Lincolnshire flood risk and water management partnership

Joint Lincolnshire Flood Risk and Water Management Strategy 2019-2050

(A review and update to the existing Joint Lincolnshire Flood Risk and Drainage Management Strategy 2012-2025)

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1 Introduction

Reviewing the existing Joint Lincolnshire Flood Risk and Drainage Management Strategy

Lincolnshire County Council is the Lead Local Flood Authority (LLFA) for the administrative county of Lincolnshire. Because of this role, since 2010 the Council has been responsible for implementing and monitoring a local flood risk management strategy.

The purpose of the strategy is to manage the impact of flood risk to people, businesses and the environment across Lincolnshire. The basic contents of the Strategy are outlined in legislation as follows:

- The risk management authorities operating in the LLFA's area
- The flood risk and coastal erosion functions that may be exercised by those authorities relating to the area
- Objectives for managing flood risk in the area
- Measures proposed to meet those objectives
- How and when the measures are to be implemented
- Costs and benefits of the measures and how they are to be paid for
- Assessment of local flood risk (meaning from surface runoff, groundwater and ordinary watercourses)
- How and when the strategy is to be reviewed
- How the strategy contributes to the achievement of wider environmental objectives

In developing the strategy, the LLFA must consult the public and risk management authorities that may be affected by the strategy. The strategy must be consistent with the National Flood Risk and Coastal Erosion Management Strategy and the LLFA must publish a summary of the strategy, including guidance about the availability of relevant information.

In Lincolnshire our strong partnership approach meant that we were able to put together our Strategy as a joint venture between all the organisations with a role in flood risk management. Completed in 2012, the Joint Lincolnshire Flood Risk and Drainage Management Strategy was one of the first of its kind in the country. It also established a trend that has grown since to join up the work of different organisations, and to tackle flood risk and water in a more co-ordinated way than in the past.

The existing Joint Lincolnshire Flood Risk and Drainage Management Strategy was developed as a partnership venture during 2011 and 2012, and was approved for the County Council by the Executive on 4 December 2012 and by Full Council in January 2013. Part 3 of the Strategy, the action plan, was made available from April 2013 and continues to be updated annually. As a consequence Lincolnshire was one the first areas in England to publish and implement a Local Flood Risk Management Strategy, and was forward-looking in implementing a strategy that sought to co-ordinate the work of all risk management authorities within the area

and to consider flood risk in the round.

In effect, the strategy co-ordinates all the work delivered by the Lincolnshire flood risk and water management partnership as a whole, overseen by the flood risk and water management scrutiny committee.

This co-ordinated approach was embedded by establishing the common works programme in 2013. This includes the major capital programmes of all partners, as well as the programme of joint activities that address solutions where responsibility is shared or where there is no clear single authority with the capacity or responsibility to act. The common works programme allows the partnership to prioritise works across the county according to need, and within the constraints imposed by availability of local and national funding.

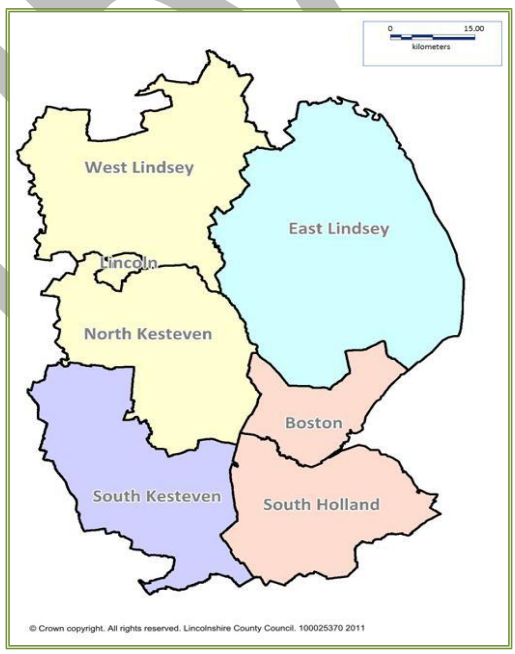
The current strategy consists of

- Part 1: strategic vision (including high level objectives)
- Part 2 (A & B): implementation plan for the strategy
- Part 3: common works programme (annually updated action plan)

It can be found in full on the Lincolnshire County Council website at the following link:

https://www.lincolnshire.gov.uk/residents/environment-and-planning/flood-risk-management/implementing-management-strategy/103045.article

Figure 1 Map of Strategy area



2 The Lincolnshire flood risk and water management partnership

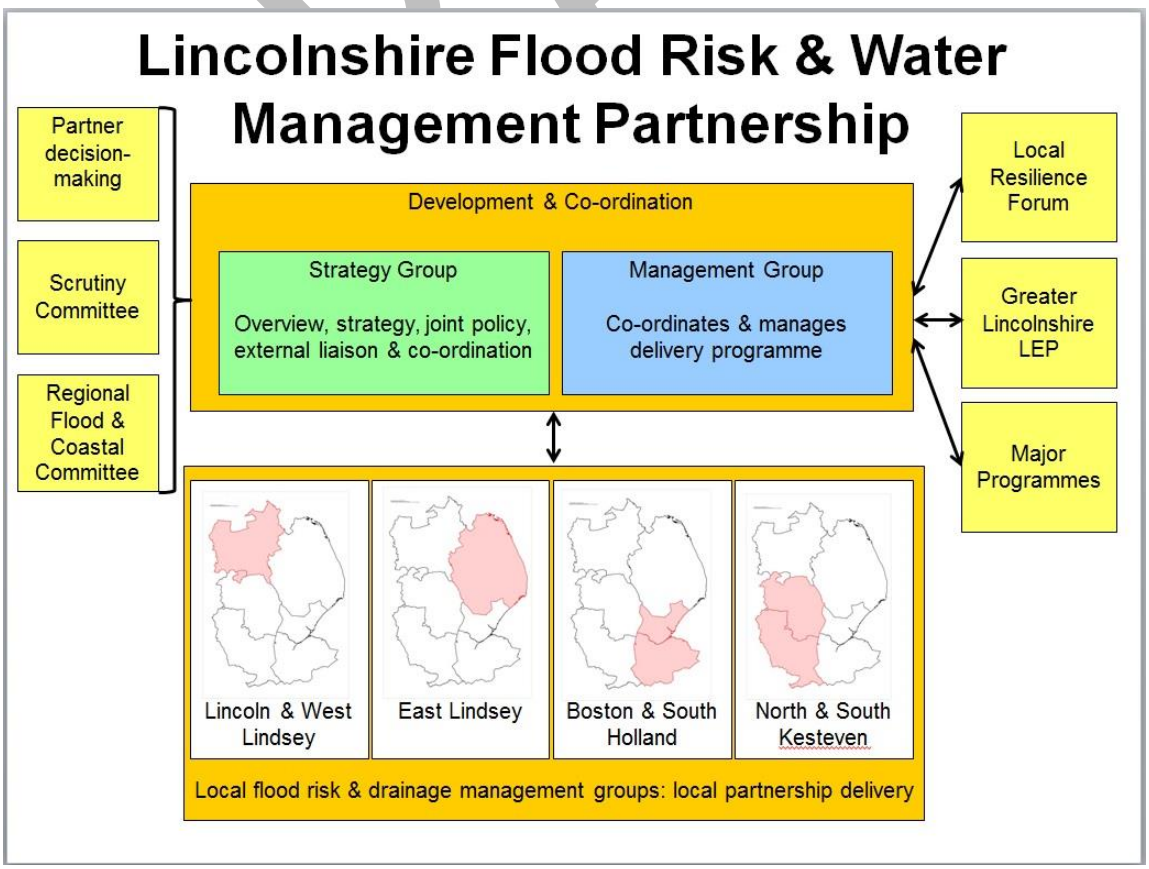
The Lincolnshire flood risk and drainage management partnership was established in 2010 in advance of the Flood Risk and Water Management Act (2010). It was created in order to provide the level of co-ordination needed to develop the joint strategy described above.

Since 2012 flood risk management has increasingly been recognised as an integral part of a wider issue of managing water as a resource that is essential to economic growth nationally and, particularly, in the east of England. To recognise this, a review of the existing partnership role and structure was undertaken during 2017/18. As a result, the partnership now includes wider water interests. Water Resources East (WRE), a regional initiative looking at water availability from a multi-sectoral position and the Greater Lincolnshire Local Enterprise Partnership and its water management board are now full members.

The revised governance and functions of the Lincolnshire flood risk & water management partnership can be found at the following link

https://www.lincolnshire.gov.uk/residents/environment-and-planning/flood-risk-management/implementing-management-strategy/103045.article

Figure 2 The Lincolnshire flood risk and water management partnership



When determining priorities and actions, the Lincolnshire flood risk and water management partnership directs its resources to areas where there is the greatest need, and where investment will bring the greatest benefits. As such, investment is considered in the round by attempting to take a truly systemic view of the water cycle to include the economic benefits its supports and unlocks.

The partnership has reviewed the key issues it believes Lincolnshire faces in terms of water. This includes flood and drought and the associated economics. It aims to work with communities to develop long term resilience to the impacts of climate change and sea level rise. It also seeks to develop new and innovative ways of funding the work that will need to be delivered to achieve this.

The partnership will focus on locations which exemplify these issues or themes and will facilitate discussions across partners, businesses, communities and central government as to how to best tackle these issues in the long term.

These locations are shown on the map in Figure 3 overleaf.

Coastal Lincolnshire

Lincolnshire's open coast is subject to significant flood risk from tidal inundation. It is protected by a mix of defences which are described in the Environment Agency's Saltfleet to Gibraltar Point strategy. Located immediately behind these defences are large communities, businesses, infrastructure and tourist attractions.

Our ability to support these communities and interests to grow sustainably brings together a great number of partners and policies. These include land use planning, infrastructure provision and flood risk. The partnership aims to bring these concerns together to deliver a sustainable plan and vision for our open coastline.

Agri-food

Agriculture and the agri-food industry are vital to a thriving Lincolnshire economy. It is dependent on the provision of clean water and the drainage of land. At present these concerns are not linked through strategy or policy. Moreover agricultural land does not attract as much government grant for flood risk protection as housing, while currently rates for drainage are subject to the local authority council tax cap. As such the partnership has two aims. To raise the importance of our contribution to the agricultural production of the UK in a post-Brexit Britain, and to ensure policies reflect the need to adequately fund land drainage and flood protection for agricultural land.

Catchment-based approach

Current strategic approaches to managing water are delivered generally in silos. This separates the management of flood risk, water resource provision and land drainage. By taking a holistic view of the management of water we believe it is possible to provide multiple benefits to the environment, businesses and communities. The governments' 25 Year Environment Plan identifies that land

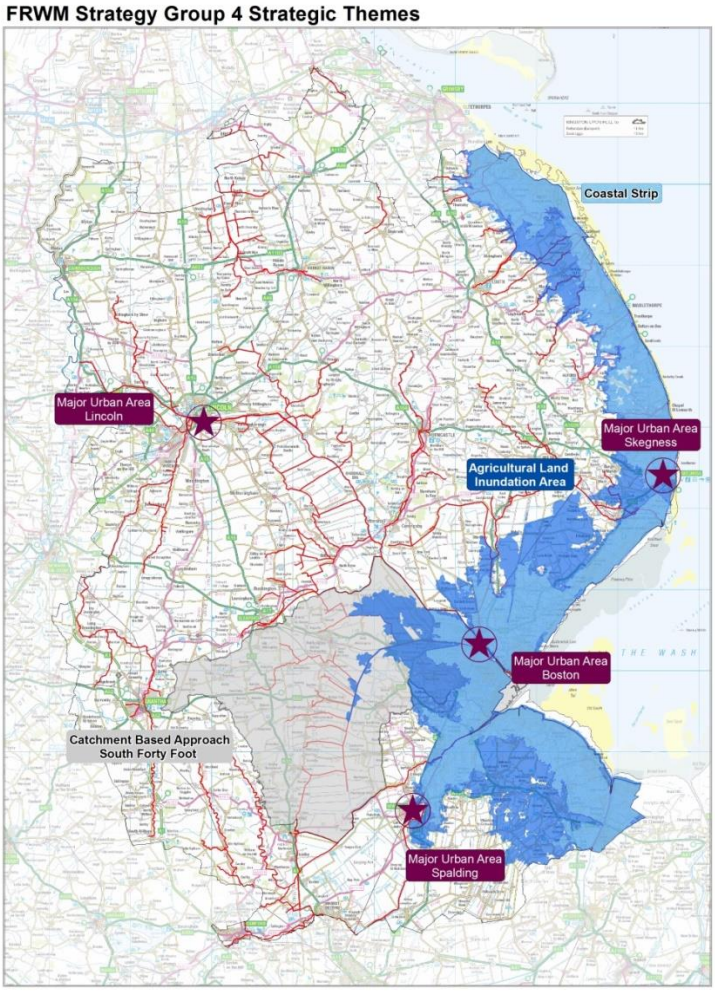
should be used and managed more sustainably and this approach will be tested in the south forty foot catchment under the South Lincs water partnership (SLWP) supported by the Lincolnshire flood risk and water management partnership.

