EAST LINDSEY STRATEGIC FLOOD RISK ASSESSMENT

MARCH 2017

Supporting Economic Growth for the Future

East Lindsey
DISTRICT COUNCIL

Contents

EXECUTIVE SUMMARY 4
PART 1 – SETTING THE SCENE 6
2.0 AREA OVERVIEW 6
3.0 POLICY FRAMEWORK 12
4.0 CLIMATE CHANGE 19
5.0 FLOOD RISK MAPPING 22
6.0 PRESENT DAY FLOOD RISK ON THE COAST AND CARAVAN SITES 25
MAP 3 Present Day Flood Risk – Donna Nook northwards 26
MAP 4 Present Day Flood Risk Donna Nook to Trusthorpe 27
MAP 5 Present Day Flood Risk – Mablethorpe to Ingoldmells 28
MAP 6 Present Day Flood Risk Ingoldmells to Friskney 29
PART TWO - STRATEGIC ASSESSMENT OF TOWNS AND LARGE VILLAGES 30
ALFORD 31
CONINGSBY & TATTERSHALL 33
TATTERSHALL 35
HORNCASTLE 37
LOUTH 39
SPILSBY 41
LARGE VILLAGES 42
BINBROOK 42
BURGH LE MARSH 43
FRISKNEY 44
GRAINTHORPE 45
GRIMOLDBY & MANBY 46
HOGSTHORPE 47
HOLTON LE CLAY 48
HUTTOFT 49
LEGBOURNE 50
MAREHAM LE FEN 51
MARSHCHAPEL 52
NORTH THORESBY 53
PARTNEY 54
SIBSEY 55
STICKNEY 58
TETFORD 59
TETNEY 60
WAINFLEET ALL SAINTS 61
WOODHALL SPA 62

PART THREE - EAST LINDSEY STRATEGIC FLOOD RISK ASSESSMENT 66
6.0 FLOODING FROM OTHER SOURCES 66
7.0 FLOOD RISK MANAGEMENT 68
8.0 SITE SPECIFIC FLOOD RISK ASSESSMENTS 70
9.0 SEQUENTIAL AND EXCEPTIONS TEST 72
10.0 SUSTAINABLE URBAN DRAINAGE SYSTEMS (SUDS) 73
11.0 EXAMPLES OF SUSTAINABLE URBAN DRAINAGE OPTIONS 74
12.0 RESIDUAL FLOOD RISK (SEE PLANNING POLICY GUIDANCE) 76
13.0 KEY SOURCES OF DATA 77
APPENDIX 1 ENVIRONMENT AGENCY STANDING ADVICE MATRIX Jan 2017 79
APPENDIX 2 LIST OF PARISHES WHERE FLOODING OCCURRED IN 2007 81
APPENDIX 3 LINCOLNSHIRE COUNTY COUNCIL GUIDANCE FOR SITE SPECIFIC ASSESSMENTS 82
APPENDIX 4 …SEQUENTIAL AND EXCEPTION TEST FOR DEVELOPMENT IN THE COASTAL ZONE OF EAST LINDSEY 83

EXECUTIVE SUMMARY

1.1 The Strategic Flood Risk Assessment (SFRA) provides an assessment of flood risk to inform the Council's strategy for delivering sustainable development. This document reflects the National Planning Policy Framework and the latest Planning Practice Guidance.

1.2 38% of the District is at risk from coastal flood risk, with additional risk over the whole District coming from surface water flooding ie from rivers, drains and localised flooding.

1.3 The SFRA uses the evidence of the Environment Agency Flood Hazard Maps and the Flood Zone Maps. It considers the District in two parts:-

- The Coastal zone - the area primarily at threat from tidal flooding defined in broad terms by the boundary of the Environment Agency's Coastal Flood Hazard Maps. These maps provide detailed information on the probability, the depth, and velocity rate of onset and duration of flooding.

- Inland East Lindsey the remainder of the District, where a Level 1 Assessment has been prepared based on the Environment Agency`s Flood Zone Maps.

1.4 In the Coastal Zone, the Hazard Maps categorise risk over 4 zones; Danger to All (Red), Danger to Most (Orange), Danger to Some (Yellow) and Low Risk (Green). In agreement with the Environment Agency the area covered by the 3 highest 'Danger Zones' provide the boundary of the coastal zone. In this area the Council's policy is to limit new housing development to sustain current population levels so that the risk to life and property is not significantly increased.

1.5 In this area the level of danger, as categorised by the Hazard Mapping is also used to provide the basis for establishing a 'least risk' strategy for future development and to provide evidence for the Sequential Test as part of the decision making process for planning applications.

1.6 For Inland East Lindsey, the Environment Agency Flood Zone Maps (as amended) have been used as a constraint in the site allocation process for the Local Plan. Where a part of a site lies in or abuts Flood Zones 2 or 3 the capacity of the site to accommodate development has been adjusted to reflect this issue.

1.7 Part 1 of the SFRA sets the scene, provides the policy background and the framework for decision making.

1.8 Part 2 of the document shows the extent of flood risk in the Towns and Large Villages where future development is proposed. Further information on surface water flooding is also available from the Environment Agency. For schemes outside these locations developers should use the Environment Agency website to establish the flood risk locally. http://maps.environment-agency.gov.uk/wiyby/wiybyController?topic=floodmap&layerGroups=default&lang=_e&ep=map&scale=7&x=531500&y=181500

