



PRCC.26 12/13

Prosperous Communities
Committee

Date 08th January 2013

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**Subject: *final version* Joint Lincolnshire Flood Risk & Drainage
Management Strategy 2012 - 2025**

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Purpose / Summary:

To seek endorsement from Committee Members for the final version of the Joint Lincolnshire Flood Risk & Drainage Management Strategy 2012 – 2025 as approved by Lincolnshire County Council Executive on 4th December 2012.

RECOMMENDATION(S):

a) That Committee Members endorse the final version of the Joint Lincolnshire Flood Risk & Drainage Management Strategy 2012 – 2025

IMPLICATIONS

Legal:

Lincolnshire County Council are designated Lead Local Flood Authority (LLFA) under the Flood and Water Management Act 2010. Responsibility to produce a flood risk management strategy is a duty under this act that rests with the LLFA. All flood Risk Management Authorities within Lincolnshire have signed a partnership agreement to work with each other in pursuit and fulfilment of flood risk management duties incumbent upon each partner organisation. In accordance with this commitment, Lincolnshire County Council are seeking constitutional endorsement for the Strategy from partner all organisations.

Financial : (Fin 3)

The Council will maintain an ear-marked reserve circa £125,000 that can be used to fund flood mitigation and prevention works identified in the common works programme currently in development and due to be published in 2013. Once again, partner agencies will be involved in shaping development of this programme through the Central Lincolnshire Flood Risk Management Group.

Staffing :

West Lindsey has assisted Lincolnshire County Council in development of this strategy by providing personnel to support Task and Finish Groups. Staff will continue to support strategic and operational working groups established under the partnership framework agreement to which this Council is a signatory. Public Protection Services personnel continue to support partners to deliver flood mitigation schemes within our district, identified through the common works programme, through participation in the Central Lincolnshire Flood Risk Management Group.

Equality and Diversity including Human Rights :

Lincolnshire County Council has conducted three months of public and stakeholder consultation, including road shows and workshops across the county. This has informed development of the Strategy and builds on the nationally regarded work of the Lincolnshire Flood Risk and Drainage Management Partnership.

The Lincolnshire County Council has a duty to discharge its responsibilities under the Equality Act 2010. An impact analysis has been carried out which demonstrates how this duty has been taken into account and discharged when reaching their decision to approve the Strategy.

Risk Assessment:

Not applicable.

Climate Related Risks and Opportunities:

The whole thrust of the Strategy is to seek to address the impact of climate change in terms of managing flood risk in accordance with scientific evidence and predictions.

Title and Location of any Background Papers used in the preparation of this report:**Call in and Urgency:****Is the decision one which Rule 14.7 of the Scrutiny Procedure Rules apply?**

i.e. is the report exempt from being called in due to urgency (in consultation with C&I chairman)

Yes☐**No****X****Key Decision:**

A matter which affects two or more wards, or has significant financial implications

Yes**X****No**☐**Executive Summary**

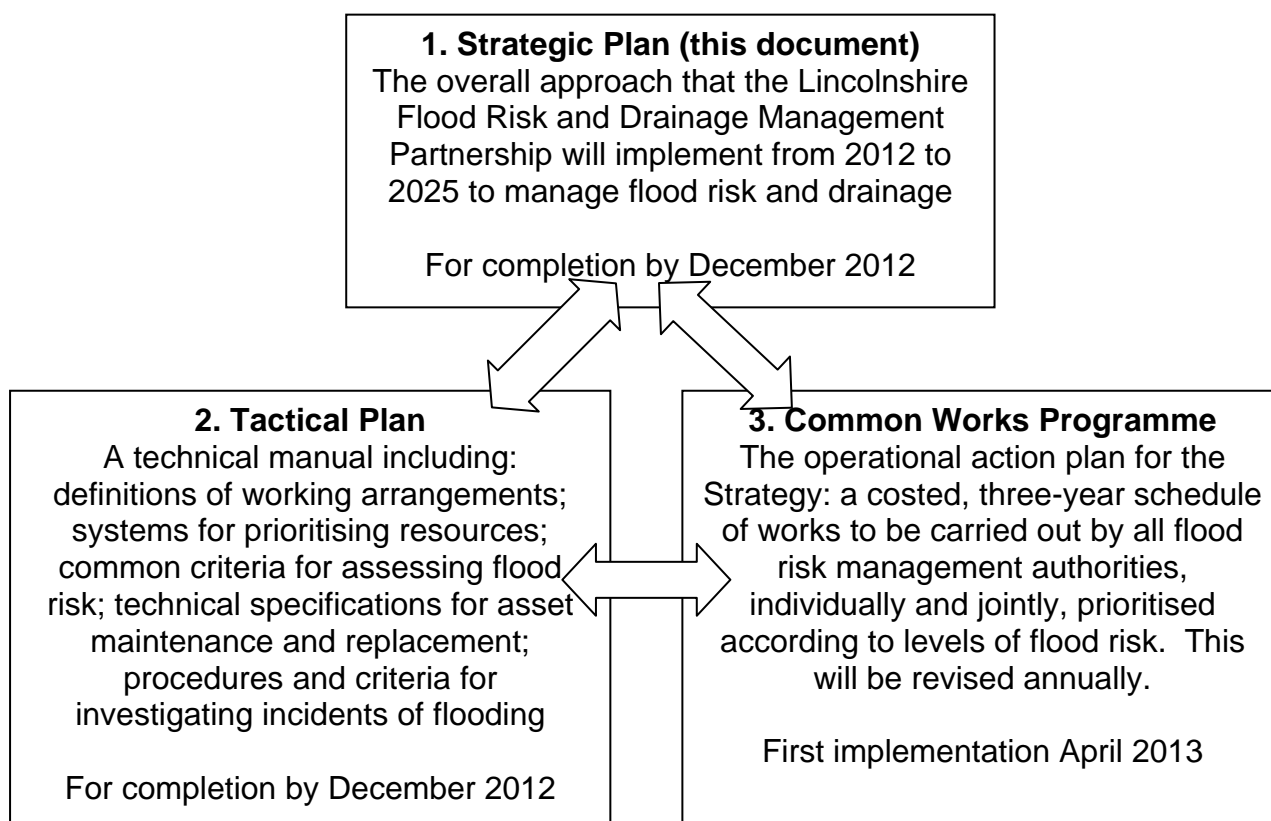
Lincolnshire County Council is the Lead Local Flood Authority (LLFA) in Lincolnshire under duties contained in the Flood and Water Management Act 2010. Among other strategic and operational responsibilities arising from this new role, Lincolnshire County Council is required 'to develop, maintain, apply and monitor a Local Flood Risk Management Strategy'.

The strength of the partnership arrangements established in Lincolnshire to address flood risk management means that this duty provides a further opportunity to develop a co-ordinated and strategic approach to responsibilities for flood risk and drainage management across the county.

As such, in Lincolnshire the Local Flood Risk Management Strategy is being developed as a Joint Flood Risk and Drainage Management Strategy to cover all forms of flooding – main rivers, surface water and coastal. The strategy will also provide a focal point to rationalise and integrate the wide range of existing strategies, plans and activity programmes that currently exist at county level across the partnership and relevant to all types of flooding .

Each of the partners that has signed up to the Lincolnshire Flood Risk and Drainage Management Partnership Agreement have provided personnel and expertise to support Lincolnshire County Council, through a number of task and finish groups, to develop the various facets of the strategy document. Following development, all the facets of the strategy will be brought together into one cohesive document for Lincolnshire.

The whole Strategy will consist of three parts in total as illustrated below:



This report presents Members with the first of these parts, the Strategic Plan.

This is divided into sections as follows:

Part 1 of 3 – Strategic Vision

Part 2A of 3 – Implementing the Strategy in Partnership

Part 2B of 3 – Annexes A - F

Each of these three documents is attached at **appendix A, B and C.**

Committee Members are invited to endorse the final version of the Joint Lincolnshire Flood Risk & Drainage Management Strategy 2012 – 2025.

The salient features of the Joint Lincolnshire Flood Risk & Drainage Management Strategy 2012 – 2025

Part 1 of 3 – Strategic Vision (Appendix A):

This document sets out the recent historical context following the extensive flooding in 2007 that culminated in the Flood Risk Regulations 2009 and Flood and Water Management Act 2010. These statutes have established a new national approach to the management of flood risk.

The Strategy points to the formal establishment of the Lincolnshire Flood Risk and Drainage Management Partnership in April 2010 and recognises the value of this forum as the mechanism through which a cohesive flood risk management strategy for Lincolnshire should be developed albeit the statutory duty remains with the Lead Local Flood Authority.

The vision encapsulates the broad principles of flood risk management for the county promoting community and business engagement in the management of risks and seeking to build on effective partnership working that has made Lincolnshire stand out nationally as an exemplar.

The strategic objectives that seek to make the vision a reality are as follows:

1. Establishment of a common works programme
2. Existing resources to be used efficiently. New resources to be brought in from sources locally and nationally
3. The impact of flooding will be reduced from current levels by 2025 even when accounting for climate change predictions
4. Emergency planning and response arrangements will for part of a single, coordinated approach to managing flooding.
5. The partnership will work with communities to manage flood risk in accordance with local need
6. Communities and businesses will be more aware of flood risk and will be supported to take steps to protect themselves
7. Planning and development will take account of flood risk and sustainable drainage. Development in flood risk areas or that will increase flood risk will be minimised
8. Flood risk management will be more accountable through democratic process and through information availability
9. Flood risk management will contribute to water quality, wider environmental benefits and sustainable growth.

The objectives stated at 1 and 2 above are likely to give rise to healthy debate amongst partners when the details are discussed.

In order to meet these long term objectives above, a range of short term partnership activity is identified and listed. The most relevant of these to our communities are:

1. Development of a flood risk management asset register – a list of infrastructure, the maintenance of which is crucial to the control of flood risk (end 2012)
2. Assessment of flood risk will be overhauled to more effectively prioritise works and measures to mitigate risk
3. A common works programme will commence in 2013, a three year programme of joint works across all partner agencies.
4. From 2013/14, co-ordination of resources to improve efficiency and increase funding available to manage flood risk and deliver works
5. Exerting more influence over sustainable development in the county
6. Establishment of a Sustainable Drainage Approving Body at Lincolnshire County Council during 2014
7. Development of a partnership communications strategy to enable the frank and informative exchange of information across the partnership, with communities and businesses.

Monitoring Delivery of the Strategy

The strategy will be monitored by the mechanisms established within the Lincolnshire Flood Risk and Drainage Management Partnership. Progress will be reviewed in public on a six month basis by the Joint Flood Risk Management Scrutiny Committee

The common works programme will be reviewed annually, the strategy every 5 years including full public involvement.

Members of Prosperous Communities Committee have requested a progress and delivery report be submitted annually to Committee. This request has been added to the Forward Plan with the first update scheduled for April 2014.

Part 1A of 3 – Implementing the Strategy (Appendix B):

Aims and Objectives (page 4 to 8) - This section of the strategy sets out how partners will work together to deliver the programme of works that will achieve the outcomes of the strategy. Table 1 on page 8 of the document provides the timeline for key strategic actions.

Roles and Responsibilities (page 9 to 17) - Roles and responsibilities are defined by law and the Lincolnshire Flood Risk and Drainage Management Partnership Agreement. Members may be particularly interested to note the statutory responsibilities placed upon flood risk management authorities, specifically District Council's on page 12 and to remind themselves of the partnership structure arrangements on page 14.

Setting the Context (page 18 to 21) - The strategy sets out why existing plans strategies to manage flood risk across the county. These have developed in a disparate way under old legislative regimes but are brought together by the Flood and Water Management Act 2010.

The strategy will play an important role in influencing the development of future business plans for Anglian Water Services and Severn Trent Water, the two water and sewerage companies that cover Lincolnshire, in particular the next five year cycle of works and improvements (page 21).

Assessment of flood risk and flood risk maps (pages 22 to 25) - contain a review of the methodology used to assess flood risk from different, individual sources and how these assessments can influence the assessment of flood risk overall. It is evident however, that the science of flood risk assessment is still evolving.

Water level management, Ordinary Water Courses and the Land Drainage Act 1991 (page 25 – 27)

This aspect of the strategy illustrates another innovative approach in Lincolnshire. In brief, Internal Drainage Boards have agreed to undertake the powers for ordinary water courses both within their own catchment areas but also outside of their catchments on behalf of Lincolnshire County Council. This approach is unique so far across England and Wales.

Increased flood risk due to climate change (page 28) – illustrates how climate change will impact flood risk management and how climate change forecasts have been taken into account

Joint assessment of flood risk from multiple sources (page 28) – recognises that some communities are at risk from flooding from multiple sources and proposes a methodology for mapping these in 2013 to quantify the level of risk involved.

Risk based prioritisation (page 29) – illustrates how flood risk management and works will be prioritised. Most important is risk to human life, followed by risk to health, property and the environment. A flexible approach will ensure that vital infrastructure such as roads and hospitals are also recognised alongside valuable agricultural land.

Mitigation measures (page 29) – defines structural and non-structural methods of mitigation and how a balance of these measures will be achieved across the county.

Resilience to Flooding (page 30) – defines the role and responsibility of emergency service, flood risk management authorities and communities in coping with flooding incidents

Planning and development control (page 31) – explains how effective flood risk management can contribute to sustainable growth.

Sustainable drainage systems (page 31 - 32) – sets out the strategic intent to better coordinate and manage flood risk data held by various agencies across the county. A flood risk management register is also being developed to enable local people, insurance companies and developers have access to the best available intelligence relating to flood risk and local flood risk management assets. Lincolnshire County Council have a statutory duty to establish a Sustainable Drainage Approving Body to approve the urban drainage systems proposed by developers.

Data management (page 32) - sets out the strategic intent to better coordinate and manage flood risk data held by various agencies across the county. This will enable the more effective and consistent assessment of flood risk and will ensure local people, insurance companies and developers have access to the best available intelligence relating to flood risk and local flood risk management assets.

Communications and Community involvement (page 32 – 33) – There is a need to sustain consistent dialogue between flood risk management agencies and communities and businesses to ensure that individuals are fully informed and know what is best for them to do for themselves. This will involve using the existing mechanisms but to better effect and is entirely consistent with the West Lindsey approach to 'localism'.

Costs benefits and funding arrangements (page 34 - 35) - Excluding Government grants and the resources available to Severn Trent and Anglian Water, public funds available for flood risk and drainage management in Lincolnshire amounts to £21m. The formula used to assess bids for national funding for works, known as 'Grant in Aid' has recently changed so that where there are contributions from local funds, these are more likely to attract national funding top up.

Hence West Lindsey District Council intends to maintain an earmarked reserve to contribute to local schemes which might not otherwise attract national funding (page 35).

Partnership resources (page 35) - The strategy seeks to drive efficiencies in the deployment of resources to manage flood risk across the county through better prioritisation via the common works programme and by engaging the organisation best placed to deliver the best results. The aim is to deliver 10% efficiencies on the 2013/14 baseline position, with savings re-invested into flood risk management.

Cross Boundary Working and the Environment (page 36 - 38) - Managing cooperation across administrative borders and integrating plans and strategies is of vital importance in managing water systems. Pages 36 to 38 provide details on how this is being achieved in the East of England.

Strategic contribution to the wider environment (38 to 39) -This section identifies how this strategy will contribute and integrate with sustainable development principles. The strategy will contribute to the wider environmental objectives by ensuring not only the proper consideration of possible harm to the environment but also opportunities for proactive improvements. Wider objectives include ecological status, biodiversity, adaption and mitigation of climate change and sustainable water resource management.

Part 1B of 3 – Annexes A – F (Appendix C):

This part of the strategy contains a bundle of annexes that provide background information and maps to the strategy document as follows;

Annex A: Statutory requirements of the local flood risk management strategy

Annex B: Risk management authorities and their functions

Annex C: Governance and accountabilities of risk management authorities

Annex D: Assessment of flood risk

D1: Coastal and river flood risk map

D2: Coastal hazard map

D3a: Surface water preliminary flood risk assessment, Central Lincolnshire

D3b: Surface water preliminary flood risk assessment, East Lindsey

D3c: Surface water preliminary flood risk assessment, South Kesteven

D3a: Surface water preliminary flood risk assessment, South East Lincs.

D4: Groundwater flood risk

Annex E: The requirements of the Flood Risk Regulation 2009

Annex F: Flood risk and land drainage management in The Fens

Conclusion

The Joint Lincolnshire Flood Risk and Drainage Management Strategy will provide the strategic direction and works programme for the Lincolnshire Flood Risk and Drainage Management Partnership. It brings together flood risk management work streams across Lincolnshire many of which have been recognised by Defra and the Local Government Association as national best practice.

While meeting statutory obligations, the development of the Local Flood Risk Management Strategy as a genuinely joint programme with a shared vision for flood risk management into the future will secure and maximise the benefits already accruing from existing work already underway thus maximising outcomes for our communities and vital infrastructure.

Recommendation

a) That Committee Members endorse the final version of the Joint Lincolnshire Flood Risk & Drainage Management Strategy 2012 – 2025

Lincolnshire Flood Risk and Drainage Management Partnership Framework



Joint Lincolnshire Joint Flood Risk and Drainage Management Strategy 2012-2025

Part 1 of 3

Strategic Vision

Introduction

In 2007 Lincolnshire, along with other parts of the UK, experienced unusually heavy rainfall. This led to serious flooding in numerous locations across the country, including in Lincolnshire. These events prompted the Government to commission a review of the way flooding is managed in England and Wales. The results of this review were published in a report in June 2008, called '[Learning Lessons from the 2007 Floods](#)'.

The report called for urgent and fundamental changes in the way we manage the risk of flooding. Its recommendations were [accepted in full](#) by the Government in 2008, and led to a new Act of Parliament, the [Flood and Water Management Act](#) (2010). Together with the [Flood Risk Regulations 2009](#), this establishes a new national approach to managing the risk of flooding.

The Lincolnshire Flood Risk and Drainage Management Partnership

Lincolnshire already possessed great expertise in managing drainage and many aspects of flood risk. Before the legislation was published, authorities responsible for managing flood risk and drainage in Lincolnshire agreed to form a partnership to work more closely together, and to make existing resources go further. In this way, although it will never be possible to prevent all flooding, Lincolnshire's flood risk management authorities aims to provide more local communities with improved protection from flood risk, while helping local people to be better prepared for flooding if it happens.

The partnership was formally established in April 2010. Its members are:

- Lincolnshire County Council
- The Environment Agency
- The 14 Internal Drainage Boards operating in Lincolnshire
- The 7 District Councils in Lincolnshire
- The two Water and Sewerage Companies operating in Lincolnshire
- Natural England
- The Regional Flood & Coastal Committee
- The Lincolnshire Resilience Forum (authorities responsible for planning for and responding to emergencies of all kinds)

A Joint Flood Risk and Drainage Management Strategy for Lincolnshire

Lincolnshire County Council, as the Lead Local Flood Authority for the county, is required by the new legislation to work with other Risk Management Authorities to develop, maintain, apply and monitor a Local Flood Risk Management Strategy, which must be consistent with the Environment Agency's national Flood and Coastal Erosion Risk Management.

In Lincolnshire we see this as an opportunity to continue improving the way we work together so that we can provide a shared vision for how flood risk and drainage should be managed in the future. The result is this Joint Lincolnshire Flood Risk and Drainage Management Strategy.

Our vision: how flood risk and drainage will be managed by 2025

The overall aim of the Lincolnshire Flood Risk and Drainage Management Partnership can be summed up very simply:

We will work with our communities to manage the likelihood and impact of flooding for the social, economic and environmental benefit of Lincolnshire. We will support local people and businesses to take part in managing the risks that affect them. Lincolnshire will continue to be a national exemplar for effective partnership working in flood risk and drainage management.

What will be in place when this vision is achieved?

The partnership will achieve a number of objectives to make this vision reality.

