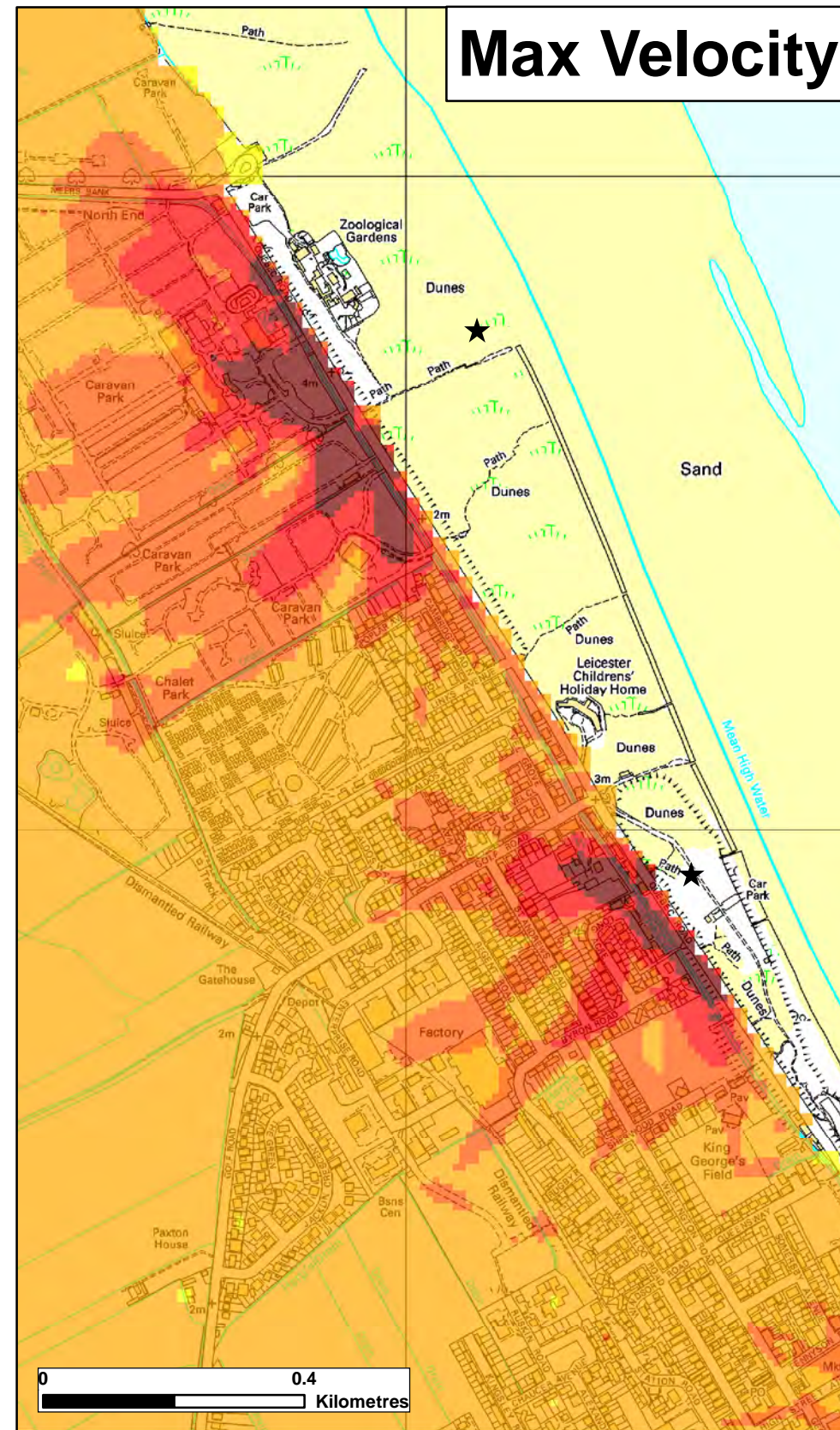
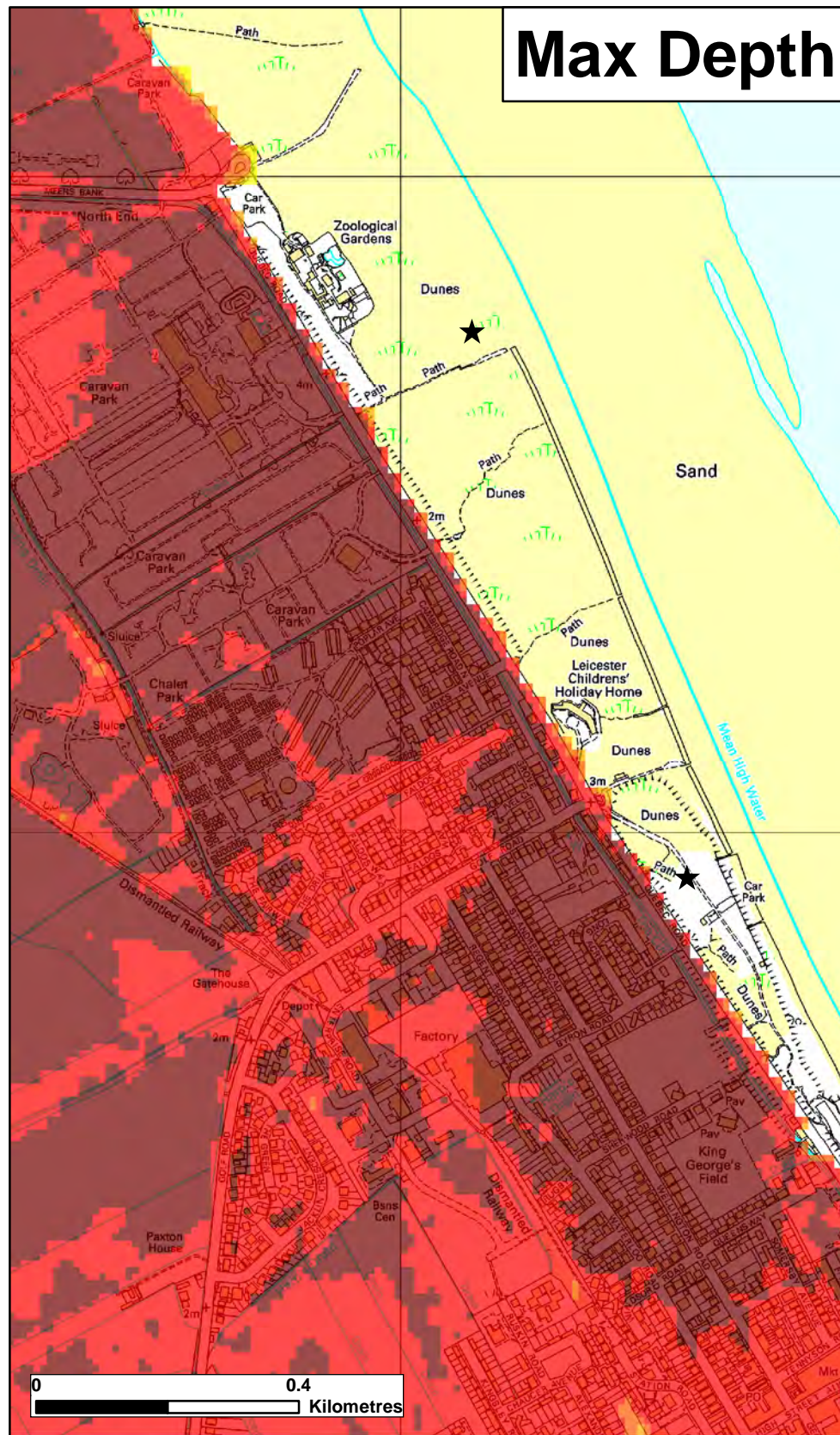
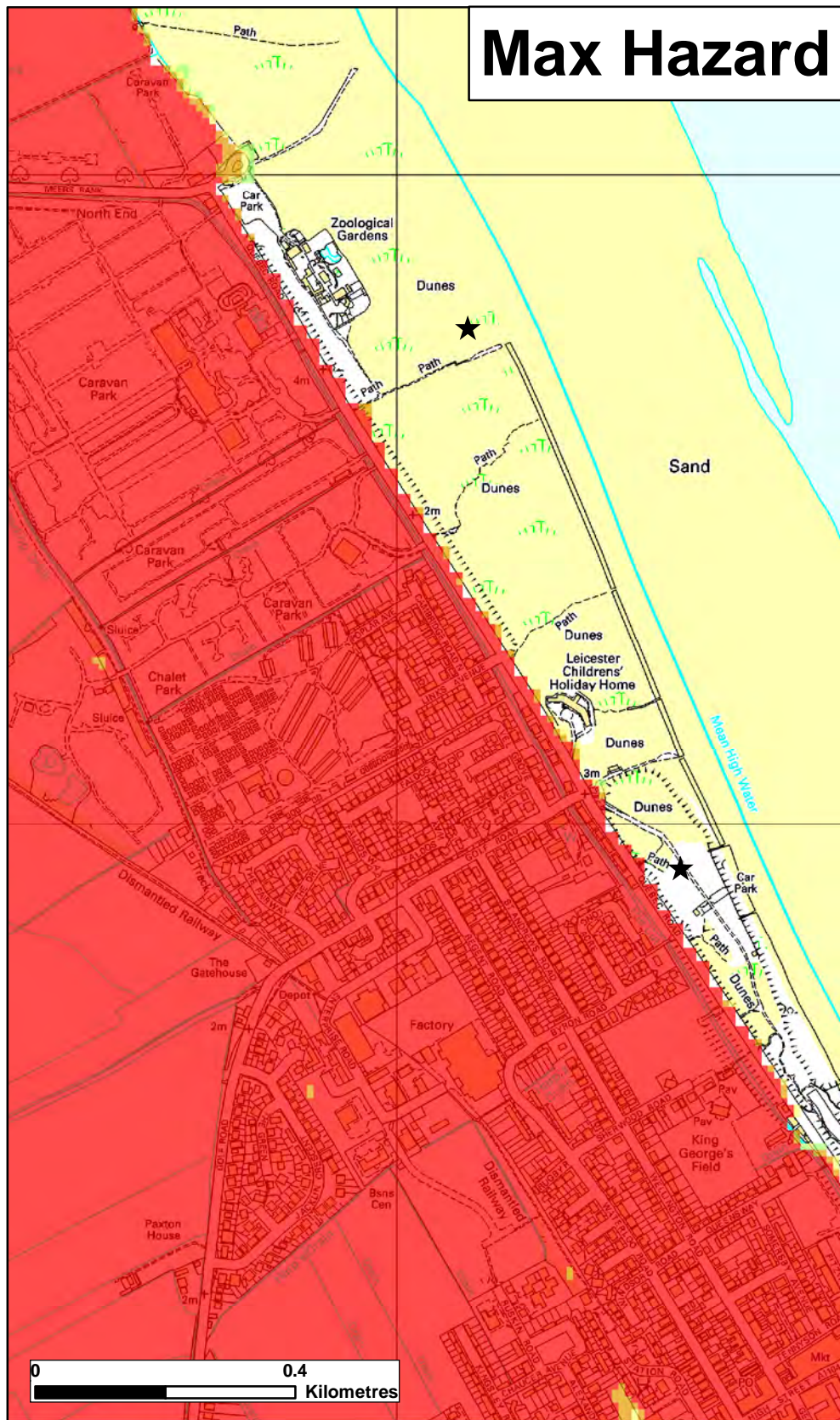
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**Lincolnshire and Northamptonshire
Tidal Breaching Hazard
Mapping**