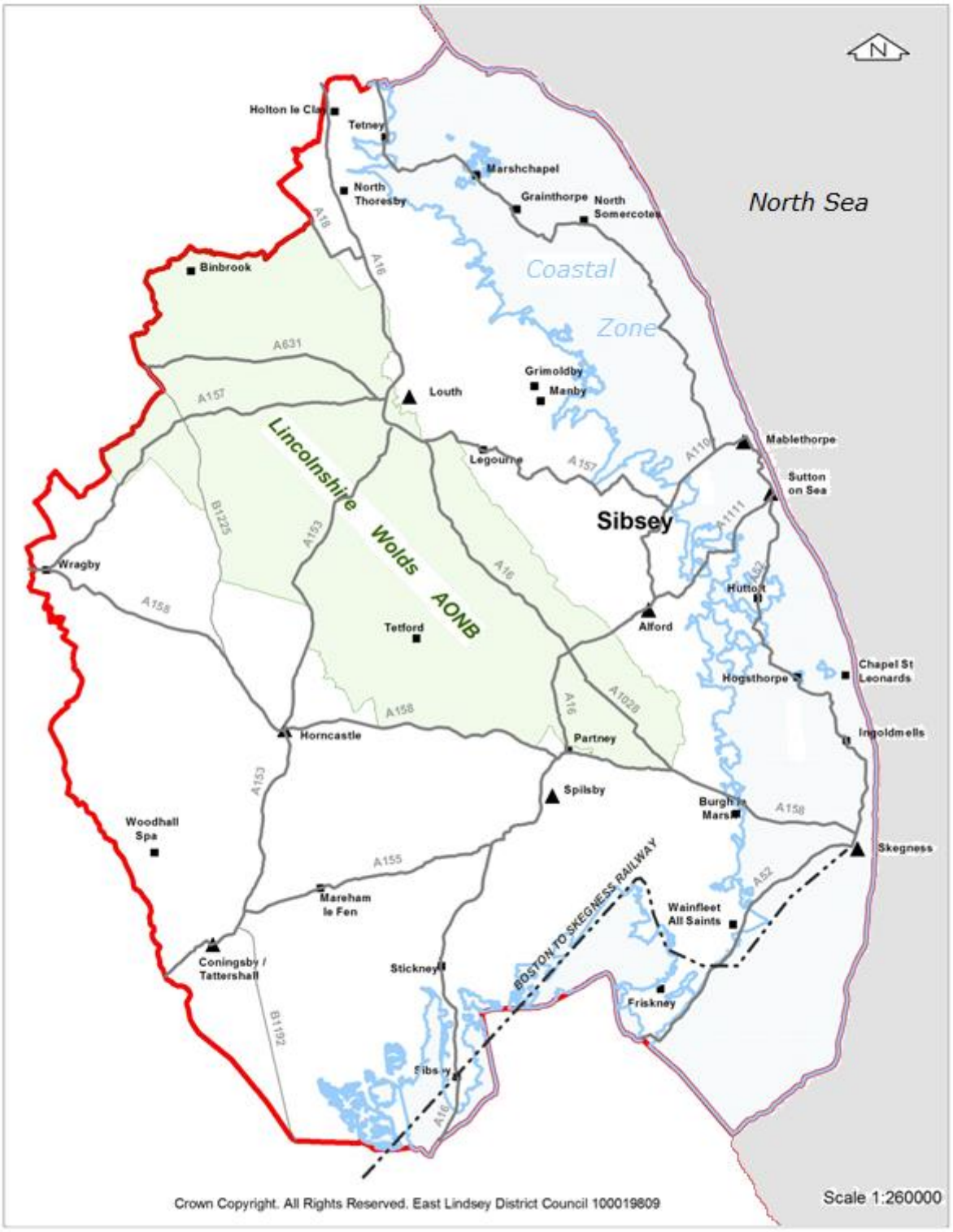
1.9 Part 3 of the SFRA considers the risk of flooding from other sources such as ground and surface water and provides initial guidance on the preparation of site specific assessments including the use of Sustainable Urban drainage systems to meet the requirements of the Flood & Water Management Act 2010.

PART 1 – SETTING THE SCENE

2.0 AREA OVERVIEW

2.1 The District of East Lindsey is predominantly rural and sparsely populated. The main urban centres occupy less than 5% of its area, with numerous villages of varying size distributed across the remainder. On the coast about 24400 static caravans also form a key component of the local landscape. Below is a key diagram of the District, showing the extent of coastal flood risk in relation to the rest of East Lindsey.

Diagram of the East Lindsey Area



Key

- District Boundary
- Coastal Flood Risk Area
- Area of Outstanding Natural

2.2 The eastern limit of the District is defined by the North Sea and, due to the predicted effects of climate change this area – notably between Skegness and Mablethorpe, is most at risk of flooding.

2.3 The southern part of the district is fen-land and to the south west the boundary is the River Witham. In this area the risk of flooding is mainly fluvial although there is also a small part at risk of tidal flooding.

2.4 The Lincolnshire Wolds dominate the central area of the district and rainfall from the Wolds feeds the rivers and drains that flow across the marsh and fen to the sea.

2.5 To the west of the Wolds the clay vale is part of a broad low valley where the risk of flooding is generally localised.

Coastal Issues

2.6 The Flamborough Head to Gibraltar Point Shoreline Management Plan (SMP) along with the Humber Estuary, and the Wash (SMPs) provide detailed assessments of coastal processes and issues for the full length of the Lincolnshire Coast. They consider how those processes might change between the present day and 2115 and set out what management policies will be appropriate for flood management in the future to respond to anticipated climate change. In broad terms the policies of the SMPs presently promote a policy of 'holding the line' i.e. to maintain current lines of defence. The SMP`s do not examine the funding of flood defences.

2.7 The Flamborough Head to Gilbraltar Point SMP which covers the bulk of the East Lindsey coast identifies 2 Policy Units and predicts the coastal process changes up to 2115 based on 3 zones within those policy units.

2.8 Zone 1, north of Theddlethorpe; the shoreline here is made-up of wide mudflats and sand banks and is currently accreting. However, to ensure defences are sustainable the SMP envisages that 'limited managed re-alignment' may be required and the scheme recently completed at Donna Nook is an example of this.

2.9 Zone 2; the intensively developed stretch between Mablethorpe and Skegness is an eroding coastline and the North Sea is held back by hardened defences which are supplemented by a beach nourishment programme (Lincshore). This scheme aims to protect against a 1 in 200 year (0.5% in any year) tidal flood by increasing the level of the beach and reducing the risk of waves reaching the main defences and going over the seawalls. It protects the clay foreshore against further erosion and prevents rapid deterioration of the defences.

2.10 Zone 3, south of Skegness towards Gibraltar Point the coastal process is predominantly one of accretion. This is expected to change in the longer term and may necessitate increased management activity. The Flamborough Head to Gibraltar Point Shoreline Catchment Plan can be found at:

http://www2.eastriding.gov.uk/council/plans-and-policies/other-plans-and-policies-information/sustainable-environment/

2.11 To the north of the District from Saltfleetby towards Grimsby, the coastal defences on the Humber Estuary are managed through the Humber Estuary Strategy. South of Gibraltar Point, the Wash SMP provides guidance on future management issues and proposes a managed re-alignment of the coast for later epochs.

2.12 The Lindsey Marsh Internal Drainage Board undertakes substantial activity in the coastal area. This includes maintenance and operation of pumping stations, along with maintenance of significant lengths of watercourses and culverts in areas such as Mablethorpe, Skegness, Sutton on Sea and Ingoldmells.

Fluvial Issues

2.12 Management of the Districts' watercourses is overseen by the Environment Agency (who deal primarily with the main rivers) along with the Lindsey Marsh and the Witham 3rd and Witham Fourth Internal Drainage Boards (IDBs) who are responsible for many of the smaller drainage channels. (The boundaries of the IDB areas is shown on Appendix 5.)

2.13 The Lindsey Marsh IDB aims to maintain their drains to a standard of flood protection of between 1 in 10 years (10%) for agricultural land and 1 in 75 years (1.3%) for urban areas.

2.14 The Witham 3rd IDB seeks to maintain a general standard capable of providing flood protection to agricultural land and developed areas of 1 in 20 and 1 in 100 years respectively.