- 1 There will be a common works programme of measures to manage flood risk and drainage by 2013.
- 2 Existing resources will be used in the most efficient way possible. We will attract as much external funding as possible, and will secure new resources locally and nationally.
- 3 The likelihood and impact of flooding from all sources will be reduced where possible from current levels by 2025. This includes accounting for increases in the risk of flooding caused by climate change.
- 4 Emergency planning and response arrangements managed by the Lincolnshire Resilience Forum will form part of a single, co-ordinated approach to managing flood risk and drainage as a whole.
- 5 The Lincolnshire Flood Risk and Drainage Management Partnership will work with local communities to develop flood risk and drainage management services that meet local needs.
- 6 Local communities and businesses will be more aware of flood risk, and with the help of public authorities, will take steps to protect themselves through individual and community action.
- 7 Planning and development control across the county will take account of all forms of flood risk and sustainable drainage; development which could increase flood risk will be minimised, as will inappropriate development in areas of significant flood risk.
- 8 Flood risk and drainage management will be more accountable to the public through the local democratic process, and through more freely available information about flood risk and measures taken to control it.
- 9 Flood risk, drainage management and future development will contribute to better water quality, wider environmental benefits and sustainable growth.

How will these objectives be achieved?

In order to meet these long-term objectives, the partnership will need to achieve a range of more immediate measures. The most important of these are:

- Information about the way flood risk assets are managed will be more accessible from the end of 2012 through the online Lincolnshire flood risk asset register.
- Lincolnshire will have more information and better ways of assessing flood risk from all sources after 2013, which will guide sustainable development and improve the way that priorities for works, other measures and further investigation are decided.
- The Lincolnshire Common Works Programme will commence in 2013. It will be a three-year, published programme of joint works by all partner organisations across the county, continuously reviewed and updated.
- From 2013-14, public authorities will co-ordinate resources to increase efficiency, and increase the amount of funding available to be used for flood risk and drainage management.
- The partnership will work together towards sustainable growth in the county, influencing planning and development control policy, as well as individual development proposals.
- The County Council will be established as the sustainable drainage approving body during 2014, working with the local development industry, local planning authorities and water and sewerage companies.
- Partnership activities will be overseen by elected members on behalf of the public.
- A partnership communications and engagement strategy will be established in 2013 to ensure open, honest and consistent dialogue is maintained with communities and businesses.
- We will work with the insurance industry to improve their understanding of flood risk and to provide local people with an improved picture of local flood risk to present to their insurers.
- Assessment of flood risk will be reviewed and updated in 2016.
- This Strategy will be reviewed in 2017 to ensure it remains current and guides all flood risk management initiatives.
- Agreed objectives for managing the coast up to 2025 will be implemented as set out in the new [Shoreline Management Plans](#) for Flamborough Head to Gibraltar Point and for the Wash.

Increased flood risk due to climate change

Climate change poses a major challenge in managing flood risk and drainage in Lincolnshire. Increases in global temperatures and changing weather patterns indicate that climate change will cause more extreme weather events. The [UK Climate Projections](#), published in June 2009, predict how these changes will affect us. These challenges will be taken into account in our future flood risk and drainage management measures and activities.

Improving delivery by working together and involving local people

The Lincolnshire partnership will drive changes in the way that existing resources are allocated. Through the common works programme we will seek to achieve more by improving the way we prioritise maintenance and new works, and we will ensure that works and other measures are undertaken by the organisation best placed to deliver the best results.

It is important that in managing flood risk and land drainage we co-operate with neighbouring areas to manage water systems that cross administrative boundaries. For Lincolnshire, this means working closely with Nottinghamshire County Council along the River Trent, and on the south bank of the Humber with North Lincolnshire and North East Lincolnshire Councils, where rivers such as the Ancholme cross administrative boundaries, and where we share interests in effective coastal management.

In the south, we need to work closely with Cambridgeshire, Peterborough, Norfolk and Suffolk, to develop a consistent management approach to the Fens. The Fens cover a very large area, much of which is defended from saltwater flooding by Lincolnshire's and Norfolk's extensive system of coastal defences. Behind these defences a vast, interconnected pumped drainage system maintains some of the best agricultural land in Europe, and its management should be consistent across the whole Fenland area.

The best approaches to flood risk management involve local people in understanding all forms of flood risk, deciding on any measures that may be appropriate, and putting these in place. However, it is equally important that people have the knowledge and support to take their own precautions, making their own properties less likely to flood and, if flooding does happen, less difficult and expensive to repair.

The partnership will establish and maintain regular and consistent dialogue with local people who have been, or may be affected by flooding or by activities to address flood risk. We will use communication methods that work best for the audience. The role of existing community groups, parish and town councils and elected members will be very important in achieving this combination of increasing community awareness and understanding of flood risk, involving people in making decisions about how flood risk and drainage is managed in their area, and building up the ability of communities to help themselves and support emergency responders.

Protecting the environment

All risk management authorities are required to undertake their duties in a way that not only protects the environment, but also seeks to improve it wherever possible. We are currently reviewing where potential environmental improvements could be made, and are working with the Greater Lincolnshire Nature Partnership to ensure that projects designed to manage flooding also contribute to environmental improvement. A [Strategic Environmental Assessment](#) has been carried out to ensure that this Strategy is consistent with the principles of good environmental management.

Monitoring progress

Successful delivery of the Strategy will be managed by the Lincolnshire Flood Risk and Drainage Partnership, and progress will be reviewed in public on a six-monthly basis by the Joint Flood Risk Management Scrutiny Committee.

The works programme will be reviewed annually, and the Strategy as a whole will be subject to a five-yearly review process, including full public involvement, to ensure it is kept up-to-date, takes account of objectives achieved, and continues to maintain a focused forward programme at strategic and operational levels.

Find out more

This Strategy is available online at

<http://www.lincolnshire.gov.uk/residents/environment-and-planning/flood-risk-management/implementing-a-strategy-to-manage-flood-risk-countywide-and-locally/103045.article?tab=downloads>

Hard copies are available on request. Postal enquiries should be sent to:

Joint Lincolnshire Flood Risk and Drainage Management Strategy
Lincolnshire County Council
Environmental Services
Witham Park House
Waterside South
Lincoln LN5 7JN

Email enquiries should be sent to sustainability@lincolnshire.gov.uk

For telephone enquiries please contact (01522) 782070

Lincolnshire Flood Risk and Drainage Management Partnership Framework



Joint Lincolnshire Flood Risk and Drainage Management Strategy 2012-2025

Part 2A of 3

Implementing the Strategy in Partnership

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Annexes (See separate document, Part 2B)

Annex A:	Statutory requirements of the Local Flood Risk Management Strategy
Annex B:	Risk management authorities and their functions
Annex C:	Governance and accountability of Risk Management Authorities
Annex D:	Assessment of Flood Risk
Annex E:	The requirements in the Flood Risk Regulations 2009
Annex F:	Flood risk and land drainage management in the Fens

1 Introduction

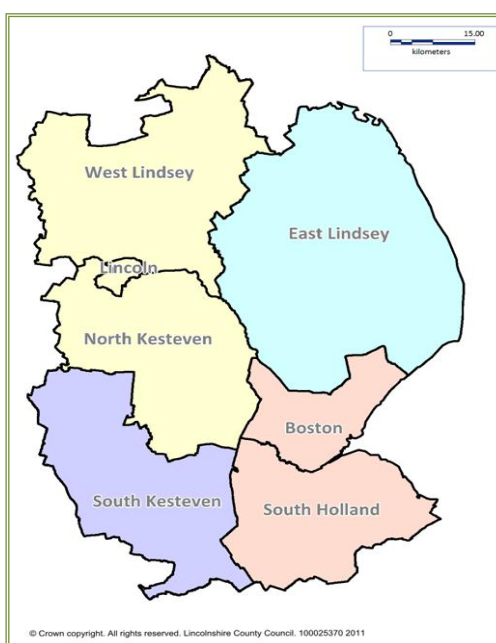
This Strategy establishes a shared strategic vision for managing flood risk and drainage across Lincolnshire. It has been developed and agreed by the Lincolnshire Flood Risk and Drainage Management Partnership, and is consistent with the National Flood and Coastal Erosion Risk Management Strategy for England published in July 2011 by Defra and the Environment Agency. It fulfils one of the main duties of the Lead Local Flood Authority for Lincolnshire under the Flood and Water Management Act 2010.

The Strategy covers the county of Lincolnshire, incorporating the districts of North Kesteven, South Kesteven, West Lindsey, East Lindsey, South Holland, the Borough of Boston and Lincoln City. The county is predominantly rural and has a geographical area of 2,309 sq miles. Population is centred around the cathedral city of Lincoln with other key centres of population in Gainsborough, Louth, Mablethorpe, Skegness, Boston, Sleaford, Grantham, Stamford and Spalding.

Forty per cent of the county is at or below sea level, and water levels in these areas are managed by fourteen Internal Drainage Boards through an extensive system of drainage channels, pumps and other control structures. There are a number of large embanked rivers and tributaries that flow through Lincolnshire including the Rivers Witham, Nene and Welland. Other significant rivers include the Rivers Brant, Till, Bain, and Slea.

The coastal floodplain stretches from the Humber estuary in the north to the Wash in the south. Numerous coastal settlements exist with a high proportion of older residents. A successful tourism industry means that many of these communities increase significantly in number during the summer months, including temporary occupation of about 25,000 caravans. The coastal plain also boasts some of the country's best agricultural land and internationally renowned nature conservation sites.

Figure 1 Map of Strategy area



2 Aims and Objectives

A vision for the future of flood risk and drainage management in Lincolnshire: how flood risk and drainage will be managed by 2025

Vision:

We will work with our communities to manage the likelihood and impact of flooding for the social, economic and environmental benefit of Lincolnshire. We will support local people and businesses to take part in managing the risks that affect them. Lincolnshire will continue to be a national exemplar for effective partnership working in flood risk and drainage management.

Strategic Outcomes: what will be in place when the vision is achieved

- 1 There will be a common works programme of measures to manage flood risk and drainage by 2013.
- 2 Existing resources will be used in the most efficient way possible. We will attract as much external funding as possible, and will secure new resources locally and nationally.
- 3 The likelihood and impact of flooding from all sources will be reduced where possible from current levels by 2025. This includes accounting for increases in the risk of flooding caused by climate change.
- 4 Emergency planning and response arrangements managed by the Lincolnshire Resilience Forum will form part of a single, co-ordinated approach to managing flood risk and drainage as a whole.
- 5 The Lincolnshire Flood Risk and Drainage Management Partnership will work with local communities to develop flood risk and drainage management services that meet local needs.
- 6 Local communities and businesses will be more aware of flood risk, and with the help of public authorities, will take steps to protect themselves through individual and community action.
- 7 Planning and development control across the county will take account of all forms of flood risk and sustainable drainage; development which could increase flood risk will be minimised, as will inappropriate development in areas of significant flood risk.
- 8 Flood risk and drainage management will be more accountable to the public through the local democratic process, and through more freely available information about flood risk and measures taken to control it.
- 9 Flood risk, drainage management and future development will contribute to better water quality, wider environmental benefits and sustainable growth.

Summary of Strategic Outcomes:

- 1 Single, co-ordinated programme of works and measures
- 2 Efficient use of resources whilst maximising external funding
- 3 Flood risk and impacts reduced where possible
- 4 Emergency response is part of a single co-ordinated approach
- 5 Flood risk management services that meet local needs
- 6 Communities more aware and can better protect themselves
- 7 Sustainable growth has regard to all forms of flood risk; inappropriate development in flood risk areas minimised
- 8 Management more accountable and information available
- 9 Contribute to better water quality and environmental benefits

Strategic Objectives: how we will arrive at our vision and outcomes

- Information about the way flood risk assets are managed will be more accessible from the end of 2012 through the online Lincolnshire flood risk asset register.

Outcomes 1, 4, 6, 8

- Lincolnshire will have more information and better ways of assessing flood risk from all sources after 2013, which will guide sustainable development and improve the way that priorities for works, other measures and further investigation are decided.

Outcomes 1, 3, 4, 5, 7

- The Lincolnshire Common Works Programme will commence in 2013. It will be a three-year, published programme of joint works by all partner organisations across the county, continuously reviewed and updated.

Outcomes 1, 2, 3, 5, 9

- From 2013-14, public authorities will co-ordinate different kinds of resources to increase efficiency, and increase the amount of funding available to be used for flood risk and drainage management.

Outcomes 2, 3, 5

- The partnership will work together towards sustainable growth in the county, influencing planning and development control policy, as well as individual development proposals.

Outcomes 1, 2, 7, 9

- The County Council will be established as the sustainable drainage approving body during 2014, working with the local development industry, local planning authorities and water and sewerage companies.

Outcomes 1, 2, 3, 5, 7, 8, 9

- Partnership activities will be overseen by elected members on behalf of the public.

Outcome 8

- A partnership communications and engagement strategy will be established in 2013 to ensure open, honest and consistent dialogue is maintained with communities and businesses.

Outcomes 5, 6, 9

- We will work with the insurance industry to improve their understanding of flood risk and to provide local people with an improved picture of local flood risk to present to their insurers.

Outcomes 3, 5, 6, 7

- Assessment of flood risk will be reviewed and updated in 2016.

Outcomes 1, 2, 3, 7

- This Strategy will be reviewed in 2017 to ensure it remains current and guides all flood risk management initiatives.

Outcomes 1, 2, 3, 4, 5, 6, 7, 8, 9

- Agreed objectives for managing the coast up to 2025 will be implemented as set out in the new [Shoreline Management Plans](#) for Flamborough Head to Gibraltar Point and for the Wash.

Outcomes 1, 2, 3, 7, 9

Guiding Principles: how we will work together to achieve the vision and objectives

- The Local Flood Risk Management Strategy is the statutory responsibility of the Lead Local Flood Authority, but as a comprehensive joint approach the Lincolnshire Joint Flood Risk and Drainage Management Strategy is owned and agreed by all parties to the Flood Risk and Drainage Management Partnership.

Outcomes 3, 4, 7
- The Strategy provides a single, overarching focal point to co-ordinate all strategic and operational flood risk and drainage management within Lincolnshire. It will act as the point of linkage between the National FCERM Strategy and the local level, as well as with existing strategies and plans, such as the Shoreline Management Policies, Catchment Flood Management Plans and Local Development Frameworks (Local Plans).

Outcomes 1, 4, 5, 7, 9
- Governance will be undertaken through the Strategy Group and Management Group of the Lincolnshire Flood Risk and Drainage Management Partnership, with member scrutiny through the Joint Flood Risk and Drainage Management Scrutiny Committee.

Outcome 8
- The purpose of the Strategy is to increase the safety of people across Lincolnshire by reducing the number of people at risk of flooding, increasing the resilience of local communities, and reducing the impact of flooding.

Outcomes 3, 6
- Resources will generally be prioritised on the basis of risk and benefit, using a single dataset common to all partners and a shared assessment of flood risk across Lincolnshire, covering all sources of flooding.

Outcomes 1, 2, 5, 7, 9
- We will seek contributions to local schemes to ensure we maximise resources, and will seek to maximise the amount of national resources drawn into Lincolnshire.

Outcomes 2, 6
- Works will be undertaken by the organisation best placed to provide cost-effective and appropriate delivery.

Outcomes 1, 2, 5

- We will support local communities to take steps to improve their own resistance and resilience to flooding, and to determine their own preferred options for doing so.
Outcomes 5, 6, 7, 8
- As the single focal point for setting out the agreed countywide priorities for flood risk and drainage management, the Strategy will provide a consistent framework for Local Planning Authorities and development control in the consideration of sustainable growth, and developing and implementing policy and practice.
Outcomes 1, 7
- Partners will share a common set of values and behaviours, based on trust, openness and a shared ambition to work together to achieve the best results for the communities that we serve.
Outcomes 5, 6, 8
- We will meet our national obligations, but will prioritise local needs and will place public accountability at the centre of what we do.
Outcomes 3, 5, 6, 8

Table 1 **Timeline of key strategic actions**

Date	Key Action
December 2012	Strategy published
April 2013	Common works programme becomes operational, prioritised using single assessment of flood risk from all sources
April 2013	Integrated partnership communications and engagement strategy operational
December 2013	Strategy provides evidence base for householders to present to insurers
December 2013	Hazard and Flood Risk Maps under the Flood Risk Regulations 2009 published
April 2014	County Council established as sustainable drainage; systems approving body (SAB) – depending on date of commencement of this section of the legislation
December 2015	Flood Risk Management Plans under the Flood Risk Regulations 2009 produced
June 2017	Preliminary Flood Risk Assessment reviewed
April 2018	Strategy reviewed and revised, with greater integration of currently existing strategies and plans
December 2019	Flood Hazard Maps and Flood Risk Management Plans reviewed under Flood Risk Regulations 2009
April 2025	The likelihood and impact of flooding from all sources will be reduced from 2012 levels where possible
December 2025	Completion date for implementing first stage of agreed coastal management policies

3 Roles and Responsibilities

A Joint Flood Risk and Drainage Management Strategy for Lincolnshire

Lincolnshire County Council, as the Lead Local Flood Authority for Lincolnshire, is required by law to develop, maintain, apply and monitor a Local Flood Risk Management Strategy (see **Annex A**). The strength of our partnership arrangements in Lincolnshire means that this is an opportunity to develop a co-ordinated approach for all organisations with responsibilities for flood risk and drainage management: a Joint Flood Risk and Drainage Management Strategy for Lincolnshire.

A new national framework

In 2007 Lincolnshire, along with other parts of the UK, experienced unusually heavy rainfall. This led to serious flooding in Louth, Horncastle and parts of Lincoln, as well as in numerous other locations in the north and east of the county. Following on from other similar events since 2000, the 2007 floods prompted the Government to commission a review of flood risk management in England and Wales by Sir Michael Pitt, who published his final report: '[Learning Lessons from the 2007 Floods](#)' in June 2008.

The report called for urgent and fundamental changes in the way flood risk is managed in the country. Its recommendations were [accepted in full](#) by the Government in 2008, and led to a new Act of Parliament, the [Flood and Water Management Act](#) (2010). Together with the [Flood Risk Regulations 2009](#), this establishes a new national and local approach to managing the risk of flooding.

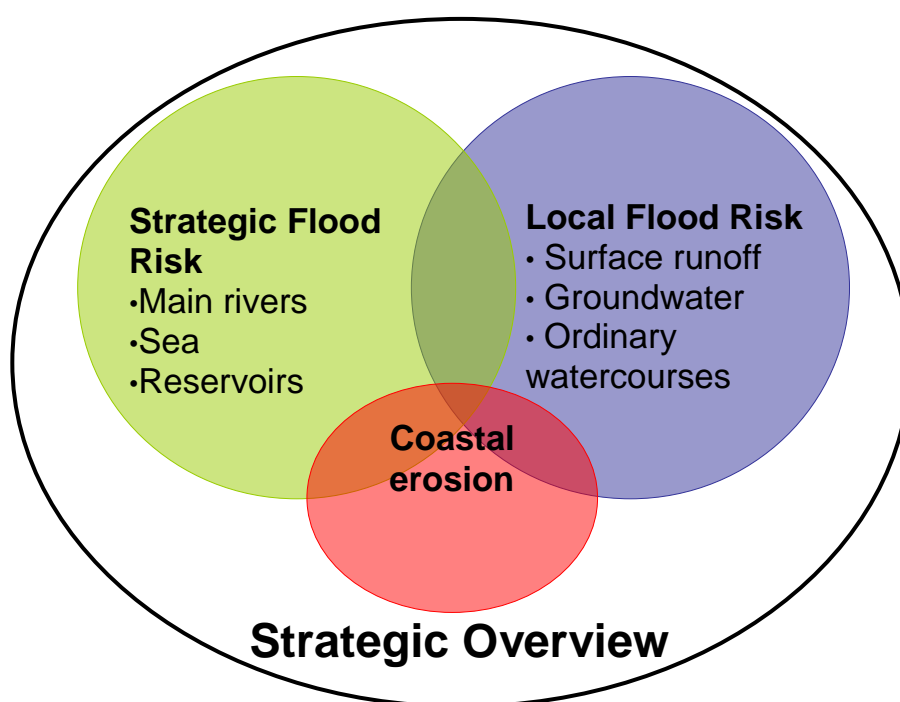


Figure 2 Strategic overview and integration of flood risk sources

A partnership between the Environment Agency and local authorities across the country lies at the core of the new arrangements. The Environment Agency is charged with maintaining a strategic overview of flood risk management throughout England as shown in Figure 2 above. This is articulated through a [National Flood and Coastal Erosion Risk Management Strategy](#).

