North East Lincolnshire

Local Flood Risk Management Strategy

February 2015

NORTH EAST LINCOLNSHIRE COUNCIL
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BACKGROUND INFORMATION				
Document Purpose	Completed to comply with section 9 of the Flood and Water Management Act 2010 to develop, maintain, apply and monitor a strategy for local flood risk management in North East Lincolnshire.			
Author	Steven Coe and Andy Smith			
Last Review and Publication Date	April 2015			
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Integrated Impact Assessment (inc E&D) done?	YES ☒	NO ☐	N/A ☐	
Name of Lead Officer undertaking Assessments	Steven Coe			
IIA Action Plan with Recommendations Produced	YES ☒	NO ☐	N/A ☐	
Corporate Priorities	**Levels of Impact**			
	High	Medium	Low	None
Stronger Economy				
Skills and employability	☐	☐	☒	☐
Business support and innovation	☒	☐	☐	☐
Local employment	☐	☐	☒	☐
Sustainable environment	☒	☐	☐	☐
Stronger Communities				
Independence	☒	☐	☐	☐
Sustainable housing	☒	☐	☐	☐
Active citizens	☐	☐	☐	☒
Healthy lives	☒	☐	☐	☐

Draft (v1) November 2013 – Draft used for the Strategic Environmental Assessment
Draft (v2) December 2013 – Draft sent to other Risk Management Authorities
Draft (v3) February 2014 – Draft for public consultation
Draft (v4) May 2014 – Draft incorporating updates from the Habitats Regulations Assessment, Strategic Environmental Assessment and public consultation
Final (v5) – Final version approved and adopted by the Council.

All developments are intended to ensure that no-one is treated in any way less favourably on the grounds of race, colour, national or ethnic or social origin, race, disability, gender, sexual orientation, gender reassignment, marriage & civil partnership, pregnancy & maternity, age, religion / belief or political / other personal beliefs

Executive Summary

The risk of flooding in North East Lincolnshire is expected to increase due to the predicted effects of climate change causing a rise in sea levels, alterations to rainfall patterns and an increase in flows in watercourses and drainage systems.

This strategy has identified the areas where we expect to face the greatest flood risks now and in the future. Measures have been put in place to manage and reduce this risk. This will involve close working between the Council, other risk management authorities that operate in the borough and local communities. The roles and responsibilities have been outlined to provide clarity including an explanation of the Council's responsibilities for coordinating local flood risk management as the Lead Local Flood Authority.

The strategy aims to build resilience with the community to be better prepared for flooding before it happens. This will be undertaken using a variety of methods including greater community engagement, further investigations into at risk areas, emergency planning, strong collaborative working between all partners and the construction of flood defence schemes.

Whilst we carry out flood risk management work we will ensure that we protect the environment and seek opportunities to improve the surroundings where people live and work.

The strategy will contribute to the Council's strategic aims to promote a stronger economy and stronger communities through eight objectives:

- All stakeholders (including members of the public) will have an improved understanding of their responsibilities for flood risk management.
- Improve our understanding of local flood risk.
- Reduce the risks to those most vulnerable to local flooding.
- Increase the amount of flood risk management work undertaken, ensuring there is a contribution to wider social, economic and environmental outcomes and sustainable development.
- Create a strong collaborative approach across stakeholders to address risks from all sources of flooding.
- Ensure that local communities are prepared to manage the risks of flooding.
- Ensure that new development does not increase local flood risk and contributes to a reduction where possible.
- Ensure effective emergency flood response plans are in place.

It will never be possible to eliminate all instances of flooding but action can be taken to reduce the impacts.

Contents

1 Introduction

1.1 Context and Legislation

1.1.1 The requirement for the Council to produce this Local Flood Risk Management Strategy (known as the Local Strategy) comes from Section 9 of the Flood and Water Management Act (FWMA) which was given Royal assent in April 2010.

1.1.2 Flooding can affect all people across the borough either by directly flooding homes and businesses or disrupting other aspects of daily life. In recent years the borough has experienced flooding from surface water, rivers and the sea. In 2007 over 630 properties suffered river and surface water flooding. In 2012 23 properties experienced surface water flooding across Immingham and in early December 2013 the Port of Immingham and other seafront businesses felt the effects of a high tide and storm surge. This highlights the importance of having a strategy to manage and reduce this risk.

1.1.3 Intense rainfall in summer 2014 caused flooding to a reported 56 properties in July and 74 properties in August which led to a Cabinet Working Group being set up to review the events. This review has been completed and recommendations for areas which need improvement have been made to Cabinet. This Strategy has also been reviewed in light of these findings to ensure that lessons learned are incorporated. The review by the Working Group has not led to any changes in the Strategy as many of their recommendations support the delivery of the Objectives and Measure which have been identified in Section 4.

1.1.4 The FWMA 2010 was the main government response to the Pitt Review into the summer floods of 2007. This report by Sir Michael Pitt entitled 'Learning Lessons from the 2007 Floods' called for urgent and fundamental changes in the way the country is adapting to the increased risk of flooding. It included 92 recommendations, 21 of which were specifically designated to local authorities. Probably the most significant change that resulted from this was that unitary and upper tier local authorities were designated as Lead Local Flood Authorities (LLFAs) and have taken on new duties, powers and responsibilities for what has been termed 'local flood risk management'. Local flood risk covers flooding from surface water, groundwater and ordinary watercourses (such as ditches and streams). This will be defined fully later in this strategy.

1.1.5 Whilst the FWMA 2010 was still being consulted on the EU Floods Directive was introduced. This was transposed into UK law by the Flood Risk Regulations 2009 (FRR). This initially required the Council to produce the Preliminary Flood Risk Assessment (PFRA) which was an assessment of past

and future flood risks across the borough and formed an essential first step in producing this strategy. Appendix A summarises the main legislative changes from the two key pieces of legislation. More detail will be covered later in this strategy.

1.1.6 The risk of flooding and coastal erosion in England is predicted to increase in the future due to the effects of climate change. Although it is not possible to prevent all instances of flooding, action can begin now to manage the risks and reduce the impact.

1.1.7 Whilst the FWMA only places duties on the LLFA in relation to local flood risk management, NELC believe that a holistic approach to flood risk management encompassing information on flood risk from main rivers and the sea in this strategy will lead to more effective working between authorities and better management of overall flood risk. This is backed by section 13 of the FWMA which places a duty on the flood risk management authorities to cooperate with each other when carrying out their work and to share information.

1.1.8 It is important to recognise that whilst providing information about all sources of flood risk and providing a way of managing this there are other plans and strategies that are being worked on by other risk management authorities. For example, The Humber Flood Risk Management Strategy currently being revised by the Environment Agency and local authorities to look at ways of managing flood risk in the Estuary and the Flood Risk Management Plans being produced by the Environment Agency to propose measures to manage the risk of flooding from reservoirs, main rivers and the sea (see section 1.5 for further information). The Local Strategy will complement and not conflict with these other plans.

1.2 Considerations within the Local Strategy

1.2.1 The Local Strategy will cover the following issues:

- Links with other plans, strategies and guidance.
- The risk management authorities in the borough and the flood and coastal erosion risk management functions that they may exercise.
- The current risk of flooding and coastal erosion.
- How the current risk of flooding and coastal erosion may change.
- The objectives for managing flood risk in the area and the measures that can be used to achieve these.
- How and when the measures are expected to be implemented.
- How the risk management authorities can work well together.
- How work will be funded and the costs and benefits of the measures used.

- How the strategy contributes to the achievement of wider environmental objectives.
- The guidance and advice available to help manage flood risk and coastal erosion.
- How and when the strategy is to be reviewed.

1.2.2 Figure 1.1 shows how the strategy fits within the roles of all the national and local flood risk management authorities and their plans. It will influence how flood risk management work is carried out by various authorities in the borough.