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					2.5 +		
Date Printed	November 2015	Scenario year	2115	Scenario Annual Chance	0.5% (1 in 200)	CCN Number	CCN-2015-40256

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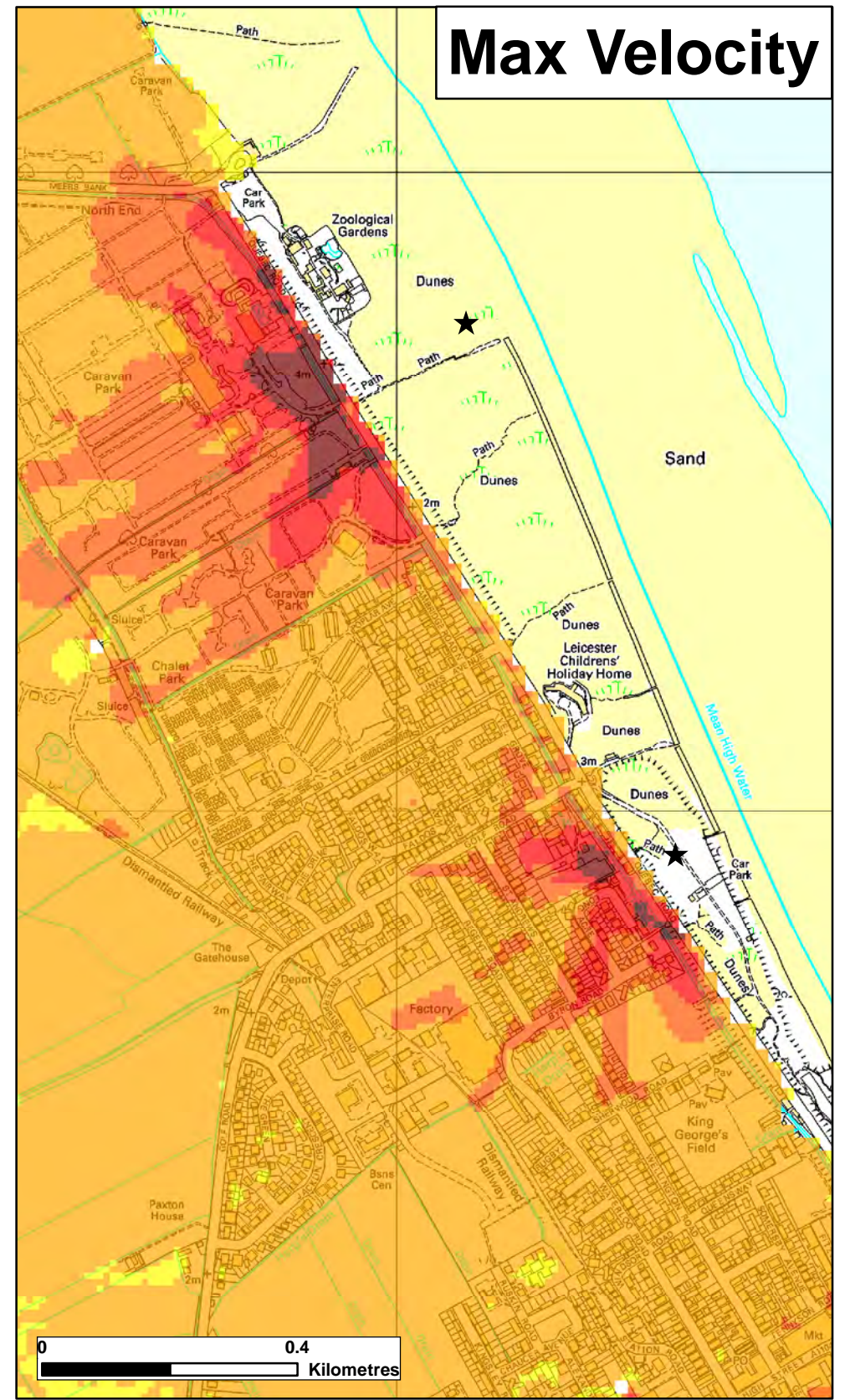
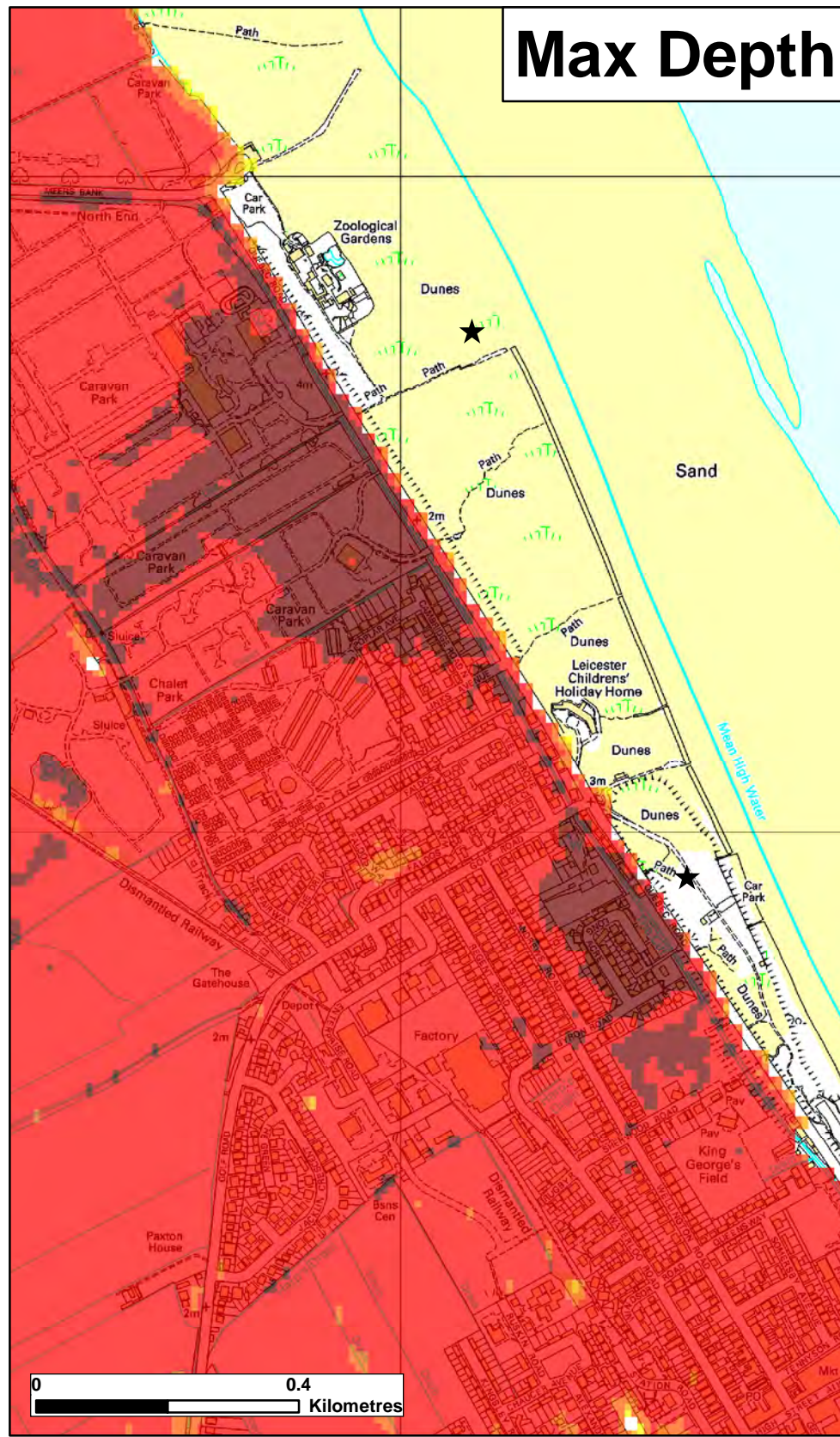
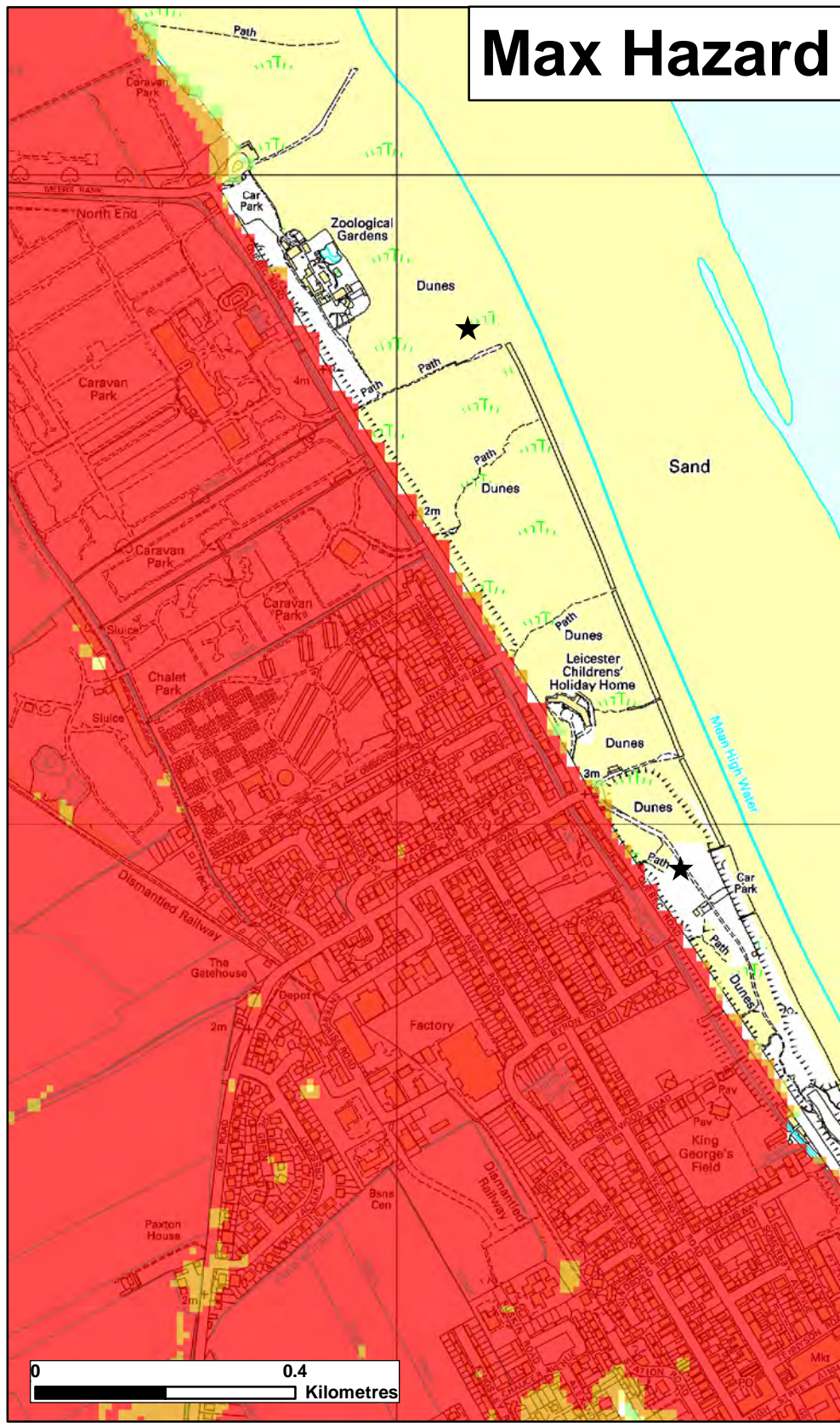
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**Lincolnshire and Northamptonshire
Tidal Breaching Hazard
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Date Printed	November 2015	Scenario year	2006	Scenario Annual Chance	0.1% (1 in 1000)	CCN Number	CCN-2015-40256