County Councils and Unitary authorities (Lead Local Flood Authorities) are responsible for leadership and co-ordination of their own and other authorities' work on flood risk management locally, managed through a Local Flood Risk Management Strategy. This must be consistent with the National Strategy but should respond to local needs and circumstances. This Strategy is therefore an important part of a new national system, as well as a key element in developing Lincolnshire's strong partnership arrangements.

Using the National Strategy and this Joint Lincolnshire Flood Risk and Drainage Management Strategy, all relevant organisations will work together with communities to achieve the National Strategy outcomes shown below.

National Strategy outcomes:

- Manage the risk of flooding and coastal erosion to people and their property. Over time, we will be able, where possible, to improve standards of protection.
- Help householders, businesses and communities better understand and manage the flood and coastal erosion risks they face.
- Respond better to flood incidents and during recovery, and to coastal erosion.
- Move the focus from national government-funded activities towards a new approach that gives more power to local people, either at an individual, community or local authority level. Local innovations and solutions will be encouraged, too.
- Invest in actions that benefit communities who face the greatest risk, but who are least able to afford to help themselves.
- Put sustainability at the heart of the actions we take, so that we work with nature and benefit the environment, people and the economy.

Functions of the Lead Local Flood Authority and other Risk Management Authorities

A number of organisations are given a range of new duties and responsibilities under the new legislation, with the County Council being the Lead Local Flood Authority. Table 2 below summarises the key existing and new responsibilities for the relevant authorities operating in Lincolnshire, although some of these duties, for example the role of sustainable drainage system approving body, are not expected to be implemented until 2014 at the earliest.

Table 2 - Key responsibilities of Risk Management Authorities

Authority	Risk Management Functions
Environment Agency	<ul style="list-style-type: none"> • strategic overview for all forms of flooding • development of National Strategy for Flood and Coastal Erosion Risk Management (FCERM) to cover all forms of flooding • conversion of Regional Flood Defence Committees into Regional Flood and Coastal Committees with new remit to include coastal erosion issues • powers to request information in connection with FCERM functions • power to designate structures and features that affect flooding or coastal erosion • duty to exercise FCERM consistently with the national and local strategies • duty to report to Ministers on FCERM including implementation of the strategies • statutory consultee to the sustainable drainage approving body on sustainable drainage • responsibility for coastal flooding • responsibility for fluvial flooding from main rivers • duty to contribute to sustainable development in discharging their FCERM functions • ability to issue levies to lead local flood authorities: levies can now also apply to coastal erosion issues as well as flooding • duty to have regard to lead local flood authority scrutiny processes • updated provisions for the regulation of reservoirs
County or Unitary Council (Lead Local Flood Authority)	<ul style="list-style-type: none"> • development, maintenance, application and monitoring of Local Flood Risk Management (FRM) Strategy • powers to request information in connection with FRM functions • duty to investigate and publish reports on flooding incidents in its area (where appropriate or necessary) to identify which authorities have relevant FRM functions and what they have done or intend to do • duty to maintain a register of assets which have a significant effect on flood risk, in the view of the lead local flood authority • power to undertake works to manage flood risk from surface runoff or groundwater • power to designate structures and features that affect flooding • responsibilities as a Sustainable Drainage (SuDS) Approval Body (SAB) with responsibility for approval, adoption and maintenance of new sustainable drainage systems

	<ul style="list-style-type: none"> • regulation of ordinary watercourses under the Land Drainage Act 1991, including consenting and enforcement outside Internal Drainage Board areas: in Lincolnshire these duties have been delegated to Internal Drainage Boards • duty to exercise FCERM functions consistently with the national and local strategies • duty to contribute to sustainable development in exercising FCERM functions
Internal Drainage Board	<ul style="list-style-type: none"> • regulation of ordinary watercourses under the Land Drainage Act 1991, including consenting and enforcement • power to designate structures and features that affect flooding or coastal erosion • duty to act consistently with local and national strategies • duty to have regard to lead local flood authority scrutiny processes • ability to work in consortia with other Internal Drainage Boards • statutory consultees to the sustainable drainage system approving body on sustainable drainage • power to undertake works on ordinary watercourses flooding within their boundary and, with the Environment Agency's consent, the sea
District Council	<ul style="list-style-type: none"> • power to designate structures and features that affect flooding or coastal erosion • duty to act consistently with local and national strategies • duty to have regard to lead local flood authority scrutiny processes • power to undertake works on ordinary watercourses and, with the Environment Agency's consent, the sea
Water and Sewerage Company	<ul style="list-style-type: none"> • provide water supply • remove and treat foul water • drain surface water • duty to have regard to national strategies and to have regard to local strategies • duty to have regard to lead local flood authority scrutiny processes • adoption of private sewers

The existing and new responsibilities of these organisations are described in more detail in **Annex B**. In Lincolnshire, these organisations are all included within a strong established partnership, which was set up by agreement in advance of the new legislation.

Further information on specific key partnership requirements and methods of delivery are provided in Section 6 of this document.

The Lincolnshire Flood Risk and Drainage Management Partnership

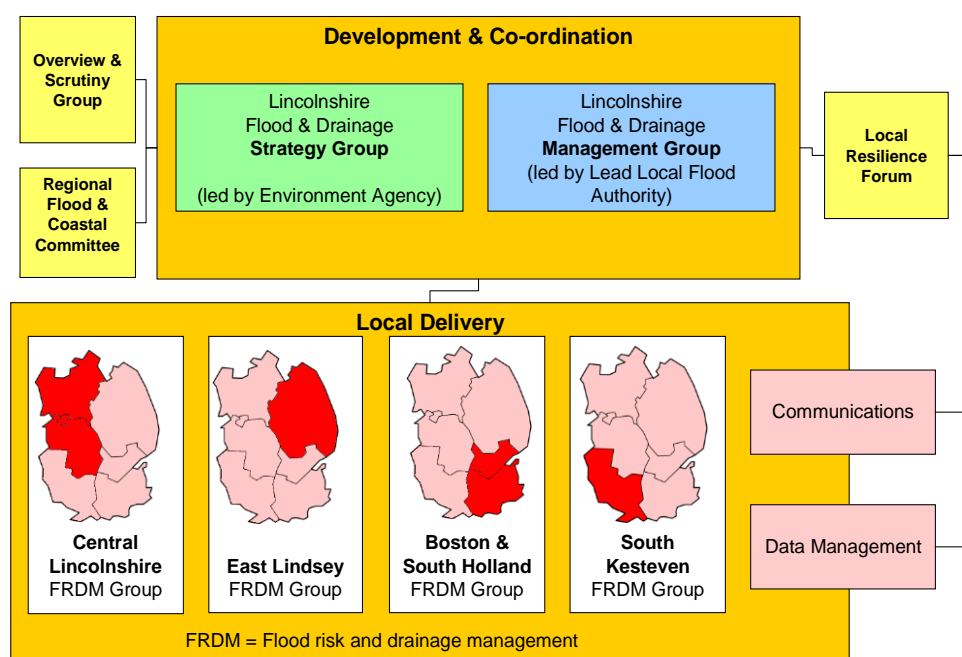
In advance of Government legislation, Lincolnshire County Council, the Environment Agency, Internal Drainage Boards, District Councils and Water Companies agreed to form a partnership to implement a more co-ordinated approach to the way flood risk is managed in Lincolnshire. This involves close joint working to deliver flood protection and prevention schemes on the ground, as well as strategic co-operation to make sure that all relevant authorities are following common, agreed aims and objectives.

The partnership was developed during 2009 and was formally established in April 2010. Its members are:

- Lincolnshire County Council
- The Environment Agency (Anglian Region, Northern Area)
- The 14 Internal Drainage Boards operating in Lincolnshire
- The 7 District Councils in Lincolnshire
- The 2 Water and Sewerage Companies operating in Lincolnshire
- Natural England
- The Regional Flood & Coastal Committee (Anglian Region, Northern Area)
- The Lincolnshire Resilience Forum (authorities responsible for planning for and responding to emergencies of all kinds)

The Partnership is organised as shown in Figure 3 below to provide strategic co-ordination at a county level, as well as collaborative solutions to flooding and drainage issues at the local level. A full description of the way the Partnership works can be found [here](#). As roles and responsibilities continue to develop, for example with the emergence of Local Nature Partnerships at county or unitary level, there is scope to keep membership under review to ensure all relevant parties can contribute effectively.

Figure 3 Organisation of the Lincolnshire Flood Risk and Drainage Management Partnership



Decision-making, governance and public accountability

One of the most important aspects of the Pitt Review was the need to ensure greater local accountability in flood risk management, with more information available to local people so that they might become more involved in decisions taken in their area, as well being better able to take more responsibility for their own resilience to flooding. Equally important was the need for more clarity about who should be contacted in the event of a flooding incident and who should be responsible for responding.

The role of the Lead Local Flood Authority is intended to provide this clarity, through its co-ordination role in relation to local flooding. Each flood risk management authority retains its own accountability arrangements, and these are set out in more detail at **Annex C**.

In Lincolnshire our partnership arrangements build on these existing accountability arrangements by bringing all flood risk activities in the county together in the Flood Risk and Drainage Management Partnership.

The Partnership has well-established arrangements for decision-making at countywide and local level, with clearly differentiated levels of responsibility assigned to the Strategy Group, the Management Group and the Local Drainage Groups. Public accountability is further enhanced by the fact that the activities of the partnership are overseen by a joint Flood Risk Management Scrutiny Committee.

Flood Risk and Drainage Management Scrutiny Committee

The Committee was established in 2010 to provide public scrutiny over the work of the partnership in Lincolnshire. It operates as a County Council scrutiny committee, and meets in public. An elected member from each of the seven District Councils in Lincolnshire is co-opted onto the Committee and representatives of each of the partner organisations also attend.

Developing a distinctive, democratically agreed set of priorities for Lincolnshire and a common programme of works to deliver them will create a framework within which the national Strategy can be implemented in a way that addresses local circumstances and needs in Lincolnshire. To this end, the close involvement of the Regional Flood and Coastal Committee is essential to ensure that the regional programme of works is sufficiently flexible to incorporate locally derived priorities.

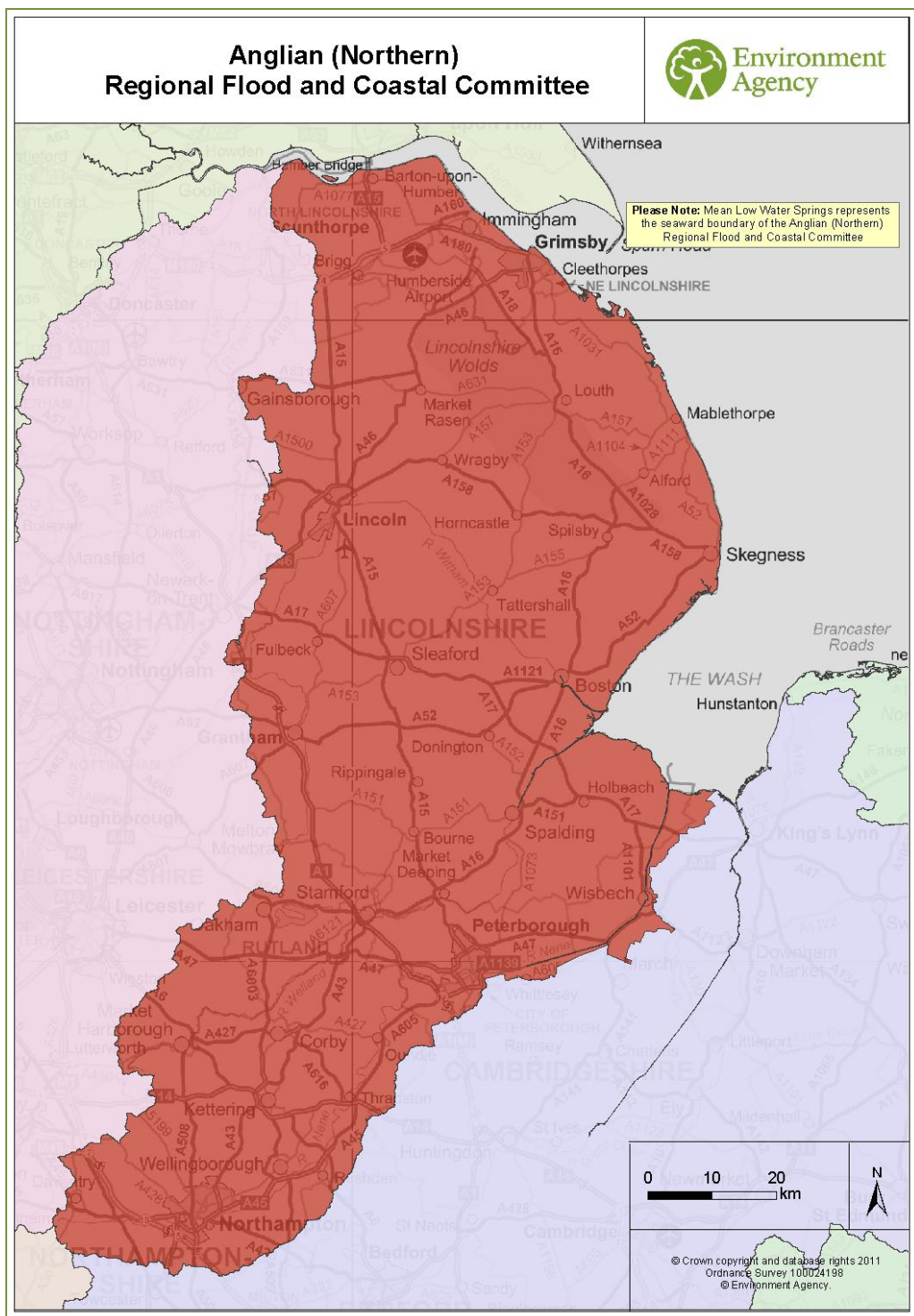
Regional Flood and Coastal Committee

The [Regional Flood and Coastal Committee](#) provides governance over the Environment Agency on behalf of Defra, and it covers the northern area of the Environment Agency's Anglian region as shown in Figure 4 below.

Most of Lincolnshire is covered by the Anglian (Northern) Regional Flood and Coastal Committee, but parts of the county along the east bank of the River Trent, including Gainsborough and the surrounding area, are covered by the Trent Committee.

The Regional Flood and Coastal Committee approves the Environment Agency's proposed plans at regional level and allocates much of the funding available to the Agency from Government. This also includes some of the funding available to Lead Local Flood Authorities and Internal Drainage Boards for local drainage and surface water flood risk management works.

Figure 4 Map showing Anglian Regional Flood and Coastal Committee area



The Lincolnshire Local Resilience Forum

The [Lincolnshire Local Resilience Forum](#) is the senior management group for the co-ordination of emergency planning within Lincolnshire. The Forum is made up of senior executives and policy makers from the principal organisations with responsibilities for emergency planning, emergency response and recovery under the Civil Contingencies Act. This includes many of the organisations represented on the Flood Risk and Drainage Management Partnership, as well as the Police, the Fire and Rescue Service, the NHS and other key partners.

Although the Local Resilience Forum covers the whole spectrum of emergency events, the potential impact of an event such as coastal flooding means that the Forum has a key role in the Flood Risk and Drainage Management Partnership to ensure that planning for major flooding events is fully aligned with the 'day-to-day' work of relevant operating authorities.

4 Setting the Context

Understanding Flood Risk

- **River and stream flooding** - This occurs when a river or stream cannot cope with the water draining into it from the surrounding land – for example, when heavy rain falls on ground that is already waterlogged.
- **Coastal and tidal flooding** - This results when there are high tides and stormy conditions. If low atmospheric pressure coincides with a high tide, a ‘tidal surge’ may happen causing higher than normal sea levels that may go over the top of defences.
- **Surface water flooding** - This occurs, for example, when rainwater does not drain away through the normal drainage system or soak into the ground, but lies on or flows over the ground instead. This type of flooding can be difficult to predict and pinpoint, much more so than river or coastal flooding.
- **Sewer flooding** - This can happen when sewers are overwhelmed by heavy rainfall or when they become blocked. The chance of flooding depends on the capacity of the local sewerage system and amount of rain that falls. Land and property can be flooded with water contaminated with raw sewage. Rivers can also become polluted by sewers that overflow.
- **Groundwater flooding** - This occurs when levels of water in the ground rise above the surface. It is most likely to happen in areas where the ground contains aquifers. These are permeable rocks that water can soak into or pass through.
- **Reservoir flooding** - Some reservoirs hold large volumes of water above ground level, contained by walls or dams.

There are a large number of existing plans and strategies defining how various aspects of flood risk will be managed. In part this is because in the past specific organisations were tasked with dealing with closely-defined areas of work that related to their own function, such as coastal management, river management, land drainage or water supply, rather than to an overarching vision of water management.

As shown in Figure 5, below, the National Flood and Coastal Erosion Management Strategy illustrates how these documents relate to each other, and which organisation has the responsibility for delivering and managing them.

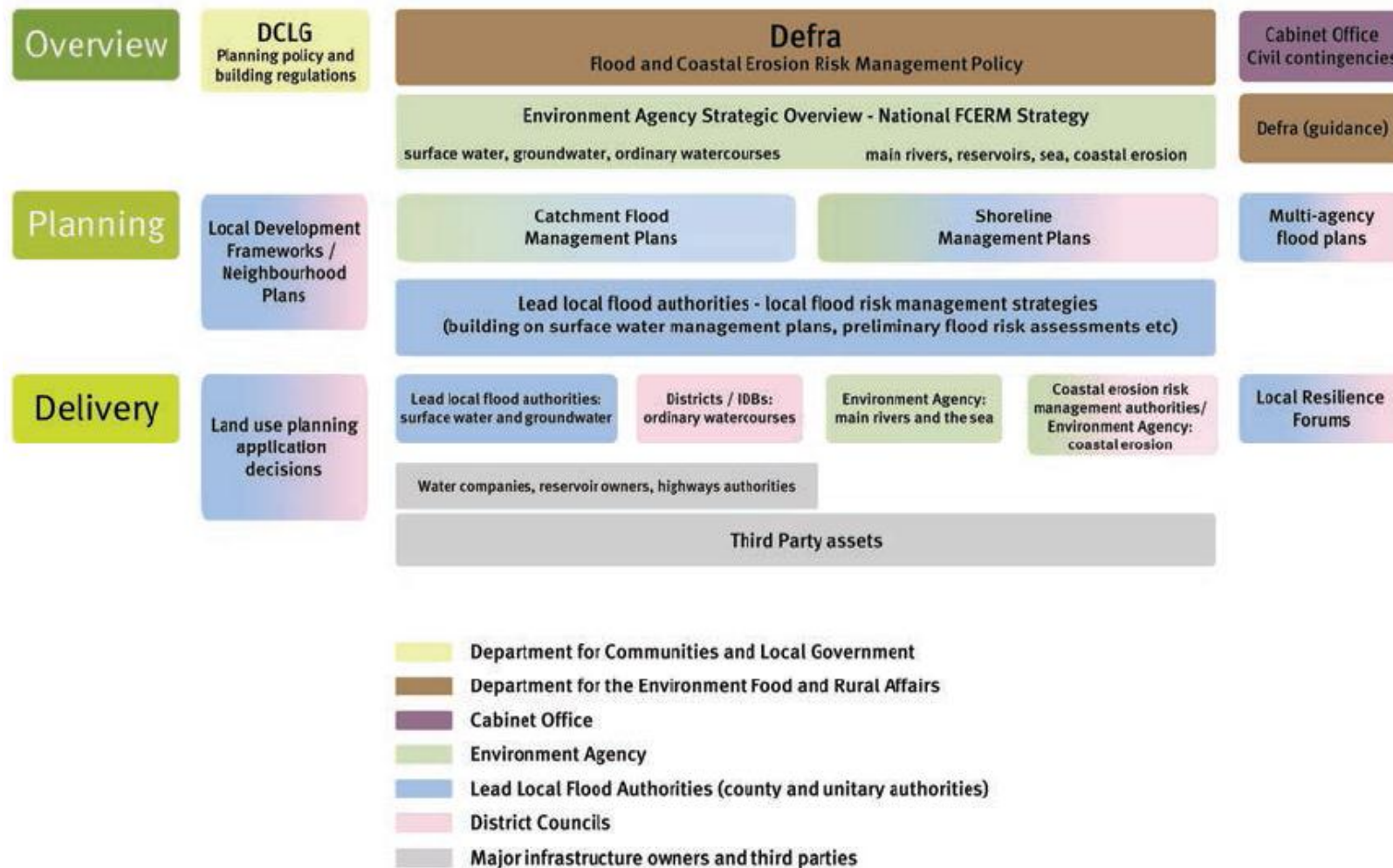


Figure 5 Strategic plans and lead authorities (from the National Flood and Coastal Erosion Risk Management Strategy)

The National Strategy provides detail on the purpose and scope of these documents (pp 47-50). Among the more important are Shoreline Management Plans (SMPs) and [Catchment Flood Management Plans](#), which set policy for coastal and river flood risk management respectively. There are two Shoreline Management Plans covering the Lincolnshire coast, one running from [Flamborough Head to Gibraltar Point](#), and a second covering the [Wash](#).