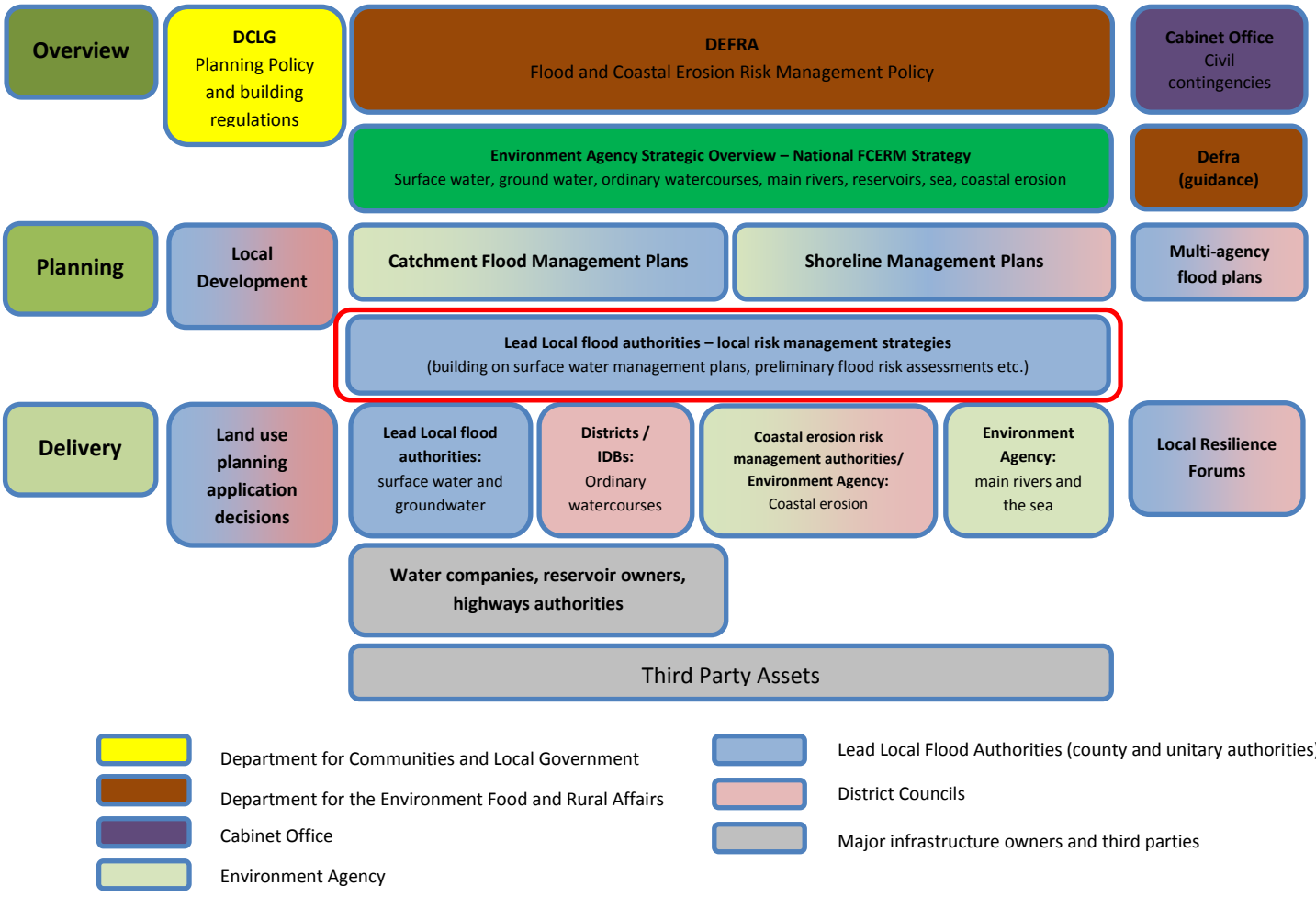


Figure 1.1. Flood and coastal erosion risk management – overview (Source: National flood and coastal erosion risk management strategy).

1.3 Aims of the Local Strategy

1.3.1 The Local Strategy aims to make sure that all those involved in flood risk management are aware of their responsibilities. It will set the direction for what work is carried out to reduce the risk and how this can be coordinated across the borough.

1.3.2 Communities, businesses and other interested parties will be able to understand the flood risks within the borough and who has the powers or responsibility to act. This will include actions they can take themselves. They will also be involved in decisions which affect where they live.

1.3.3 The NELC Council Plan 2014/15 sets out two priorities for the Council: to promote a **stronger economy** and **stronger communities**.

1.3.4 In creating a stronger economy the focus will be on jobs and skills and what the borough has to offer in port related industries and the 'energy estuary'. Managing flood risk will be important in ensuring that these businesses can operate in a safe environment. Disruption from flooding would otherwise lead to significant disruption which could damage the local economy.

1.3.5 To develop stronger communities the Council aims to establish a new relationship with the community to promote a culture of independence. This strategy aims to involve communities more in the decisions about how flood risk is managed. Communities will also need to play a greater role than before in reducing their own flood risks, becoming more resilient and ensuring that they are prepared for flooding without relying on the Council to provide all the solutions.

1.4 Links With the National Flood and Coastal Erosion Risk Management Strategy

1.4.1 The Environment Agency have produced the National Flood and Coastal Erosion Risk Management Strategy for England (National Strategy) as required by the FWMA 2010. It sets out the national framework for flood and coastal erosion risk management helping communities and organisations to understand their roles. There is an emphasis on localism and recognising that there are limitations in what the government and national bodies can achieve on their own and that communities should become more involved in decision making. The government will work with individuals, communities, and organisations to reduce the threat of flooding and coastal erosion by:

A copy of the national strategy can be found at: https://www.gov.uk/government/publications/national-flood-and-coastal-erosion-risk-management-strategy-for-england

- Understanding the risks of flooding and coastal erosion, working together to put in place long-term plans to manage these risks and making sure that other plans take account of them.
- Avoiding inappropriate development (that is either at risk of flooding or increases the risk to others) in areas of flood and coastal erosion risk and being careful to manage land elsewhere to avoid increasing risks.

- Building, maintaining and improving flood and coastal erosion risk management infrastructure and systems to reduce the likelihood of harm to people and damage to the economy, environment and society.
- Increasing public awareness of the risk that remains and engaging with people at risk to make their property more resilient.
- Improving the detection, forecasting and issue of warnings of flooding, planning for and co-ordinating a rapid response to flood emergencies and promoting faster recovery from flooding.

1.4.2 The National Strategy sets the context for, and informs the production of, this Local Strategy, which will in turn provide the framework to deliver local improvements needed to help our communities manage local flood risk.

1.4.3 The national strategy uses six guiding principles which need to be considered (Source: Local Government Association, Framework to assist the development of the Local Strategy for Flood Risk Management):

1) **Community focus and partnership working** – Risk management authorities need to engage with communities to help them understand the risks, and encourage them to have direct involvement in decision-making and risk management actions. Working in partnership to develop and implement local strategies will enable better sharing of information and expertise, and the identification of efficiencies in managing risk.

2) **A catchment and coastal 'cell' based approach** – In understanding and managing risk, it is essential to consider the impacts on other parts of the catchment or coast. Activities must seek to avoid passing risk on to others within the catchment or along the coast without prior agreement. In developing local strategies LLFAs should ensure that neighbouring LLFAs within catchments are involved in partnerships and decision making. Strategic plans such as Catchment Flood Management Plans (CFMPs) and Shoreline Management Plans (SMPs) should be used to help set strategic priorities for local strategies. Regional Flood and Coastal Committees and the North East Coastal Group will have an important role in this approach.

3) **Sustainability** – LLFAs should aim to support communities by managing risks in ways that take account of all impacts of flooding (for instance on people, properties, cultural heritage, infrastructure and the local economy) and the whole-life costs of investment in risk management. Where possible, opportunities should be taken to enhance the environment and work with natural processes. Risk management measures should also be forward looking, taking account of potential risks that may arise in the future and being adaptable to climate change. Government guidance has been published setting out the link between sustainable development and risk management.

4) **Proportionate, risk-based approaches** – It is not technically, economically or environmentally feasible to prevent all flooding and coastal erosion altogether. A risk-based management approach targets resources to those areas where they have greatest effect. All aspects of risk management, including the preparation and implementation of local strategies, should be carried out in a proportionate way that reflects the size and complexity of risk. The assessment of risk should identify where the highest risks are and therefore the priorities for taking action. The Local Strategy provides an opportunity to agree a local framework for risk based decisions and interventions with local communities and stakeholders.

5) **Multiple benefits** – As well as reducing the risks to people and property, flood risk management can bring significant economic, environmental and social benefits. In developing and implementing local strategies, LLFAs should help deliver broader benefits by working with natural processes where possible and seeking to provide environmental benefit, including those required by the Habitats, Birds and Water Framework Directives. Measures such as the use of sustainable drainage to manage risk should be considered wherever possible as they can also deliver benefits for amenity, recreation, pollution reduction and water quality. Further benefits can be realised in relation to regeneration, growth and emergency planning.

6) **Beneficiaries should be allowed and encouraged to invest in local risk management** – The benefits achieved when flood and coastal erosion risks are managed can be both localised and private, through the protection of specific individuals, communities and businesses. In developing local strategies, LLFAs should consider opportunities to seek alternative sources of funding for managing local flood risk rather than relying solely on Government funds. However, LLFAs should consider the balance they wish to achieve in relation to major coastal and fluvial schemes, where the scale of local contributions required to make up partial national funding may be much more significant than that usually needed for surface water management schemes.