2.15 The Witham 4th IDB watercourses aims to maintain a free board 0.9m above the water level for a 1 in 10 year rainfall to all but the lowest parts of the District, which offers a level of protection to overtopping of around 1 in 50 with some areas higher. The Board's main drains aim to provide a 1 in 100 year standard of protection to all but the lowest parts of the District.

2.16 The main watercourses in the District are shown on Map 1. To the south the River Witham is the most significant river locally. Along with the East & West Fen Catchwater Drains, and the Steeping River, it provides a main

pathway for water from a much wider network of drains and 'sewers' including the River Bain that runs through the towns of Horncastle and Coningsby / Tattershall before becoming part of the River Witham.

2.17 The Witham Flood Management Plan (CFMP) provides an assessment of how flood risk is expected to change in the mid to long term (up to 100 years) in this area. It notes that for much of their lengths the systems in the catchment run between embankments that protect the surrounding areas from inundation. However it does recognise a degree of risk from tidal flooding in the Fens around Boston as well as fluvial risk at Horncastle and along the River Bain.

2.18 A concern raised by the CFMP is the flood risk at Horncastle caused by the steeper nature of the upper Bain catchment to the north, and the narrow channel through the town and the potential risk of overtopping in the event of heavy rainfall. A recently completed flood alleviation scheme being undertaken at Horncastle aims at reducing the threat to 1 in 100.

2.19 The floods of June 2007 resulted in some flooding from the River Steeping, in Wainfleet. The cause was identified as a low spot in the defence that was repaired to reinstate the standard of protection and the flood risk management partners continue to work together in this area to manage the risk of flooding.

2.20 In the north and east of the District (Map 1) the main 'rivers' flowing from the Wolds eastwards across the marsh are the Waithe Beck, the River Lud, the Louth Canal, and the Great Eau to Saltfleet Haven, the Willoughby High Drain and the Woldgrift Drain. Flood risk in this area is assessed in the Louth Coastal Catchment Flood Management Plan.

2.21 There are a number of potential flood risk issues identified in the Louth CFMP area, these are:-

- River flooding at Louth, Mablethorpe and Chapel St Leonards
- Tide locking at the main tidal outfalls
- Potential embankment breaches from the main upland rivers across lower lying areas of the catchment
- Surface water and sewer flooding

2.22 The main threat of flooding in Louth is as a result of heavy downpours causing water to overtop the banks of the River Lud, and it is associated with flooding from surface and foul water systems. A flood alleviation scheme has been developed to reduce flooding in Louth from the River Lud. That scheme is calculated to reduce the risk in Louth from 1 in 5 to 1 in 100.

Flooding from Other Sources

2.23 In addition to river flooding the NPPF identifies rainfall, rising groundwater, overwhelmed sewers and drainage systems as potential sources of flooding (collectively known as surface water flooding). As the local events in June 2007 and more recently in 2012 showed, in the urban environment of the District it is a particular problem where available permeable surfaces are at a premium and foul and surface water systems become overloaded at the same time.

2.24 The response to flooding from other sources (surface water, ground water and ordinary watercourses) that is managed by and including the role of the County Council as the Lead Local Flood Authority, and the requirements for site specific flood risk assessments to address local issues, are dealt with in more detail in Sections 3 and 7 of this document.

3.0 POLICY FRAMEWORK

3.1 The Strategic Flood Risk Assessment (SFRA) has been prepared within the framework of the National Planning Policy Framework (NPPF), and it's associated Planning Practice Guide. It draws together the best information available at this time to provide the assessment of flood risk for planning policy and development management processes for East Lindsey.

3.2 The NPPF sets out the requirements for planning applications and local plans in dealing with flood risk and climate change. Amongst other aims they should seek to:-

- Take full account of flood risk and coastal change, and encourage the reuse of existing resources, including conversion of existing buildings, and encourage the use of renewable resources (for example, by the development of renewable energy); (s17)

- Promote mixed use developments, and encourage multiple benefits from the use of land in urban and rural areas, recognising that some open land can perform many functions (such as for wildlife, recreation, flood risk mitigation, carbon storage, or food production) ;(s17)

- Plan for new developments to avoid increased vulnerability to the range of impacts arising from climate change. (s99)

- Where new development is proposed in vulnerable areas, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure. (s.99)

- Avoid inappropriate development in areas at risk of flooding by directing development away from areas at highest risk but where development is necessary, making it safe without increasing flood risk elsewhere. (s100)

- Apply the sequential and exceptions test as appropriate (see NPPF s101) and Planning Policy Guidance (paras 019 and 023)

- Manage Flood Risk from all sources

3.3 In addition to the specific roles of the Environment Agency and Internal Drainage Boards for rivers and drains, the Flood & Water Management Act requires an integrated response to other causes of flooding. Lincolnshire County Council (LCC) is the lead authority locally and, along with the 'Risk Management Authorities' it has responsibility for implementing and monitoring a strategy for local flooding arising from surface-water runoff, groundwater, and ordinary watercourses (including lakes and ponds).

3.4 To that end the Joint Lincolnshire Flood Risk & Drainage Management Strategy was produced in 2012. It integrates the roles of the County Council, emergency services, local authorities, Internal Drainage Boards, Water and Sewerage Companies the EA and Natural England, to take a strategic county wide view on flood risk and address issues and problems of localised flooding. For more information see https://www.lincolnshire.gov.uk/residents/environment-and-planning/flood-risk-management/flood-risk-management-partnership/103046.article

3.5 As lead Authority the County Council are required to investigate flooding incidents under section 19 'Duty to Investigate'; and maintains a register of structures and features that are considered to have a significant effect on flood risk in the area. These reports are available on the County Council website.

3.6 As a further measure to ensure the risk of flooding is minimised, Lincolnshire County Council is now a statutory consultee for surface water drainage matters on all major or 'relevant planning applications'.

3.7 The SFRA has been prepared in consultation with the Environment Agency (EA) and Lincolnshire County Council. It brings together information from the Agency, Lincolnshire County Council Emergency Planning & Highways Divisions; the local Internal Drainage Boards, and the work of its land drainage staff. It draws on the findings of the following studies:-

- EA Flood Maps for Planning
- EA Hazard Mapping, 2009
- East Lindsey SFRA 2006
- Louth Coastal Catchment Flood Management Plan (CFMP)(2009)
- River Witham Catchment Flood Management Plan (CFMP) (2009)
- Flamborough Head to Gibraltar Point Shoreline Management Plan 2009
- Humber Flood Risk Management Strategy 2008
- Wash Shoreline Management Plan (2010)
- Joint Lincolnshire Flood Risk and Drainage Management Strategy
- Anglian River Basin District Flood Management Plan 2015-2021
- Humber River Basin District Flood Management Plan 2015-2021

3.8 The Environment Agency (EA) Flood Zone Maps have provided the starting point for assessing the risk of flooding since they were introduced in 2004, and they continue to provide guidance for the inland part of the District where the more detailed assessment needed to inform a Level 2 Assessment has not been carried out. These maps are updated regularly and can be accessed through the EA website.