Boundaries of river catchments and the extent of the individual Shoreline Management Plans, together with the boundaries of the Environment Agency regions are illustrated in the maps in Figure 6 below:

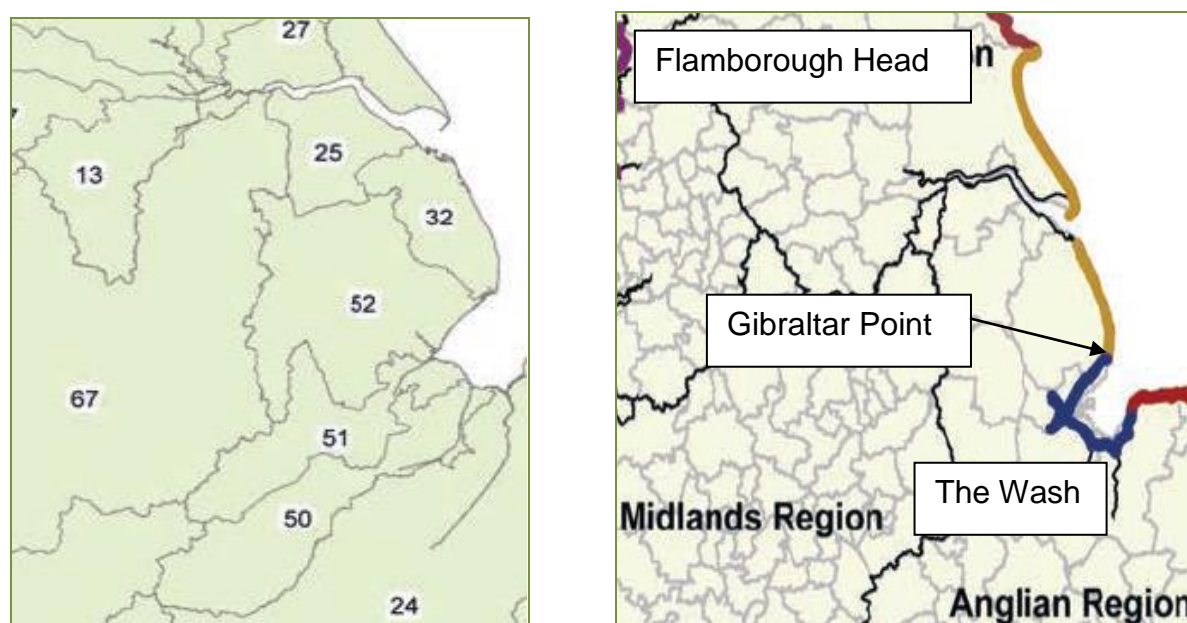


Figure 6 River Catchments and Shoreline Management Plan boundaries

The catchments covering Lincolnshire are:

25: Grimsby and Ancholme
32: Louth Coastal
50: River Nene

51: River Welland
52: River Witham
67: Trent

River catchments cut across the county's administrative boundaries, and an important aspect of development of the Flood Risk and Drainage Management Strategy will be establishing a working balance between governance systems and works that operate on different geographical principles. Similar considerations apply to the long coastal stretches covered by Shoreline Management Plans.

The [Lincolnshire Coastal Study](#), completed in 2010, builds on the policies agreed in the Shoreline Management Plans. It establishes a detailed evidence base of flood hazard, social, economic and environmental conditions in the coastal zone, as the basis for a broad strategic approach to planning for the coastal zone. The Lincolnshire Coastal Study was originally undertaken to advise the revision of the Regional Plan for the East Midlands. Since that

level of statutory plan making has been revoked the evidence and proposals of the Lincolnshire Coastal Study will be taken forward through Local Plans.

[Anglian Water Services](#) and [Severn Trent Water](#), the two water and sewerage companies covering Lincolnshire, plan their investment strategies through five yearly Asset Management Plans (AMPs), which are fundamental to the management of the public sewerage, water treatment and supply systems. Delivery of Asset Management Plans is regulated by Ofwat. This Strategy will play an important role in influencing the development of future business plans and, in particular, the formulation of the next five-year cycle, AMP6 (2015-20).

More broadly, there is national and European legislation protecting the environment that the Strategy must respect, alongside a duty in the Floods and Water Management Act itself that requires flood risk management authorities to undertake their duties in a manner 'consistent with sustainable development'. Of particular importance is the [Water Framework Directive](#), which imposes strict targets for the water quality of the UK's rivers and water bodies. This is part of the rationale behind the emphasis in the legislation on sustainable drainage systems.

An important aspect of this Strategy, therefore, is to act as a focal point so that over time the number of different flood risk assessments, plans and strategies can be rationalised and simplified.

5 Delivering the Strategy

Assessment of flood risk and Flood Risk Maps

Flood risk is assessed in a variety of ways according to its cause and how well it is understood. Flood risk from the sea and rivers has been the main focus of flood defence thinking in the UK for the past thirty or more years, and therefore is well understood with detailed techniques for assessment. Surface water flooding, caused by heavy rainfall, is less predictable and less well understood.

In general terms, there is a well-established framework in environmental risk assessment provided by the Government's 'Foresight' flood and coastal project in 2003 (illustrated below in Figure 6). This will be used to consider flood sources, risks and potential management measures, as it reflects the physical processes by which flooding occurs.

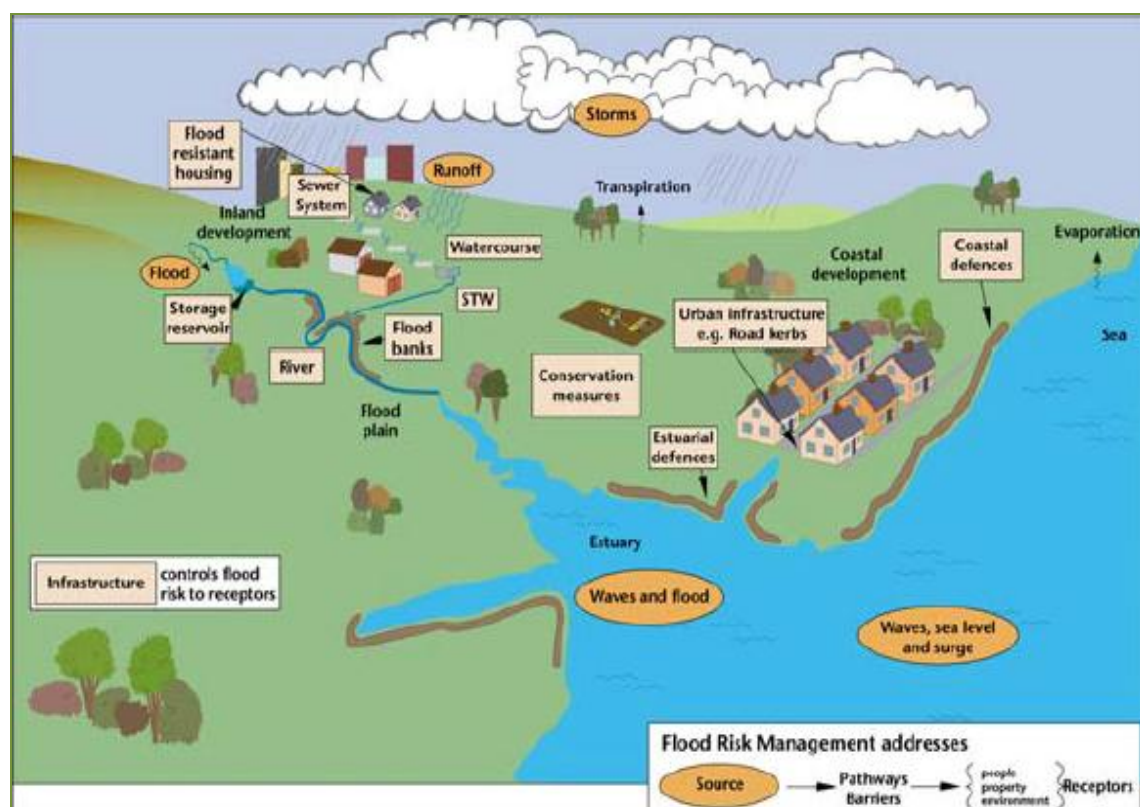


Figure 7 Source-Pathway-Receptor framework for flood risk analysis

A summary of sources, pathways and receptors is provided below.

Physical flooding elements:

- **Sources** are the weather events or sequences of events that may result in flooding (e.g. heavy or sustained rainfall, marine storms)
- **Pathways** are the mechanisms that convey flood waters that originate as extreme weather events to places where they may impact upon receptors. Pathways therefore include fluvial, surface water and groundwater flows, overland and floodplain, and in or out of rivers, streams and other channels, beach processes and failure of both fluvial and sea defence structures etc.
- **Receptors** are the people, houses, industries and built and natural environments that may be impacted upon by flooding

Important information underpinning the assessment of flood risk is found in the [flood risk maps](#) provided by the Environment Agency. Many of these are accessible to members of the public via the Agency's website. These flood maps, alongside additional information about historic flood events, represent the extent of flooding that might occur if flood defences were not present. This is part of the evidence used to assess the risk of flooding, but a full assessment will also consider the likelihood of flooding happening and level of hazard that it might present.

Where a Local Planning Authority has an up to date Strategic Flood Risk Assessment it will include assessments of flooding from all sources and reflect what is known about climate change and sea level rise over the next one hundred years. Local Planning Authorities have a duty to ensure such information is kept up to date in the longer term, and existing Assessments are currently being revised or have recently been revised. Strategic Flood Risk Assessments are available for [East Lindsey](#), [West Lindsey](#), the [City of Lincoln](#), [North Kesteven](#), [South Kesteven](#), [Boston](#) and [South Holland](#), and will be fundamental in planning for flood risk and as part of this Strategy.

Coastal and river risk mapping (Annex D1)

This shows the maximum possible extent of flooding from rivers and the sea, in the event of flood events significant enough to occur, on average, once in every 200 years. It shows a worst-case scenario, assuming no flood defences and simultaneous flooding at all possible points along the coast and rivers.

Coastal hazard mapping (Annex D2)

This assesses the danger posed by flooding on the assumption that it has already taken place. The map at **Annex D2** again looks at a flooding event from the sea of a size that statistically may occur once every two hundred

years, and models the behaviour of water if the sea defences were to be breached.

The modelling takes into account local topography, and rates hazard caused by depth and speed of water, as well as the quantity of debris carried in it. It is important to bear in mind that these maps do not show the likelihood of breaching, only the consequences once breaching has taken place.

Surface water flood risk

Lincolnshire County Council, working through the Flood Risk and Drainage Partnership, completed a [Preliminary Flood Risk Assessment](#) in June 2011, fulfilling one of the first new duties imposed on it by the Flood Risk Regulations 2009 (see **Annex E**). This is first time an assessment has been made across the county of the potential risk from surface water.

In essence, the assessment uses historical information about flooding incidents known to have happened in the past, where good, detailed information is available, as well as early Environment Agency surface water flood maps which indicate where there may be a risk of flooding in the event of extreme rainfall in the future. The combination of these data sources has provided a strategic assessment of risk (**Annexes D3a-d**).

Risk mapping as a science has been less advanced for surface water flooding than it is for coastal and river flooding. Extreme rainfall is also considerably more difficult to predict in terms of when and where it might happen. For this reason, the Preliminary Flood Risk Assessment did not identify specific properties that may be at risk of surface water flooding.

Following on from the Preliminary Flood Risk Assessment the Lead Local Flood Authority has been undertaking more detailed analysis of surface water flood risk across the county. This information is being used to inform a national revision of surface water flood maps by the Environment Agency which will provide improved and updated surface water flood maps during 2013. These will enable the partnership to promote better management of surface water to help reduce the risk of surface water flooding

Sewer Flooding

All water and sewerage companies maintain a register of properties at risk of flooding due to a hydraulic overload in the sewerage network, known as the DG5 register. This is part of the set of Ofwat DG (Director General) indicators (DG2 – DG9) used to monitor company performance.

The DG5 register is a register of properties and areas that have suffered or are likely to suffer flooding from public foul, combined or surface water sewers due to overloading of the sewerage system more frequently than the relevant period. There are 3 at risk reporting categories: '1 in 20 year', '1 in 10 year' and '2 in 10 year'. The reporting category reflects the frequency of flooding incidents in properties/areas and not the return period of the storm that

causes the flooding. A sewer is overloaded when the flow from a storm is unable to pass through it due to a permanent problem (e.g. flat gradient, small diameter). Temporary problems such as blockages, siltation, collapses and equipment or operational failures are excluded. It is also worth noting that properties will be removed from the register once a solution is in place.

As part of Water and Sewerage Companies' obligation to Ofwat, they are required to undertake capacity improvements to alleviate sewer flooding problems on the DG5 register during the current Asset Management Period (2010-15) with priority being given to more frequent internal flooding problems. The DG5 programme will be prioritised on the basis of cost benefit, which must be greater than the whole life cost of the scheme.

Groundwater flood risk

Some areas are more prone to higher groundwater levels than others, particularly when prolonged or extreme rainfall has saturated the ground and raised the water table in a locality. Parts of western Lincolnshire could be susceptible to flood risk due to high groundwater levels in the underlying aquifer. Also parts of the Lincolnshire Wolds may be susceptible to groundwater flooding when water levels are high in the chalk aquifer.

Groundwater mapping (**Annex D4**) is currently not well-suited to local assessment of risk, but rather assists in an overview of strategic risk at county level.

Reservoir flood risk mapping

Reservoir flood maps for large reservoirs are available from the Environment Agency website. Large reservoirs are those that hold over 25,000 cubic meters of water, but this is to be amended to 10,000 cubic metres. Flood maps are not widely available for smaller reservoirs or for reservoirs commissioned after reservoir mapping began in spring 2009. The maps also do not give any information about the depth or speed of the flood waters and are only intended as a guide and are not a prediction of what will happen.

Flooding from reservoirs in Lincolnshire is not considered to be a high probability.

Water Level Management, Ordinary Watercourses and the Land Drainage Act 1991

As well as specific aspects of flood risk management, water level management in general is very important to Lincolnshire. With forty per cent of the county at or below sea level these low-lying areas depend on constant management of water levels to balance the land drainage needed for agriculture with the maintenance of water levels required to support the natural environment.

Internal Drainage Boards have been established for many years in such low-lying areas, known as areas of special drainage need. Each Internal Drainage Board is a local public authority with permissive powers to manage water levels within their drainage districts. To do this, Internal Drainage Boards maintain extensive networks of drainage channels and pumping stations.

In addition, there are smaller water channels across the county, including natural streams, agricultural dykes and privately-owned ('riparian') drainage ditches. These channels are known as 'ordinary watercourses' to distinguish them from 'main rivers' managed by the Environment Agency and main drains maintained by Internal Drainage Boards.

Previously, prior to the Flood and Water Management Act, land drainage regulatory powers and responsibilities within England and Wales, in relation to ordinary watercourses were very complex, particularly outside of Internal Drainage Board areas.

Under the Land Drainage Act 1991 (Sections 23 and 24), prohibition of, or consent for placing obstructions and other features in watercourses, and enforcing compliance of the legislation (often referred to as 'consenting and enforcing') was undertaken by Internal Drainage Boards within their areas and by the Environment Agency elsewhere.

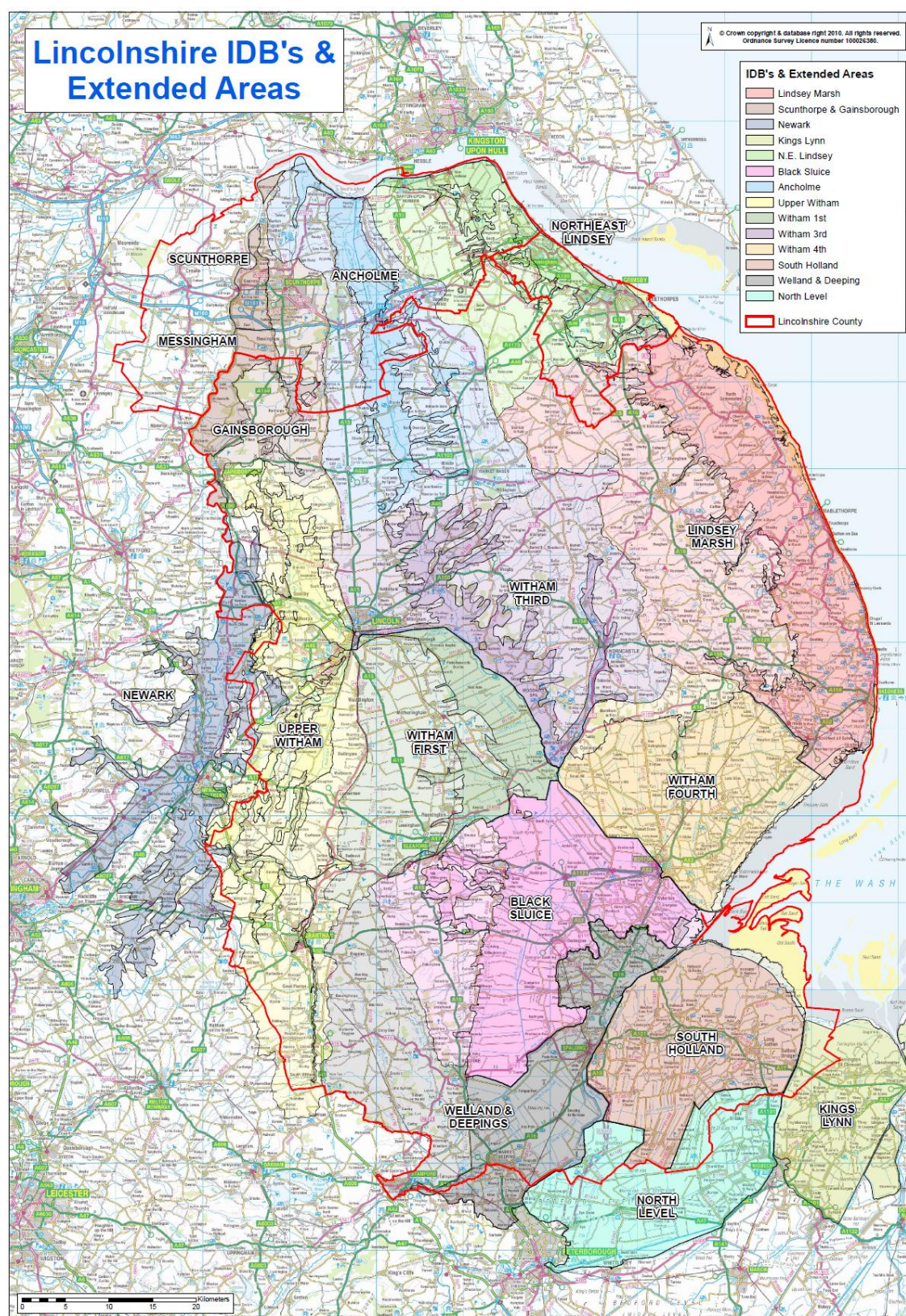
However, the enforcement of obligations to repair structures, such as bridges (Section 21), and powers to require works for maintaining flow (Section 25 – known as 'riparian enforcement'), could be taken up by District Councils, Internal Drainage Boards, the Environment Agency and County Councils. Consequently, outside of the Internal Drainage Board areas, implementation of these powers countywide has been sporadic with certain District Councils taking up the powers at certain times, while others have not used the powers for over twenty years.