Urban areas

Major urban areas provide a particular challenge. Flood risk arises from a number of sources including surface water, sewers, rivers and the sea. Growth and economic development can often be focused here. Our aim is to collectively manage these risks whilst allowing our urban centres to flourish and grow sustainably.

The map below shows these areas. The partnership aims to show ambition and determination to bring the necessary stakeholders and policy makers together to deal with the challenges facing Lincolnshire and build sustainable, resilient and thriving communities and economies. It must also be remembered that the partnership co-ordinates day to day operational works throughout the county to manage the risk from all sources of flooding. The current programme of these works can be in Part 3 of the current strategy found here.

Figure 3 Map showing strategic themes / locations

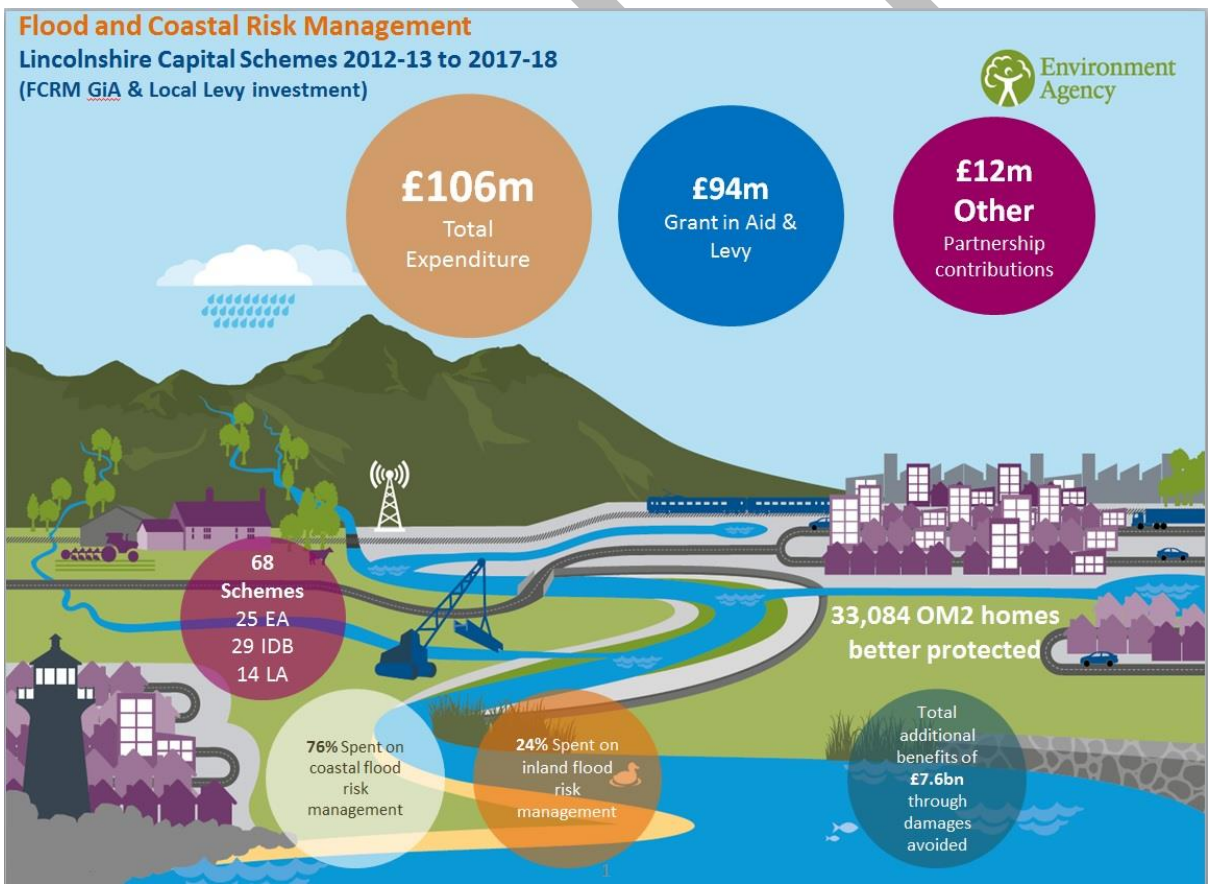


The history of the Lincolnshire flood risk and water management partnership, means it has developed a key role in managing flood risk in particular. This includes deploying resources and co-ordinating risk across a range of partners and risk management authorities.

The type of action that will be undertaken to manage flood risk and drainage will depend on the severity of the risk in each circumstance, including factors such as the likelihood of flooding, the level of danger posed by flooding, its impacts and the physical and economic feasibility of implementing a specific scheme or activity.

Since 2012 flood risk management authorities in Lincolnshire have been very successful in securing national funds for works, known as 'Grant in Aid' and funding provided by the Government to the Environment Agency allocated at regional level by the Regional Flood and Coastal Committee. This is also true of funds raised locally (called 'Local Levy') and provided to the Environment Agency by Lincolnshire County Council.

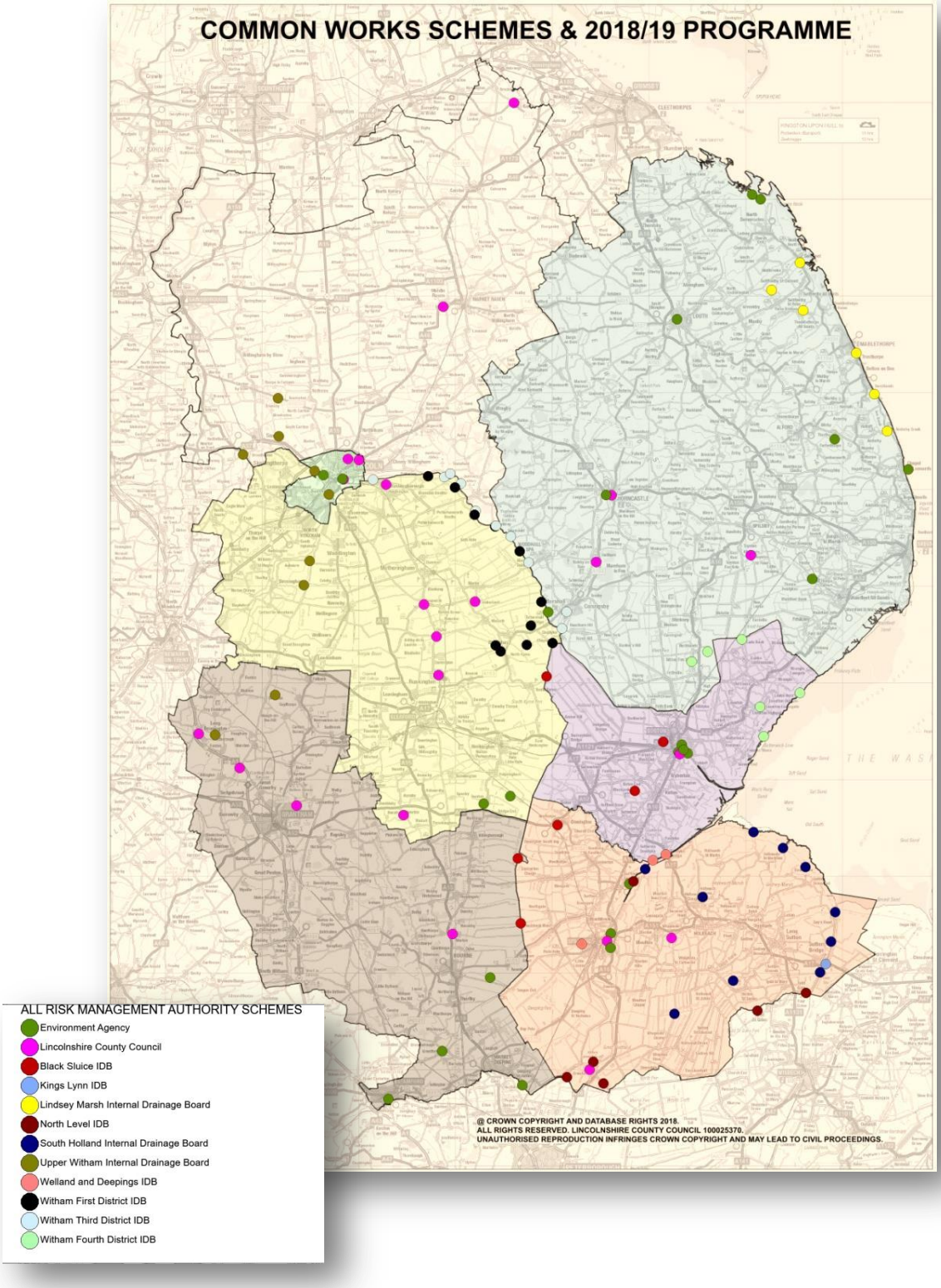
Figure 4



Many of the flood risk management activities undertaken are already the responsibility of individual organisations, such as the maintenance of an organisation's own assets, or the fulfilment of particular legal obligations. The common works programme includes schemes, works and other initiatives undertaken by flood risk management authorities across Lincolnshire where, in some cases, two or more authorities have come together through the Lincolnshire partnership to deliver work that would not have been possible, or would have

taken longer to achieve, if undertaken by one organisation alone. The common works programme is refreshed annually with all risk management authorities retaining the flexibility to respond to schemes and works needs as they arise. By combining resources, partners have been able to attract inward investment at a national level and raise the priority of proposed schemes regionally.

Figure 5 Location of partnership works that have received national funding and been delivered by Lincolnshire risk management authorities since 2012



3 The previous Joint Flood Risk & Drainage Management Strategy 2012-2025

Since the original Flood Risk and Drainage Management Strategy was completed and approved in 2012 considerable progress has been made to tackle the challenges faced from flood risk and water resource issues. Flood risk management authorities in Lincolnshire have been recognised by Government as among those leading nationally in the development and co-ordination through the Lincolnshire Flood Risk and Drainage Management Partnership Framework. In the period 2012-2018 we have deployed a total of £106,000,000 funding locally on flood risk management works in Lincolnshire, which has levered in £94,000,000 national capital funding, and has led to 33,084 homes being better protected from flood risk. In addition we have delivered numerous smaller schemes across the county, and completed investigations into 205 flooding incidents affecting one or more residential properties.

The partnership has taken a flexible approach as circumstances change and has identified and embraced new initiatives and opportunities that are emerging. The partnership continues to adapt in its approach to deal with changes since the original strategy was launched in 2012 such as expected legislation not enacted.

The previous strategy identified **9 strategic outcomes**, which have either seen significant progress, have been achieved or remain the fundamental approach to achieving positive outcomes in how the Flood Risk and Water Management Partnership operate. Outcomes specifically achieved and which are now firmly embedded in how the partnership function include:

Outcome 1	There will be a common works programme of measures to manage flood risk and drainage by 2013.
Outcome 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
Outcome 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.
Outcome 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.
Outcome 9	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.

A series of Strategic objectives were also identified within the original strategy to demonstrate how the vision and outcomes would be met. Once again some significant process has been made in these areas, most notably;

- The **register of Lincolnshire flood risk management assets** which was launched in April 2013. This is a web-base mapping system available to the public that brings together information about flood risk assets that are managed by as many flood risk management authorities as possible

- As a county we now have more information and better ways of assessing flood risk from all sources, significantly improved by the launch of the **risk of flooding from surface water map** launched by the Environment Agency in 2013

- The **common works programme** was first published on 1st April 2013. This, Part 3 of the existing Strategy, is the Action Plan and identifies the flood risk works being undertaken in partnership across the county and is updated annually.

- Risk management authorities in Lincolnshire have been efficient in securing partnership funding to deliver flood risk mitigation work. A major step forward in securing efficient work practices at a local level has been the development and implementation of the **Public Sector Cooperation Agreement** (PSCA). This provides arrangements for risk management authorities to deliver flood risk maintenance works and similar activities by a partnership approach. The development and national roll out of PSCAs was modelled on the existing innovative approach between Lincolnshire County Council and Internal Drainage Boards to deal with consenting and enforcing of ordinary water courses under a memorandum of understanding. These arrangements implemented 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.

- The partnership continues to work together to enable sustainable growth in the county. New links with the **Greater Lincolnshire Local Enterprise Partnership** ensure that this is embedded in the approach to flood risk and water management and is a fundamental part of the revised objectives of the new strategy

- Partnership activities continue to be overseen by elected members by the **flood and water management scrutiny committee**

Legislation which was expected to establish the County Council as a sustainable drainage approving body during 2014, was not enacted and elements of this role have been passed to the local planning authorities, with the LLFA providing an advisory service to them.

Overview of some key developments since publication of the first flood risk and drainage management strategy in 2013

Planning and development control

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 promoting sustainable growth and responsible mitigation of flood risk and provision of water resources.