1.5 Other Plans, Policies, Strategies and Legislation

1.5.1 There are other plans, policies, strategies and legislation which the Local Strategy needs to take account of, some of which are explained in more detail:

- **Grimsby and Ancholme Catchment Flood Management Plan** – covers all forms of inland flooding and establishes flood risk management policies to deliver long term sustainable flood risk management. The Policy Units which cover the borough fall within 2 sub-areas: ‘Ancholme, North Lincolnshire Wolds and Laceby’ where there are areas of low to moderate flood risk and the policy is to

generally reduce flood risk management actions and 'Immingham, Grimsby and Buck Beck' where flood risk is being managed effectively but further action may need to be taken to keep pace with climate change.

- **Flamborough Head to Gibraltar Point Shoreline Management Plan** – an aspirational broad scale plan for managing flood and erosion risk for our particular stretch of shoreline, looking at the short, medium and long term. The main aim is to develop a sustainable management approach for the coastline. The North East Coastal Group (of which the Council is a member) reports on the progress of the policies and actions.
- **Humber Flood Risk Management Strategy (HFRMS) (2008)** – this is the plan for managing flood risk in the Humber Estuary looking at the different ways that this can be achieved. Whilst the Local Strategy also covers coastal flood risk management the aim is to not conflict with the HFRMS. This is currently in the process of being reviewed and will be the main source of information for coastal flood risk management in the borough.
- **Humber Flood Risk Management Plan** – Plans being produced by the Environment Agency as required by the Flood Risk Regulations 2009 to cover flooding from main rivers, the sea and reservoirs. This will use the information from the CFMPs and SMPs to propose measures for managing flood risk from 2015 to 2021 and beyond. NELC have agreed to contribute local flood risk information which is included in this strategy and from further investigations. There will be a public consultation with the final plan published in December 2015.
- **Preliminary Flood Risk Assessment** – compiled by the Council under the Flood Risk Regulations 2009 to provide a summary of local flood risk for past and future flooding.
- **National Planning Policy Framework and Technical Guidance** – national government planning policy which sets out how flood risk should be considered at all stages of the planning process.
- **Strategic Flood Risk Assessment** – a study carried out by the local planning authority to assess the risk to an area from all sources of flooding for the present day and in the future. It provides the information needed for the Council to take flood risk and climate change into account when allocating development as part of the Local Plan or determining planning applications (this is a joint document with North Lincolnshire Council).
- **North East Lincolnshire Local Plan 2003** – a statutory planning policy document providing the basis for planning decisions in the borough. Some policies were saved in 2007 to prevent them from expiring. A new Local Plan is currently being developed. This strategy will inform that process.

- **Local Flood Risk Management Strategies for Neighbouring Authorities** – these will need to be considered when dealing with flood risk management issues which cross our boundary to a neighbouring LLFA.
- **Climate Change Act 2008** – legislation which provides targets for the reduction of greenhouse gases.
- **Conservation of Habitats and Species Regulations 2010** – provides for the designation and protection of European designated sites.
- **Civil Contingencies Act 2004** – establishes a framework for emergency planning and response from local to national level which designates the Council as a Category 1 responder.
- **Strategic Environmental Assessment Directive 2001** – this requires a strategic environmental assessment to be undertaken for this strategy to ensure that environmental impacts are fully considered and mitigated.
- **Land Drainage Act 1991** – this legislation provides the Council and drainage boards with powers relating to the regulation of ordinary watercourses, as amended by the FWMA 2010.
- **Water Framework Directive 2000 and Humber River Basin Management Plan** – the current plan was produced in 2009 with an environmental focus as it was prepared under the Water Framework Directive. It focuses on the protection, improvement and sustainable use of water. They work on a 6 year cycle with work already commencing on the next plan due in 2015.
- **Coast Protection Act 1949** – designated the Council as a Coastal Protection Authority with responsibility for managing coastal erosion. Amendments from the FWMA 2010 have also designated us as a Coastal Erosion Risk Management Authority.
- **Reservoirs Act 1975** – regulates large raised reservoirs to ensure public safety. In England enforcement rests with the Environment Agency. Changes may be made to this legislation from the FWMA 2010.
- **Water Industry Act 1991** – this legislation relates to the supply of water and provision of wastewater services.
- **Water Resources Act 1991** – legislation which covers water resources, water quality and flood defence.
- **Highway Act 1980** – legislation which deals with the management and operation of the road network including drainage.
- **Water Act 2014** – opens up competition in the water market and ensures that hundreds of thousands of properties in the highest flood risk areas will have access to affordable flood insurance from 2015.

1.5.2 Figure 1.2 shows how some of the plans listed above influence the production of the Local Strategy and how it in turn will influence other plans.

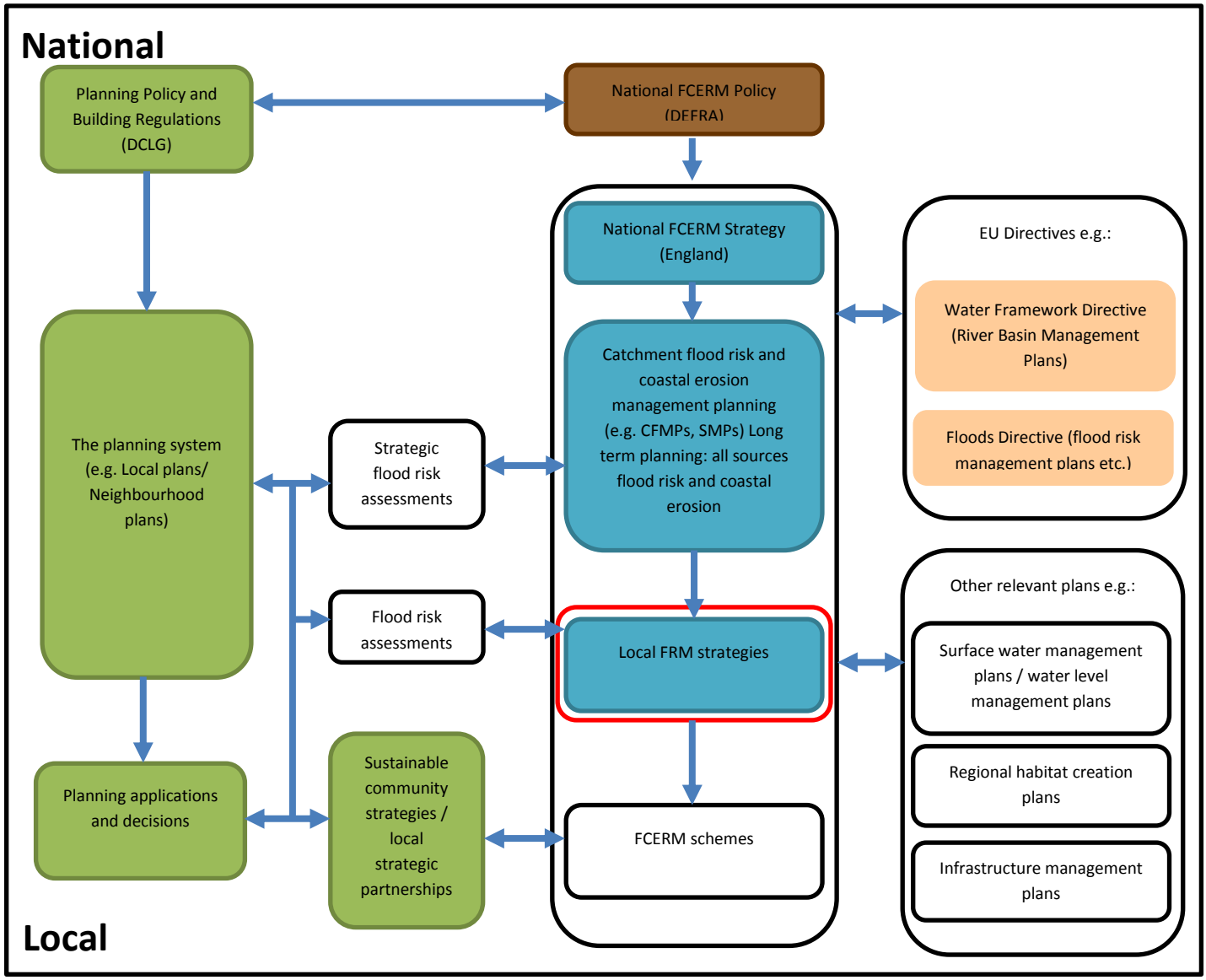


Figure 1.2. Flood risk management strategies and plans and their relationship with other planning initiatives (Source: National flood and coastal erosion risk management strategy).