The Flood and Water Management Act 2010 has revised the Land Drainage Act in these respects and from 6 April 2012 all of these powers have been rationalised to being the exclusive responsibility of Internal Drainage Boards within their areas and the Lead Local Flood Authority outside of them.

In Lincolnshire we have taken this opportunity to pilot an innovative approach to these powers, implementing the principles of our partnership arrangements to achieve the most effective flood risk and drainage management in the county by the most effective and appropriate partner to deliver it. In brief, the Internal Drainage Boards have agreed to undertake these powers across the whole county, establishing extended catchment areas to ensure consistent coverage across Lincolnshire.

This approach, which is so far unique in England and Wales, is illustrated below in Figure 8.

Figure 8 Lincolnshire Internal Drainage Boards and their extended areas



Increased flood risk due to climate change

Climate change poses a major challenge in our management of flood risk and drainage in Lincolnshire. Increases in global temperatures and changing weather patterns indicate that climate change will cause more extreme weather events as shown below.

Likely impacts of climate change include:

- Increased severity and frequency of storm events
- increased frequency of intensive rainfall events that may cause significant run-off from urban and agricultural areas, exceeding the capacity of artificial drainage systems and natural watercourses reaching their capacity
- Increased saturation of groundwater from large rainfall events that may cause large overland flows and watercourses to overflow
- Contribution to rising sea levels that may increase the risk of coastal flooding

It is widely accepted that climate change is occurring and will affect our weather patterns. The rise in temperatures and the changes to weather patterns in recent years have provided further evidence for this. The UK Climate Projections were published in June 2009 and predict how these changes will affect us. Key findings are shown below.

Key findings from UK Climate Projections 2009 suggest that:

- All areas of the UK will experience warmer weather especially in the summer
- The amount of precipitation annually will only slightly increase but more will fall in the winter and summer rainfall events will become more intense
- Sea level rise will be greater in the south of the UK than the north.

These and other climate change challenges will be considered and taken into account where appropriate in respect of future flood risk and drainage management measures and activities.

Joint assessment of flood risk from multiple sources

Recognising that communities may be at risk from more than one source of flooding, the partnership is developing methods of identifying where combined flood risk is present, and then quantifying the level of risk involved. These methods will be used to undertake hazard mapping during 2013 and formulation of detailed flood risk management by 2015 under the Flood Risk Regulations timetable.

Risk-based prioritisation

Funding is always limited, which is particularly true in the current economic climate. Therefore, in determining our priorities and actions, the Partnership will direct its resources to areas where there is the greatest need, and where investment will bring the greatest benefits.

The most important priority will always be risk to human life, followed by risk to health, property and the environment. These are key factors in the national framework for prioritisation, and the partnership will work within this framework when prioritising flood risk management measures in Lincolnshire. However, we will also seek to implement a flexible approach that reflects the nature of local circumstances, recognising the importance of high grade agricultural land, and tourism, while taking into account infrastructure such as hospitals, GPs' surgeries, local shops, transport links and power supplies.

Mitigation measures

Mitigation measures used to deliver the Strategy will depend on the severity of flood risk in each circumstance, made up of factors such as the probability, hazard and consequences of flooding, along with location, and physical and economic viability. A range of measures including structural and non-structural will be used. Examples of these measures are shown below.

- **Structural** - building defences, retaining wall, weirs, sluices, channels, storage ponds, property level resistance and resilience, Sustainable Drainage Systems, separation of surface water from foul water sewerage systems, retrofitting surface water management measures
- **Non structural** - flood warnings, deploying policies, strategies and plans, emergency planning, response and recovery, communications, awareness raising and training, land use planning and development control, regulation and enforcement, maintenance activities on existing structural measures, investigations, surveys

Many of these measures are currently being used (and also proposed in the future) by the Lincolnshire partnership, to better manage flood risk and drainage across the county. Specific measures, ongoing and proposed, are provided in the Action Plan and Common Works Programme (Part 3 of the Strategy).

The partnership maintains an array of flood protection measures across the county, and is investing in new schemes to reduce the risk of flooding to communities and businesses in Lincolnshire. Future investment will be undertaken on a risk-based approach, in response to identified risks and opportunities. This will be delivered through the Common Works Programme to maximise efficient use of resources.

Working on this principle the partnership has brought forward significant flood alleviation schemes such as Louth and Horncastle flood storage, the Boston tidal barrage and the Lincshore beach replenishment programme between Mablethorpe and Skegness.

By combining resources, partners have been able to attract inward investment at a national level and raise the priority of these schemes regionally. These principles have also been applied to the formulation of the Common Works Programme, which has enabled the partnership to achieve the highest rates in the country of national funding for local schemes. These include works at Waddingham, Fiskerton, Saxilby, Welbourn, Whaplode St Catherine's, Holbeach and Donington, bringing relief to communities that have experienced flooding in the past.

The forthcoming Common Works Programme is included in this Strategy's action plan, and will be reviewed on a regular basis.

Resilience to flooding

It will never be possible to prevent all flooding. For this reason it is important that Lincolnshire and its communities are able to cope if flooding happens. Lincolnshire's flood defences are among the best in the country, and we are used to living with flooding and flood risk. We need to be prepared for major events, such as the coastal flooding of 1953, as well as for more frequent extremes of weather as we experienced in 2007 and 2012.

Partner organisations work together to respond to flooding incidents as members of the Lincolnshire Resilience Forum, under the Civil Contingencies Act. This ensures that we are well prepared for the worst emergencies, and have plans in place to manage our response that have been tested on a number of occasions, such as during Operation Watermark in 2011.

However, it is important that local people understand how they can contribute to their own and their community's safety. Information on this can be found on the [Environment Agency's](#) website as well as that of the [Lincolnshire Local Resilience Forum](#), which will enable people and communities to keep up to date with any flood warnings that may be in force, and to know what to do in the event of flooding. The measures that people can take for themselves include registering with the Environment Agency service Floodline, making a personal flood plan, establishing local flood wardens and putting in place a parish emergency plan.

Where there is a likelihood of repeated flooding, householders and businesses can consider [property level resilience measures](#). These can include demountable flood boards, airbrick covers, raising electrical equipment and sockets to a higher level, tiled flooring on the ground floor of properties and using water-resistant plaster. Such measures can reduce the damage caused by a flooding incident, and also reduce the costs of reinstating the property afterwards.

Planning and Development Control Sustainable Drainage Systems

Significant areas within Lincolnshire are in need of growth and regeneration and these areas can be affected by flood risk. A balance needs to be struck between managing sustainable communities against increasing the number of people and properties at risk of flooding, while continuing to protect existing communities who are at risk of flooding.

Until now surface water flooding has not been given sufficient priority in the planning process. This has been given wider prominence during the flooding events of 2007 and 2012, when the majority of flooding was caused by surface water flooding.

Across the County, Local Planning Authorities are at varying stages of production of their Core Strategies and Local Plans, and some have come together to produce joint Local Development Frameworks, for example Central Lincolnshire and South-East Lincolnshire.

In guiding future sustainable development it is important that we take greater account of all forms of flood risk, including surface water. This will need to be reflected in land use planning Core Strategies, Local Plans, and Strategic Flood Risk Assessments. Individual development proposals will need to be appropriately considered in respect of all forms of flood risk through site-specific flood risk assessments and the planning process.

Sustainable Drainage Systems

The Government wishes to reduce the impact of future development by promoting the use of sustainable drainage systems. The purpose of sustainable drainage systems is to replicate, as closely as possible, the natural drainage from a site before development without transferring pollution to groundwater. The variety of sustainable drainage techniques available means that virtually any new development should be able to deliver a drainage scheme around these principles.

Sustainable drainage objectives are to minimise the impacts from development on the quantity and quality of water running off a site, while maximising amenity and biodiversity opportunities. Appropriate techniques include infiltration and retention, which mimic runoff from a site in its natural state and enable rainwater to be managed close to its source.

Sustainable drainage systems are predominantly features used for the controlled discharge and cleansing of surface water drainage, such as green roofs, swales and ponds. These features will generally be above ground and manage flows at source. Underground 'end of pipe' features, such as tanks, are not considered to be sustainable drainage systems.

The Flood and Water Management Act 2010 contains provisions that require sustainable drainage systems to be provided on new developments. These provisions are expected to be implemented from 2014 onwards, and they will

have important implications for the way in which flood risk and drainage is considered within the planning system. It will also be possible in certain circumstances to consider 'retrofitting' sustainable drainage systems to existing developments, providing a range of benefits including improved management of surface water, separation of surface water runoff from foul water sewerage and improvements to local environmental amenity.

Under the Act a drainage system for any construction work with drainage implications must be approved before construction work commences. This also applies to permission to connect the drainage system to the public sewerage system. This approval is a parallel process to planning permission, similar to Building Regulations Approval. National standards will be published by the Government setting out the guiding principles for the design of sustainable drainage systems.

The Act will establish the County Council, as the Lead Local Flood Authority, as the Sustainable Drainage Approving Body. Most construction work requires planning permission and any with drainage implications will also require Sustainable Drainage Approving Body approval for surface water drainage systems. Construction work not requiring planning permission, but involving construction of a building or other structure covering more than 100m² of land, will also require Sustainable Drainage Approving Body approval.

These changes will have a significant impact on the development industry and the way future development is designed and built. It also significantly changes the role of the County Council, as it will be responsible for surface water drainage of the majority of future developments. This role was previously undertaken by Water and Sewerage Companies.

Data management

Good information is the cornerstone to effective joint working, and this Strategy will ensure that partner organisations share the operational information they need to provide the best solutions to flood risk issues. Just as important, the Strategy also makes sure that local people have access to better information about what is already in place to manage flood risk, as well as work that is planned to improve protection.

A flood risk asset register is being established as required by the Flood and Water Management Act, which will allow members of the public to identify significant flood risk assets managed by all partner organisations in their locality. This will be available by December 2012.

Communications and community involvement

However there is also a much broader need for a long-term, consistent dialogue between local people and businesses and the organisations responsible for flood risk and drainage management.

Partner organisations in Lincolnshire recognise that the best approaches to flood risk management involve local people in understanding all forms of flood risk, deciding on any measures that may be appropriate, and putting these in place. However, it is equally important that people have the knowledge and support to take their own precautions, making their own properties less likely to flood and, if flooding does happen, less difficult and expensive to repair.

Lincolnshire has attracted national pathfinder status for its work on raising awareness of coastal flood risk and working with local communities in the longer term to increase their resilience to flood risk and other impacts of climate change.

On the basis of this experience, the partnership will establish and maintain regular and consistent dialogue with local people who have been, or may be affected by flooding from all sources or by activities to address flood risk. We will use communication methods that work best for the audience. The role of existing community groups, parish and town councils and elected members will be very important in achieving this combination of increasing community awareness and understanding of flood risk, involving people in making decisions about how flood risk and drainage is managed in their area, and building up the ability of communities to help themselves and support emergency responders.

This approach will be extended to cover the whole of county, and to embrace dialogue on flood risk from all sources and between all involved parties. Its objectives will be to:

- Provide practical, simple and clear channels of communication between local people, business and flood risk management authorities, day-to-day and before, during and after a flooding incident, whether localised or more widespread
- Provide consistent information on local flood risk and appropriate resilience measures
- Provide a consistent background for early involvement of local people in proposing, developing and implementing specific schemes to address flood risk issues
- Ensure that operating authorities are able to share and access up to date technical asset and incident information, and that local people and businesses can access the information they need, when they need it
- Ensure that local people and businesses have a single, responsive point of contact
- Develop a joint approach between risk management authorities, local businesses and local communities to improve our understanding of flood risk in Lincolnshire and to identify opportunities to work together to reduce its impact

6 Costs, benefits and funding arrangements

Funding for flood risk management comes from a range of sources, including national funding from the Department for the Environment Food and Rural Affairs (Defra) via the Environment Agency, from the Department for Communities and Local Government (CLG), and locally from the County Council, Internal Drainage Boards and Districts. The funding system is shown in Figure 9 below. Public funding available for flood risk and drainage management in Lincolnshire from all these sources amounts to about £21m, although this does not take account of resources deployed by Water and Sewerage Companies.

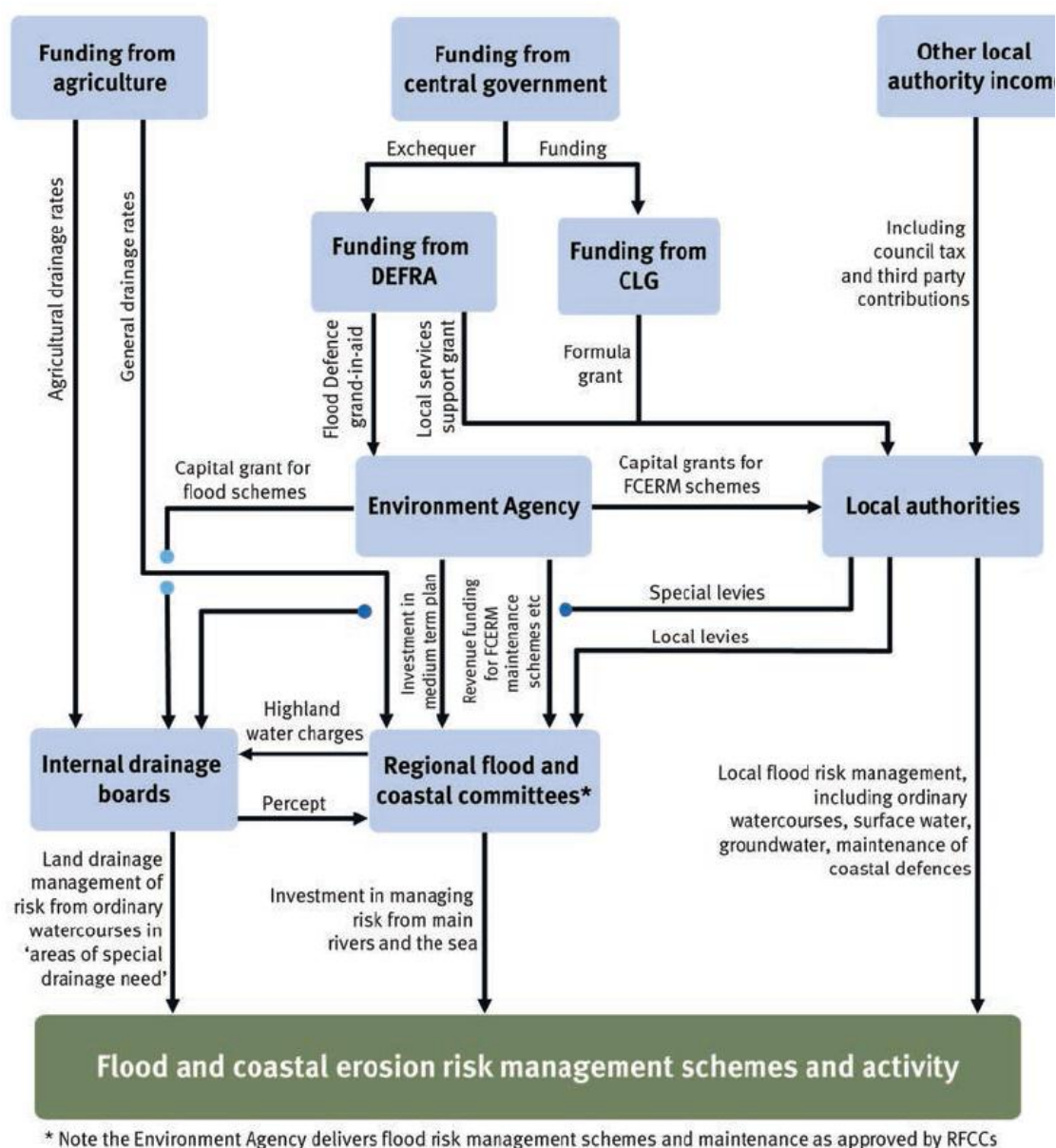


Figure 9 National funding system (National FCERM Strategy)

National funding that comes into the area via the Environment Agency for maintenance and new works is prioritised and agreed by the Regional Flood and Coastal Committee regionally. This is also true of funds called the local levy paid into the Committee annually by each Lead Local Flood Authority.

National funds for works, known as 'Grant in Aid', is allocated according to a national formula that uses a range of different criteria to establish the relative priority of schemes, and thereby to establish how much national funding each scheme can attract. This formula now provides for contributions of local funds to enable the allocation of some national funding to schemes that might not previously have attracted any, but it does also mean that fewer schemes will now be fully funded from this source.

Funds raised by Internal Drainage Boards and Districts are generally spent within their own areas, while government funding direct to the County Council are allocated across Lincolnshire to discharge its duties as Lead Local Flood Authority.

Partnership resources

The Lincolnshire partnership will drive changes in the way that existing resources are allocated, seeking to achieve more by improved prioritisation through the common works programme of maintenance and new works, by ensuring that works are undertaken by the organisation best placed to deliver the best results, and by efficiencies gained in improved partnership working. In particular, the partnership will aim to achieve a 10% efficiency saving from the baseline position of 2013-14, with any savings reinvested in managing and reducing flood risk across the county.

In order to achieve this, the partnership will identify a 'common works programme' of schemes that can best be achieved through use of a range of locally-raised funds from a number of different sources, together with continuing to deliver innovative and nationally recognised excellent partnership working.

The partnership will continue to evolve partnership working, with the aim of achieving more flexible deployment of people and equipment, as well as simplifying the current, complex funding system, retaining as much funding within Lincolnshire as possible, and maximising external investment in Lincolnshire's flood risk and drainage management.

With regard to funding of coastal flood risk management, the partnership will seek to maximise national investment in coastal defences, while exploring opportunities for contributions from wealth generated through commercial and private exploitation of benefits provided by the sea defences.

This is a significant issue for Lincolnshire, given the national importance of the high-quality agricultural land protected by the coastal defences, and the regional importance of the tourism assets along the east coast (see **Annex F**).