Across the county, local planning authorities are at varying stages of production of their 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. Individual development proposals will need to be appropriately considered in respect of all forms of flood risk.

Revised national planning policy framework

In July 2018 the revised National planning policy framework was published. This is the first revision of the national planning policy framework since 2012 and implements around 85 reforms announced previously through the housing white paper, the planning for the right homes in the right places consultation and the draft revised national planning policy framework consultation.

The revised national planning policy framework will be a vital tool in ensuring that we get planning for the right homes built in the right places of the right quality at the same time as protecting our environment. The national planning policy framework sets out the Government's planning policies for England and how these should be applied. It provides a framework within which locally-prepared plans for housing and other development can be produced.

A key principle within the national planning policy framework is to contribute to the achievement of sustainable development. At a very high level, the objective of sustainable development can be summarised as meeting the needs of the present without compromising the ability of future generations to meet their own needs. Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives):

1) an economic objective
2) a social objective
3) an environmental objective

Planning policies and decisions should promote an effective use of land in meeting the need for homes and other uses, while safeguarding and improving the environment and ensuring safe and healthy living conditions. Plans should also

take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures. Policies should support appropriate measures to ensure the future resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure.

Local planning authorities have an important role in the county with regard to strategic thinking on land use planning and the effects of flood risk, water provision and environmental need should be paramount in future planning decision making.

Sustainable drainage systems

Sustainable drainage is intended to mitigate the impact of future development by promoting the use of sustainable drainage systems. The purpose of sustainable drainage systems is to mimic nature and typically manage rainfall close to where it falls and to take account of water quantity (flooding), water quality (pollution) biodiversity (wildlife and plants) and amenity. 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 systems can be designed to transport (convey) surface water, slow runoff down (attenuate) before it enters watercourses, they provide areas to store water in natural contours and can be used to allow water to soak (infiltrate) into the ground or evaporated from surface water and lost or transpired from vegetation (known as evapotranspiration). They are drainage systems that are considered to be environmentally beneficial, causing minimal or no long-term detrimental damage. They are often regarded as a sequence of management practices, control structures and strategies designed to efficiently and sustainably drain surface water, while minimising pollution and managing the impact on water quality of local water bodies.

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.

Water Companies now include include certain sustainable drainage features within their cirteria for adoption as public sewers.

Features that are adoptable by the Water and Sewerage Companies’ must serve more than one property. Therefore, any sustainable drainage features that only drain the highway, for example, would be adopted by Lincolnshire County Council as the highways authority..

Managing surface water in existing urban areas

Disposing of surface water places stress on existing drainage systems utilising hydraulic during times of peak flow, which can result in flooding of homes, pollution of the environment and an increased carbon footprint associated with pumping.

The approach taken to managing surface water has largely remained unaltered for generations. A new approach to managing rainwater closer to where its lands and reducing the impact of surface water is a cultural change that will take many years to implement.

This new approach involves the delivery of sustainable drainage within the existing built environment, often known as 'retrofitting'. This often involves the installation of small scale features such as water butts, rain gardens and tree pits, as well as larger features such as ponds and wetlands. As these features will be installed into existing areas, local communities will be at the heart of decision making and design opportunities.

Taking a long term approach allows partners to create resilient drainage systems can help all risk management authorities to meet the challenges of a changing future driven by climate change and future housing growth.

Register of Lincolnshire flood risk management assets

Lead Local Flood Authorities are required, under Section 21 of the Flood and Water Management Act 2010, to 'establish and maintain:

(a) a register of structures or features which, in the opinion of the authority, are likely to have a significant effect on a flood risk in its area, and

(b) a record of information about each of those structures or features, including information about ownership and state of repair'.

The Act goes on to state that 'the lead local flood authority must arrange for the register to be available for inspection at all reasonable times'.

In Lincolnshire a web-based system has been adopted that is accessible to the public at all times. It brings together information about flood risk assets that are managed by as many flood risk management authorities as possible.

The asset register shows structures (such as pumping stations, flood defence banks, weirs and sluices) currently being used to manage flood risk and drainage across the county, along with the relevant flood risk management authority.

As far as possible, the information links existing databases so that information about flood risk and assets can be shared by operating authorities without unnecessary duplication. Each authority retains responsibility for updating and maintaining its own data, but now has greater capacity to access and make use of data held by other authorities.

Every endeavour has been made to make the first release of the asset register as

comprehensive as possible, but it is important to note that this is a system that will be developed and improved over time. It has not been possible yet to include every known asset, and it is likely that there are others for which an owning or managing organisation cannot, at present, be identified. The asset register will be updated regularly, and additional information will be added as it is identified and verified.

Please follow this link to access the asset register.

Public sector co-operation agreements

The public sector co-operation agreement (PSCA) provides arrangements for the Environment Agency and an Internal Drainage Board, Lead Local Flood Authority , District Council or other risk management authority to deliver specific flood risk maintenance works and similar activities jointly. This is a major step forward in securing efficient work practices at a local level. The agreement places both parties on a sound legal basis to deliver work as agreed – either party may undertake work for the other.

Based on section 13(4) of the Floods and Water Management Act 2010, a PSCA can cover any maintenance or similar activity such as inspections, obstruction removal, weed control, grass cutting, tree work, vermin control, dredging, pump operation etc. It also provides for mutual RMA support in managing flood incidents. In some cases it can be used for capital asset improvement or replacement works.

The benefits of PSCAs

- Securing efficient local working arrangements which will achieve value for money in delivering operational maintenance activities.
- Taking advantage of local skills and experience including local knowledge of geography, associated river/drainage systems and operational practices, to benefit local communities.
- Sound legal basis for either party to undertake work for the other party, as agreed.
- Having flexible partnership working arrangements. Agreements typically cover a period of up to 5 years, with annual reviews to discuss/agree the specific extent of activities to be carried out under the PSCA.
- Standardised documents which are simple to apply to local needs.

Greater Lincolnshire LEP

The Greater Lincolnshire LEP is a business led partnership made up of private and public sector leaders. Working with government and stakeholders to find solutions enables the LEP to deliver strategic projects and programmes that will drive local prosperity and economic growth. Greater Lincolnshire is now widely regarded as a very successful LEP and has gained a strong reputation for delivery and influence, with many schemes and investments now taking shape. The LEPs £307 million growth plan covers the area's key economic sectors and recognizes the importance of water management in developing these.

In 2014 the LEP launched its Strategic Economic Plan which highlights the

important role Greater Lincolnshire plays in the national economy by contributing to food security, manufacturing output, the UK visitor economy and our country's housing needs. It sets out priorities and drivers to develop the area's three defining sectors that offer the most competitive advantage, namely agri-food, manufacturing and the visitor economy. The plan identified water management as key with security from flooding a key infrastructure requirement for our economy. The threat of flooding affects developer confidence and development viability whilst water management in the whole is seen as fundamental to Greater Lincolnshire, not only because it provides valuable services that underpin our environment, economy and quality of life, but also because of our geography.

Subsequently the LEP developed an integrated approach to water and in 2015 developed the Water Management Plan. The plan identifies the effective management of flood risk and water resources to be a critical factor in enabling economic growth across the area. The strength of the existing long-standing partnership working in flood risk management in the county provided the opportunity to develop this further and drive links with organisations responsible for water supply and management.

A partnership approach to catchment management

In October 2015, the Anglian Northern Regional Flood and Coastal Committee (RFCC) raised significant concerns over watercourse systems that, following a Defra cost benefit analysis process, would be 'unfunded' for flood and coastal risk management funding. As a result of this the partnership approach to catchment management (PACM) project was formed to understand other options for these systems. Despite the additional maintenance funding from Government in 2016, there is still a need to address unfunded systems, find efficiencies and develop a sustainable, forward look for asset management in the area. Asset management is the key driver, but also alignment with flood risk and environmental benefits by applying and embedding catchment management principles

The PACM approach provides a framework of assessment for risk management authorities and other local delivery partners to use in order to deliver a partnership approach to water management on a catchment scale. The work focuses on all issues relevant to the movement and management of water in a defined catchment or area. This work offers a unique opportunity to identify the most appropriate authority/authorities, organisation or community to lead on asset management, delivering efficiencies and enhancing opportunities for reinvestment locally.

This project is being delivered across the Anglian Northern RFCC area and will provide a foundation for all organisations which have an interest in the catchment. This can range from risk management authorities to volunteer groups and the general public to understand and agree how a catchment is to be managed.

Regional water resource planning

During 2017/18 a clear direction from government and water regulators emerged making it clear that greater coordination of water resource management plans is required to meet the challenges we face. It is recognised that the water industry has been considering improved co-ordination, for example Water Resources East

(WRE) has demonstrated innovation by taking a cross-sector approach and is making important links with the initial priority catchments identified in the abstraction plan.

Government is clear that the water industry now needs to turn thinking into action and that water companies should take a genuinely regional approach to producing plans that transcend company boundaries and identify optimum solutions for the region as a whole. This planning should then provide the basis for individual water company plans. In doing so it is expected they will engage with other water users to develop cross-sector solutions as well as work with regional groups such as local enterprise partnerships to understand regional economic and population forecasts.

There is great potential for strategic water resource management initiatives developed through Water Resources East (WRE) to provide strong support for Lincolnshire's priorities in resilience to flood risk, growing the agri-food and visitor economies, and protecting and sustaining the county's environment and local communities for the future.

Rationalising the main river network

During 2017/18 an innovative approach was trialled on a small number of selected water courses in England as part of a pilot project – rationalising the main river network. The Environment Agency worked closely with key partners, local communities and stakeholders to develop proposals for re-designating sections of selected watercourses in England. The proposals allow the transfer of flood risk activities to willing internal drainage boards or county and district councils. One of these pilot areas was in the South Forty Foot catchment in Lincolnshire where stretches of low flood risk watercourses were re-designated from main river to ordinary watercourse.

Changes brought about by the project mean that the Environment Agency will no longer be responsible for the overall management of the watercourse. Instead, maintenance and flood risk management will be done at a more localised level by Black Sluice Internal Drainage Board. This process is known as ‘de-maining’ and will help ensure that the right people are managing the right watercourses and assets in the right places

The proposals came about as the Environment Agency looked at new and innovative ways to deliver more for the environment by changing their ways of working and how they use their resources. As part of this, they worked closely with Black Sluice Internal Drainage Board who wished to take more responsibility for maintaining and regulating their local, low flood risk, watercourses in Lincolnshire.

De-maining aims to bring more choice to communities and local organisations in how watercourses are managed and maintained. In the South Forty Foot catchment, this means decisions on watercourse maintenance will be made at a local level and be better informed through greater collaboration between all area stakeholders.

The success of the South Forty Foot catchment pilot means this process could now be rolled out more widely across the county in suitable areas where watercourses are not major rivers or near population centres, have a low flood risk and where IDB or lead local flood authorities/district councils are willing and the local community is supportive.

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4 Understanding Flood Risk

The risk of flooding is affected by a range of factors. These can be natural, such as the weather, or man-made like urban development and the presence of flood risk management schemes. Risk management authorities who manage flood and coastal erosion risk are continually seeking to improve their understanding of risk and the way in which they communicate this to the public.

Information about the risk of flooding and coastal erosion has many uses, including:

• ensuring that investment in flood and coastal erosion schemes is proportionate to need and directed to where it achieves the best value

• informing developer and local planning authority decisions on future development and infrastructure

• helping emergency planners to prepare how they will respond to floods

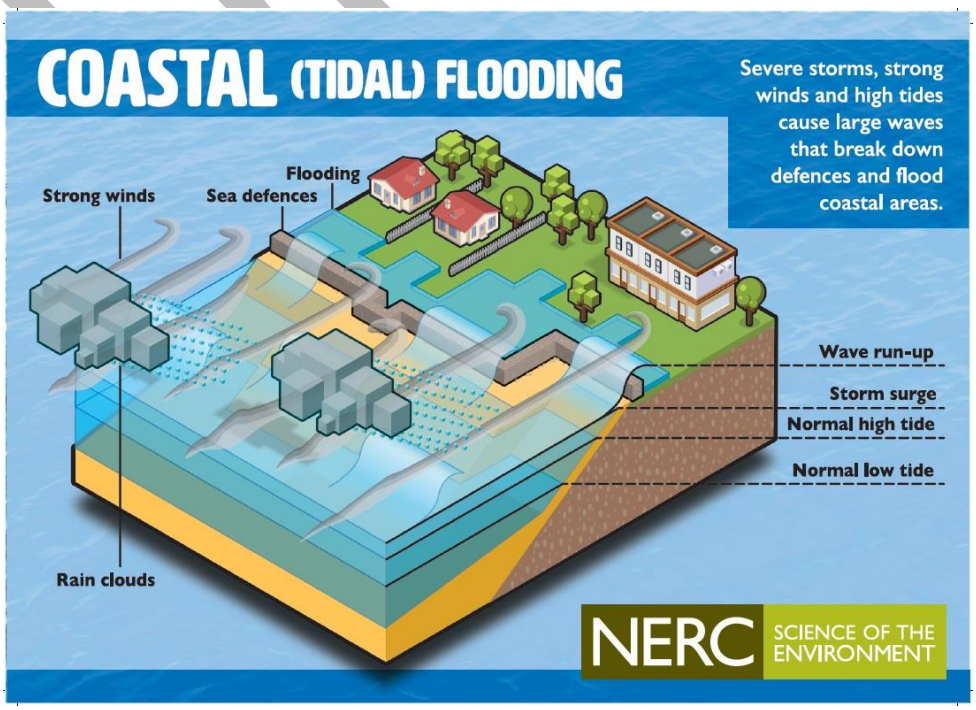
• enabling people to understand and make decisions about the risk they face

The different types of flooding

There are different types of flooding that can happen depending on where the water comes from. Each of these flooding types are managed by different organisations across Lincolnshire. The information below details seven types of flooding that are likely to be experienced under certain climatic conditions.