3.9 In 2009 the Environment Agency produced Flood Hazard Mapping for the coast. This provides data for 2006 and 2115 flood event scenarios in this area

and the maps have been used to establish the boundary of the Coastal Zone in the Local Plan. The Plan uses 2115 flood event scenario to underpin the Councils' planning policies and decision making for development management. The Hazard Maps categorise risk over 4 hazard zones; Danger to All (Red), Danger to Most (Orange), Danger to Some (Yellow) and Low Risk (Green).

3.10 The Hazard Mapping provides a greater level of detail than the Flood Zone maps, on the areas at risk including the depth, velocity and estimated duration of flooding. (Copies should be obtained from the Environment Agency.) The Council will use relevant parts of the Environment Agency Standing Advice Matrix (2013) to ensure a consistent approach to applying the Hazard Rating for different locations identified by the Hazard and Flood Zone Mapping

3.11 In addition, the Council and the Environment Agency have agreed an approach for applying the Sequential and Exceptions Tests for dealing with planning applications in the Hazard Zones. This is dealt with in more detail in Section 9.

Planning Policy and Development Management

3.12 Section 10 of the National Planning Policy Framework (NPPF) requires local planning authorities to apply a sequential, risk-based approach to the location of development to avoid flood risk to people and property where possible, and manage any residual risk, taking account of the impacts of climate change, by:

- applying the Sequential Test
- if necessary, by applying the Exception Test
- safeguarding land from development that is required for current and future flood management
- using opportunities offered by new development to reduce the causes and impacts of flooding; and
- where climate change is expected to increase flood risk so that some existing development may not be sustainable in the long-term, seeking
- opportunities to facilitate the relocation of development, including housing, to more sustainable locations.

3.13 Where planning applications are concerned the NPPF (s102) states local planning authorities should ensure flood risk is not increased elsewhere, and only consider development in flood risk areas appropriate where informed by a site-specific flood risk assessment. Also, following application of the Sequential Test, and if required the Exception Test, it can be demonstrated that:

- within the site, the most vulnerable development is located in areas of lowest flood risk unless there are overriding reasons to prefer a different location; and,
- development is appropriately flood resilient and resistant, including safe access and escape routes where required, and that any residual risk can be safely managed; it gives priority to the use of sustainable drainage systems.

3.14 Essentially the two parts to the Test require proposed development to show that it will provide wider sustainability benefits to the community that outweigh flood risk, and that it will be safe for its lifetime. This has been considered as part of the Local Plan and is discussed further below.

East Lindsey Local Plan Alteration 1999 & Saved Policies 2007.

3.15 The Saved Policies of the Local Plan make provision for the delivery of housing on allocated sites and requires developers to show that development can provide foul sewers, sewage treatment and surface water drainage of adequate capacity to serve the site.

3.16 Whilst those elements of the Local Plan remain pertinent it should be noted that the Plan has been superseded by more recent legislation and in addition to the above schemes will need to meet current requirements. This will include the provision of Sustainable Urban Drainage Systems, as below.

Local Plan 2016 - 2031

3.17 The East Lindsey Local Plan sets out the Council's approach to minimising the impact of flood risk. It applies a high level sequential approach to development across the District by treating the coastal and inland parts of the District as 2 discrete areas with their own flood risk policies.

The Coast

3.18 Chapter 10 - Coastal East Lindsey in the Core Strategy sets out the Council`s policy approach to development in the Coastal Zone. This policy sets out development the Council will and will not support in this area of flood risk.

3.19 All relevant development in areas of flood risk has to show how it has passed the Sequential and Exception tests. With regard to the Sequential Test this steers development to areas of lowest risk. One of the aims of the Coastal Policy is to make it clear to those wishing to develop what will and will not be supported by the Council. Part of this work is to make the process of submitting and understanding the process around planning easier. As noted previously this approach is dealt with in more detail in Section 9.

3.20 For static caravan holiday sites in locations where, the short term threat of flooding is low, the Council will look to grant temporary (20 year) permissions. This is to reflect the need to sustain the local economy and the predicted, lower rate of rising sea level from climate change over the 1st epoch (see section 5). These locations are shown on Maps 4,5,6 and 7 at the end of that section.

3.21 In addition the Council and the Environment Agency have agreed an approach for dealing with housing proposals (in settlements) on the edge of the Coastal Hazard Zones that lie within Flood Zone 3. Some of these settlements weave in and out of the Coastal Zone. They are still washed over by the Flood Zone 3 maps but the risk in reality is low between the outer extents of Hazard Zone and the Flood Zone. For housing developments in these locations the starting point for any planning application determination will be the Flood Zone mapping which shows flood risk without any defences in place. It is still relevant but National Planning Policy advocates that more refined evidence on flood risk should be used and where available information from the Coastal Flood Hazard Maps will be used.

3.22 This means that sequentially, a proposed housing site which lies outside the hazard zone but inside flood zone 3 may be acceptable in terms of flood risk, because that risk is low, though they may still have to carry out some mitigation, depending on advice from the EA. The site would be deemed to have passed the sequential and exception test. In general the yellow (danger for some) and green (low risk) zones are quite narrow bands of flood risk with the majority of the land in the coast lying in orange and red zones. If the housing site lies in the green zone or partly in the green zone it may still be acceptable subject to mitigation.

3.23 If a site for housing is fully in the coastal flood hazard zone in a red, orange or yellow zone, then the area for search for the sequential test is the rest of the District outside those zones. This would then conform to the NPPF in that inappropriate development should be avoided by directing development away from areas of highest risk – this search would include those settlements that border the zone but are not completely in it but are in flood zone 3.

Inland East Lindsey

3.24 In the inland area the Council has excluded sites in flood zones 2 and 3 from its local plan allocations. Where schemes come forward through the development management process within these areas the Council will:-

- Apply a sequential approach to the location of new development away from areas at risk of flooding in line with the NPPF. In these cases the Council will use 'inland' East Lindsey as its area of search.

- On brownfield sites within areas of flood risk that are in need of regeneration, support for residential use will only be forthcoming where it can be shown that no viable, alternative use can be found.

- Require new development to address the need for water conservation and sustainable drainage systems as part of their design.

3.25 All relevant development whether in the coast or inland will need to provide a site-specific flood risk assessment which should identify and assess the risks from all forms of flooding, to and from the proposed development. It should demonstrate how these risks will be managed so that development remains safe throughout its lifetime, taking into account climate change.

3.26 The NPPF identifies 4 flood risk zones (1, 2, 3a & 3b) and sets out what type of development is appropriate in each zone according to a vulnerability classification. In turn this relates to different land uses and (in Table 3 of that document) indicates where based on those classifications, the exception test will be applied. That table is set out below.