7 Cross-Boundary Working and the Environment

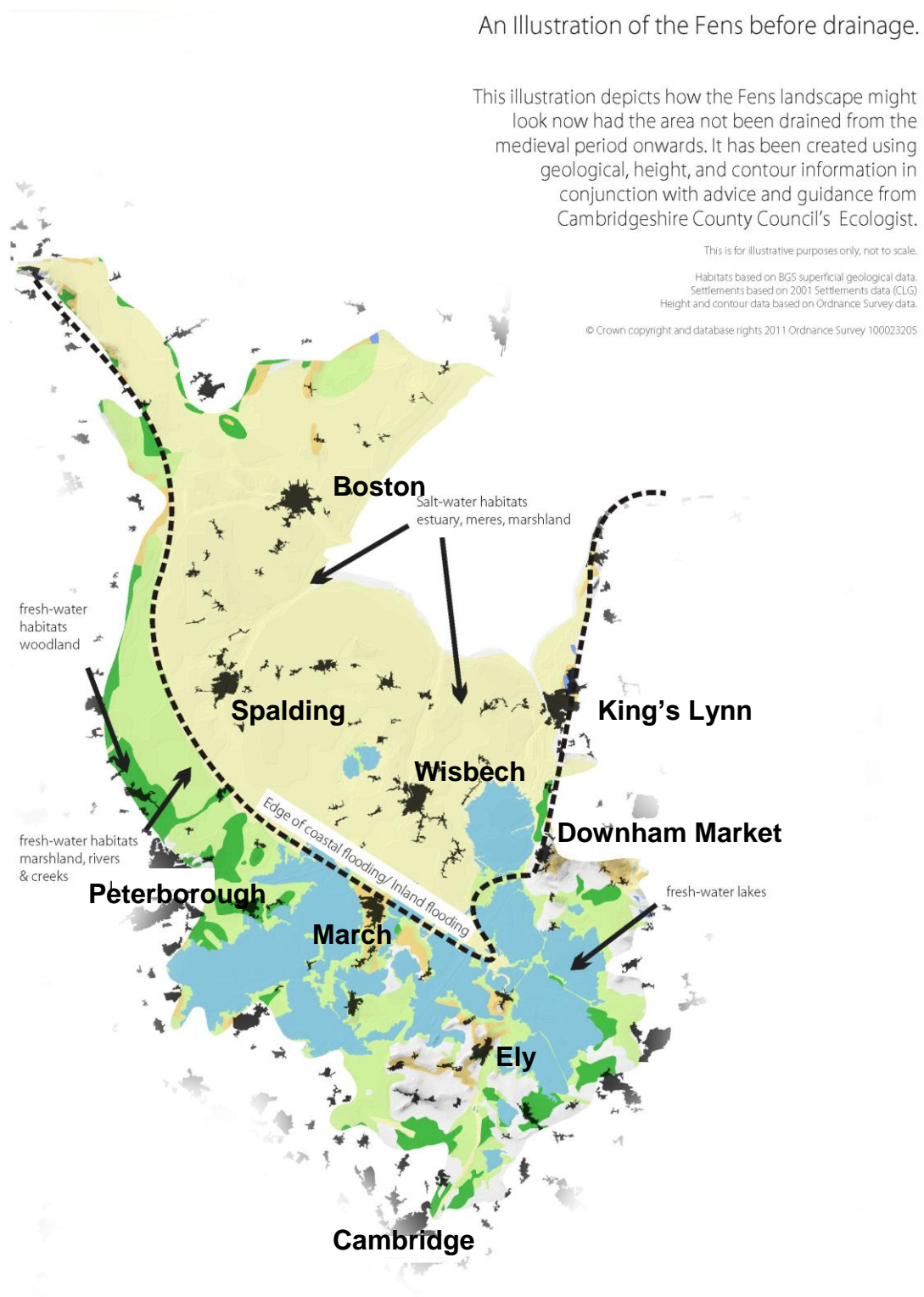
Working with neighbouring authorities

It is important that in managing flood risk and land drainage we co-operate with neighbouring areas to manage water systems that cross administrative boundaries. For Lincolnshire, this means working closely with the authorities on the South Humber bank, North Lincolnshire and North East Lincolnshire Councils, where rivers such as the Ancholme cross the administrative boundaries, and where we share interests in effective coastal management.

In the south, we need to work closely with Cambridgeshire, Peterborough, Norfolk and Suffolk, to develop a consistent management approach to the Fens. The Fens cover a very large area, with significant inland areas defended from saltwater flooding by Lincolnshire's and Norfolk's extensive system of coastal defences. Behind these defences a vast, interconnected pumped drainage system maintains some of the best agricultural land in Europe (see **Annex F**), and it is important that its management is consistent across the whole Fenland area.

The map reproduced below in Figure 9 is a reconstruction of the extent of coastal and inland inundation that might exist in the Fens without successive land drainage and defence since the thirteenth century, with the positions of the main modern settlements marked.

Figure 9 Extent of coastal and inland inundation without land drainage and defence.



To reflect the importance of the Fens as a highly productive and precious resource the following aspirations have been identified by the five Lead Local Flood Authorities for the wider area in respect of flood risk and drainage management:

- Continue to ensure that appropriate flood risk and drainage management measures are taken to protect the nationally important food production areas in the Fens
- Ensure that where appropriate, current levels of protection are maintained in the Fens taking into account climate change
- Manage flood risk and drainage in accordance with principles of sustainable development
- Ensure that development is undertaken appropriately, so that adverse consequences of flood risk are not increased
- Contribute towards the protection and enhancement of the environmental heritage and the unique landscape character of the Fens including biodiversity
- Support promotion and use of the waterways and other areas in the Fens for tourism and recreation
- Develop effective dialogue with local communities to facilitate their involvement in flood risk management in the Fens
- Work with local planning authorities to help them grow the economy in the Fens, through the early consideration of flood and water management needs

Strategy contribution to wider environmental objectives and meeting obligations under the Water Framework Directive

All risk management authorities are required to undertake their duties in a way that not only protects the environment, but also seeks to improve it wherever possible. We are currently reviewing where potential environmental improvements could be made, and are working with the Greater Lincolnshire Nature Partnership to ensure that projects designed to manage flooding also contribute to environmental improvement. A [Strategic Environmental Assessment](#) has been carried out to ensure that this Strategy is consistent with the principles of good environmental management.

In addition, there are stringent targets for improving water quality under the [Water Framework Directive](#). The Environment Agency is reviewing its River Basin Management Plans as the basis for achieving these improvements, and this Strategy will be implemented with regard to relevant River Basin Management Plans, to fulfil statutory obligations on public bodies to protect and enhance the water environment.

The Strategy will provide environmental benefit, and contribute to the achievement of wider environmental objectives by

- Ensuring that, as far as is reasonably practical, actions taken will maximise opportunities to ensure that Lincolnshire's countryside,

coastline and towns become richer in biodiversity and waterways achieve good ecological status

- Ensuring that in all decision making, adaption to mitigate the likely effects of climate change will be taken into account, community engagement will be encouraged and the ethos of 'making space for water' will be followed
- Ensuring that actions taken do not prevent water bodies from achieving the improvements required under the Water Framework Directive, or cause their condition to deteriorate
- Ensuring that the development of a flood risk management plan under the Flood Risk Regulations is consistent with the relevant River Basin Management Plan
- Ensuring that in addition to Water Framework Directive and biodiversity improvements, other benefits will be sought as appropriate, such as more sustainable water management practices like sustainable drainage systems, diverting floodwaters into areas where it can achieve positive environmental benefits, and improved public access.

Strategy review process

Delivery of the Strategy will be managed by the Lincolnshire Flood Risk and Drainage Partnership, with regular progress reports against targets to the Management Group, and from there to Strategy Group and the Scrutiny Committee. Progress will be reviewed on a six-monthly basis by the Joint Flood Risk Management Scrutiny Committee, and results will be published for public inspection.

The strategic delivery works programme will be reviewed annually, and the Strategy as a whole will be subject to a five-yearly review process, including full public involvement, to ensure it is kept up-to-date, takes account of objectives achieved, and continues to maintain a focused forward programme at strategic, tactical and operational levels.

The Lead Local Flood Authority will be responsible for ensuring that monitoring and reviews are undertaken according to plan, but the partnership as a whole will contribute to the review and refresh of the Strategy.

8 Find out more

This Strategy is available online at:

<http://www.lincolnshire.gov.uk/residents/environment-and-planning/flood-risk-management/implementing-a-strategy-to-manage-flood-risk-countywide-and-locally/103045.article?tab=downloads>

Hard copies are available on request. Postal enquiries should be sent to:

Joint Lincolnshire Flood Risk and Drainage Management Strategy
Lincolnshire County Council
Environmental Services
Witham Park House
Waterside South
Lincoln LN5 7JN

Email enquiries should be sent to sustainability@lincolnshire.gov.uk

For telephone enquiries please contact (01522) 782070

Glossary

Assets	Structures or a system of structures used to manage flood risk.
Catchments	An area that serves a river with rainwater. Every part of land where the rainfall drains to a single watercourse is in the same catchment.
Defences	A structure that is used to reduce the probability of floodwater or coastal erosion affecting a particular area (for example a raised embankment or sea wall)
Groundwater	Water which is below the surface of the ground and in direct contact with the ground or subsoil.
Local flood risk	Flood risk from sources other than main rivers, the sea and reservoirs, principally meaning surface runoff, groundwater and ordinary watercourses.
Main river	A watercourse shown as such on the Main River Map, and for which the Environment Agency has responsibilities and powers
National receptor dataset	A collection of risk receptors produced by the Environment Agency.
Ordinary watercourses	All watercourses that are not designated Main River, and which are the responsibility of Local Authorities or, where they exist, IDBs.
Pathway	The connection between a particular source and a receptor that may be harmed.
Receptor	Something that may be harmed by flooding.
Resilience	The ability of the community, services, area or infrastructure to withstand the consequences of an incident.
Risk	Measures the significance of a potential event in terms of likelihood and impact.
Risk assessment	A structured and auditable process of identifying potentially significant events, assessing their likelihood

	and impacts, and then combining these to provide an overall assessment of risk, as a basis for further decisions and action.
River basin district	There are 11 river basin districts in England and Wales, each comprising a number of contiguous river basins or catchments. The Environment Agency is responsible for collating LLFA reports at a river basin district level.
Significant harmful consequences	Where flooding occurs to people, residential and commercial property, and key critical infrastructure and essential services property to a depth of 0.3m and above. Frequency of flooding (<i>NOTE: speed of inundation, velocity and other hazard factors and associated impacts including indirect impacts on communities of flooding to critical infrastructure and essential services will be considered further as part of the Local Flood Risk Management Strategy.</i>)
Strategic Flood Risk Assessment	Spatial planning documents prepared by local planning authorities in England to provide an overview of flood risk within their area
Source	The origin of a hazard (e.g. heavy rainfall, strong winds, surge etc).
Surface runoff	Rainwater (including snow and other precipitation) which is on the surface of the ground (whether or not it is moving), and has not entered a watercourse, drainage system or public sewer.

Legislation and key documents related to flood risk and drainage management

Reservoirs Act (1975)
Highways Act 1980 (as relevant to water)
Building Act (1984)
Land Drainage Act (1991)
Water Industry Act (1991)
Water Resources Act (1991)
Environment Act (1995) (as relevant to water).
Strategic Environmental Assessment Directive (2001)
Making Space for Water (2004)
Civil Contingencies Act (2004)
Strategic Flood Risk Assessments
Water Framework Directive (WFD)
The Natural Environment and Rural Communities Act (2006)
Climate Change Act (2008)
Catchment Flood Management Plans
Health Act (2009) (as relevant to water)
Flood Risk Regulations (2009)
Conservation of Habitats and Species Regulations (2010)
Shoreline Management Plans (2010-11)
Flood & Water Management Act (2010)
National Planning Policy Framework (2012)

Lincolnshire Flood Risk and Drainage Management Partnership Framework



Joint Lincolnshire Flood Risk and Drainage Management Strategy 2012-2025

Part 2B of 3

Annexes A-F

Annex A: Statutory requirements of the Local Flood Risk Management Strategy

Section 9 of the Flood and Water Management Act details the statutory requirements for Local Flood Risk Management Strategies (see section 10 on Wales for the differences for councils in Wales)

It states that a Lead Local Flood Authority must develop, maintain, apply and monitor a strategy for local flood risk management in its area for the following forms of flood risk

- surface runoff
- groundwater
- ordinary watercourses

The strategy must specify the following:

- the risk management authorities in the authority's area
- the flood and coastal erosion risk management functions that may be exercised by those authorities in relation to the area
- the objectives for managing local flood risk
- the measures proposed to achieve those objectives
- how and when the measures are expected to be implemented
- the costs and benefits of those measures, and how they are to be paid for
- the assessment of local flood risk for the purpose of the strategy
- how and when the strategy is to be reviewed
- how the strategy contributes to the achievement of wider environmental objectives

There must be consultation with the public and any risk management authority that would be affected. The Strategy must also be consistent with the National Flood and Coastal Erosion Risk Management Strategy for England.

A summary of the Local Strategy must be published and may be accompanied by guidance on how the strategy should be applied in the area.

In October 2010, the first elements of the Act were commenced, including the responsibility to produce a Local Flood Risk Management Strategy. Preliminary Flood Risk Assessments, which are part of the Flood Risk Regulations 2009, provide the initial assessment of local flood risk and should be used as the first step in developing the Local Strategy.

Annex B: Risk management authorities and their functions

The Lead Local Flood Authority (Lincolnshire County Council)

Most of the responsibilities laid on the County Council as Lead Local Flood Authority are new, although the Council has been actively working with partner organisations to develop the partnership before the legislation passed through Parliament. Its main duties consist of strategic action to provide local leadership and co-ordination, as well as operational and planning activities to manage the risk of local flooding.

These new responsibilities are summarised below.

- Develop, maintain, apply and monitor of a strategy for local flood risk management (with 'local flood risk' defined as flooding from surface water, groundwater and from ordinary watercourses outside Internal Drainage Board areas)
- Investigate and publish reports on flooding incidents (where appropriate or necessary) to identify which authorities have relevant flood risk management functions and what they have done or intend to do
- Maintain a register of structures or features which, in the view of the authority, have a significant effect on flood risk
- Power to undertake works to manage flood risk from surface runoff or groundwater
- Power to designate structures and features that could affect flooding and are considered to be significant when assessing local flood risk
- Become the Sustainable Urban Drainage (SuDS) Approval Body (SAB) with responsibility for approval, adoption and maintenance of new SuDS developments (implementation expected by April 2013)
- Responsibility for issuing consents for works on ordinary watercourses (outside Internal Drainage Board districts) by third parties that may affect water flow and for enforcing obligations on third parties to maintain and for enforcement action where third parties are not meeting any obligations they may have towards these

The Lead Local Flood Authority must exercise these functions consistently with the Environment Agency's National Flood Risk and Coastal Erosion Management Strategy, and in a way that contributes to sustainable development.

In order to help it discharge its duties, the LLFA also has powers to request relevant information from other organisations, and in common with the other risk management authorities, it is obliged to co-operate with and provide information to those authorities. All risk management authorities can, by

agreement, take on flood and coastal erosion risk management functions from each other, except for the Lead Local Flood Authority, which cannot delegate its duty to provide the local flood risk management strategy, or its basic accountability – in other words it cannot ask another authority to act as the Lead Local Flood Authority for its area.

The Environment Agency

The Environment Agency already has significant flood and coastal erosion risk management functions, including coastal management (in some parts of the country this is undertaken by local authorities) and management of main rivers (see map below).

The Agency had an existing power to issue a levy on County Councils and Unitary Councils to support flood risk management on a regional basis, through the Regional Flood and Coastal Committee. This remains as a levy on Lead Local Flood Authorities, although the regional committees have now been changed to Regional Flood and Coastal Committees so that their remit covers the Environment Agency's coastal activities.

The most important new responsibilities for the Environment Agency are:

- A National strategic overview role for all forms of flooding, and a duty to develop a National Strategy for Flood and Coastal Erosion Risk Management (FCERM) to cover all forms of flooding. The Agency is required to report to Ministers about flood and coastal erosion risk management including application of the national strategies for England and Wales and management of flood risk by all risk management authorities
- Converting Regional Flood Defence Committees into Regional Flood and Coastal Committees with a new remit to include coastal erosion issues
- Powers to request information in connection with the Environment Agency's flood and coastal erosion risk management functions
- Power to designate structures and features that affect flooding or coastal erosion
- Powers to cause flooding and erosion for nature conservation and cultural heritage reasons, and people's enjoyment of these
- Existing provisions for regulating flood risk from reservoirs have been updated to increase the range of reservoirs subject to regulation and tighten up regulations

In carrying out its duties, the Environment Agency must have regard to the Local Flood Risk Management Strategy set out by the LLFA, and, like other risk management authorities, must also contribute to sustainable development, co-operate with other risk management authorities and provide

them with information. In addition, the Environment Agency is a statutory consultee on proposals for SuDS.

A further significant change is the loss of the Environment Agency's former powers to consent and enforce ordinary watercourses. Only Lead Local Flood Authorities and Internal Drainage Boards have these powers from April 2012.

Internal Drainage Boards (IDBs)

Internal Drainage Boards are the longest established of all the risk management authorities. In their current form the Boards date back to the 1930s, but their predecessor organisations, particularly in the Lincolnshire Fens, can be traced back to the thirteenth century.

Internal Drainage Boards are established in low-lying areas of special drainage need, which in Lincolnshire amounts to 40% of the county's land area. This is highest proportion of any local authority area covered by Internal Drainage Boards. The main responsibilities of IDBs are land drainage, management of water levels across large areas and extensive drainage systems, and, increasingly, a major contribution towards biodiversity and nature conservation.

The new legislation adds a number of new powers and responsibilities to the IDBs' existing role:

- Power to designate structures and features that affect flooding or coastal erosion
- Powers to cause flooding and erosion for nature conservation and cultural heritage reasons, and people's enjoyment of these
- Duty to exercise their functions in a manner consistent with local and national strategies
- Duty to be subject to scrutiny from lead local flood authorities' democratic processes
- Ability to work in consortia with other IDBs
- Statutory consultees to the SuDS approving body on sustainable drainage
- Powers to undertake consenting, enforcement and works on ordinary watercourses flood risk within their boundaries, and with the Environment Agency's consent, the sea.

Water and Sewerage Companies

Two Water Companies operate in Lincolnshire. The majority of the county is covered by Anglian Water Services Ltd, although a strip of the county along the Trent in the West, including Gainsborough and surrounding area, are served by Severn-Trent Water.

Water Companies provide a range of services, including supply of fresh water, removal of foul water, maintenance of many surface water sewers in built-up areas as well as an extensive sewerage system, sewage treatment and water quality. They are the only risk management authorities that are private businesses, rather than public authorities.

Under the legislation they acquire the following new roles and responsibilities:

- duty to act consistently with the national strategies and to have regard to local strategies when carrying out their flood risk management functions
- duty to be subject to scrutiny from lead local flood authorities' democratic processes in respect of their flood risk management functions
- duty to co-operate with and share information with other risk management authorities in respect of flood risk management functions
- adoption of private sewers within the property boundary of private residences

District and Borough Councils

New roles and responsibilities:

- power to designate structures and features that affect flooding or coastal erosion
- duty to exercise their flood risk management functions in a manner consistent with local and national strategies, and to have regard to those strategies in their other functions
- duty to be subject to scrutiny from lead local flood authorities' democratic processes

Continuing roles and responsibilities

- power to do works on ordinary watercourses and, with the Environment Agency's consent, the sea

Other key partners

The Regional Flood and Coastal Committee – see Annex C below

The Lincolnshire Resilience Forum – acts to bring together operational authorities responsible for responding to major emergencies and events, including major flooding incidents.

Natural England – has a key role to advise and support the partnership in meeting environmental responsibilities and ensuring that flood risk and drainage management secures wider environmental benefits in strategic and operational practice.

Annex C: Governance and accountability of Risk Management Authorities

The accountabilities of individual organisations can be briefly summarised.