2 Flood Risk Management Roles and Responsibilities

2.1 Flood Risk Management Authorities Powers, Duties and Legislation

2.1.1 There are many organisations that are involved in and have a contribution to make to flood risk management in the borough. The FWMA 2010 specifically designates North East Lincolnshire Council (NELC), the Environment Agency, the Drainage Boards, Anglian Water and Highway Authorities as Risk Management Authorities (RMAs). This designation is used by the FWMA 2010 to bestow additional requirements which do not apply to all those involved in flood risk management. Risk Management Authorities have a duty to cooperate where they exercise their flood risk functions and act consistently with the National and Local Strategies with the exception of water and sewerage companies who only need to have regard to the Local Strategy.

2.1.2 The roles of all involved are explained in more detail below and **contact details can be found in Appendix B**.

2.1.3 The legislation used by the RMAs is mostly 'permissive' which means there is no legal requirement to carry out works to reduce the risk of flooding.

North East Lincolnshire Council

2.1.4 NELC has a number of different roles which contribute to flood risk management.

2.1.5 As the **LLFA** for the borough we have the following responsibilities which we undertake by working closely with other RMAs:

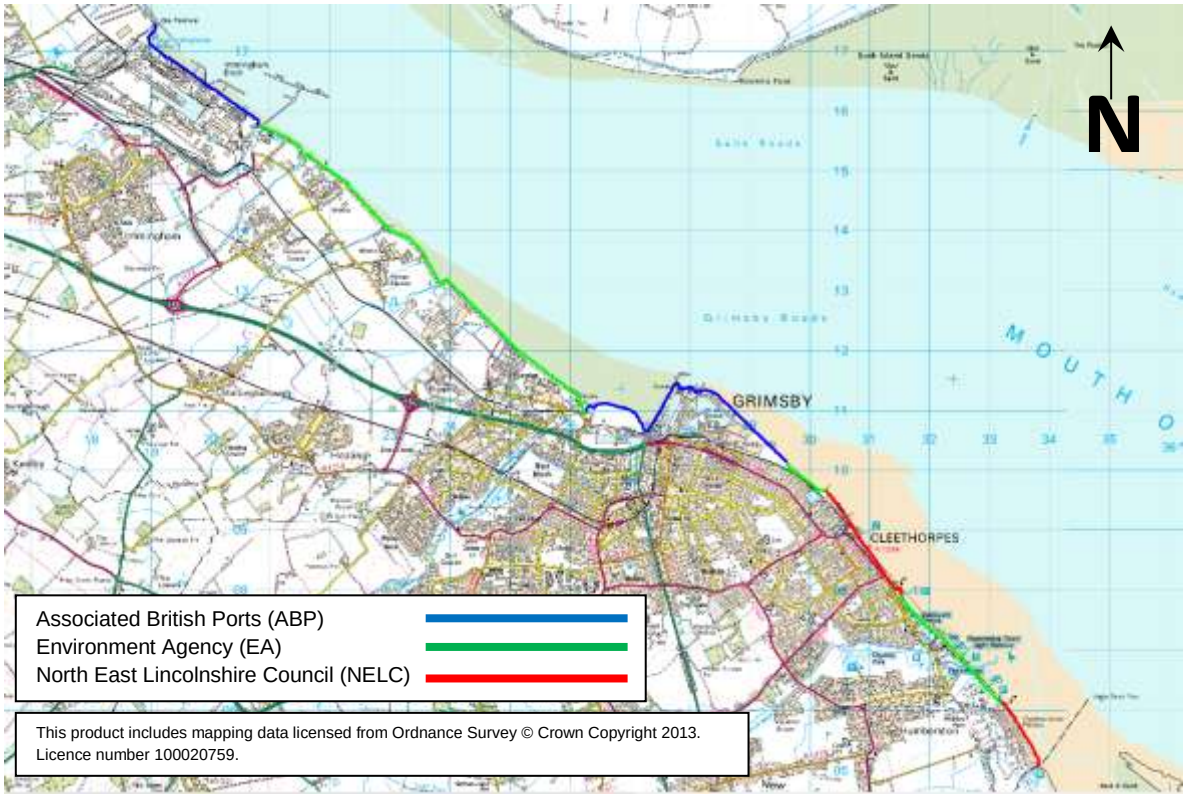
- Coordinating the management of local flood risk which includes surface water runoff, groundwater and ordinary watercourses.
- We work closely with other RMAs so that we are able to plan maintenance and improvement works to ensure the drainage systems are able to operate during a flood event.
- Ordinary watercourse regulation. As a unitary authority we already have powers under sections 14, 15, 20 and 25 of the Land Drainage Act 1991 to maintain the flow in ordinary watercourses. As the LLFA we now have additional powers under sections 23 and 24 which gives us consenting and enforcement powers for certain works which are carried out (generally applies to works which will affect the flow of water or culverting).

Ordinary watercourses are defined as every river, stream, ditch, drain, cut, dyke sluice and passage through which water flows that is not part of a main river.

Main rivers are those marked on the official main river map which is held by Defra and maintained by the Environment Agency.

- A duty under Section 19 of the FWMA 2010 to investigate flood incidents to help understand how they happened, their impacts, and actions that may be taken to reduce future risk.
- Maintaining a register of assets which are considered to have an effect on flood risk to clarify ownership and responsibility for on-going maintenance.
- A requirement to act in a manner consistent with the national and local strategies when exercising our powers.

2.1.6 We are also designated a **Coast Protection Authority** under the Coast Protection Act 1949 and a **Coastal Erosion Risk Management Authority** under the FWMA 2010. This makes us responsible and gives us powers for managing coastal erosion on two sections of coastline: the north and central promenades of Cleethorpes (2.4km) and the front line defence at the Humberston Fitties (1.2km). Third party activities on the coast are controlled by consenting powers. Associated British Ports (as a private land owner) and the Environment Agency are also responsible for other stretches of our coast. Map 2.1 shows who is responsible for the different lengths.



Map 2.1. Map showing responsible parties for the coastal flood defences.

2.1.7 As the **Highway Authority** under the Highways Act 1980 we manage the highway drainage network including pumping stations, gullies, roadside ditches, and drains. This does not include trunk roads as these are the responsibility of the Highways Agency. The majority of urban highway gullies

drain to a public sewer operated by Anglian Water which is not the responsibility of the Council to maintain. Roadside ditches are always the responsibility of the adjacent land owner except where the ditch has been constructed for the sole purpose of draining the road. The Highway Authority has the right to use any roadside ditch for the purpose of draining the highway.

2.1.8 As the **Local Planning Authority** the Council is responsible for the planning process which includes individual applications and spatial planning. We ensure that flood risk is taken account of at all stages of the planning process in accordance with the National Planning Policy Framework (NPPF). This includes taking account of other flood risk management plans for the area and consulting with other RMAs.

2.1.9 From April 6 2015 the government is set to change national planning policy to make it clear that there is an that Sustainable Drainage Systems (SuDS) will be expected in new developments. The Local Planning Authority will be responsible for ensuring there are robust and sustainable arrangements for the maintenance of these systems. Advice will be given by the LLFA role within the Council.

2.1.10 When Schedule 3 of the FWMA 2010 is enacted it will make the Council the **SuDS Approving Body (SAB)** – SuDS are Sustainable Drainage Systems. This will make us responsible for approving the drainage arrangements for new developments which meet certain criteria in the National Standards for SuDS as set by the government. This was due to commence in April 2014 but it has now been delayed by government with no date set at the time of publication for this strategy. This will require close working and coordination with our functions as the Local Planning Authority.

2.1.11 Under the Civil Contingencies Act 2004 we are a designated **Category 1 responder** which gives us a duty to prepare emergency plans for major incidents including flooding. We work closely with the Humber Local Resilience Forum and have produced a draft Multi-Agency Flood Plan with the Humber Emergency Planning Service. This outlines the roles which the RMAs have and provides for a clear understanding of who should be involved in the response. This is currently being updated and reviewed. The Council also has a protocol for dealing with small-scale localised flood events. This is in the form of a draft Local Extreme Flood Event plan (LEFE) which links to the Multi-Agency Flood Plan. This will be finalised as one of the measures to be achieved from this strategy.

2.1.12 All flood risk management functions carried out by the Council can be reviewed by the Council's scrutiny panels which are made up of elected

members. The final draft of this strategy was also sent to them for their consideration. Under amendments to the Local Government Act 2000 the scrutiny panel can also scrutinise the work of other RMAs in the borough, when requested they must provide information or a response to a report produced by the panel.