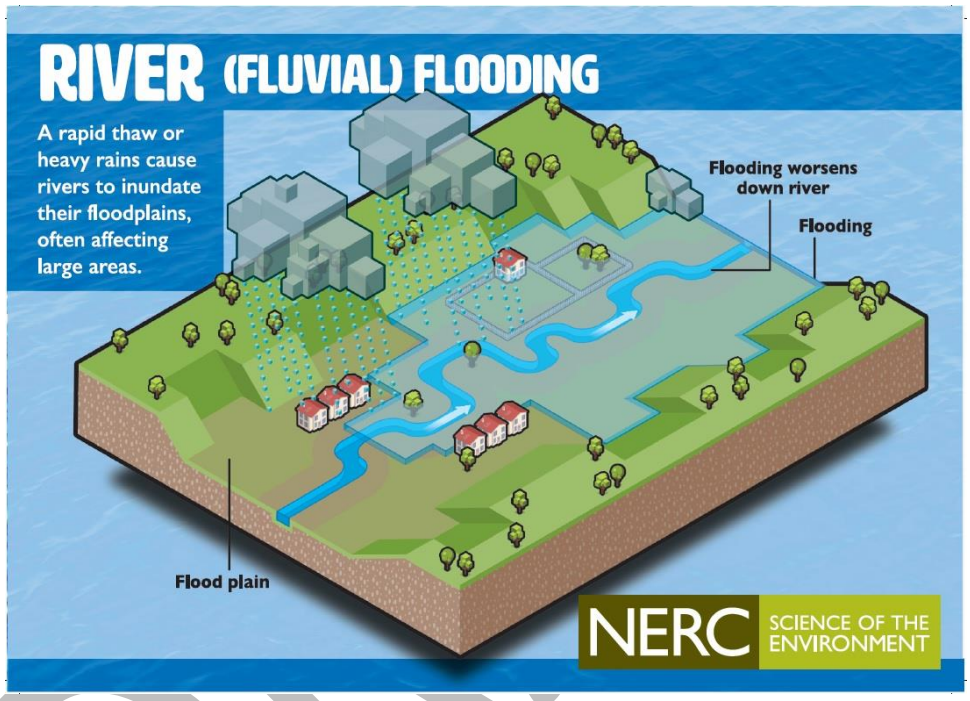
Coastal flooding

Coastal flooding happens when there are high tides and stormy weather conditions that can result in a "tidal surge", which could cause sea levels to rise over flood defences. Lincolnshire was affected by significant coastal tidal surge events in 1953 and 2013.



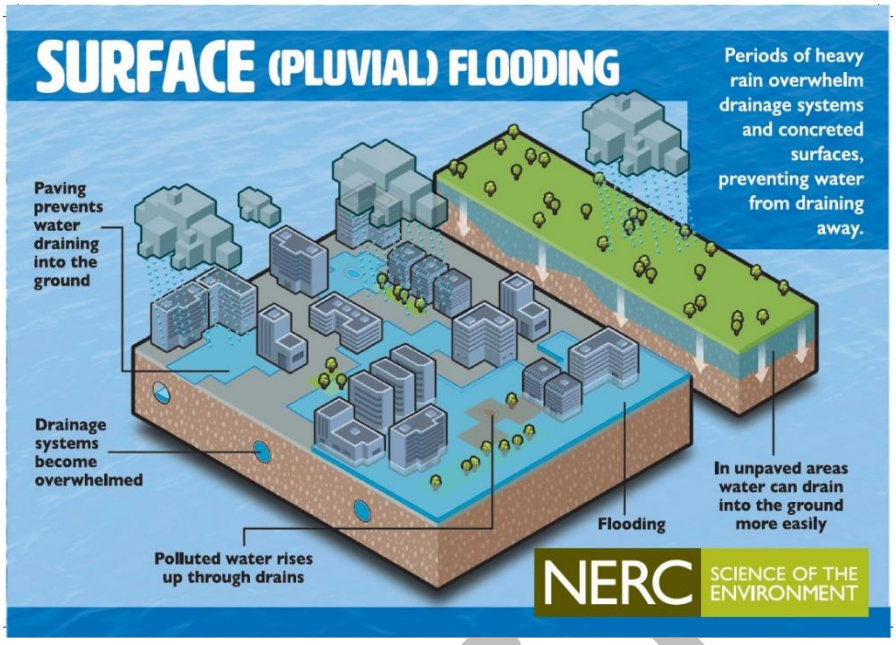
River flooding

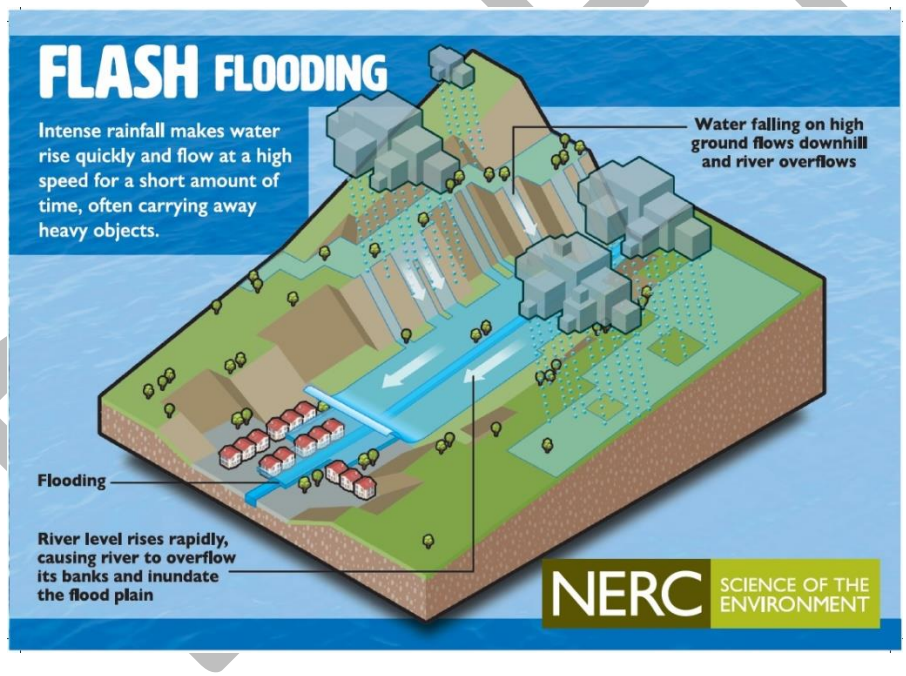
River flooding happens when a stream or river (watercourse) cannot cope with the amount of water that is flowing into it from the surrounding land. Rivers are separated into "main rivers" and "ordinary watercourses". Main rivers are usually the larger ones in the county such as the River Witham, Welland, Slea and Steeping but also some smaller streams that are important for drainage. Ordinary watercourses are any other smaller rivers, streams or ditches.



Surface water flooding

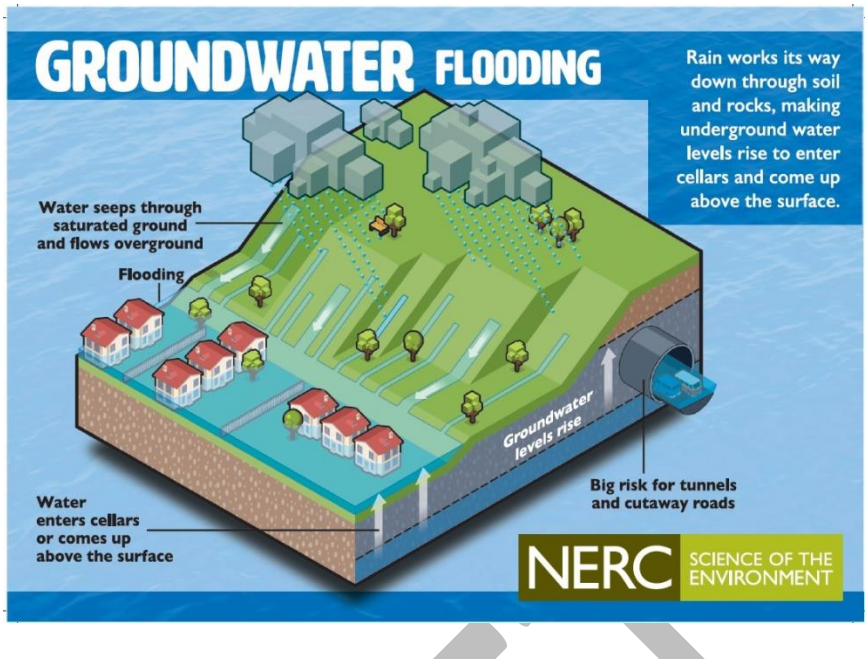
Surface water flooding happens when rainwater flows or ponds over the surface of the ground and does not soak into the land or enter a drain or river. It usually happens during heavy rainfall (more than 30mm per hour) and is made worse by blocked ditches, drains, very dry soils after periods of drought and compacted or waterlogged soil. There is no early warning system for surface water flooding and it is difficult to predict, however our surface water flood risk maps do show the risk across the county.





Groundwater flooding

Groundwater flooding happens when water levels in the ground rise above the surface. It is common after long periods of constant heavy rainfall and likely in low lying areas, those with natural springs and where chalk is present under the ground (which acts like a sponge to store water).



Sewer flooding

Sewer flooding happens either when the pipes in the network are blocked or when there is heavy rainfall and the sewers cannot cope with the amount of water because they are not designed to cope with heavy, prolonged rainfall. The danger of this type of flooding is that water can become contaminated with raw sewage and enter land and property, or the river system.

Snowmelt flooding

Snowmelt can cause significant flooding. Unlike rainfall, which reaches the soil almost immediately, snow stores the water for some time until it melts. Long periods of snowfall can therefore result in a large volume of water being released in a short space of time (around 1cm of water is released for every 10cm of snow). Snowmelt flooding is made worse when the ground remains frozen and snow melts, as the water cannot enter the ground, and so acts like surface water flooding.

Reservoir flooding

Reservoir flooding is extremely rare. It happens when there is a failure in the dam holding back the water as a result of erosion, accidental damage or water levels rising above/over-topping the dam. Whilst the risk is low, the resulting flooding can be very destructive.

With thanks to - NERC and Ben Gilliland for the use of the graphics which support this section

Communicating the risk

Since 2012 the way in which information on flood risk is shared with the public and partner organisations has also improved. The Environment Agency now offers more information to people about their flood risk and flood maps can now be downloaded free of charge. Part of this is linked to the many recent advances in data and modelling methods.

Many people and organisations need access to flood and coastal erosion risk information. It is important that this information is easily understandable and provides clear instruction on what action to take in the event of flooding. Since 2000 the Environment Agency has published its National Flood Risk Assessment which is now the main source of information on flooding from rivers and the sea.

The Environment Agency has worked in partnership with local authorities to improve the quality and accessibility of coastal erosion data. The national coastal erosion risk map (NCERM), published on the Environment Agency website in 2012 uses local authority verified data and provides the first consistent assessment of coastal erosion risk around England. These maps show what is expected to happen where the shoreline management plan (SMP) policies are implemented and what is likely to happen if there is no active intervention along the coast. The Environment Agency worked with local authorities to update the national coastal erosion risk map between 2015 and 2017 and will continue to maintain this information in the future.

Surface water flood risk maps

One key area of data which has been made available since 2012 is the surface water flood maps. The maps provide information on all the major types of flooding which affect England including, for the first time, the risk of flooding from surface water.

They are presented in a clear, simple and consistent way, making it easier for people, communities and partners to understand flood risk and make decisions about how to manage it.

To access the maps, please click here.

The Risk of Flooding from Surface Water Map shows the flood risk from surface water from the impact of heavy rainfall. Using the latest data, technology and modelling techniques it shows areas at risk of flooding from surface water and includes potential depth and velocity.