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

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

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

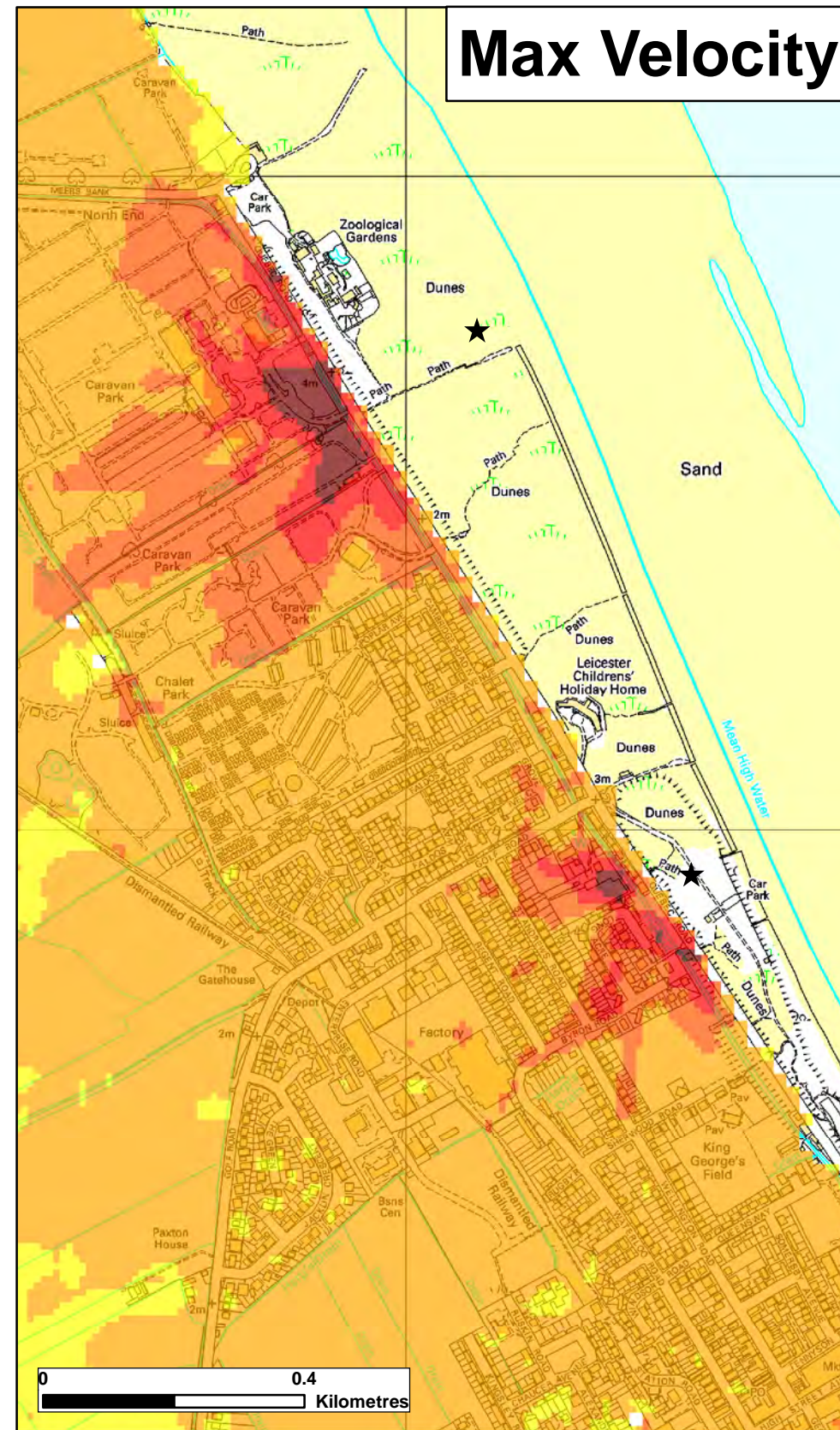
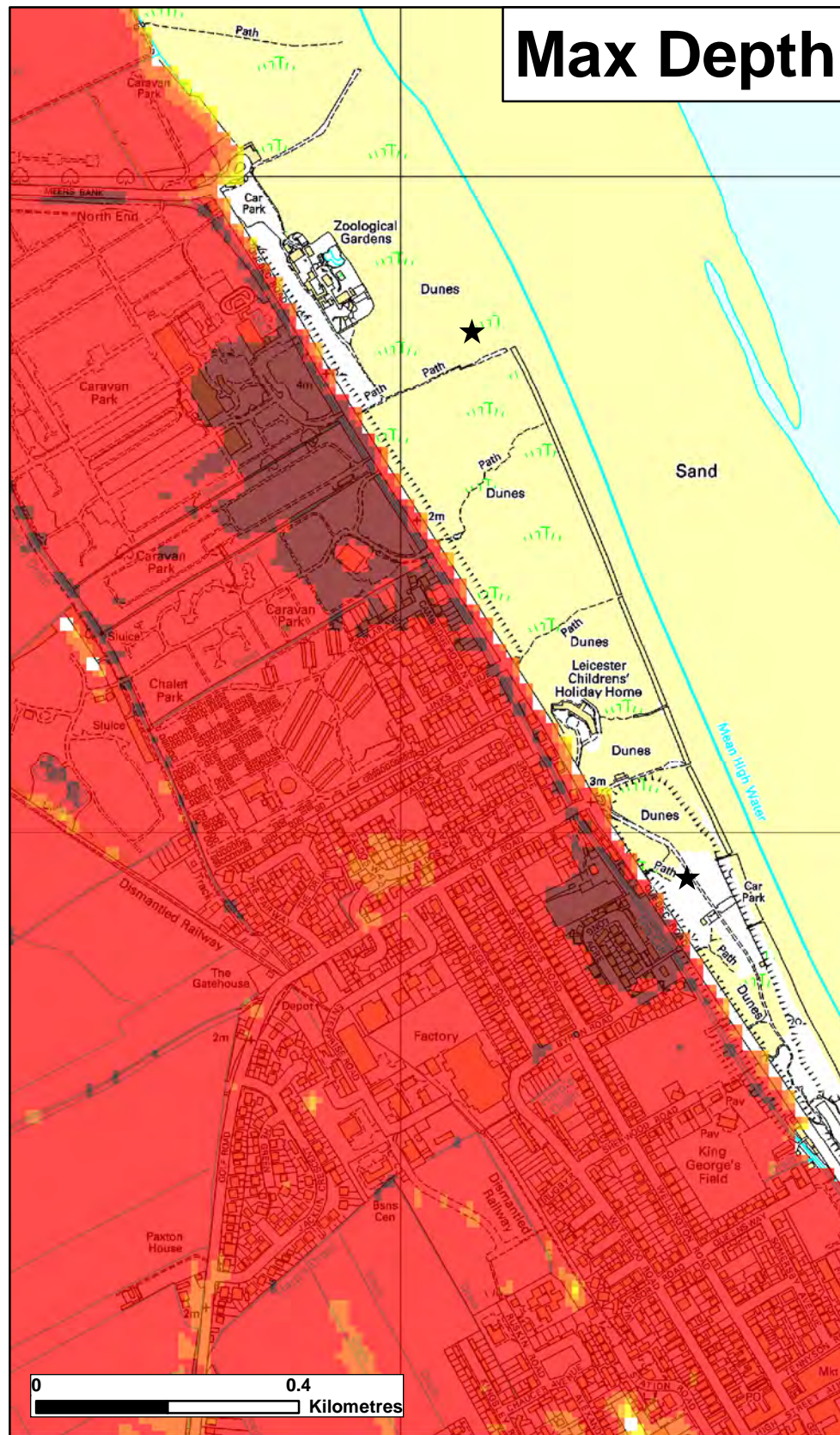