The Environment Agency

2.1.13 As set out in the National Strategy the Environment Agency has the strategic overview role for all sources of flooding and coastal erosion. This includes providing evidence and advice to the government, setting direction through strategic plans, building knowledge and sharing good practice, establishing the Regional Flood and Coastal Committees and monitoring and reporting on flood and coastal erosion risk management.

2.1.14 They also have operational responsibility for the delivery of flood and coastal erosion risk management activities on main rivers and the coast and the regulation of reservoir safety. They regulate what works can be carried out on the main rivers and coastal defences using powers given to them by the Water Resources Act 1991 and the Land Drainage and Sea Defence Byelaws for the Anglian Region.

2.1.15 Flood warnings, covering main rivers and the sea, are issued by the Environment Agency to people who sign up to their Floodline Warnings Direct service – these are informed by the Flood Forecasting Centre which is run in partnership with the Met Office.

Table 2.1. Description of mapping products offered by the Environment Agency.

Map name	What they can be used for
Flood Map for Planning (Rivers and Sea)	To be used for land-use planning purposes.
Risk of Flooding from Rivers and Sea	This map is their national assessment of the likelihood of flooding from rivers and the sea, taking into account flood defences.
Risk of Flooding from Reservoirs	This map shows the extent of flooding if a reservoir was to fail.
Risk of Flooding from Surface Water	This map should be regarded as the primary source of national information on surface water flooding.
Flood Risk Maps	These are summary PDFs showing what can be affected by flooding, i.e. people, infrastructure and environmental areas of importance. These maps will be at a River Basin District scale showing the impact of flooding from river, sea, surface water and reservoirs.

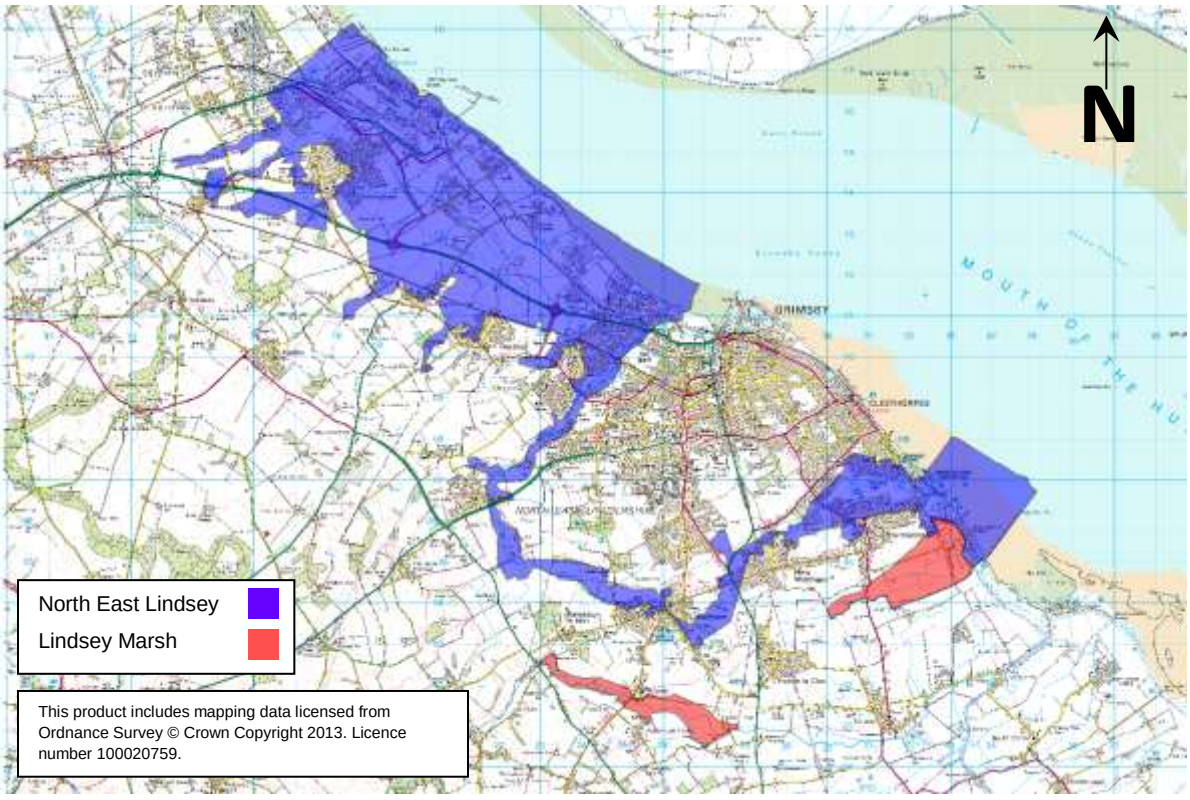
2.1.16 The Environment Agency are a statutory consultee in the planning process providing comments and advice on applications (other than minor development) which are in Flood Zones 2 and 3 and for any site that is

greater than 1 hectare in size. The requirement to consult them on sites of 1 hectare and greater in size will no longer exist with the introduction of the SAB (see Section 3.8 for further information).

2.1.17 The Environment Agency have produced a range of maps that show the risk of flooding from different sources. They have recently updated these and they are now available on their website with simplified names to make them more accessible to those who need to use them. Details are shown in Table 2.1. The risk of flooding from surface water maps are a new addition that will be particularly useful for identifying areas at risk from this source.

Drainage Boards

2.1.18 Drainage Boards are established in particularly low lying areas of England where land drainage and flood defence are necessary to protect both agricultural and developed land. The Boards are made up of directly elected members representing landowners and also members nominated by local authorities who contribute to their funding.



Map 2.2. Areas of North East Lincolnshire covered by the Drainage Boards (shows coverage in NELC boundary only).

2.1.19 The Drainage Boards have powers under the Land Drainage Act 1991 to supervise the drainage of land in their areas which includes similar consenting

and enforcement powers that the Council has in relation to ordinary watercourses.

2.1.20 The two Drainage Boards with responsibilities in our borough are the Lindsey Marsh Drainage Board and the North East Lindsey Drainage Board whose extents are shown on Map 2.2. They must carry out their functions in a manner that is consistent with the national and local strategies.

2.1.21 Whilst the Lindsey Marsh Drainage Board only covers a small area in the south of our borough, the North East Lindsey Drainage Board covers the majority of the north of the borough plus the flood plains of the Laceby Beck/River Freshney and Buck Beck catchments. There is billions of pounds worth of industrial infrastructure within this Board's district.

Water and Sewerage Companies

2.1.22 The water and sewerage company in our borough is **Anglian Water**. Under section 94 of the Water Industry Act 1991 they have a duty to provide, maintain and operate systems of public sewers and works for effectively draining the borough. This does not include highway drainage, land drainage or watercourses although highway drainage can be accepted on agreement with the Highway Authority. The majority of water from the highways in urban areas is drained using gullies maintained by the Council which connect to sewers operated by Anglian Water.

2.1.23 They are responsible for managing the risks of flooding from foul, combined and surface water sewers as well as from burst water mains – problems can be reported to a 24 hour call centre.

2.1.24 They keep a register of properties which are known to be at risk of flooding, this is known as the DG5 register. This is required by Ofwat, the Water Services Regulation Authority, as part of a set of DG (Director General) indicators used to monitor their performance. This includes all properties that have suffered or are likely to suffer flooding from public foul, combined or surface water sewers due to overloading of the sewerage system. A system is overloaded when flow is unable to pass through it due to permanent problems such as flat gradients or small diameters and not temporary problems such as blockages or pipe collapse.

2.1.25 Anglian Water are required to undertake capacity improvements to alleviate sewer flooding problems on the DG5 register during this current Asset Management Plan (AMP) period (2010 – 15), giving priority to more frequent internal sewer flooding problems. The programme is prioritised on the basis

of cost benefit where the benefits must be greater than the whole life costs of the scheme.

2.1.26 They have a proactive Planned Preventative Maintenance (PPM) programme of work for systems where maintenance is known to be required. Reactive maintenance, for example to remove temporary blockages, is prioritised in areas where repeat blockages or pollution incidents may occur. Reactive replacement or repair work, for example replacing collapsed sewers, is prioritised on a risk and value basis. Mitigation measures such as flood doors and non-return valves are used where a permanent solution is not planned within two years which allows time for a more robust solution to be found. Further detail on their PPM programme is included in Appendix C.

Highways Agency

2.1.27 The Highways Agency is an Executive Agency of the Department for Transport and are responsible for operating, maintaining and improving the strategic road network. In North East Lincolnshire they are responsible for the A180.