There are four categories of risk:

high - the chance of flooding in any year is greater than 3.3 percent (1 in 30 year chance)

medium - the chance of flooding in any year is 3.3 percent (1 in 30 year chance) or less, but greater than 1 per cent (1 in 100 year chance

low - the chance of flooding each year is 1 percent (1 in 100 year chance) or less, but greater than 0.1 per cent (1 in 1000 year chance)

very low - the chance of flooding each year is 0.1 percent (1 in 1000 year chance) or less

There are some simple steps you can take to reduce the impact of flooding on your home and business. You can find more information on how to take these actions on the Environment Agency's website.

Awareness of, and preparation for, flood risk

There are various steps that can be taken to help prepare for flood risk from rivers and the sea if you live in a high or medium risk area. These include;

- Signing up for free flood warnings
- Completing a flood plan
- Finding out how to prepare a property for flooding

It is important to remember that even if living in a low risk area, the risk of flooding can never be eliminated and there are lots of things that you can do such as those outlined above.

There is no warning service for surface water flooding but you can keep up to date with local weather bulletins to forewarn you of heavy rainfall. There are also simple steps that can be taken to prepare for this type of flooding.

- Completing a flood plan
- Finding out how to prepare your property for flooding
- Checking the three-day flood risk forecast

It is always important to be aware of local weather, particularly if there is severe weather approaching that could lead to local or more widespread flooding.

The below link shows any severe weather warnings released by the Met Office for the next 5 days as well as any flood warnings from the Environment Agency. If a warning is showing, click on it to find out more.

https://www.metoffice.gov.uk/public/weather/warnings#?date=2018-11-20

Flood defences

It is important to remember that whilst a flood defence may reduce the risk of flooding from rivers or sea, it is less likely that it will reduce the chance of flooding from surface water. While flood defences reduce the level of risk they do not completely remove it. As described above they can be overtopped or fail in extreme weather conditions, or if they are in poor condition.

Further information on the risk of flooding from rivers, the sea and reservoirs can be obtained from the local Environment Agency office on 0345 988 1188.

If you would like more information on existing or planned surface water reduction measures in your area then you can contact Lincolnshire County Council's customer services team on 01522 782070.

Insurance

To find out whether you can insure your home for flooding, contact a range of insurers to obtain quotes.

If you live in an area of high flood risk or where there have been previous insurance claims for flooding, you may need to find a specialist insurer, or use a broker to obtain insurance. The National Flood Forum also provides advice on obtaining flood insurance. National Flood Forum

The Environment Agency makes their flood risk information available to insurers who may use it alongside other information to inform their decisions about provision and cost of insurance. It is worth noting that insurers already have other/their own surface water information, so this is an additional dataset which they may decide to license. The Environment Agency is always clear that the maps estimate flood risk for areas of land, not individual properties.

The Environment Agency and Lincolnshire County Council have no role in determining insurance cover or setting premiums. Insurers are free to use whichever data they like to determine whether to offer insurance and at what price.

If the Risk of Flooding from Rivers and Sea or Risk of Flooding from Surface Water map shows your area to be at risk of flooding, then the flood risk may affect whether flood insurance is available and at what cost. Flood risk in an area is defined as ‘significant’ according to an agreement between the government and the Association of British Insurers (ABI). The agreement - the ‘Statement of Principles’ - is about offering insurance, not about pricing.

For more information about what this means got to www.abi.org.uk.

For more information on the future of flood insurance go to www.gov.uk.

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5 Roles and functions of Lincolnshire flood risk management authorities

The Lincolnshire flood risk and water management partnership has been a feature of the way risk management authorities work in Lincolnshire for a number of years now. It has successfully driven a partnership approach to working, with particular reference to inland and coastal flood risk and received considerable praise from central government and other counties as a result.

Amongst many other things, the partnership has secured a long term common works programme for Lincolnshire that has brought together the work of all relevant partner organisations to allow for more efficient delivery. It has allowed authorities to respond as one to key government challenges and facilitated the delivery of long needed schemes at Louth, Horncastle, Stamp End, Lincoln and Waddingham. It has built partnerships between risk management authorities leading to greater efficiency in working, for instance through IDB consenting and enforcement of ordinary water courses. It has also been instrumental in building resilience in our emergency response through the Local Resilience Forum.

In addition to the strong partnership working arrangements in the county individual Risk Management Authorities have their own roles and functions with regard to their duties and powers under the Flood and Water Management Act. Many of these remain unchanged from those published in the original strategy, however there have been some changes, most notably around sustainable drainage.

Lincolnshire County Council

Under the Flood and Water Management Act 2010, Lincolnshire County Council as a Lead Local Flood Authority is responsible for managing the following types of flooding:

- **Surface water flooding** – this includes flooding from rainfall run off from surfaces such as roads, roofs, and patios
- **Ordinary watercourses** – this includes drains which can be easily overwhelmed after heavy rain, but excludes main rivers that are managed by the Environment Agency.
- **Groundwater flooding** – this includes flooding caused by heavy and sustained levels of rainfall capable of increasing the groundwater table.

The Lead Local Flood Authority role includes assessing the risk of surface water flooding across Lincolnshire as well as working with organisations responsible for water management across the county, so that we can bring people and resources together more effectively so that we can reduce the likelihood of flooding happening, and provide the best possible help when it does happen. See Lincolnshire County Council flood risk management

Specifically, Lincolnshire County Council as a highways authority is responsible for repairing drainage and flooding issues on highways and roads across the county. This includes blocked drains and gullies on the roads, however they are not

normally responsible for ditches alongside roads. In most cases the responsibility is with the adjacent landowner.

Contact LCC Highways to report flooding on a highway, including blocked drains and gullies on roads. Lincolnshire County Council Highways Drains and Flooding

Stamp End flood alleviation scheme

The Stamp End flood alleviation scheme in Lincoln was completed in March 2018. The £1million project is Designed to protect 119 homes from the type of adverse weather which caused damage to homes and local businesses in 2007.

The area suffered flooding after prolonged heavy rainfall, 84 homes were affected, leading to the evacuation of 200 residents. It is estimated that over half a million pounds of damage was initially caused but the knock on economic effect for local businesses and travel infrastructure is likely to be significantly higher.

The flooding closed a local road which was the single means of access to major factories and a Western Power substation.

The project was jointly funded by Lincolnshire County Council, Anglian Water, Witham Third District Internal Drainage Board and a Defra grant provided by the Environment Agency as well as numerous local businesses who contributed in kind.

In 2007 the drains and sewers at Stamp End were unable to move the excessive surface water to the nearby River Witham, which itself was over-pouring.

The new scheme provides flood resistance to the residential area with a low flood barrier, whilst the new pump station which has been installed will alleviate pressure at times of heavy rainfall thereby making improvements to the Anglian Water surface water sewers so that they can carry more water to the new pump.

Environment Agency

The Environment Agency is responsible for coastal management in Lincolnshire, managing the risk of flooding from main rivers and regulating reservoirs. The Agency has a duty to contribute to sustainable development when delivering its statutory functions.

For more information and advice about flooding please follow this link.

Louth and Horncastle flood alleviation schemes

Two Flood Alleviation Schemes in Louth and Horncastle collectively reduce flood risk to over 350 properties. Construction on the £6.5m Louth scheme and the £8.1m Horncastle scheme started in summer 2015, and were finalised in July 2017. The two projects were delivered in a partnership of the Environment Agency, Lincolnshire County Council, East Lindsey District Council, Anglian Water and the Lindsey Marsh and Witham Third Internal Drainage Boards. Louth and Horncastle town councils will fund ongoing maintenance on the schemes. The development of the two schemes was led by the Environment Agency, with construction being carried out by its contractors.

Communities in Louth and Horncastle were significantly affected by the floods of summer 2007, when over 200 properties in the area were flooded. Close partnership working has since helped fund and made the two Flood Alleviation Schemes possible.

The Horncastle Flood Alleviation Scheme consists of a single flood storage reservoir on the River Bain, upstream of the town of Horncastle. As part of this scheme, a number of residents whose homes are at risk of flooding from the river Waring were offered property-level flood protection, such as air brick covers and flood doors. The Louth Flood Alleviation Scheme consists of a flood storage reservoir on the Northern branch of the River Lud, and one on the Southern branch of the river.

In addition to reducing flood risk to hundreds of properties in Louth and Horncastle, the two schemes also deliver benefits to the environment. In Horncastle, partners have created a large lake and wetland area which will provide a habitat for water voles. At the reservoirs in Louth, additional water vole habitat will also be created.

Over the Easter bank holiday weekend in 2018, 37mm of rainfall fell in two events over both the Louth and Horncastle catchments. Following the second event the reservoir at Louth filled for 12 hours and the reservoir at Horncastle filled for nearly 24 hours before commencing a controlled release with both reservoirs operating as expected.

Anglian Water Services and Severn Trent Water

Water and Sewerage Companies manage the supply and quality of drinking water, as well as the disposal and treatment of sewage and, in urban areas, the disposal of surface water runoff from properties.

All water and sewerage companies maintain a register of properties at risk of flooding due to a hydraulic overload in the sewerage network.

The flooding 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 from the register, but dealt with immediately when required. It is also worth noting that properties will be removed from the register once a solution is in place.

As part of a Water and Sewerage Company's business planning process, they will agree with customers their priorities for future work. This may include delivering traditional sewerage capacity schemes, or more likely in the future, managing surface water through the use of sustainable drainage measures. Sustainable drainage schemes will need to be delivered in partnership with risk management authorities and local communities.

For more information please visit;

- Anglian Water
- Severn Trent Water

Internal Drainage Boards

Internal Drainage Boards (IDBs) are a type of local public authority that manages water levels in England where there is a special need for drainage. IDBs undertake works to reduce flood risk to people, property and infrastructure, and manage water levels for agricultural and environmental needs. Each IDB has permissive powers to manage water levels within their drainage district, carefully maintaining rivers, drainage channels, culverts, sluices, weirs, embankments and pumping stations. They also play an important regulatory role, using powers to keep watercourses clear of obstructions. They set byelaws to ensure the watercourse network works efficiently, and they scrutinise planning and development in their area to mitigate its impact on the water environment and flood risk. They have statutory duties with regard to the environment and recreation when exercising their functions.

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IDBs are defined as a Risk Management Authority within the Flood & Water Management Act 2010 working alongside the Environment Agency, local authorities and water companies to actively manage and reduce the risk of flooding. Their activities and responsibilities are principally governed by the Land Drainage Act 1991as amended by subsequent legislation.

The 14 Internal Drainage Boards which operate in Lincolnshire manage an extensive network of drainage channels, pumps and sluices which combine to maintain low-lying, high-quality agricultural land, as well as managing water levels across large areas of the county.

More information on Internal Drainage Boards can be found here ADA - Association of Drainage Authorities

IDB consenting and enforcement of ordinary or riparian watercourses

A riparian watercourse is any natural or artificial channel, above or below ground, through which water flows, such as a ditch, stream, culvert or pipe. If you own land adjoining or above a watercourse, or with a watercourse running through it, you are a 'riparian owner'. This brings with it certain rights and responsibilities which can be found via the following link - Owning a watercourse

Under the Land drainage Act 1991 consent is needed to carry out works to ordinary watercourses, including changes to dams, weirs and other structures, or to pipe or culvert a watercourse. Within IDB Districts it is the relevant IDB which would normally process such applications, and the County Council as Lead Local Flood Authority (LLFA) outside those Districts. However, in Lincolnshire the LLFA has used it's powers under the Land Drainage Act to enter into arrangements with the IDB's by entering into Memorandums of Understanding, which allows the IDB's to act on behalf of the LFFA for the purposes of consent and enforcement who now operate within extended areas. Further information can be obtained from the appropriate IDB (see **Figure 6** below).

The approach taken in Lincolnshire has been an innovative way in dealing with 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. The Internal Drainage Boards have agreed to undertake these powers across the whole county, establishing extended catchment areas to ensure consistent coverage across Lincolnshire.