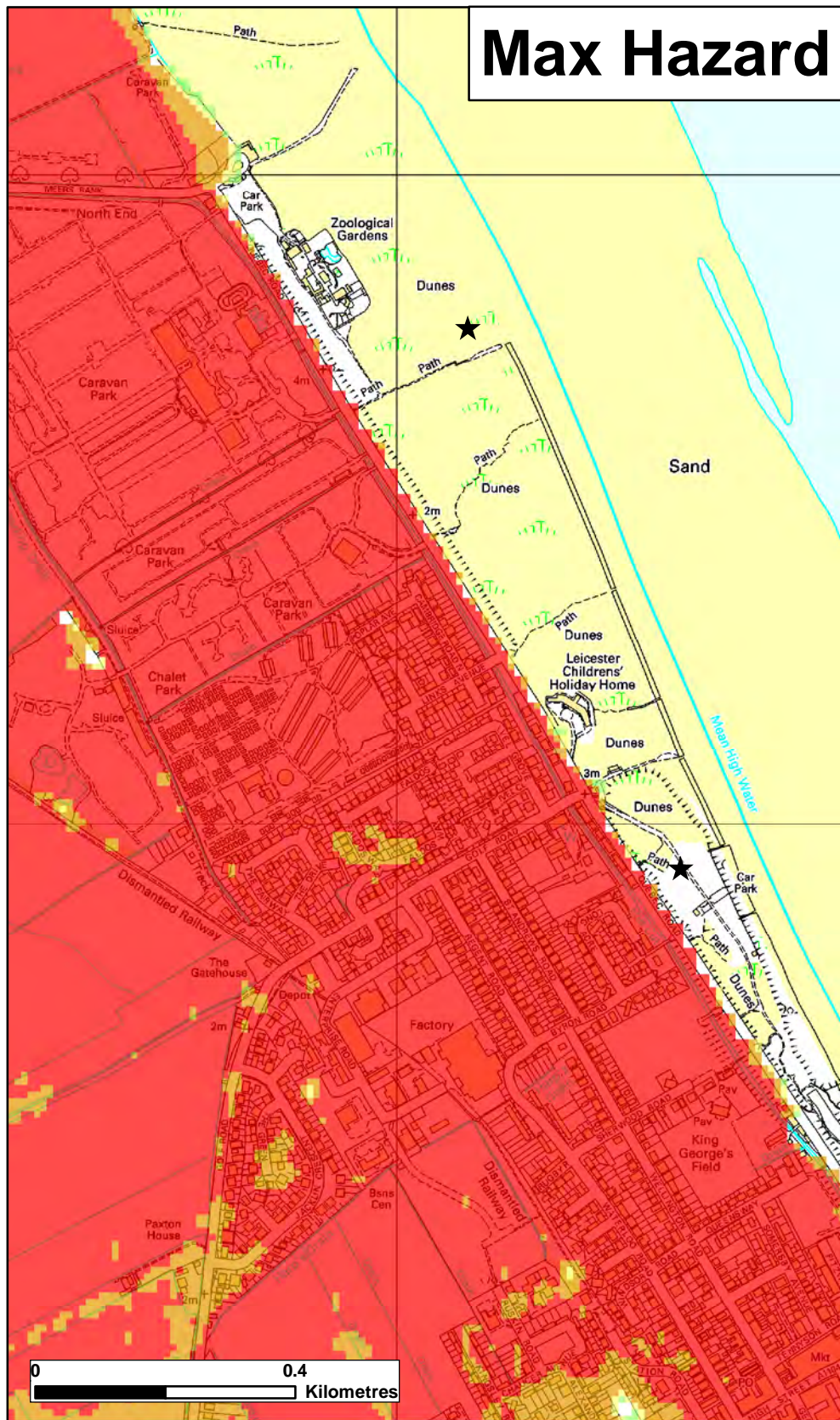
General Enquiries No: 03708 506 506. Weekday Daytime calls cost 5p plus up to 6p per minute from BT Weekend Unlimited. Mobile and other providers' charges may vary