2.1.28 They have sole responsibility for dealing with the surface water run-off from their roads. For new road projects this will include making sure that flood risk is not increased.

2.1.29 They are also responsible for identifying which of their roads are at flood risk and implementing measures to manage this.

Regional Flood and Coastal Committees

2.1.30 The Regional Flood and Coastal Committee (RFCC) is established by the Environment Agency under the FWMA 2010 with majority membership representing LLFAs and independent members with relevant experience for the following purposes:

- To ensure there are coherent plans for identifying, communicating and managing flood and coastal erosion risks across catchments and shorelines.
- To promote efficient, targeted and risk-based investment in flood and coastal erosion risk management that optimises value for money and benefits for local communities.
- To provide a link between the Environment Agency, LLFAs, other risk management authorities, and other relevant bodies to engender mutual understanding of flood and coastal erosion risks in its area.

- To collect the General Drainage Charge which applies to the Environment Agency Anglian Region only. This generally only applies to agricultural land, commercial woodlands and woodlands in a Defra or Forestry Commission scheme. The money is used to supplement schemes and other local priorities.

2.1.31 The Council is a member of the Anglian Northern RFCC which approves the programme of flood risk management work to go on the Medium Term Plan and also has the power to raise money through the use of the Local Levy on Councils. This can be used to fund local priorities or support schemes in attracting national funding.

Neighbouring LLFAs

2.1.32 Our Neighbouring LLFAs are North Lincolnshire Council and Lincolnshire County Council. We will ensure that we work with these authorities on flood risk issues which cross boundaries. This includes working together to coordinate our approach to coastal flood risk management through the Shoreline Management Plan and the Humber Flood Risk Management Strategy. There may also be some opportunities for sharing resources where works are close to local authority boundaries.

2.1.33 We have regular contact with our neighbouring LLFAs to discuss these issues and explore further opportunities for working together.

2.2 Other Organisations Involved in Flood Risk Management

2.2.1 The following organisations or groups of people are not referred to in the FWMA but they do have a role to play in contributing to the management of local flood risk.

Parish and Town Councils and Communities

2.2.2 The Council's Drainage and Coastal Defence team have established good relationships with parish and town Councils. They are more likely to have initial contact with flood victims and can refer people to the Council for additional help.

2.2.3 Parish and Town Councils will be an important link when engaging with communities at risk of flooding and will often have good knowledge of the history of the area. They will also play an important role in developing community emergency plans to help prepare communities for flooding.

2.2.4 As communities will be involved in influencing plans and work for their area this could also be done through parish and town Councils or specific

community groups set up in response to floods. It is important to ensure that all of those affected have an opportunity to be heard but this will vary depending on how people choose to represent themselves.

Associated British Ports (ABP)

2.2.5 As shown in Map 2.1 ABP are responsible for maintaining the flood defences around the ports in Grimsby and Immingham. These defences protect the port estates but also some residential areas. ABP operate an emergency plan to minimise disruption and aid recovery in the aftermath of a flood.

Utility/Infrastructure Providers

2.2.6 Some utility and infrastructure providers will have assets that are classified as 'critical'. Critical infrastructure includes assets that are vital to the delivery of essential services without which there could be severe economic or social consequences. Such infrastructure includes electricity, water and gas supplies, transport infrastructure, communications and health services. The organisations responsible for this infrastructure will be responsible for protecting it from flooding.

Further information on riparian rights can be found in the 'Living on the Edge' booklet at: https://www.gov.uk/government/publications/riverside-ownership-rights-and-responsibilities

Land and Property Owners (Riparian Owners)

2.2.7 Landowners who have a watercourse running through or bordering their land are referred to as riparian owners. This comes with rights and responsibilities. Riparian owners are responsible for the bed and banks and any vegetation that is growing. Flows must not be obstructed and any structures such as trash screens and culverts will need to be kept free of debris to allow the free passage of water. Failure to do this could result in flooding of their property and that of their neighbours. If works are proposed in the channel or adjacent to it permission should be sought from the relevant Risk Management Authority as described previously (either NELC, the Drainage Board or the Environment Agency).

2.2.8 As well as being responsible for general maintenance, riparian owners can also help to reduce flood risk downstream of their land through changes to land management practices by holding rainfall on or within the ground before it reaches a watercourse.

2.2.9 Any works that are carried out by riparian owners will need to comply with the legislation outlined in section 6. If this places constraints on what work can be

carried out further discussions should be held with the RMA responsible for issuing consent for the works.

2.2.10 The culverting or piping of a length of watercourse makes no difference to riparian responsibilities and the Land Drainage Act 1991. The general assumption is that for watercourses that form the boundary between two properties the owners of each property will own up to the middle of the watercourses unless the deeds to the property state otherwise. Responsibility for roadside ditches, both open and piped, causes a lot of confusion with many adjacent land owners unaware that they are the riparian owners of these ditches. Generally, the only exception to this is if the ditch has been dug by the Highway Authority for the primary purpose of draining the public highway so the responsibility will stay with them.

2.2.11 Property owners of domestic and commercial premises are responsible for the drains within the curtilage of their property. This means maintaining drains in an operational condition so water can flow and ensuring that nothing could enter the system which would cause a blockage.

2.2.12 Responsibility for protecting private property actually rests with the owner and not any of the risk management authorities. The Council also has no duty to provide sand bags to members of the public. More work needs to be done to make people aware of their flood risk so that they are able to contribute to reducing this risk. This was also found by the Cabinet Working Group into Flooding.

Environmental Groups and Organisations

2.2.13 The following organisations are able to provide advice and guidance on protecting the environment which will be particularly useful when designing schemes or projects that can have an environmental as well as a flood risk benefit.

2.2.14 **Natural England** is the national government advisor who provide advice on how to protect the natural environment. Their remit is to ensure that the natural environment is conserved, enhanced and managed for the benefit of present and future generations. Their work includes building an evidence base on the natural environment, managing environmental stewardship schemes, providing advice to the land owners and the planning system on protecting the natural environment and issuing licences for works on protected sites. Advice from Natural England has helped with the completion of the Habitats Regulations Assessment (see section 6 for further information).

2.2.15 North East Lincolnshire is covered by two **Nature Partnerships**: **Greater Lincolnshire** and **Humber**. These bring together interested stakeholders to work together to protect and enhance the environment.

2.2.16 There are also local groups such as **Lincolnshire Wildlife Trust** who safeguard wildlife in Lincolnshire by protecting and creating wildlife habitats, advise decision makers and encourage enjoyment of the natural environment.

2.2.17 There are projects going on by different environmental and nature organisations that can also have a contribution to reducing flood risk, for example by providing additional storage within the catchment.

2.3 Local Partnerships and Governance

North East Lincolnshire Local Flood Risk Management Group

2.3.1 The complex interactions that exist between drainage systems and watercourses requires good partnership working arrangements between the RMAs listed in the previous section.

2.3.2 NELC have been chairing the Drainage Infrastructure Group since the summer floods of 2007. This was given further emphasis in the FWMA 2010 when the Council was designated as the LLFA and was required to take a strategic lead over local flood risk management. The group has recently changed to the Local Flood Risk Management Group to reflect the range of responsibilities the Council has as LLFA. The group currently meets four times a year with the following permanent members:

- North East Lincolnshire Council.
- Cofely (The Council's Regeneration Partner).
- The Environment Agency.
- Anglian Water.
- North East Lindsey Drainage Board.
- Lindsey Marsh Drainage Board (attendance as required by agenda).

2.3.3 Other people can attend on invitation.

2.3.4 The group has its own terms of reference which facilitates:

- The sharing of information and knowledge between members.
- Development of options to reduce the risk of flooding which can be a collaboration between several members.
- The sharing of resources, for example for maintenance activities and emergency response, which means funds can stretch further.
- The opportunity for new planning applications to be considered in relation to all sources of flooding to ensure flood risk is fully considered.

Local Resilience Forum

2.3.5 The Local Resilience Forum is attended by risk management authorities, local government, the Environment Agency, emergency services, health services and utility and transport organisations.

2.3.6 It plans for a range of emergency situations, of which flooding is one, by developing, maintaining and monitoring the Multi-Agency Flood Plan.

3 Flood Risk Within North East Lincolnshire

3.1 Types of Flood Risk

3.1.1 Flooding is a natural process that can happen at any time in a wide variety of locations. A number of forms of flooding present a range of different risks due to varying speeds of inundation, depths and durations of flooding. The limits of flood risk areas cannot be defined precisely because floods which affect a similar area can arise from different combinations of weather and rainfall patterns, sources, local topography and patterns of development. With climate change, the frequency, patterns and severity of flooding are forecast to change and become more damaging.