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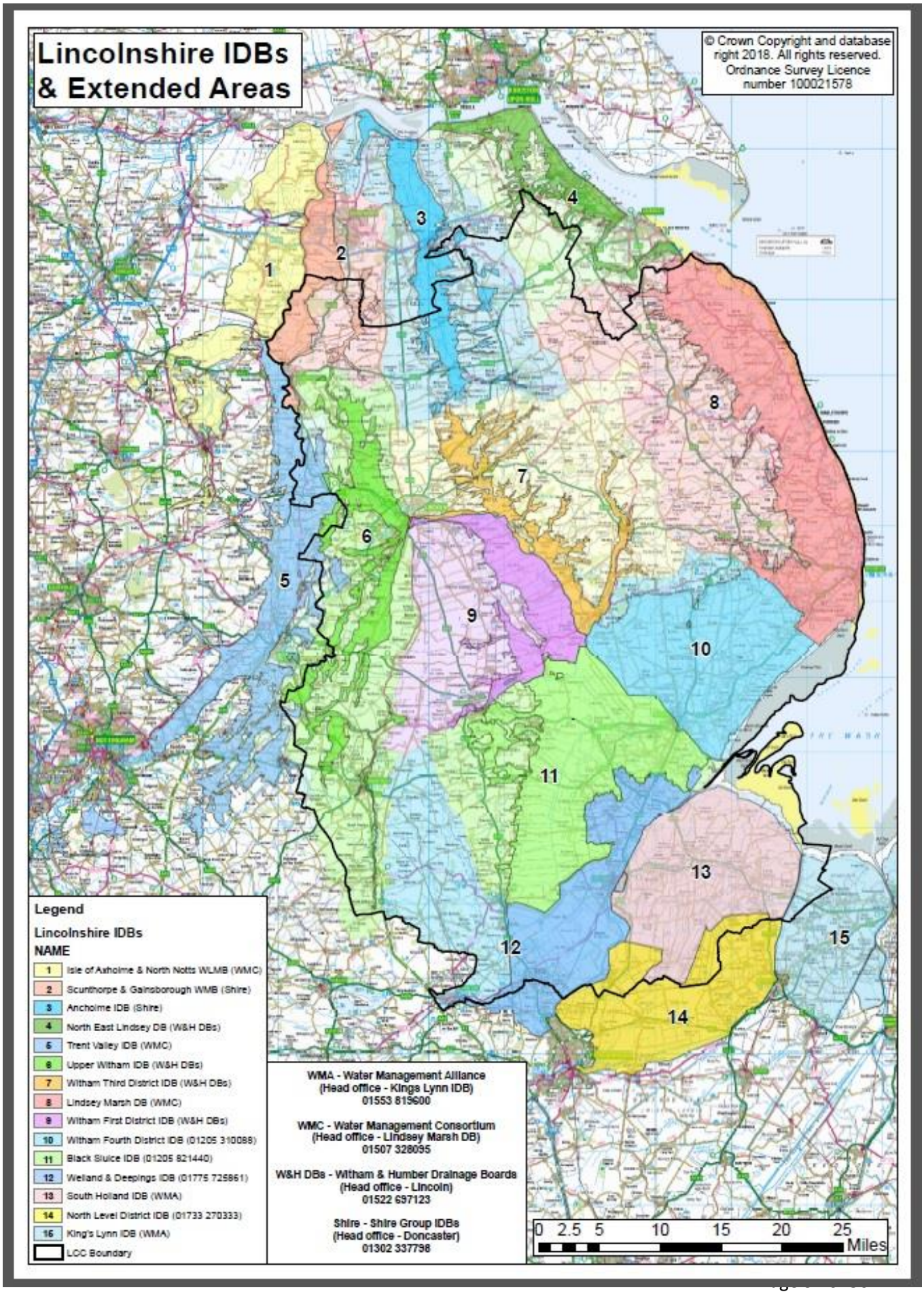
Figure 6 Lincolnshire Internal Drainage Boards and their extended areas



The seven district and borough councils in Lincolnshire retain existing powers to undertake works on ordinary watercourses, but also obtained new roles and responsibilities under the Flood and Water Management Act. Most recent of these, and a new role established since 2012 is that they now act as the SuDs Approving Body (SAB) for major developments with surface water drainage

Lincolnshire Prepared

Emergency planning in Lincolnshire is co-ordinated by the County Council's emergency planning and business continuity service - Lincolnshire Prepared. Preparing for emergencies at the local level is carried out under a piece of legislation called the Civil Contingencies Act (2004). The purpose of the Civil Contingencies Act is to establish a statutory framework for civil protection at the local level. It sets out clear expectations and responsibilities for front line responders to ensure that they are prepared to deal effectively with the full range of emergencies from localised incidents through to catastrophic emergencies.

The Civil Contingencies Act sets out clearly how organisations, particularly local responders, should go about preparing for emergencies and tells us:

- what scale of emergencies we should be preparing for
- what organisations have to be involved in preparing for emergencies
- what these organisations have to do

Under the Act there is a requirement to produce a Community Risk Register as part of the wider work in preparing for, responding to and recovering from emergencies. The register covers all types of risks and this is used as a basis for planning to protect Lincolnshire. The key risks affecting Lincolnshire are prioritised as follows:

1. Pandemic Flu
2. East Coast Flooding
3. Inland Flooding
4. Impacts from disease / contamination
5. Severe Weather
6. Loss of critical infrastructure
7. Fuel shortages
8. Malicious Acts

As can be seen some of the highest risks within the county are from the risks of flooding and the effects of severe weather. Lincolnshire prepared works very closely with the Environment Agency and many other professional partners both in planning to reduce the effects of flooding and in the response to an incident. There is much that can be done in preparing for the risks and effects of flooding such as signing up to flood warnings, making a flood plan and preparing an emergency kit. Much more information is available through the Lincolnshire Prepared webpages.

Other organisations and individuals that have an important role in flood risk and water management within Lincolnshire

Highways England

Highways England is responsible for drainage of a small section of the A roads (trunk roads) in Lincolnshire. These are the A1, A46 (from the Nottinghamshire border to Lincoln bypass Carholme Roundabout) and the A52 west of Grantham to the Nottinghamshire border. Contact Highways England for flooding issues on these roads - Highways England

Town and parish councils/communities

Town and parish councils as well as communities both play an important role in managing flood risk at the community level. They can help gather information on areas at risk of flooding by reporting any flood incidents.

Communities and individuals at risk of flooding should prepare Community and Household Flood Plans. Residents can also get involved with the community and local councils by becoming a flood warden. In addition communities and parish or town councils can be crucial in raising additional funding for local flood defence measures and for undertaking regular maintenance. Find your town or parish council

Riparian owners

All landowners and tenants whose property has a watercourse within or adjacent to the boundaries of their land, are riparian owners of that watercourse. Riparian owners have a responsibility for maintaining the watercourse and bank, clearing debris and keeping any ditches or structures clear to allow water to flow naturally and prevent flooding. This ownership extends to watercourses that are piped (culverted) under the land.

Riparian owners can face legal action if the lack of maintenance of their watercourse causes flooding. Land ownership is sometimes unknown, disputed or difficult to work out. To find out who owns certain parcels of land (and therefore whether or not they have a riparian responsibility), obtain copies of title registers and title plans using the online land registry services.

The revised and updated functions of the Lead Local Flood Authority and other risk management authorities are identified in **Table 1** below.

Table 1 - Key roles and functions of Risk Management Authorities

Authority	Risk Management Functions
Environment Agency	• duty to have a strategic overview for all forms of flooding • duty to develop, consult on, maintain, apply and monitor a National Strategy for Flood and Coastal Erosion Risk Management (FCERM) to cover all forms of flooding • duty to establish Regional Flood and Coastal Committees with new remit to include coastal erosion issues and consent for the regional programme • duty to have regard to the national and local FCERM strategies • duty to report to Ministers on FCERM including implementation of the strategies • duty to contribute to sustainable development in discharging their FCERM functions • duty to comply with any request made by, and have regard to reports and recommendations of, lead local flood authority overview and scrutiny committees • various duties for the regulation of reservoirs • various duties under the Environment Act 1995 • power to issue guidance about application of the Strategy in England • powers to request and share information in connection with FCERM functions • power to designate and protect third party assets and features that affect flood risk or coastal erosion • power to carry out and to approve coast protection works • power to carry out FCERM works in relation to sea or main river if considered desirable having regards to the National FCERM Strategy • power to enforce obligations to repair main river watercourses • power to consent works on or near main rivers • power to take action to require works for maintaining flow on main rivers • power to make new byelaws to secure the effectiveness of FCERM works • power to issue levies to lead local flood authorities: levies can now also apply to coastal erosion issues as well as flooding

County or Unitary Council (Lead Local Flood Authority)	• 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 • established as the statutory consultee for major development with surface water drainage • 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	• 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 be have regard to lead local flood authority scrutiny processes • ability to work in consortia with other Internal Drainage Boards • power to undertake works on ordinary watercourses flooding within their boundary and, with the Environment Agency's consent, the sea
District Council	• 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 • as local planning authority, responsible for ensuring that development proposals have adequately considered flood risk and sustainable drainage. • power to undertake works on ordinary watercourses and, with the Environment Agency's consent, the sea

Water and Sewerage Company	• 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 • Stat consultee to local plans • Delivery of Drainage and Wastewater Management Plans (DWMPs) • Business planning • adoption of private sewers

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6 Future look

Overall the Lincolnshire partnership will maintain its key role within the county and build on its ability to galvanise support and consensus around key strategies, economic growth and influence central government. The work of the partnership and delivery of the our strategic aims is far from complete and significant challenges and opportunities lie ahead.

Climate change

It is widely accepted that climate change is occurring and will affect our weather patterns. Climate change poses a major challenge in our planning, adaptation and resilience to managing flood risk and water resource issues in Lincolnshire. In November 2018 the Met Office published its projections for future climate change - **UK Climate Projections 2018 (UKCP18**), which are the first major update to the UK's national climate change projections for nearly 10 years**.** The information available will help government, business and other interested parties to assess the challenges and opportunities we face from our changing climate.

In the most part trends show that the UK climate is continuing to warm and that sea levels continue to rise. We need to take into account however that these latest predictions were released whilst this strategy was being reviewed and therefore due to the complexity of the new projections, it is likely to be some time before clear guidance emerges as to what this may mean for Lincolnshire in respect of both land use planning and scheme/ project development. Some of the headline findings that have been identified are summarised below.

Overview

By the end of the 21st century, all areas of the UK are projected to be warmer, more so in summer than in winter.

Hot summers are expected to become more common.

Rainfall patterns across the UK are not uniform and vary on seasonal and regional scales and will continue to vary in the future.

A new set of marine projections show that sea level around the UK will continue to rise to 2100 under all emission pathways.

There is now no doubt the continuation and likely increase in the weather extremes will provide significant challenges in managing flood risk and water resources in the future, with examples of some of the variances highlighted below.

Some Key findings from UKCP18

The average temperature over the most recent decade (2008-2017) has been on average 0.3 °C warmer than the 1981-2010 average and 0.8 °C warmer than the 1961-1990 average. Nine of the ten warmest years have occurred since 2002.

The most recent decade (2008-2017) was around 1 °C warmer than the pre-industrial period (1850-1900). This temperature rise in the UK is consistent with warming that has been observed at a global scale, of around 1 °C since the pre-industrial period.

Summers in the UK, for the most recent decade (2008-2017), have been on average 17% wetter than 1981-2010 and 20% wetter than the 1961-1990 average. However, very long-period natural variations are also seen in the longer observational record.

Total rainfall from extremely wet days (days exceeding the 99th percentile of the 1961-1990 rainfall) has increased by around 17% in the most recent decade (2008-2017), for the UK overall. However, changes are largest for Scotland and not significant for most of southern and eastern England.

Mean sea level around the UK has risen by about 16 cm since the start of the 20th century (when corrected for land movement).

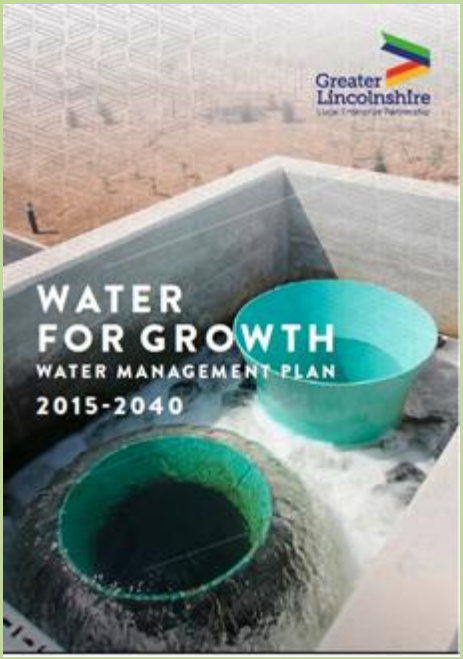
The pattern of sea level rise is not uniform across the UK. Sea level rise is less in the north and more in the south, this is mainly due to the movement of land, up and down.

We can continue to expect increases to extreme coastal water levels driven mainly by increases in mean sea level rise, although we cannot rule out additional changes in storm surges.

Recent developments in Lincolnshire

Since 2012 flood risk management has increasingly been recognised as an integral part of a wider issue of managing water as a resource that is essential to economic growth nationally and, particularly, in the east of England. The Greater Lincolnshire Local Enterprise Partnership (GLLEP) has recognised the importance of managing water in this way through its Water Management Plan (2016), which incorporates key strategic flood risk management issues where they can directly support or influence the growth agenda. This has particular relevance in Lincolnshire because of the importance of sustainable water supply and resilience to major sectors of the county's economy, notably with regard to agri-food and the visitor economy.

Greater Lincolnshire LEP's Water Management Plan 2015-2040



The strength of an existing long-standing Partnership working in flood risk management in Greater Lincolnshire provides an opportunity to develop this further and to drive links with organisations responsible for water supply and management. The aim is for Greater Lincolnshire to be seen as a national exemplar for water management, in both flood reduction and water supply, and to act as an incentive for investors in the LEP's priority sectors of Agri-food, visitor economy and manufacturing & engineering. This will enable effective water management to be a positive contributor to economic growth.