- The Environment Agency is an executive agency of Defra, and is accountable, through its national Board, to the Secretary of State and, ultimately, to Parliament
- The Lead Local Flood Authority (Lincolnshire County Council) is directly accountable to the public by four-yearly election of the 77 Members
- District Councils are similarly accountable through direct public election of their Members
- Internal Drainage Boards are accountable to ratepayers in the areas they serve, their Boards being made up of members who are elected by these ratepayers and of appointed District Council members
- Water and Sewerage Companies are accountable to their shareholders and customers through their Boards
- Natural England has similar accountability arrangements to the Environment Agency

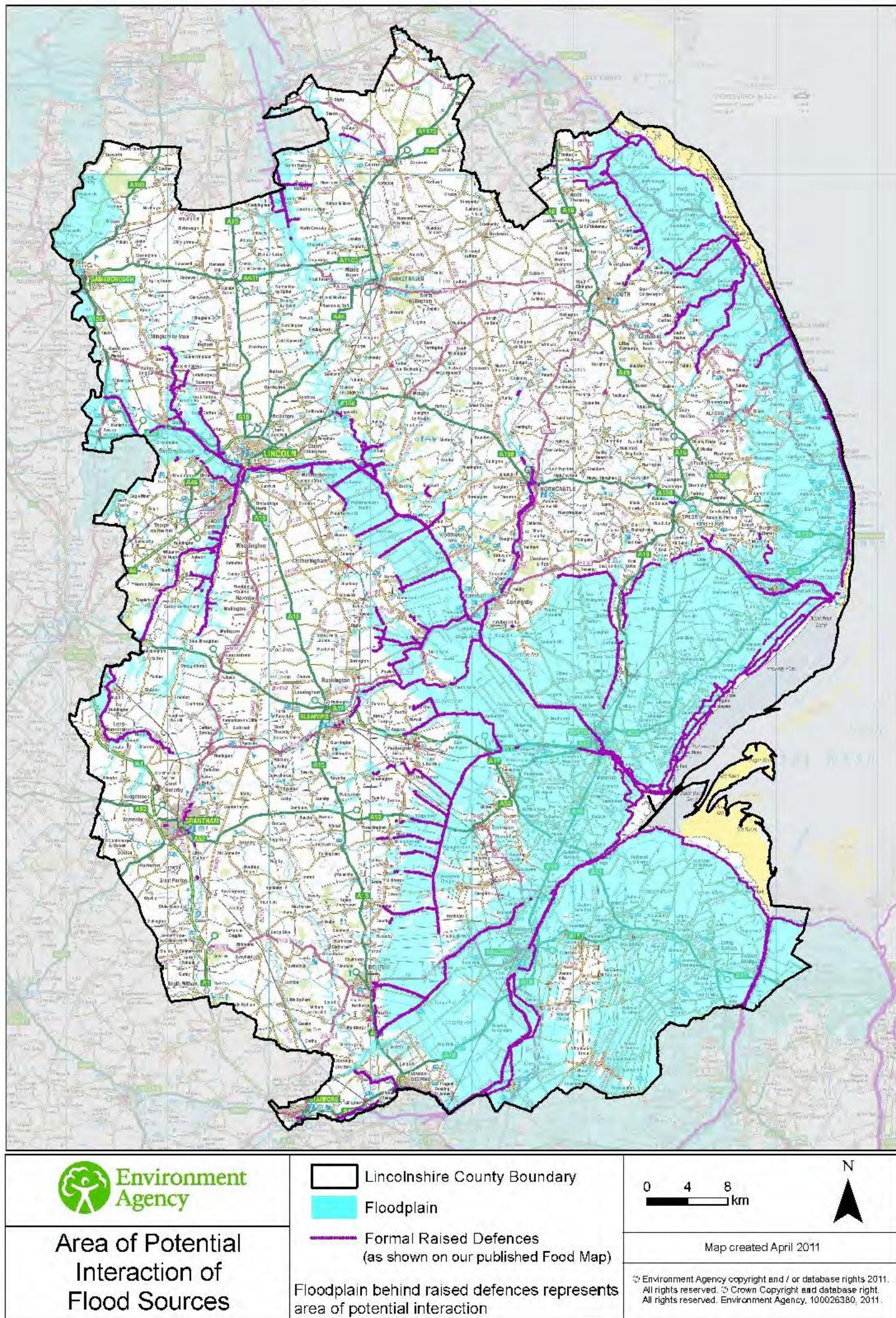
In addition there is a **Regional Flood and Coastal Committee**, which approves the Environment Agency's proposed plans at regional level and allocates much of the funding available to the Agency from Government. This also includes funding available from Government to Lead Local Flood Authorities and Internal Drainage Boards for local drainage and surface water flood risk management works.

The Anglian (Northern) Regional Flood and Coastal Committee covers most of Lincolnshire and Northamptonshire, Peterborough, parts of Cambridgeshire and Norfolk, North East Lincolnshire and part of North Lincolnshire. A strip of Western Lincolnshire along the Trent, including Gainsborough, is covered by the Trent Regional Flood and Coastal Committee. This is because these Committees are based on the boundaries of main river catchments.

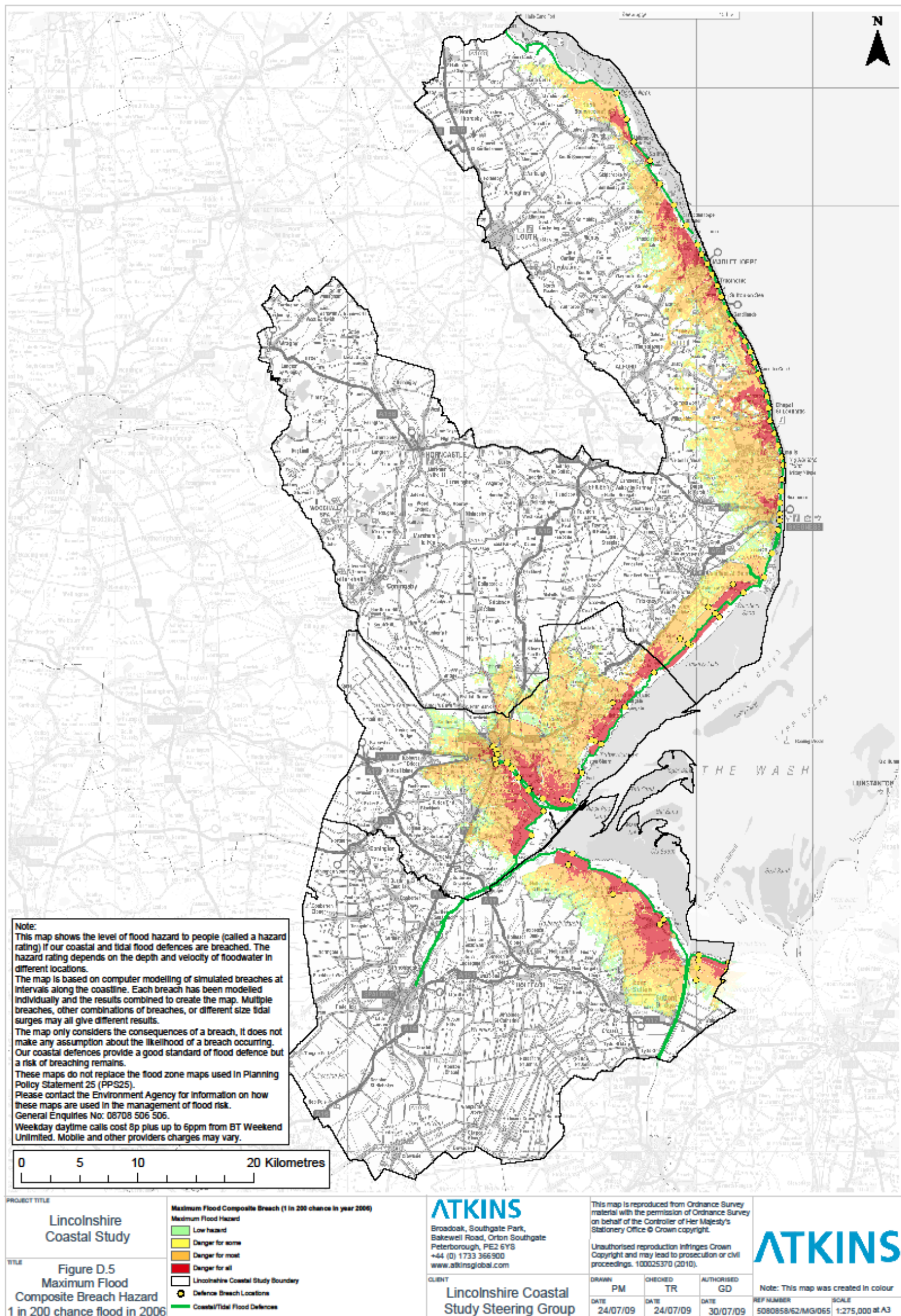
Regional Flood and Coastal Committees are composed of members appointed by the Environment Agency, as well as a bare majority of elected councillors appointed proportionately by the Lead Local Flood Authorities in the Committee's area. Lincolnshire County Council has three seats on the Anglian (Northern) Committee and shares a further seat with North Lincolnshire. North Lincolnshire also represents Lincolnshire's interests on the Trent Committee.

Annex D: Assessment of Flood Risk

D1: Coastal and river flood risk mapping

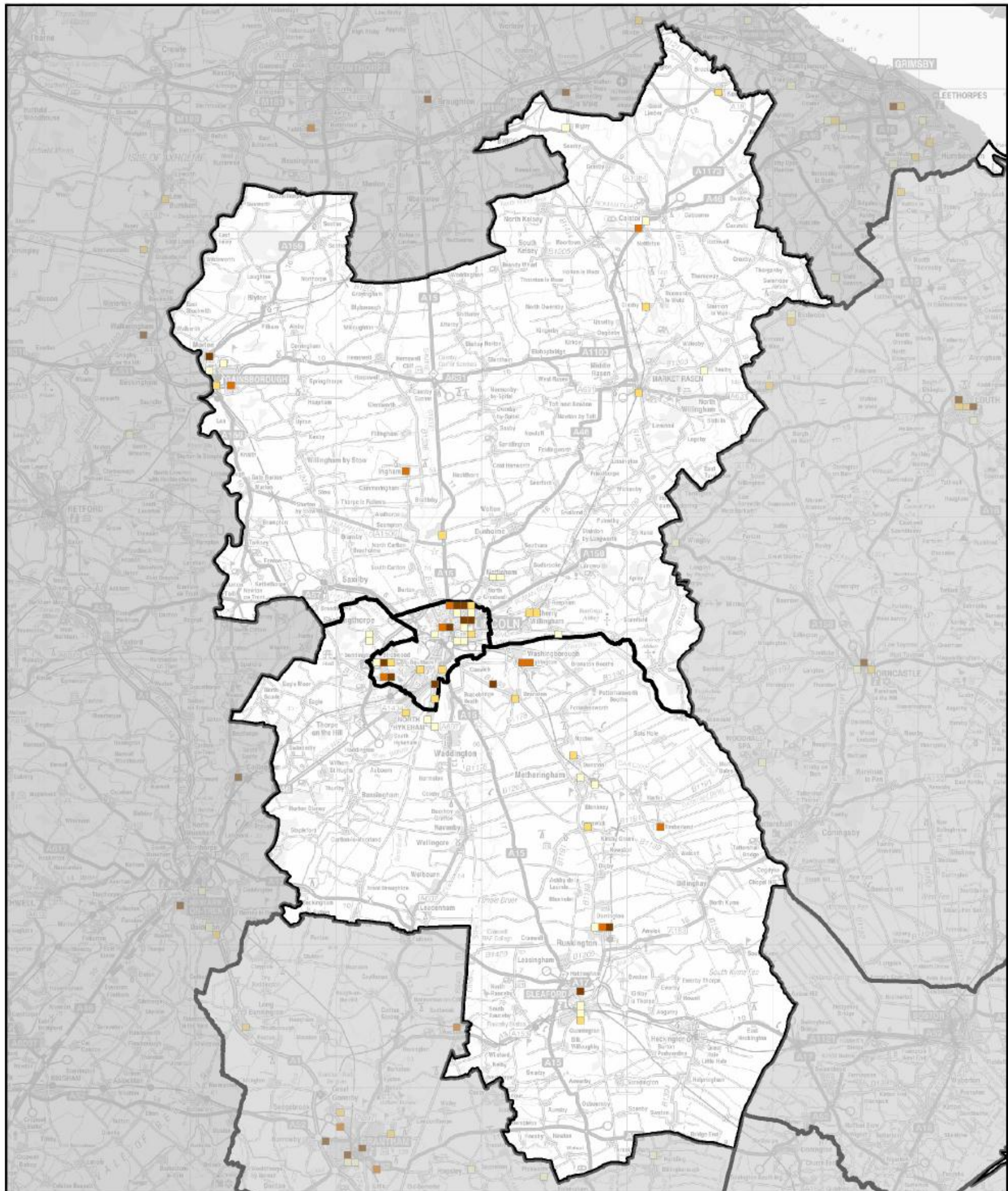


D2: Coastal hazard mapping



D3a: Surface water: preliminary flood risk assessment, Central Lincolnshire – initial areas where potential flood risk requires further investigation

NOTE: Map should be viewed at no larger than 1:50,000 scale



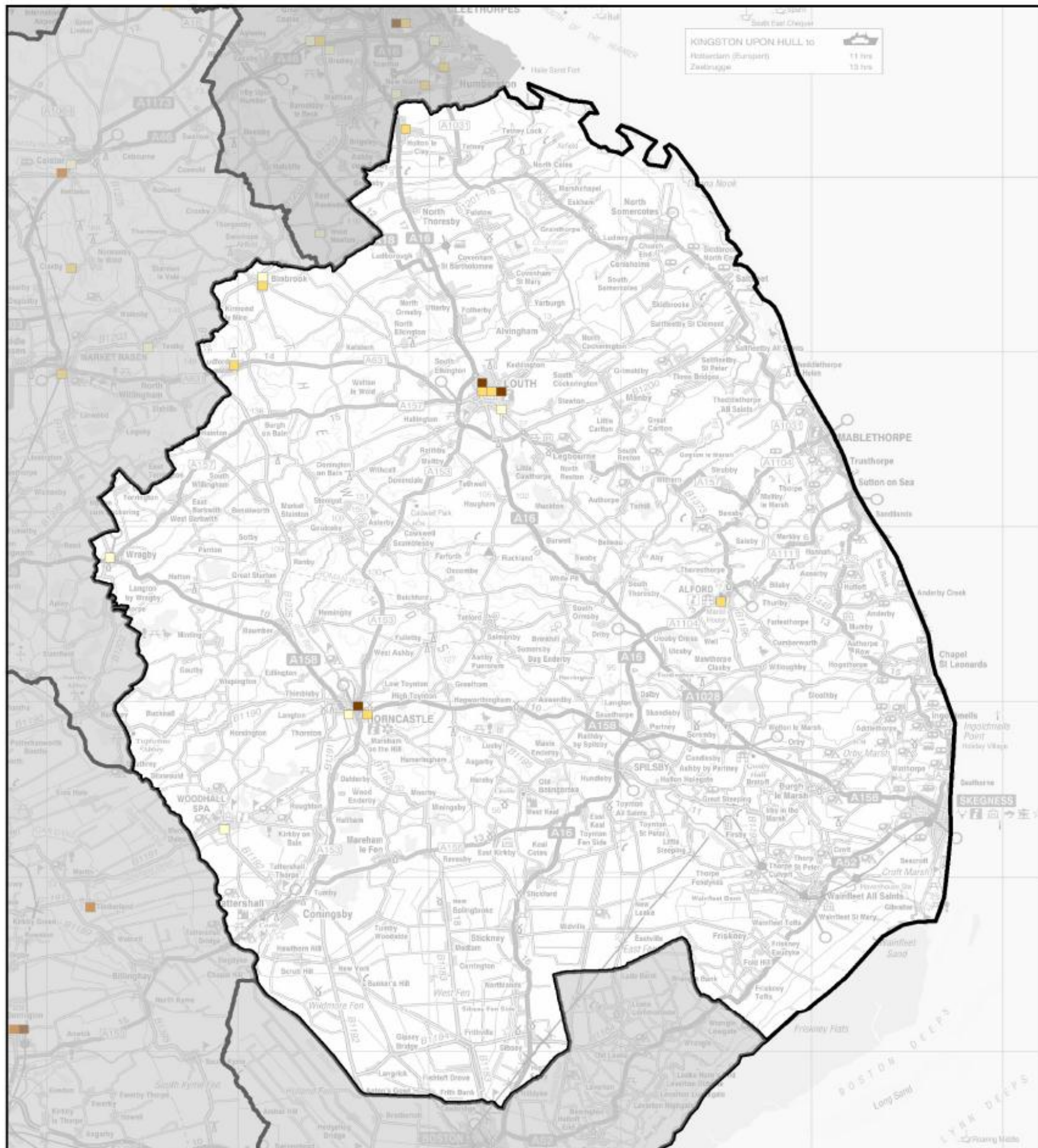
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Legend – Estimated number of properties within a 0.5 km sq at potential risk of local flooding



D3b: Surface water: preliminary flood risk assessment, East Lindsey – initial areas where potential flood risk requires further investigation

NOTE: Map should be viewed at no larger than 1:50,000 scale



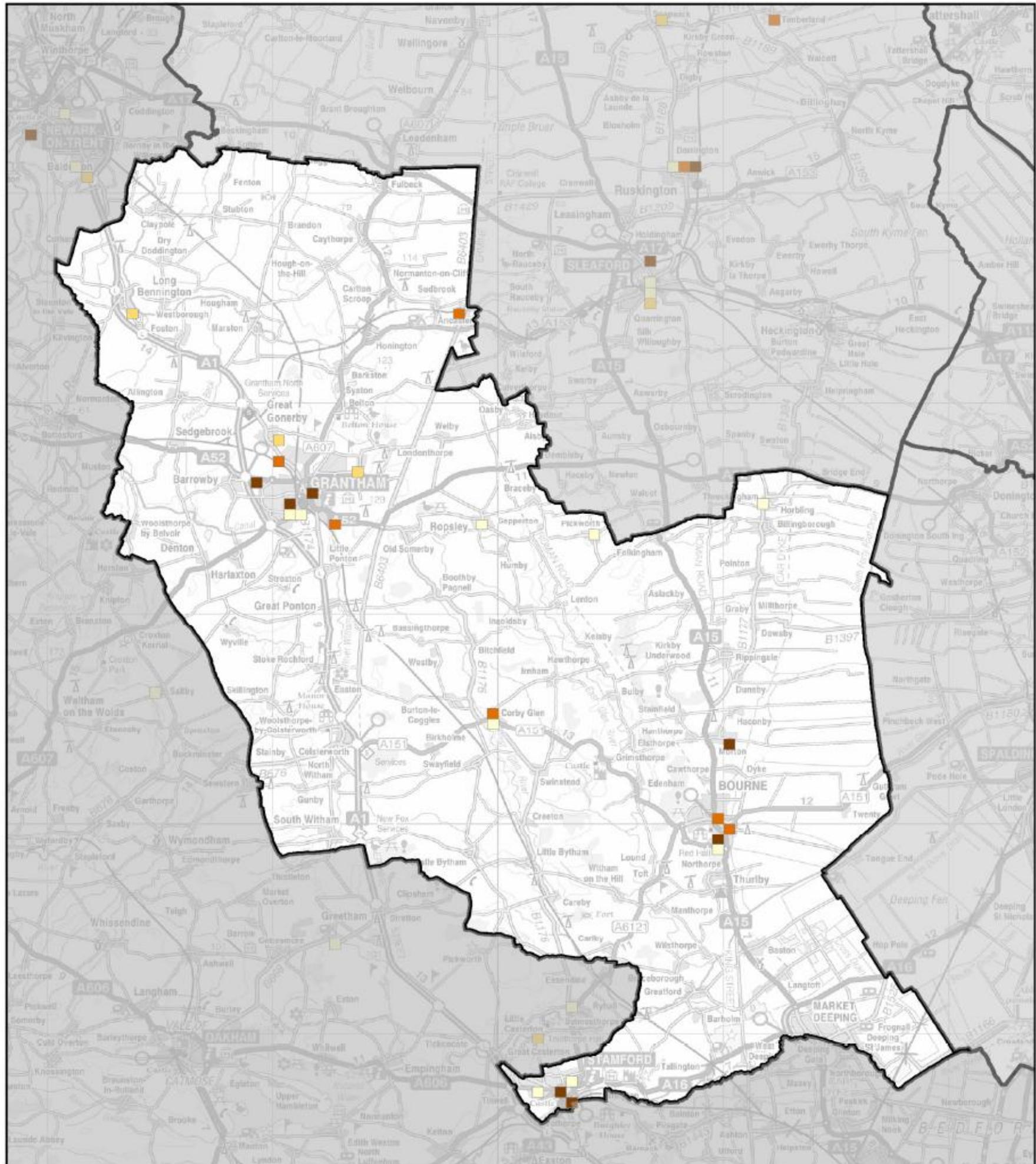
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Legend – Estimated number of properties within a 0.5 km sq at potential risk of local flooding