3.1.2 The types of flooding which present a risk to North East Lincolnshire are:

1) **Flooding from ordinary watercourses** – also known as **fluvial** flooding. This occurs when capacity in the system is reached or a blockage causes water to come out of the channel and flow across land.
2) **Surface water flooding** – also known as **pluvial** flooding. This occurs when, usually intense, precipitation falls onto the ground, flows over or collects on the surface and does not enter a watercourse or drainage system.
3) **Groundwater flooding** – caused by water levels in rocks and soil rising until it appears above the ground surface.
4) **Sewer flooding** – from the public sewer system. As defined by the FWMA 2010 flooding from this source is only covered by this strategy if it is wholly or partly caused by an increase in precipitation entering the system, not by blockages.
5) **Coastal flooding and erosion** – high tides and storm surges can overtop or breach defences causing flooding inland. Erosion occurs when the action of the waves removes material causing the permanent loss of land.
6) **Flooding from main rivers** – the same as for ordinary watercourse flooding.

3.1.3 Sources 1, 2 and 3 are considered by the FWMA 2010 to be local sources of flood risk which need to be included within this strategy. Sources 4, 5 and 6 will also be included in the strategy since they have a large influence across the borough.

Section 2 referred to the Risk Management Authorities who are responsible for the different sources of flooding listed above. Specific queries can be made direct to them using the contact details in **Appendix B**. If there is any confusion about who to speak to the councils Drainage and Coastal Defence team can be contact for further advice.

3.1.4 Every flood will have a different impact on people, property and the environment with the consequences of flooding depending greatly on land use. For example, overtopping and/or breach of a flood defence in a densely populated urban area poses a greater threat to life than in a rural area. The different sources of flood risk can also combine which can make the consequences more difficult to predict.

3.1.5 The Council carried out a Preliminary Flood Risk Assessment in 2011 as required by the Flood Risk Regulations 2009. This found areas of past floods and potential future floods for **surface water, groundwater and ordinary watercourse** flooding. This helped to identify areas at greatest risk across the borough for use within this strategy. This showed that the number of properties at risk in the future as being between 1,350 and 1,850 (excluding risks from main rivers and the sea).

3.1.6 The CFMP has identified that there are approximately 470 residential properties at risk of **fluvial flooding** which will rise to an estimated 1,600 with the effects of climate change increasing river flows.

3.1.7 The Humber Flood Risk Management Strategy (2008) has estimated that there are close to 33,000 properties in the tidal floodplain which are at risk of **coastal flooding**.

3.1.8 Adding these figures together will not give the total number of properties at risk of flooding in the borough as some could be at risk of surface water and coastal flooding. Adding the individual figures would count some properties more than once.

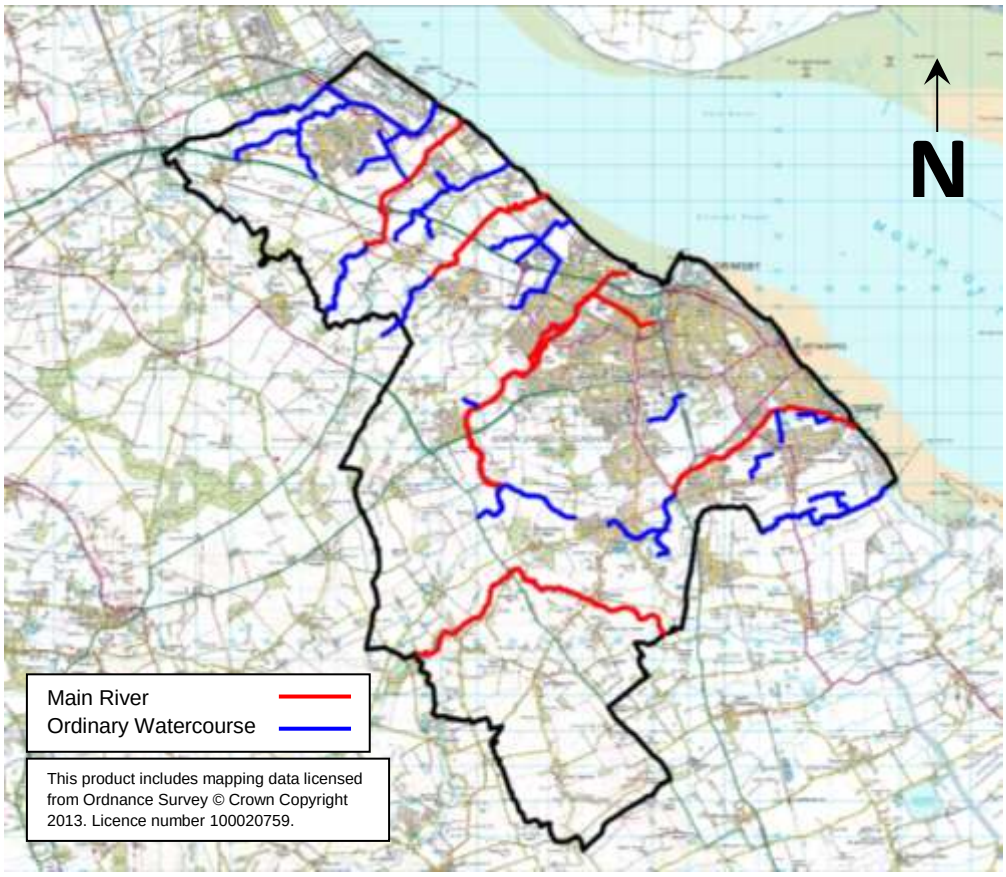
3.1.9 The figures show the seriousness of the flood risk that needs to be managed. Whilst there is on-going work to reduce this it will not eliminate the risk altogether. During the tidal surge at the beginning of December 2013 the borough came close to being seriously affected by coastal flooding. Businesses on the sea front and at Immingham docks were affected but residential properties were not. Had the wind been blowing onshore instead of offshore the level of the sea would have been higher which could have put lives at risk and caused extensive damage to residential properties.

3.1.10 The Council and other RMAs will continue to work to reduce the risk and ensure there are plans in place during emergencies but people need to be aware of what the risks are so they can prepare.

3.2 Assessment of Flood Risk Within North East Lincolnshire

Flooding from Ordinary Watercourses and Main Rivers

3.2.1 This combines sources 1 and 6 which includes all of the watercourses in the borough. Watercourses (rivers and streams) flood when the amount of water in them exceeds the flow capacity of the channel or when there are downstream restrictions to flow. Most rivers have a natural floodplain into which the water spills in times of flood but problems can occur where these have been developed on. Flooding can either develop gradually or rapidly according to how steeply the ground rises in the catchment and how fast water runs off into surface watercourses. In a large, relatively flat catchment, flood levels will rise slowly and natural floodplains may remain flooded for several days, acting as the natural regulator of the flow. Map 3.1 shows the principle watercourses in the borough.



Map 3.1. Local watercourses in the borough.

3.2.2 In small, steep catchments, local intense rainfall can result in the rapid onset of deep and fast-flowing flooding with little warning. Such 'flash' flooding, which may only last a few hours, can cause considerable damage and possible threat to life. Land use, topography and the layout of local development can have a strong influence on the velocity and volume of water and its direction of flow at particular points. Flooding can also occur when culverts, trash screens and bridges are blocked by debris. There are steep

catchments around the Wolds area in North East Lincolnshire. There have been past instances where the steep nature of the topography has contributed to internal and external flooding of property and the flooding of the highway network, i.e. Beelsby, Hatcliffe and Ashby cum Fenby. However extensive mitigation and on-going maintenance is managing flood risk at these locations. This includes full maintenance of the existing highway drainage systems and connected ordinary watercourses plus the provision of additional drains and trash screens where necessary.

3.2.3 Map 3.3 shows the fluvial flood zones in the borough from watercourses if there were no flood defences in place. From a flood risk point of view, the highest risk watercourses, with potential for causing internal flooding, within North East Lincolnshire are:

- Laceby Beck and its downstream length the River Freshney.
- Buck Beck.
- Waithe Beck.
- New Cut Drain.
- Habrough Marsh Drain.
- Middle Drain.
- Townscroft Drain.

3.2.4 Land drainage systems comprising networks of smaller watercourses often pose just as much a threat of flood risk as the main rivers or Drainage Board drains listed above. This is the case in:

- Immingham – the area to the north of Washdyke Lane;
- Buck Beck catchment around Mount Pleasant through the village of Waltham (through Waltham Buck Beck is classed as an ordinary watercourse);
- Stallingborough – south end of the village;
- Humberston – the catchment north of Humberston Avenue; and
- Healing – in the area of Great Coates Road.