Table 1: Flood risk vulnerability and flood zone 'compatibility'

Flood risk vulnerability classification (see table 2 of the guidance)	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	√	√	√	√	√
Zone 2	√	Exception Test required	√	√	√
Zone 3a	Exception Test required †	X	Exception Test required	√	√
Zone 3b functional floodplain	Exception Test required*	X	X	X	√*

Key: √ Development is appropriate. X Development should not be permitted.

Notes to table 1:

This table does not show the application of the Sequential Test which should be applied first to guide development to Flood Zone 1, then Zone 2, and then Zone 3; nor does it reflect the need to avoid flood risk from sources other than rivers and the sea;

The Sequential and Exceptions Tests do not need to be applied to Minor Developments and changes of use, except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home.

Some developments may contain different elements of vulnerability and the highest vulnerability category should be used, unless the development is considered in its component parts.

† In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

* In Flood Zone 3b (functional floodplain) essential infrastructure that has to be there and has passed the Exception Test, and water-compatible uses, should be designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

4.0 CLIMATE CHANGE

4.1 SFRAs are a response to flooding events since 1990, and the increasing awareness of the impact of global warming and climate change in the future. The most significant of these are, rising sea levels and changing weather patterns resulting in increased storm frequency, duration and severity.

4.2 The National Planning Policy Framework sets strict tests to protect people and property from flooding which all local planning authorities are expected to follow. Where these tests are not met, national policy is clear that new development should not be allowed. Detailed guidance for dealing with Climate Change is provided by the Planning Practice Guidance: Flood Risk and Coastal Change. https://www.gov.uk/guidance/flood-risk-and-coastal-change#site-specific-flood-risk-assessment-all

4.3 The Planning Policy Guidance provides guidance for both flood risk assessments and strategic flood risk assessments including details of the allowances that should be in any assessment in respect of :-

- Peak river flow by river basin (either Humber or Anglian)
- Peak rainfall intensity
- Sea level rise, and
- Offshore wind speed and extreme wave height

4.4 This document is not intended to reproduce that guidance but, in this section aims to highlight the key issues that need to be considered when preparing strategic and site specific assessments. For more details see; https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

4.5 East Lindsey is covered by the Humber and Anglian river basin areas. The table below shows the predicted potential change in peak river flows as a consequence of climate change for both. Flood Risk Assessment s should use these in conjunction with the flood risk vulnerability classification for different developments.

Table 2 peak river flow allowances by river basin district
(East Lindsey falls between the Humber and Anglian River Basin areas)

River basin district	Allowance category	Total potential change anticipated 2015 to 2039	Total potential change anticipated for 2040 to 2069	Total potential change anticipated for 2070 to 2115
Humber	Upper end	20%	30%	50%
	Higher central	15%	20%	30%
	Central	10%	15%	20%
Anglian	Upper end	25%	35%	65%
	Higher central	15%	20%	35%

	Central	10%	15%	25%

4.6 The changing weather patterns accompanying climate change, will see dryer winters and wetter summers marked by heavy downpours of rain, and as well as increasing the pressure on rivers and drains will impact, particularly in urban areas where impermeable surfaces predominate.

4.7 It is predicted that rainfall intensity increases will range between 5% - 40% (see below) and assessments should be made across these levels.

Table 3 peak rainfall intensity allowance in small and urban catchments (use 1961 to 1990 baseline)

Applies across all of England	Total potential change anticipated for the '2020s' (2015 to 2039)	Total potential change anticipated for the '2050s' (2040 to 2069)	Total potential change anticipated for the '2080s' (2070 to 2115)
Upper end	10%	20%	40%
Central	5%	10%	20%

4.8 The table below sets out the 'sea level allowances for net sea level rises between 1990 and 2115. It indicates the average annual increase (and total increase) expected over the 4 epochs up to 2115 and provides the basis for establishing the extent of possible flooding along the coast.

4.9 It is expected that the sea level rise will increase the rate of coastal erosion nationally. The coastal erosion maps for the Lincolnshire coast show that based on the relevant shoreline management plans, there will be no change along the East Lindsey coastline for the foreseeable future.

Table 4 Sea level allowance for each epoch in millimetres (mm) per year with cumulative sea level rise for each epoch in brackets

Area of England	1990 to 2025	2026 to 2055	2056 to 2085	2086 to 2115	Cumulative rise 1990 to 2115 / metres (m)
East, East Midlands, London, south east	4mm p.a (140 mm)	8.5mm p.a. (255 mm)	12mm p.a (360 mm)	15mm p.a. (450 mm)	1.21 m

4.10 As a consequence of higher sea levels it is also predicted that wave heights will increase and that we may also see an increase in the duration and severity of storms. Wind speed plays an important part in this and assessments of any proposed development in coastal areas will need to take this into account.

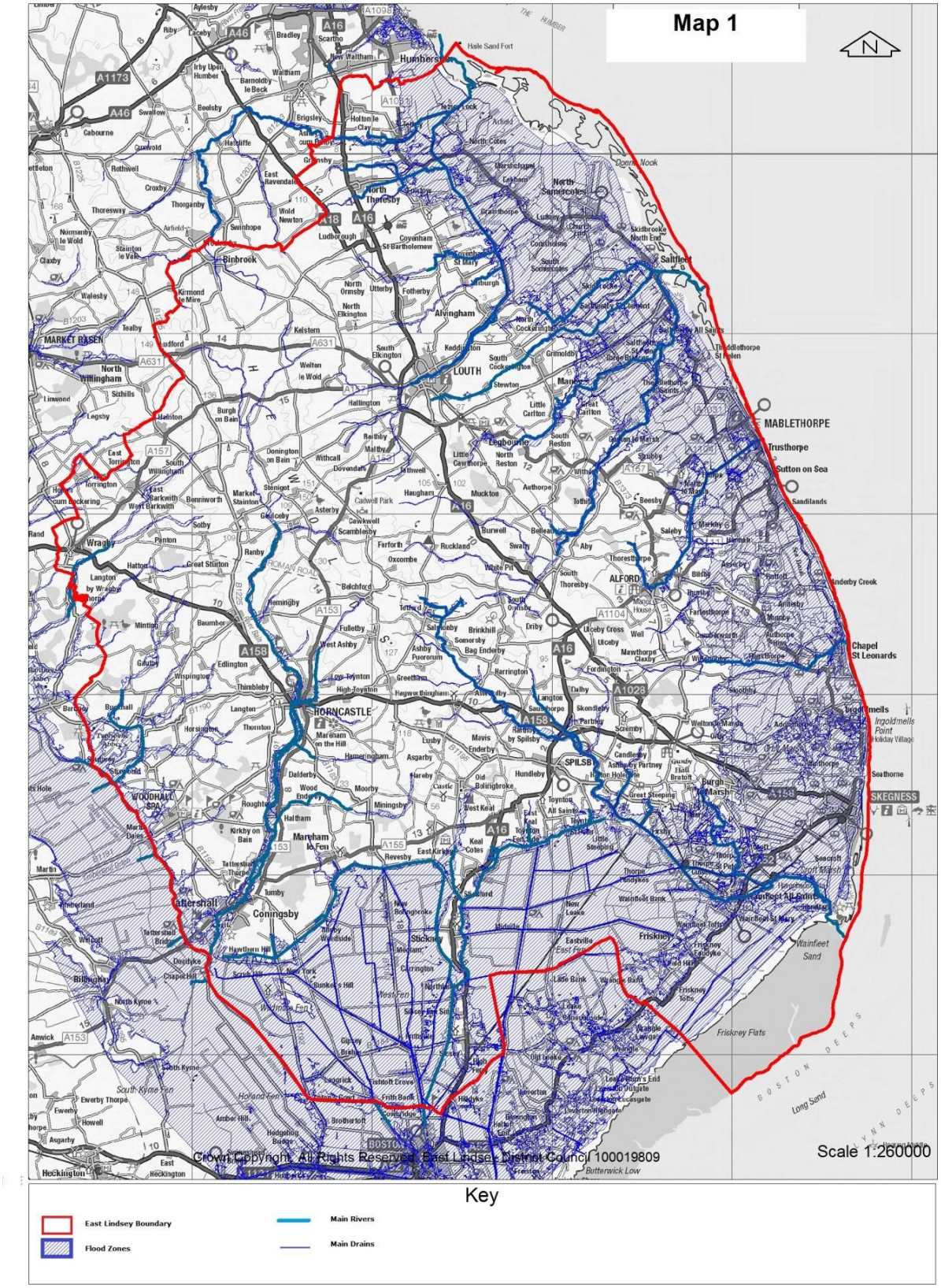
4.11 In the inland part of the District the Local Plan has used the extent of Flood Zone 2 as a constraint when allocating sites for new development and includes a strategy for the maintenance of watercourses, and improved drainage systems