In achieving this aim, the LEP believes that close collaboration with the neighbouring Humber LEP, Greater Cambridge and Greater Peterborough LEP, and the New Anglia LEP is essential, as these areas share many important economic challenges and opportunities. Because of this, the Greater Lincolnshire LEP has established a Water Management Board and launched a Water Management Plan.

Greater Lincolnshire faces significant challenges from the risk of flooding and future availability of water. Around 45% (2,843km²) of Greater Lincolnshire lies within the floodplain - representing 17% of England's total floodplain area - and has been affected by a number of significant coastal and inland floods, most notably in 1953, 2007, 2012 and 2013.

The Greater Lincolnshire area is also one of the driest in the country and is prone to drought. The two dry winters experienced in 2010/11 and 2011/12 demonstrated the challenges and raised awareness of the need to adapt to this element of our changing climate. In April 2012, the second of these two dry winters was followed by an exceptional summer which led to significant problems for our priority sectors and illustrates the need to prepare for more weather extremes.

The importance of water management in Greater Lincolnshire and its established expertise in managing flood risk, a critical part of the solution, provides an opportunity to explore innovative approaches across the whole range of water management activities. No other part of the country is taking this comprehensive approach or has identified water management as so essential a factor in bringing about economic growth.

Find out more at;
https://www.greaterlincolnshirelep.co.uk/documents/water-management-plan/

A related development is the growing importance of water resource management since major droughts (interspersed with significant surface water flooding events) in 2012 and 2013. Flood risk is increasingly seen as part of a bigger picture that includes resilience to drought and planning for sufficient supplies of water where and when it is needed. This future planning for water availability has led to further consideration of potential opportunities for strategic linkage between water resource, flood risk, growth and environmental management, as reflected in Anglian Waters draft Water Resources Management Plan. These are key elements in supporting economic growth across Lincolnshire, and of direct interest to key economic sectors in Lincolnshire and its neighbouring authorities.

Most recently, future planning for water availability has led to the Water Resources East initiative within the Anglian region and further consideration of potential opportunities for strategic linkage between water resource, flood risk, growth and environmental management. These are key elements in supporting economic growth across Lincolnshire, and of direct interest to key economic sectors in Lincolnshire and its neighbouring authorities.

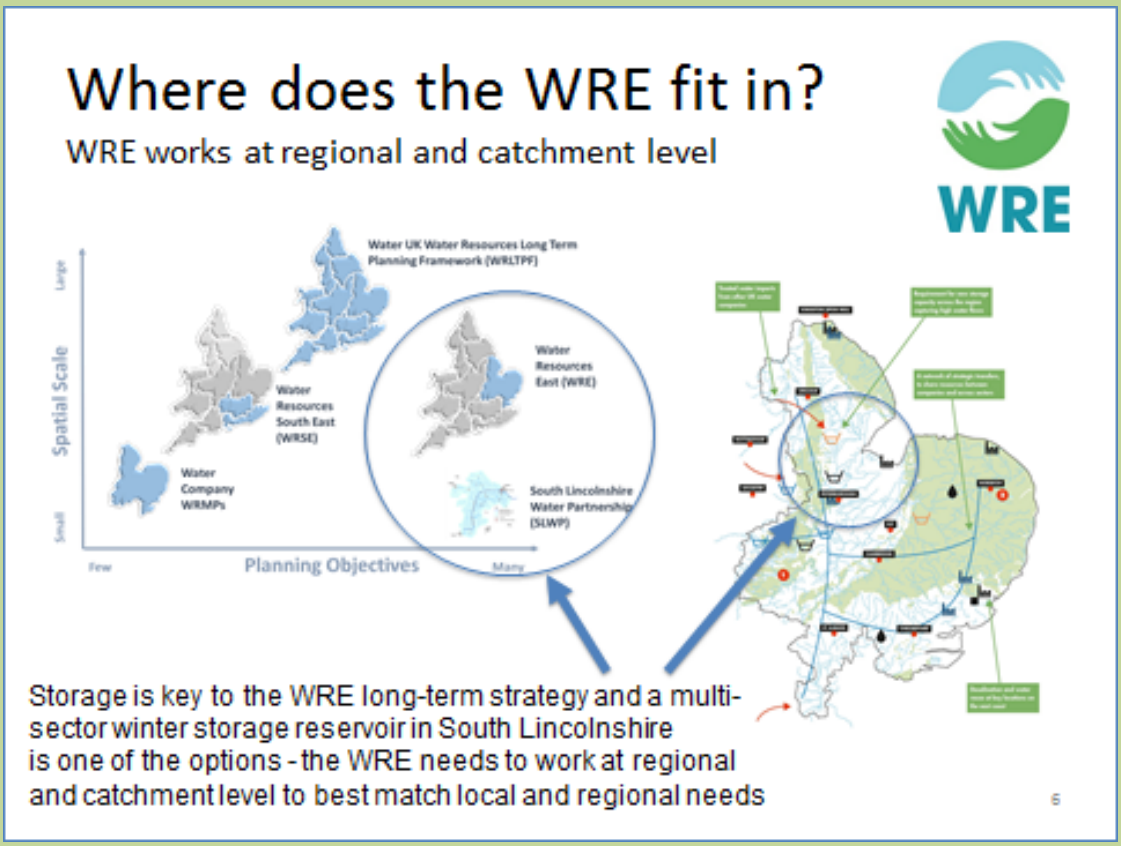
Water Resources East (WRE) is a collaboration between Partners in the East of England to develop a more integrated approach to water resource planning and management.

The WRE vision is for a strong economy and a flourishing environment with a purpose to build capacity in the region to deliver this. It operates at a number of different scales (see graphic overleaf):

a) Regional: the WRE has developed the first multi-sector long-term regional water resource strategy in England using modern planning techniques. The strategy covers an area from the Humber to North London and is designed to meet the needs of the public water supply, environment, power and agricultural sectors in a future where impacts from climate change, growth and severe drought are expected but uncertain. The strategy combines far-reaching demand management, including large reductions in leakage, with a combination of new resource and transfer options. These include a multi-sector winter storage reservoir in South Lincolnshire

b) Catchment: the WRE is working in South Lincolnshire and elsewhere to develop a partnership based water resource planning process at catchment level. This will use the techniques developed for the regional planning effort, but will apply them at local scale. In South Lincolnshire the aim is to produce a sustainable water resource strategy for an area where water supply, drought and flood risk are constraints on economic development. The project is being delivered by the South Lincolnshire Water Partnership (SLWP) and aims to ensure that future reservoir development in the area meets local economic and environmental needs, as well as the needs of the wider region, and

c) Sub-catchment level: the WRE also works with landowners at farm and estate level to develop “Water Plans” based on the principle of Integrated Water Resource Management (IWRM). A number of these are being developed in Lincolnshire where water quality issues are being examined, along with measures to capture high flows in streams and rivers so as to reduce flood risk, increase the volume of water available for irrigation and increase the sustainability of irrigation operations



The catchment level work of the WRE & SLWP is supporting implementation of the Environment Agency "Water Abstraction Plan". This programme will reform the current abstraction licensing system, helping maintain abstraction at sustainable levels and improving access to the available resources.

In Lincolnshire, the WRE & the SLWP report through to the Lincolnshire Flood Risk and Water Management Strategy Group.

Emerging initiatives are supporting our approach of improved flood risk that also provides greater water resource sustainability which in turn supports economic growth. These methods also support the catchment approach in managing an area from source to sea rather than in isolation.

This broader integration of water related activities was explicitly recognised when the flood risk and drainage partnership was renamed the Lincolnshire flood risk and water management partnership in 2015. The review of partnership during 2017-18 consolidated these developments and confirmed the need to embed a wider approach in its membership and terms of reference. The review of the partnership's strategy provides the opportunity to continue this process of alignment and co-ordination and be formally recognized as the **Joint Lincolnshire Flood Risk and Water Management Strategy** to reflect the broader scope of our ambitions.

Since 2012 there has been the development and emergence of a number of local, regional and national strategies and initiatives which moving forward as a partnership we will need to take into account when considering our role in managing water more holistically within Lincolnshire. A list of these is provided on page 51 of this document.

The **25 Year Environment Plan**, published in early 2018 sets out the government's ambition to protect and enhance England's natural landscape for now and the long-term. How we manage flood and coastal risk will be a key part of how the plan is implemented and Lincolnshire's Risk Management Authorities are well positioned to take on the challenge. Collaboration between RMAs and their partners in managing all sources of flooding and coastal risk and at all spatial scales is essential if we are to achieve this and increase both the county's and our nations resilience to such pressures. 25 Year Environment Plan

The Environment Agency ~~has~~ is in the process of reviewing its **national strategy for flood and coastal erosion risk management**. It is working in partnership with RMAs and a range of other partners to form a collective vision for the future of flood and coastal risk management. The aim of this coalition of partners is to identify the initial measures needed in order to achieve a shared vision and then to deliver it together. It is encouraging that the ambitions in this emerging national strategy reflects the goals and ambitions which are set out in the Lincolnshire Flood Risk and Water Management Strategy. Formal public consultation is expected to commence in early 2019. Flood & Coastal Erosion Risk Management National Strategy Information

In a Lincolnshire context the vital work the Environment Agency carry out along the open coast is also being reviewed as part of the **Saltfleet to Gibraltar Point strategy review**. How management of flood risk on the Lincolnshire coastline is undertaken remains vital to over 20,000 homes, approx. 24,500 static caravans, 35,000 hectares of farmland and a bustling tourist industry that lie within the strategy area.

Interim Beach Management Lincolnshire Coast 2018 to 2021

The Environment Agency annually place around 550,000 cubic metres of sand in key locations along a 20km frontage of the east coast of Lincolnshire. The Environment Agency have been artificially supplying sand to recharge the beach in this area since 1994. The beach re-nourishment scheme, in combination with the existing hard defences, reduces the risk from tidal flooding with a 0.5% chance of occurring in any one year. This flood risk management approach benefits 20,000 households, 24,500 static caravans, 1,700 businesses and up to 35,000Ha of agricultural land. The Environment Agency are currently reviewing our strategy for managing tidal flood risk over the next 100 years between Saltfleet to Gibraltar Point with the public and partner organisations. The strategy once approved will recommend the continuation of beach re-nourishment in combination with additional measures to reduce future beach erosion.

A preferred strategy and delivery plan for flood risk management on the Lincolnshire coast over the next 100 years is being developed as the Environment Agency work closely with partners in local and central government to finalise the draft strategy document, which is planned to be taken forward to a public consultation in 2019.

While work is undertaken to finalise the draft strategy, planning continues for the 2019 beach nourishment campaign which will protect the sea defences and to manage the risk of flooding to communities across the Lincolnshire coast. For further information on the revised strategy please see Saltfleet to Gibraltar Point Strategy

Intrinsically linked to our approach around water management is the provision to enhance amenity benefits and environmental betterment. This is approach is demonstrated by the **South Lincolnshire Fenlands partnership**. The partnership is a group of organisations, land managers and community representatives all with an interest in enhancing and protecting the unique and special qualities of the cultural, natural and ~~historical heritage~~ historic environment of the Lincolnshire Fenlands. The area covered by the project lies between Bourne, Spalding, and Market Deeping and includes the villages of Baston, Langtoft, Thurlby Fen, Tongue End and Twenty. The Project Officer facilitates and engages a broad spectrum of people from land owners and local residents to politicians and national statutory bodies to discuss approaches to managing natural assets in a changing world to secure benefits for wildlife and people. This area is low lying with rich farming soils and astonishing amounts of water flowing through courses, some of which are rich in botanical diversity and rare fauna. As the impacts of climate change become more apparent, then the partnership's role in finding solutions of a landscape scale approach to water management for people and wildlife will increasingly become more critical.

Over the past six years Lincolnshire risk management authorities and partners have adapted to ever-changing and growing pressures, learning lessons through collaboration and continuously seeking to evolve. Funding will remain one of the key challenges faced in delivering the aspirations of this strategy. The current national six-year capital investment programme ends in March 2021 and consideration is being given to what a future programme may look like. As this strategy is being reviewed Defra and Treasury are still in discussions, but this will be informed by the next Long Term Investment Scenarios (LTIS) analysis which will provide an updated view on the optimal amount to spend on flood risk management. The new analysis will build on the existing information and address a number of emerging questions and issues including high range climate change scenarios, development controls, standards of protection, property level resistance and resilience, temporary community defences, natural flood management, and risks to infrastructure.

These current uncertainties mean it is as ever important for Lincolnshire organisations to pull together to seek collaborative solutions to address these challenges and continue to seek innovative and forward thinking methods to do so.

Wrangle Sea Banks

This £1.8million project, completed in September 2018, was the first major improvement to coastal flood defences in the area for over 30 years. Over 3,400 hectares of prime grade one farmland, and 460 domestic and industrial properties in this area of the Wash are now better protected, thanks to the co-ordinated efforts of flood risk management authorities and local landowners.