D3c: Surface water: preliminary flood risk assessment, South Kesteven – initial areas where potential flood risk requires further investigation

NOTE: Map should be viewed at no larger than 1:50,000 scale



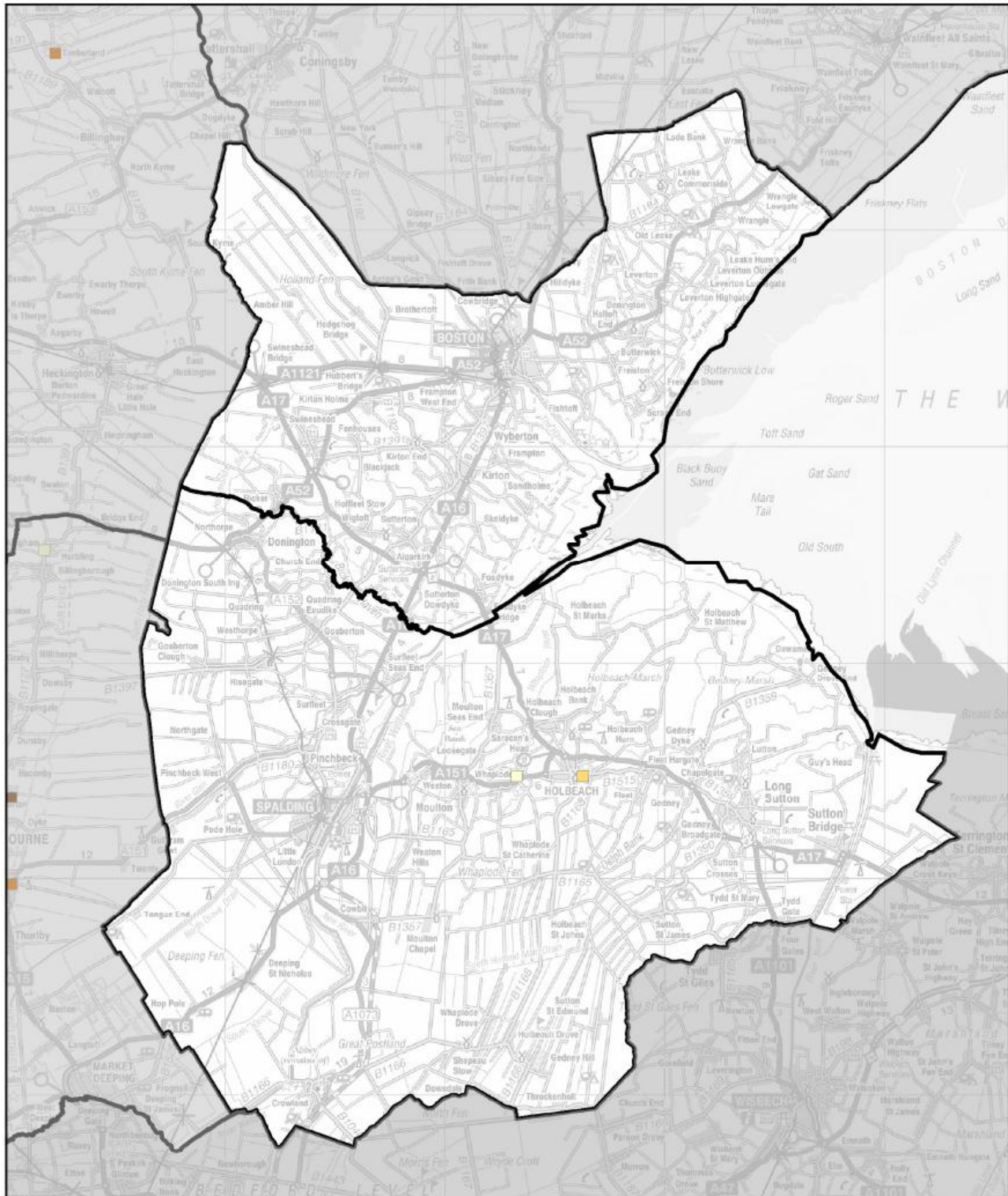
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Legend – Estimated number of properties within a 0.5 km sq at potential risk of local flooding



D3d: Surface water: preliminary flood risk assessment, South East Lincolnshire – initial areas where potential flood risk requires further investigation

NOTE: Map should be viewed at no larger than 1:50,000 scale

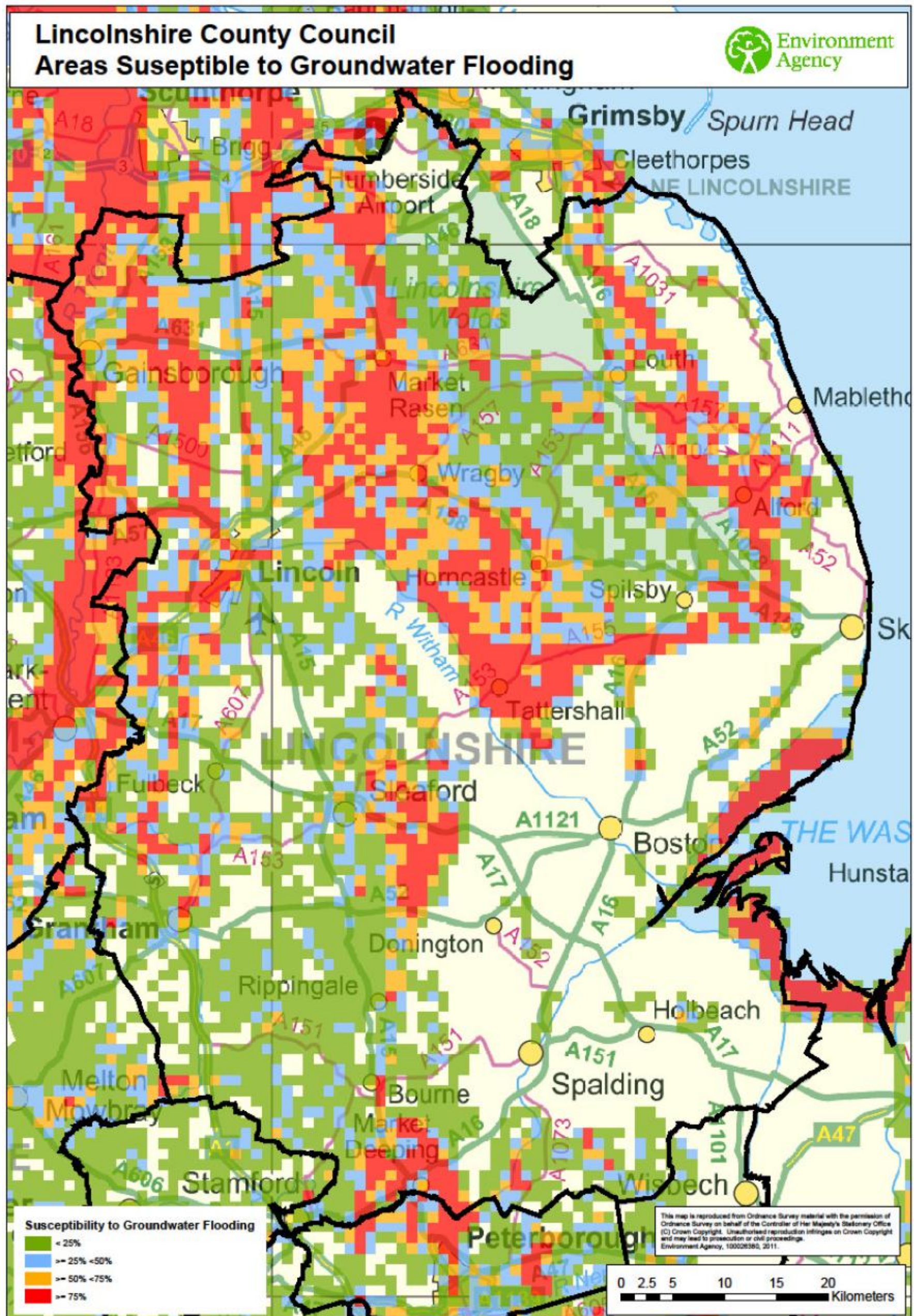


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Legend – Estimated number of properties within a 0.5 km sq at potential risk of local flooding



D4: Groundwater flood risk



Annex E: The requirements in the Flood Risk Regulations 2009

The [Flood Risk Regulations 2009](#) came in to force on 10 December 2009. They transpose the EU Floods Directive into UK law.

The key provisions of the Regulations are

- to give responsibility to the Environment Agency to prepare Directive deliverables – preliminary flood risk assessments, maps and plans - for floods from the sea, main river and reservoirs
- to give responsibility to lead local flood authorities (unitary and county councils) to do the same for all other forms of flooding (excluding sewer flooding which is not caused by precipitation)
- preliminary flood risk assessments (PFRAs) to be prepared by the Environment Agency and LLFAs by 22 December 2011. These should, on the basis of Environment Agency and LLFA PFRAs, identify areas of significant flood risk. LLFAs submitted their PFRAs to the Environment Agency by 22nd June 2011.
- flood hazard and risk maps to be prepared by 22 December 2013 for identified areas of significant flood risk
- flood risk management plans to be prepared by 22 December 2015 for the same areas

LLFAs have submitted their PFRAs, and will need to submit hazard and risk maps and management plans (where required) to the Environment Agency six months before the specified December deadlines to allow for review, collation, publishing and reporting to the European Commission.

The assessment, mapping and planning cycle continues thereafter on a six yearly basis with the first review of the preliminary flood risk assessment due by 22 December 2017. Flood maps must be reviewed by 22 December 2019 and flood risk management plans by 22 December 2021. Each review must take into account the likely impact of climate change on the occurrence of floods.

These reviews will involve refreshing the PFRA in the same six yearly cycle. Since the PFRA will provide much of their evidence base, this will impact on the Local Strategies too, which will need to be adapted to accommodate any changed assessment of flood risk.

Annex F: Flood risk and land drainage management in the Fens

The Fens Area

The Fens cover a large area of eastern England, stretching from the Wash out to Lincoln, Peterborough and Cambridge. Five different rivers, the Witham, Welland, Glen, Nene and Ouse, carry water from surrounding uplands through the Fens and into the Wash.

Management Plans for the Fens

The Environment Agency has developed Catchment Flood Management Plans for the Anglian Region with the aim of taking a broad view of flood risk at catchment level over the next 100 years. Factors such as climate change, future development and changes in land use and land management were taken into account in developing sustainable policies for managing flood risk in the future.

The Fens area is covered by four different Catchment Flood Management Plans (CFMPs); one for each of the fenland catchments of the Nene, Welland and Glen, Witham and Great Ouse and also by the Wash Shoreline Management Plan (SMP). All five plans recommended that an integrated plan is produced specifically for the Fens in order to develop a sustainable, integrated and long term flood risk management approach for this landscape area. There was also a need for any future plan to bring together organisations and other plans and projects from across the Fens.

Since the development and approval of the CFMPs, the legislative framework for flood risk management landscape has changed considerably, providing opportunities to develop a more integrated approach to upland and lowland flood risk and drainage management from all sources.

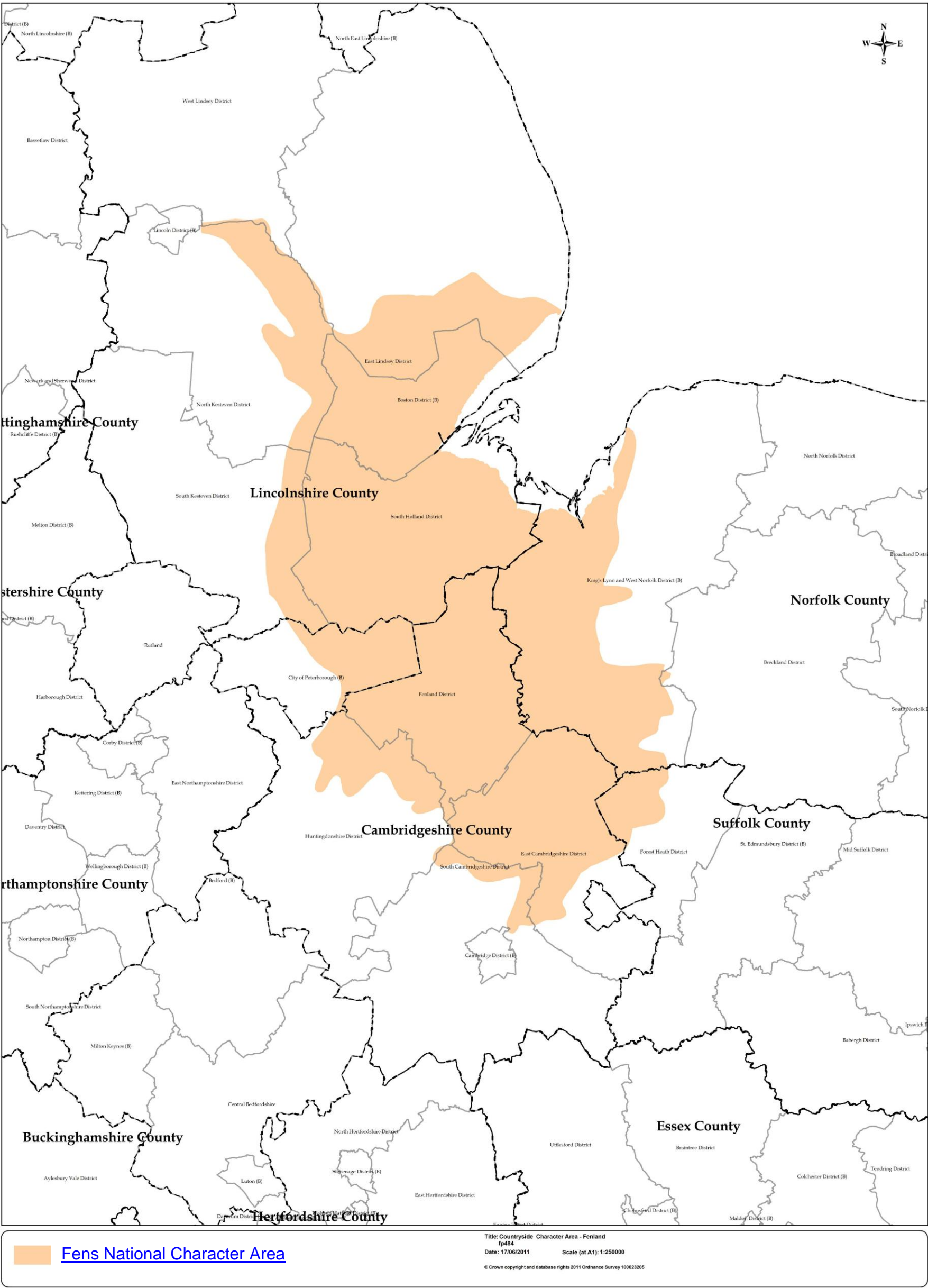
The introduction of the duty for LLFAs to produce Local Flood Risk Management Strategies (local strategies) provides an opportunity for integrating and delivering the aims for the Fens. Local strategies are considered an appropriate vehicle due to their key role in setting objectives and identifying priorities and funding needs for local flood risk management. Local strategies will also be driven by LLFAs in partnership, will undergo public consultation and will be informed by CFMPs, SMPs, SFRAs and other relevant strategic and local documents. It is therefore considered a more practical approach to ensure that flood risk and drainage management of fenland areas is co-ordinated across the relevant local strategies. This is in preference to creating an additional, overlapping single strategy for the Fens, managed within a national, rather than local governance framework.

Local strategies will integrate the needs and opportunities of the local Fens and fenland communities with those of the rest of the local LLFA area, and promote a consistent approach across the Fens as a whole. This consistency is crucial, for example, to IDBs, who often span more than one local authority and whose practices will be similar throughout their area. The LLFAs of

Lincolnshire, Peterborough, Cambridgeshire, Norfolk and Suffolk have therefore agreed to work together closely to achieve this aim. Forest Heath District Council has been involved on behalf of Suffolk County Council since Suffolk's fenland is principally located in this area.

Background to the Fens

Localised drainage took place in the fenland landscape from as early as the medieval period. However, large scale drainage of the Fens first began in the 17th Century, when the 'Fens' as we now know it began to take shape. Today this artificially drained landscape is home to approximately half a million people. The Fens cover an area of almost 1,500 square miles, divided between eleven District and five County Councils.



Well maintained coastal and fluvial flood defences are essential to providing the conditions in which Internal Drainage Boards can maintain extensive artificial drainage of the area. Across the Fens, IDBs maintain 3,800 miles of watercourse, 200 miles of watercourse embankment and 286 pumping stations. In addition there are over 60 miles of coastal sea walls and 96 miles of river embankments, maintained by the Environment Agency. The Fens area, therefore, has a high level of protection and is classified as a defended flood plain. Climate change, however, poses a serious threat to the Fens and a continued programme of investment in flood defences and drainage systems will be needed for existing standards of protection, including provision for climate change, to be maintained in the medium and long term.

The Internal Drainage Boards within the Fens have been established over many years because of the special water level and drainage management needs existing within this area, and the particular need for lowland and inland local flood risk management activities. These local works are funded in the main from funds levied locally by IDBs, and present an effective example of the Government's 'localism' agenda.

Well maintained coastal and fluvial flood defences, supporting an extensive drainage infrastructure are essential in promoting sustainable growth in the Fens. Housing, jobs and services that meet the needs of the market towns and the rural communities can only happen if drainage and flood risk is well managed. Growth in the Fens will need to be embraced in a sustainable way; balancing development needs with the need to promote and protect open spaces, natural habitats, landscapes, the built environment and the unique qualities of the Fens. It is therefore essential that 'Flood Risk Management Authorities', utilities and local communities continue to work closely with local planning authorities, so that consideration of sustainable drainage in particular and flood and water management in general are an integral part of the planning and development control process.

Farming contributes significantly to the success of the local economy, supporting a large number of businesses involved in the production of food and rural tourism. The important role that farming plays in the Fens is emphasized by the steady decline in self-sufficiency in the UK, and the Government's renewal of the food security agenda. The Fens account for 50% of all Grade 1 agricultural land in England, producing 37% of all vegetables and 24% of all potatoes grown in the country, as well as enough wheat to make 250 million loaves of bread every year. The area also supports significant livestock, dairying and outdoor pig production as well as about 18 million hens, ducks, turkeys and geese in the Lincolnshire Fens alone. This supports a large well-established food processing industry. It is critical, therefore, that appropriate flood risk and drainage management measures are taken to protect this nationally important food production area.

In addition to food production, the Fens is popular for tourism, attracting more than 15 million visitors a year. The Fens provide a unique and rich habitat for wildlife and include the Ouse and Nene Washes which while providing flood storage capacity, also retain important wetland for birds. There are also major

transport networks, road and rail, as well as houses, critical infrastructure, water, gas and electricity that would be affected if fenland areas were to flood.

The Fens also contain heritage sites and form three sides of the Wash, which is internationally designated for animal and plant biodiversity. As well as numerous local sites, ranging from SSSIs to Local Nature Reserves, there are important washland habitats, such the Cowbit and Crowland washes, and a major landscape scale [fenland restoration initiative](#) in the South Lincolnshire Fenlands, with links to the Fens Waterways Partnership and aspirations for restoration elsewhere, for example along the Witham close to Lincoln. Effective water level management is critical to maintain these areas in good condition, and can make a fundamental contribution to the opportunities that exist in the Fens for landscape-scale opportunities for fenland and washland restoration.

This Strategy is available online at

<http://www.lincolnshire.gov.uk/residents/environment-and-planning/flood-risk-management/implementing-a-strategy-to-manage-flood-risk-countywide-and-locally/103045.article?tab=downloads>

Hard copies are available on request. Postal enquiries should be sent to:

Joint Lincolnshire Flood Risk and Drainage Management Strategy
Lincolnshire County Council
Environmental Services
Witham Park House
Waterside South
Lincoln LN5 7JN

Email enquiries should be sent to sustainability@lincolnshire.gov.uk

For telephone enquiries please contact (01522) 782070