(including urban drainage systems) as part of new developments. It considers that these measures will address the anticipated risk associated with climate change and, that by making no provision for strategic growth in the coastal area the Plan has properly addressed the issue.

4.12 In addition the Council and the Environment Agency have established various protocols to deal with local circumstances such as the development of brownfield sites and holiday accommodation which reflect the need to balance the needs of the community with the requirements for assessing flood risk.

5.0 FLOOD RISK MAPPING

Map 1 - East Lindsey area showing Main Rivers and Flood Zones



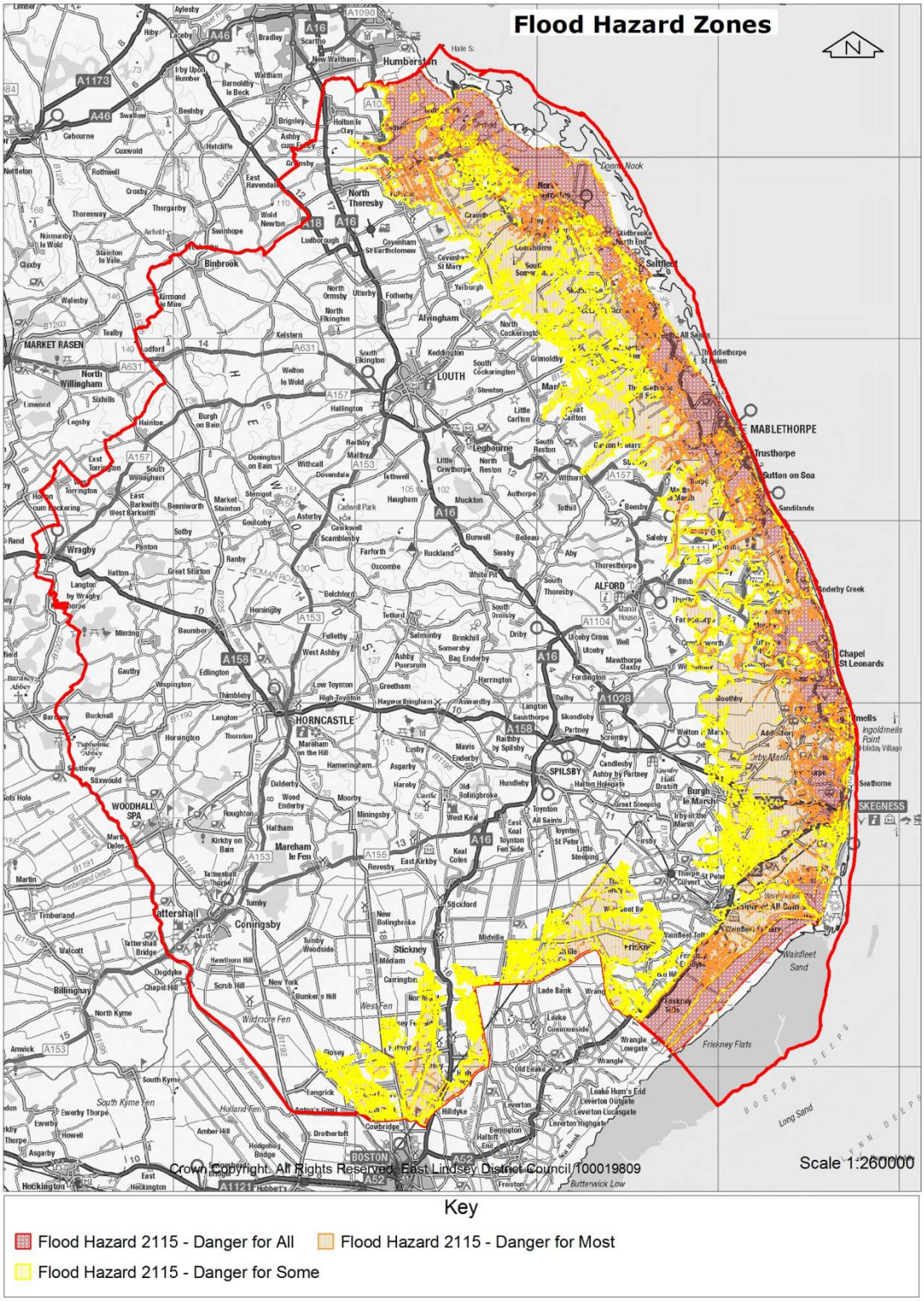
5.1 Map 1 shows the extent of the FLOOD ZONES in East Lindsey produced by the Environment Agency, along with the designated Main Rivers and Internal Drainage Board Drains maintained by the Agency and the Internal Drainage Boards.

5.2 The Flood Zone information continues to be used for Inland East Lindsey. However, it has been superseded and refined by the Coastal Flood Hazard Mapping (Map 2 below) and this will provide the basis for planning policy decisions along the coast in the future.