An Environment Agency review in 2012 had identified a 5km stretch of the Wash sea defences near the village of Wrangle, as particularly vulnerable, with the lowest sea banks along the Wash frontage, and only a single line of defence.

Witham Fourth District IDB (W4IDB) agreed to be the lead risk management authority on the project as they were able to deliver efficiencies using local landowner agreements and local contractors. This partnership approach, combined with the number of households and businesses protected, enabled an application of support through £1.3 million of DEFRA and half a million pounds of EU funding.

The project involved re-profiling the sea banks and raising them to over 7 metres high, with a 1 in 3-rear slope leading to a soke dyke to cope with future over-topping. During high tides, these accommodate the water that permeates up through the ground and during heavy rainfall, they enable surplus water to flow to the W4IDB managed pumping stations. This also enabled at least 10 hectares of habitat creation behind the banks including grassland and semi-wetland habitats. Landowners contributed around 40 linear metres of farmland to provide the spoil to re-profile the sea banks.

It was the tidal surge of December 2013, again breaching the main line of defence as it had 60 years earlier, that galvanised farmers and landowners to push for action. W4IDB were by partner representatives from Lincolnshire County Council, landowners, EA and Natural England to deliver the project.

7 Delivering the strategy

Vision

Our vision statement for working in partnership to tackle flood risk and water resource issues to 2050

"Working in partnership for a resilient future"

In order to work towards this vision, the partnership has developed and agreed a new set of high-level aims. These aims take account of changes and developments since 2012 in how we consider the effective management of water and flood risk whilst recognising the ambition to seek wider benefits for Lincolnshire in not only flood risk but broader water resource issues.

In collectively developing these aims, the partnership is clear that a 'do nothing' approach is clearly not an option. Climate change will bring significant challenges for both flood risk (such as rising sea levels and more extreme weather events) and water resources issues (i.e. drought). Water is the essential component that brings organisations together to seek a resilient future to the extreme challenges we face. Through partner and stakeholder engagement the following themes are considered key in moving forward to deal with these challenges.

Catchment based approach

Currently when taking a strategic approach to managing water such as management of flood risk, water resources provision and land drainage this is largely looked at in isolation. In adopting a holistic view of the management of water it is possible to provide multiple benefits to the environment, businesses and communities buy managing water sustainably through a whole catchment approach. As indicated through the innovative approaches being looked at as part of the WRE initiative in the South Forty Foot catchment and the pilots which formed part of the PACM project the lessons learned will provide a sound evidence base that can be tested on catchments in other areas. Ultimately the ambition is to cover all catchments within the county as well as maximizing opportunities with other neighbouring authorities encouraging cross boundary working.

Ecosystem services

The natural environment is one of Lincolnshire's greatest strengths. If the ecosystem services that the natural environment provides are restored and recreated across the county, and delivered in a sympathetic way, it is possible to combine effective flood risk and water resource management solutions.

In certain situations adaptations to existing, or new, environmental features can improve flood defence through an increase in capacity to store water (both for flood risk management and irrigation), improve connecting habitat, improve water quality and accommodate leisure and tourism activities. All of these have the added value of bringing economic benefits to the area. To align with proposals set out in the draft national FCERM strategy it is recommended that, where possible, Risk Management Authorities in Lincolnshire will seek to achieve biodiversity net gain in all programmes and projects. They will seek to work with developers and planners to achieve environmental net gain as part of strategic development proposals and will use lessons learned from pilot projects to expand and mainstream working with natural processes.

Strategic thinking on land use planning

Our approach to land use planning will become even more critical moving forward to balance the challenges faced from flood risk and managing water resources. Planned for, and managed in a sustainable way, this will aid in securing economic growth and environmental enhancement but there are likely to be challenges meeting different government targets. Housing, flood risk and growth will need to be considered collectively across a range of organisations to meet aspirations and manage the cumulative effects of the climatic conditions we will face in the future. The partnership will build on its influencing role and ensure it is in a strong position in negotiating key policy developments. Conserving and enhancing the natural, built and historic environment in Lincolnshire will also be a key consideration when addressing land use planning in the county. The draft National Flood and Coastal Erosion Risk Management Strategy emphasis the need to develop local resilience to flood risk and climate change. Delivering this aspiration strategically for Lincolnshire could include a variety of approaches, ranging from more traditional coastal management techniques through to long term evolution of some communities to focus their future development towards lower risk locations or with greater provision for resilience in the event flood risk events.

Asset management

It is recognised that there is a need to have a joint approach to resolving issues with obsolete legacy assets such as old navigation assets (subject to navigation rights), weirs, outfalls, embankments and culverts. These are currently maintained by Risk Management Authorities and consideration needs to be given, where appropriate, to decommission or transferring assets to a more appropriate body. The recent rationalising the main river network project highlighted the success of this approach which can lead to the streamlining of operations, make efficiency savings and bring opportunities to achieve more for the environment. In assessing such assets it should be considered that some may be heritage assets (both designated and undesignated) which should be considered when decommissioning or transferring.

Establish an evidence base for Lincolnshire

Flood risk management authorities in Lincolnshire have been recognised by

government as among those leading nationally in the development of partnership and co-ordination through the creation of the Lincolnshire flood risk and water management partnership. These same authorities, along with other stakeholders, are determined that such recognition is maintained through our broader aspirations around water management in the whole.

To ensure Lincolnshire remains at the forefront of such activities it is essential a sound proof and evidence base is developed to demonstrate how we will collectively face the flood risk and water resource challenges in our region. Agri-food, housing growth, tourism, the environment, historic environment and energy sectors are all nationally strategically important within the county and will be a priority for investment and infrastructure needs in the future. All are highly reliant on water to function effectively whether it be protection from flood the risk of flooding and tidal inundation or the need to have a guaranteed supply of water. A supporting evidence base will be key in lobbying government and engaging key stakeholder groups to ensure we achieve the support and backing to deliver against our aims.

As a result of partner and stakeholder engagement, four aims have been developed. Outlined below, they will be the key drivers for the delivery of this strategy.

Aim	Key area of focus	How this will be achieved
Aim 1.	To move from flood risk management to cover water management	To have clear objectives for supporting and developing linkages between effective water management and securing economic growth and environmental enhancement To have a greater emphasis on managing water in catchments, both locally and at a strategic level To promote a greater mix of measures including water retention & attenuation and natural flood risk management methods
Aim 2.	To develop a more strategic approach to development and land use planning	To have alignment with major regional and national strategic infrastructure initiatives, particularly involving water resources linking flood risk solutions with improved resilience to drought. To have a greater integration of flood risk and water resource management with local planning policy

		development Conserving and enhancing the natural, built and historic environment in Lincolnshire will also be a key consideration when addressing land use planning in the county To ensure the effects of climate change are included in long term planning for flood risk and water resources Risk Management Authorities will invest in planning skills and capabilities to ensure they can advise planners and developers effectively to enable climate resilient places To better align long term planning for flood and coastal change with water company business planning cycles to identify opportunities for managing both floods and droughts
Aim 3.	To build on the existing strong profile of the Lincolnshire Partnership ensuring it has a strong influencing role	To ensure awareness of the partnership is maintained with proactive engagement regionally and nationally in key policy developments To proactively support national initiatives that can enhance local approaches to flood risk and water management such as IDB boundary extension To build a proof and evidence base to government and key stakeholder groups that support the ambitions of the partnership
Aim 4.	To build and develop key lines of communication to promote the aims, ambitions and achievements of the Lincolnshire Partnership	To Develop a public and stakeholder communications & engagement strategy To develop a partnership action plan detailing key priorities moving forward

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

1. 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.

2. The Lincolnshire Flood Risk and Water Management Partnership will work with local communities to develop flood risk and drainage management services that meet local needs.

3. Local communities and businesses will be more aware of flood risk, and with the help of public authorities, will take steps to protect themselves and become more resilient through individual and community action.

4. 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.

5. Flood risk, water management and future development will contribute to better water quality, wider environmental benefits, sustainable growth and overall resilience to the effects of climate change and sea level rise.

6. The Lincolnshire Flood Risk and Water Management Partnership will continue to lobby government for a fairer deal for the rural economy in the county with regard to flood risk activities and supporting economic growth

7. Adaptive planning against the effects of climate change will be a key factor in all future planned flood risk mitigation works by the Lincolnshire Flood Risk and Water Management Partnership

8. The Lincolnshire Flood Risk and Water Management partnership will focus on the key issues it believes Lincolnshire faces in terms of water, both flood and drought, and seek long term solutions to support the coast, agri-food, a catchment based approach and urban areas

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

- The Lincolnshire Flood Risk & Water Management Partnership will seek to develop new and innovative ways of funding flood risk and water management activities and build on current successes in maximizes national funds and delivering efficiencies.

Outcomes 1, 2, 4, 6

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- The Lincolnshire Flood Risk & Water management Partnership will proactively engage with partners and stakeholders to establish effective policy and delivery approaches for the future management of the Lincolnshire coast by 2021.

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

- Lincolnshire flood risk management authorities will work closely with the Greater Lincolnshire LEP to deliver the plan of increasing the value of the local economy by £3.2bn by 2030. Water management is fundamental to the growth of the economy, the environment, quality of life and food security.

Outcomes 1, 2, 4, 5, 6

- By 2025, in collaboration with Water Resources East, water resilient solutions to flood risk, drought and water supply will have been developed for south Lincolnshire.

Outcomes 1, 4, 5, 7, 8

- Lincolnshire flood risk management authorities will work together to explore and develop a catchment based approach to delivering flood risk and water management schemes by 2023.

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

- Risk management authorities in Lincolnshire will work closely with developers and local planning authorities to ensure future development is located appropriately and takes account of suitable flood risk mitigation measures

Outcomes 2, 3, 4, 5, 7

- Working in collaboration with other partners and stakeholders, the Lincolnshire Flood Risk & Water Management Partnership will develop a proof and evidence base to government to support our strategic aims by 2021.

Outcomes 5, 6, 7, 8

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- A public and stakeholder communications and engagement strategy will be developed by 2020 to develop key lines of communication to promote the aims, ambitions and achievements of the Lincolnshire Partnership .

Outcomes 2, 3, 4

- The common works programme will continue to be reviewed and updated on an annual basis and remain the key source of information on flood risk and water management activities undertaken by risk management authorities in Lincolnshire.

Outcomes 1, 2, 5, 7, 8

Collectively our combined aim is that by 2050 Lincolnshire will be an area resilient to flood risk and water resources issues with a long term strategic vision delivering local benefits.

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Strategy review process

Delivery of the strategy will be managed by the Lincolnshire flood risk and water management partnership, with regular progress reports against targets to the management group, and from there to strategy group and the scrutiny committee.

The strategic delivery common works programme will continue to 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.

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8 Find out more

This strategy is available online at:

www.lincolnshire.gov.uk/floodrisk

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

Joint Lincolnshire Flood Risk and Water Management Strategy
Lincolnshire County Council
Place Directorate
Lancaster House
36 Orchard Street
Lincoln
LN1 1XX

Email enquiries should be sent to

FloodAndWaterStrategy@lincolnshire.gov.uk

For telephone enquiries please contact (01522) 782070

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9. 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)
Defra	Department for Environment, Food and Rural Affairs
GLLEP	Greater Lincolnshire Local Enterprise Partnership
Groundwater	Water which is below the surface of the ground and in direct contact with the ground or subsoil.
IDBs	Internal Drainage Boards
LLFA	Lead Local Flood Authority (Lincolnshire County Council)
Local flood risk	Flood risk from sources other than main rivers, the sea and reservoirs, principally meaning surface runoff, groundwater and ordinary watercourses.
LPA	Local Planning Authority
Main river	A watercourse shown as such on the Main River Map, and for which the Environment Agency has responsibilities and powers
NFM	Natural Flood Management
Ordinary watercourses	All watercourses that are not designated Main River, and which are the responsibility of Local Authorities or, where they exist, IDBs.
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.

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RMA	Risk Management Authorities
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
WRE	Water Resources East

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10. Key strategies and initiatives developed since 2012 that will influence our strategic approach within Lincolnshire

- Current review of National Flood Risk and Coastal Erosion Management Strategy
- Humber Estuary Strategy
- Current national review of Shoreline Management Plans
- Saltfleet to Gibraltar Point Strategy
- Wash Banks Strategy
- Partnership Approach to Catchment Management
- Flood Plan for Lincolnshire (Emergency Response)
- Water Resources Management Plan
- Water Resources East Initiative
- Local Planning Policy – Local Plans
- GLLEP Strategic Economic Plan
- GLLEP Water Management Plan
- GLLEP Energy Strategy for Greater Lincolnshire
- National and Local Industrial Strategies
- Defra 25 Year Environment Plan
- LCC Waterways Development Plan 2018-2028

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Lincolnshire COUNTY COUNCIL
Working for a better future