Lincolnshire and Northamptonshire Tidal Breaching Hazard Mapping

Map Centred on TF5004386168

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

Max Hazard

(Flood Risk to People : FD2320)

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

Max Depth (m)

- 0 - 0.25
- 0.25 - 0.50
- 0.50 - 1.0
- 1.0 - 2.0
- 2.0 +

Max Velocity (m/s)

- 0 - 0.3
- 0.3 - 1.0
- 1.0 - 1.5
- 1.5 - 2.5
- 2.5 +

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Lincolnshire and Northamptonshire Tidal Breaching Hazard Mapping

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Date Printed	November 2015	Scenario year	2006	Scenario Annual Chance	0.5% (1 in 200)	CCN Number	CCN-2015-40256
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DRAWINGS



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rev:	date:	description:	by:



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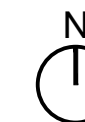
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Golden Sands Holiday Park
Quebec Road, Mablethorpe
 title:
Certificate of Lawful Use App.
Site Location Plan

scale @ A3: 1:2500	drawn by: JY	revision:
date: June 2023	approved: JY	
project no: 8525	dwg no: P01	

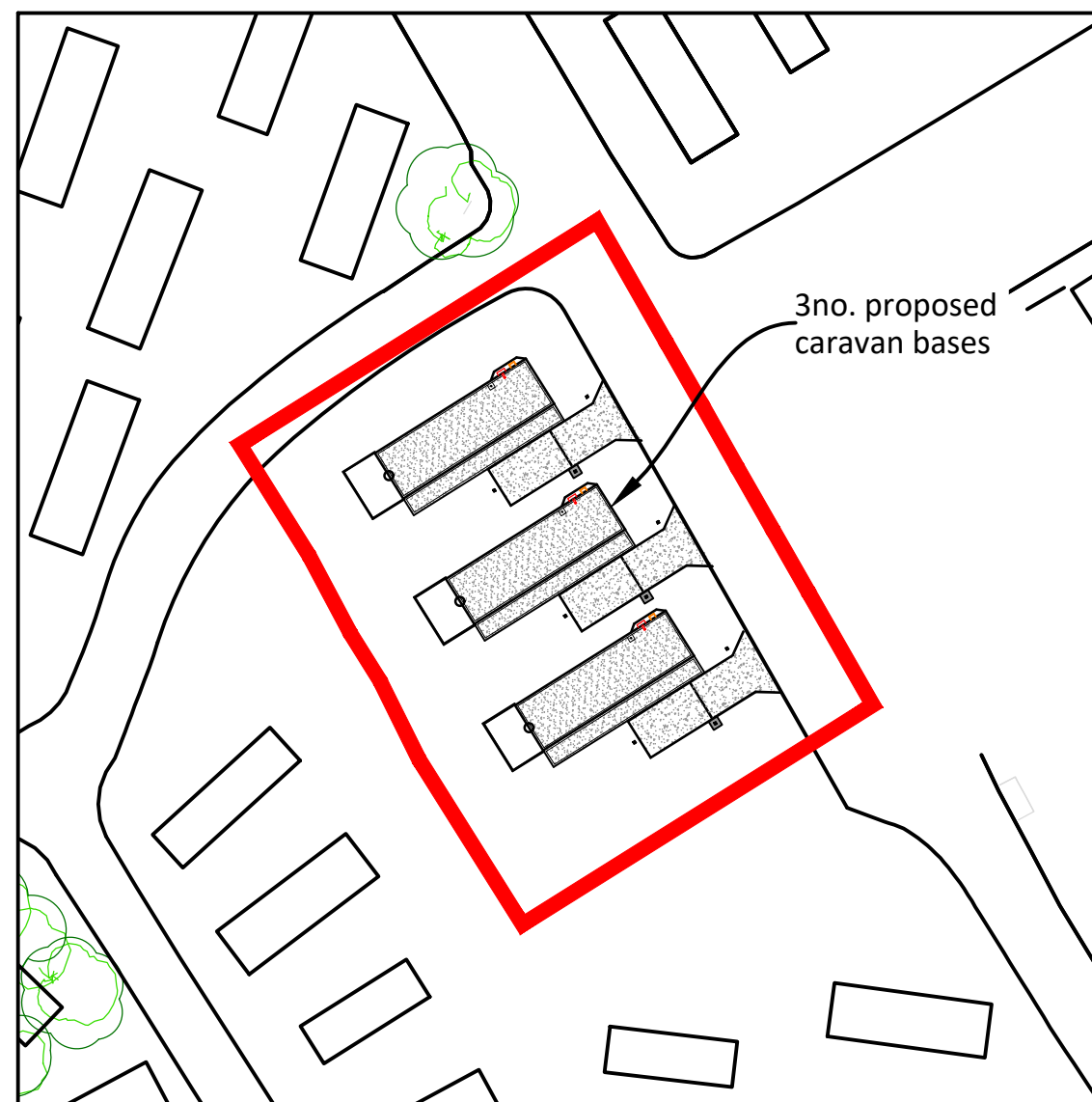
PLANNING

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Area A



Area B

rev:	date:	description:	by:



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title:
Certificate of Lawful Use App.
Block Plan

scale @ A3: 1:500	drawn by: JY	
date: June 2023	approved: JY	
project no: 8525	dwg no: P02	revision:

PLANNING