5.3 Part 2 of the SFRA shows the extent of flood risk around the inland towns and large villages where development is proposed in more detail. For the purpose of the Plan it has been agreed that only the areas defined by the Red (danger for all), Orange (danger for most) and Yellow (danger for some) zones will be considered at risk and that they will define the 'coastal zone' this zone includes the settlements listed below.

Addlethorpe, Anderby, Chapel St Leonards, Croft, Ingoldmells, Mablethorpe, New Leake, North Cotes, North Somercotes, Saltfleetby All Saints, Saltfleetby St Clements, Saltfleetby St Peter, Skegness, Skidbroook cum Saltfleet, South Somercotes, Sutton on Sea, Theddlethorpe All Saints, Theddlethorpe St Helen and Trusthorpe.

Map 2 - Areas at risk of flooding from breaching of sea defences, due to a 1 in 200 year event in 2115



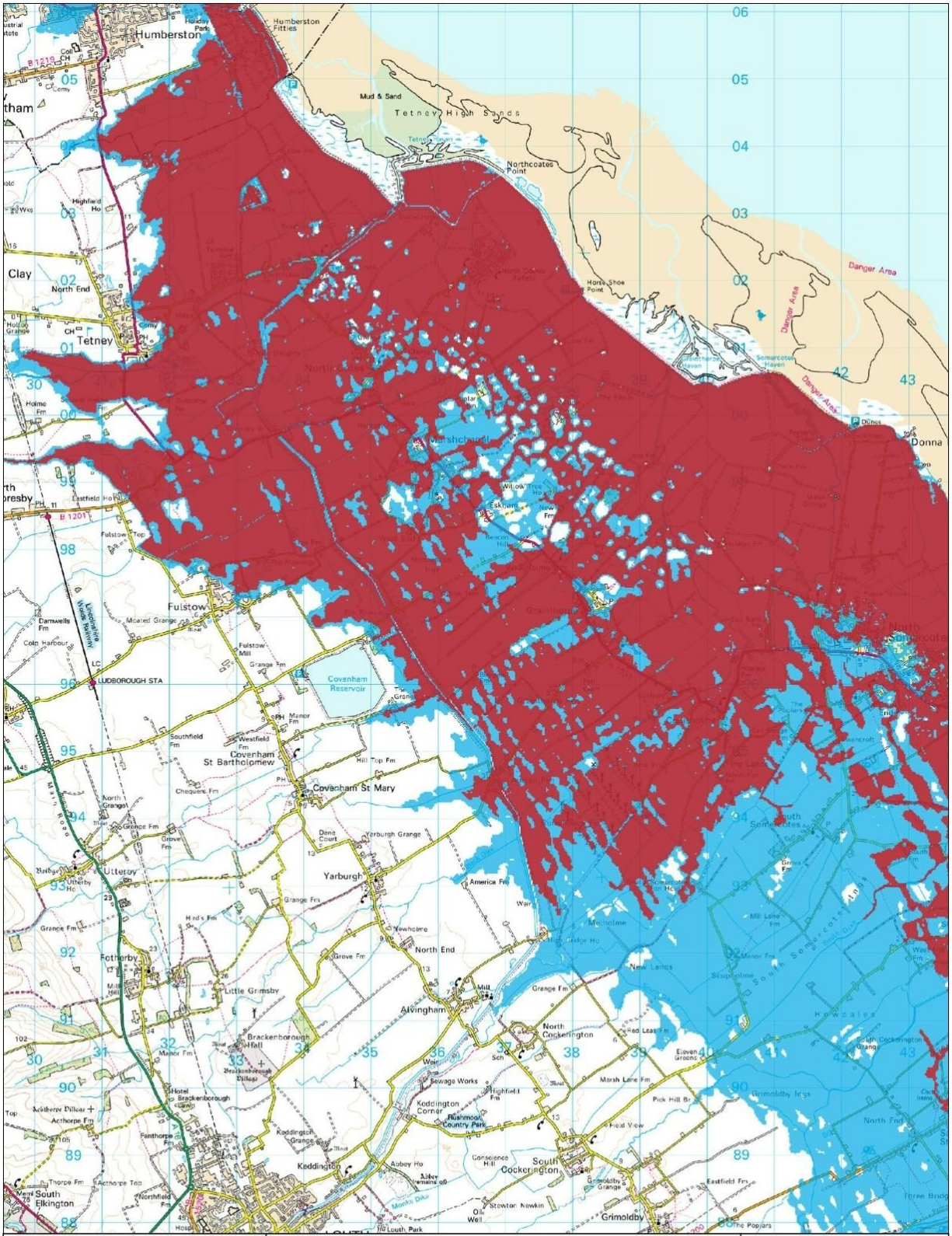
6.0 PRESENT DAY FLOOD RISK ON THE COAST AND CARAVAN SITES

6.1 As discussed above, where the impact of climate change is not expected to increase risk in the short term, temporary permissions for holiday caravans will be considered by the Council. This is covered in the Core Strategy under Strategic Policy SP19 – Holiday Accommodation which states at paragraph 10;

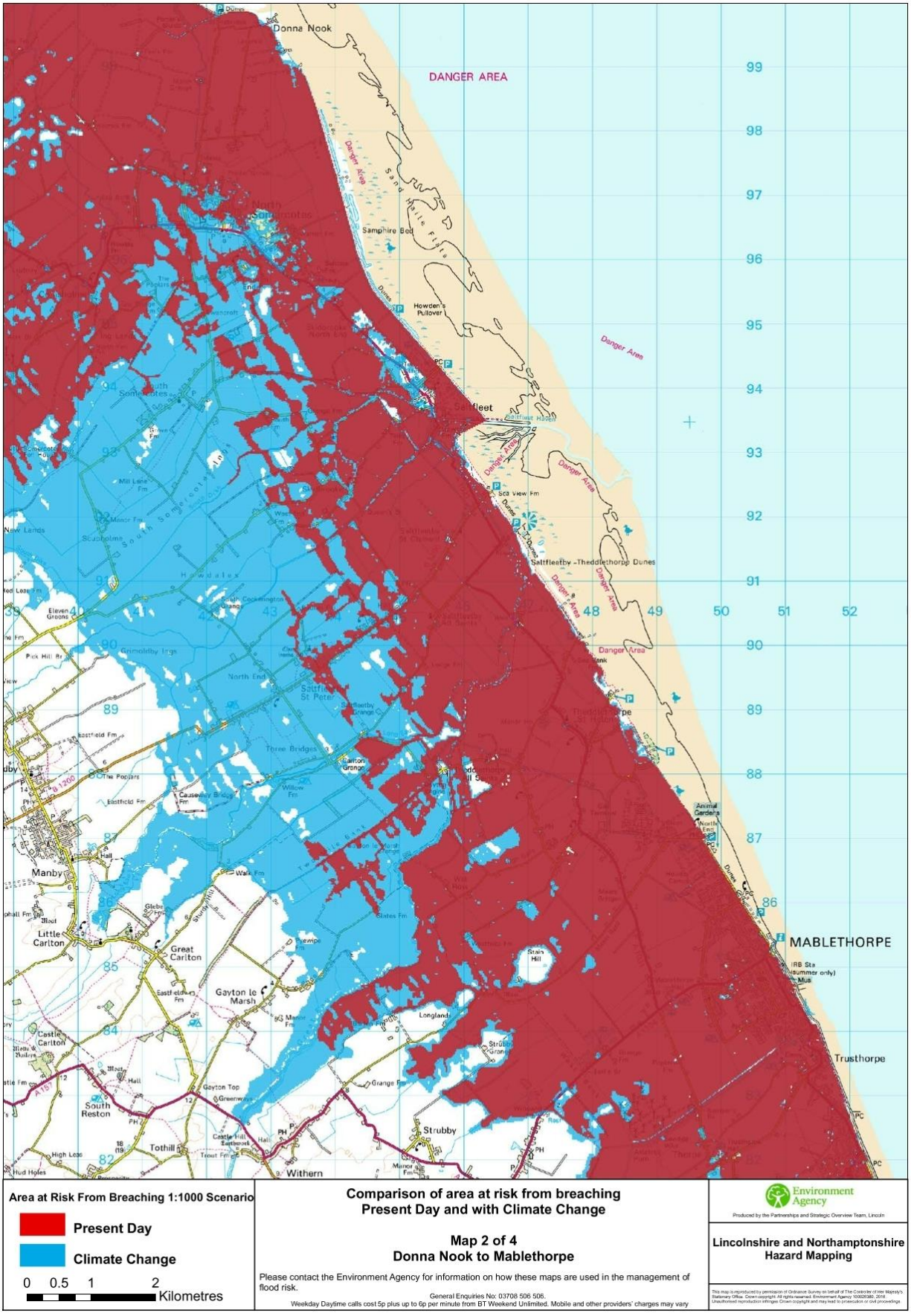
"10. There are some limited areas in the Coastal Zone that are not currently shown to be impacted by flood water in the current day breach scenario. In these areas there may be an opportunity to allow holiday sites to be safely occupied throughout the year for a limited period of 20 years. This would need to be secured via planning condition to allow an opportunity to reassess the impacts of climate change in 20 years' time. At that time our knowledge and understanding of how climate change is progressing will be better understood and we will also be able to use the latest available information to provide robust evidence. The Strategic Flood Risk Assessment sets out these areas."

6.2 The areas where this approach will be applied are shown on the maps below, the Council will manage and monitor these conditions in the same way as it monitors all planning conditions.

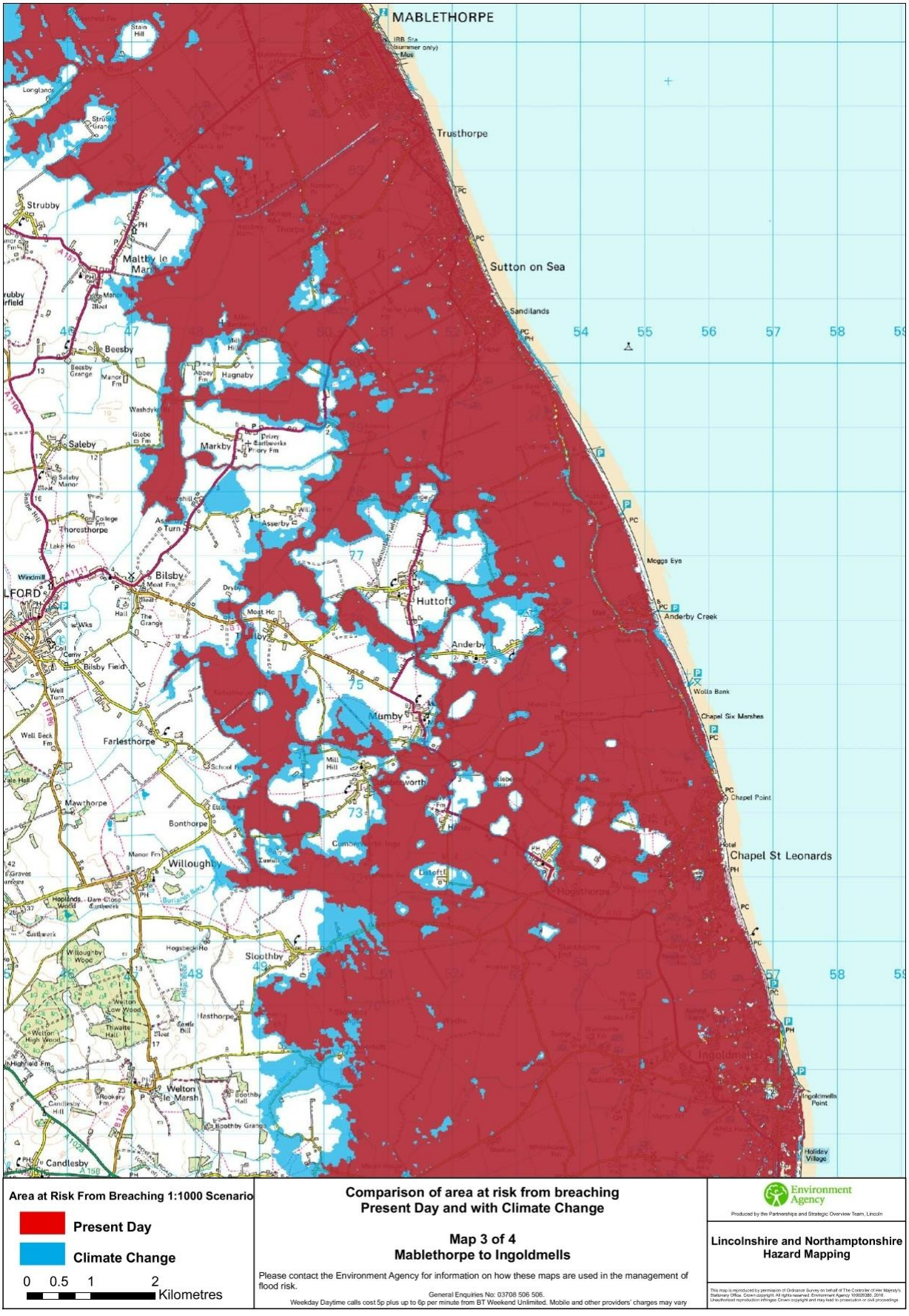
MAP 3 Present Day Flood Risk – Donna Nook northwards



MAP 4 Present Day Flood Risk Donna Nook to Trusthorpe



MAP 5 Present Day Flood Risk – Mablethorpe to Ingoldmells



MAP 6 Present Day Flood Risk Ingoldmells to Friskney