3.2.5 During the summer floods of 2007, all of the above watercourses contributed to flooding in Grimsby, Immingham, Waltham, Brigsley, Great Coates and Stallingborough. The most notable fluvial flooding incident in 2007 was on the Willows Estate in Grimsby when the River Freshney overtopped its defences which added to the surface water from the drains causing 186 properties to be internally flooded.

3.2.6 All of these watercourses outfall into the sea with all but one in this borough. Because of the low lying nature of the borough, which has a large tidal flood plain, some of the watercourses rely on pumping stations to discharge during high tide periods. Those without pumping stations can become tide locked for varying lengths of time. The other main influence is the condition of the gravity

outfalls. There is an emerging issue with the condition of some of these outfalls at Oldfleet Drain and the New Cut Drain. Periods of low flow in the rivers can bring about a build-up of siltation which may prevent the outfall functioning efficiently. This in turn may lead to flooding of land where water levels are high in the receiving watercourse.

3.2.7 Where there is an interface with the sewer system at any of these locations it is included in the sewer flooding section below.

3.2.8 One major cause of flooding from land drainage systems is a lack of maintenance. This can be a particular problem when the banks of a watercourse are under different ownership and the land owners have different approaches to land drainage maintenance. There may be situations where land owners are unaware of, or choose to ignore, their riparian maintenance responsibilities. There is no legal obligation on a riparian owner to maintain a watercourse but if the condition of it brings about a risk of flooding to property or the public highway then NELC can serve notice under the Land Drainage Act 1991 to have it rectified. Likewise, in a Drainage Board District, the Drainage Board would be able to serve the notice. The Council will always look for an informal solution prior to enforcement action.

Surface Water Flooding

3.2.9 Intense rainfall, often of short duration, that is unable to soak into the ground or enter drainage systems can run quickly off land and result in local flooding. This can be a problem especially when the land is either extremely dry or wet. In developed areas, this flood water can be polluted with domestic sewage where foul sewers surcharge and overflow. Local topography and the built environment can have a strong influence on the direction and depth of flow. The design of development down to individual plot level can influence or exacerbate this. Overland flow paths therefore need to be taken into account when planning new developments.

3.2.10 There are strong interactions between surface water flooding and flooding from the sewer system. If drain covers become blocked or do not have enough capacity water will stay on the surface and flow to lower spots where it will pond and cause flooding.

3.2.11 The causes of surface water flooding are what makes it difficult to predict. Whilst weather forecasts can predict that heavy rain could be due in a region it is impossible to predict this down to an individual street level which is where surface water usually causes problems. For example, with the surface water flooding in Immingham in 2012 it was known that heavy rainfall was due over

the borough but not that it would mostly fall over the town with few impacts elsewhere.

3.2.12 Flooding can be exacerbated if development increases the percentage of impervious area. However, sustainable drainage on new developments in North East Lincolnshire has been a requirement for the past 10 years, longer in some areas of the borough such as Scartho. The main difficulty with the provision of sustainable drainage in the borough is the lack of permeability in the ground which has meant that surface water storage with an attenuated discharge is often the only option. Forthcoming legislation, creating the SuDS Approving Body (SAB) within the Council, will require us to approve and adopt new drainage systems which will ensure their long term effectiveness in flood risk management.

3.2.13 The Environment Agency have recently released maps showing the risk of flooding from surface water. These are the third generation of maps, published for the first time, to show this information with the accuracy improving each time. They represent the levels of the land, buildings and how flows can be affected by the presence of roads and structures such as bridges and rail embankments. These maps were reviewed by the Council and were deemed to be an accurate portrayal of past flood events. Although not to be used to predict flooding to individual properties, they provide valuable information on areas that could be affected so that further investigations can be carried out. They can also inform new developments of areas which might be at risk so this can be taken account of.

Groundwater Flooding

3.2.14 Groundwater flooding occurs when water levels in the ground rise above surface elevations. It is most likely to occur in low-lying areas underlain by permeable rocks (aquifers) such as the extensive chalk that underlies North East Lincolnshire and the east part of North Lincolnshire. The water is under pressure in the chalk aquifer and finds any weaknesses in the overlying ground which are known locally as blow wells. Water levels below the ground rise during wet periods, and fall again when conditions are dry. During very wet periods, rising water levels may lead to the flooding of normally dry land, as well as reactivating flow in ‘bournes’ which are intermittent streams that only flow for part of the time when groundwater levels are high. Precise locations at risk of groundwater flooding are difficult to predict.

3.2.15 An example of ‘bournes’ are the ditches on “Saltings Allotment” adjacent to Chelmsford Avenue and Westward Ho. This location is close to the water extraction works operated by Anglian Water where there were only minor instances of groundwater flooding during the 1990s. However, as a result of

petrol contamination of the aquifer, extraction was reduced 32% in 2001 and groundwater flooding has been present ever since. A reduction in the amount of water extracted has caused the groundwater levels to rise although this location is still a major source of groundwater extraction. Mitigation here is in the form of ditch clearing and maintenance of outfalls so that water can drain away and is carried out by the Council as the riparian owner. There are other locations in this area where groundwater flooding occurs regularly such as the grassland off Westward Ho and an area to the rear of Clare Court.

3.2.16 There are active springs that arrive at the surface under noticeable pressure such as in Spring Lane, Laceby and Willingham Street, Grimsby, further locations are shown on Map 3.2. These springs discharge into the surface water piped systems serving the properties.

Map 3.2. Locations of active springs in the borough.

3.2.17 The chalk shows some of the largest seasonal variations in groundwater level, and is the most extensive source of groundwater flooding. This may take weeks or months to dissipate because groundwater flow is much slower than surface flow and water levels thus take much longer to fall.

3.2.18 The Grimsby & Ancholme Catchment Flood Management Plan has also identified areas of the borough with the highest susceptibility to groundwater flooding:

- Areas of Grimsby
- Immingham
- Humberston
- Cleethorpes

3.2.19 There is also an old river bed, the Old Haven, running through Grimsby which provided access for sea going vessels into central Grimsby throughout the medieval period. It still has an influence on the built environment with subsidence of properties leading to demolition and re-build. In terms of flood risk there has been flooding of domestic property in the vicinity of Hainton Avenue where it is reported that water entered via the sub floor space. This location was very close to the route of the river bed as is the emergence of ground water springs around Bargate, Westward Ho and Chelmsford Avenue. It is possible that the alluvial silts associated with old river beds provide sub-surface pathways for groundwater.

Sewer Flooding

3.2.20 In urban areas, rainwater is usually drained into surface water sewers or sewers containing both surface and waste water known as ‘combined sewers’. In Grimsby and Cleethorpes there are large areas served by combined sewers, mostly in the older areas of the towns. More modern areas of development are generally served by separate systems but eventually discharging into combined sewers except where the surface water sewer is discharging to a watercourse. These locations tend to be closer to the edge of the developed areas where open watercourses are still available. Immingham is served entirely by separate systems.

3.2.21 Flooding can result when the sewer is overwhelmed by heavy rainfall, becomes blocked or is of inadequate capacity. When this happens to combined sewers, there is a high risk of land and property flooding with water contaminated with raw sewage. Likewise, flooding from surface water sewers, ordinary watercourses or main rivers can become contaminated as the flood waters can enter foul sewers via external domestic gullies. The other common method of cross contamination is wrongly connected surface water drains

causing surcharging of foul sewers during a rainfall event at the same time as surface water sewers are surcharging and flooding.

3.2.22 The following areas of North East Lincolnshire are served by sewer systems that are prone to surcharge through inundation from rainfall events:

- Some parts of the Willows and Wybers Wood estates, Grimsby – combined system. There was further internal and external flooding of property here during three intense rainfall events in summer 2014.
- North part of Heneage Ward, Grimsby – combined system
- South and north east parts of Yarborough Ward, Grimsby – combined system. The Ward was extensively affected by the summer floods of 2014 especially the north east part with a number of properties twice being internally flooded.
- Parts of Laceby – separate systems, surface water causing surcharge of the foul system.
- South part of the Humberston and New Waltham Ward - separate systems, surface water causing surcharge of the foul system.
- Scartho area of Grimsby – has been prone to sewer surcharge for the past 30 years due to increased development bringing out over loading of the core sewers. In recognition of the problem a planning embargo was put in place by Grimsby Borough Council until 1996. Attenuation was required by the newly formed North East Lincolnshire Council from 1996 onwards. The Scartho area is also highlighted in the CFMP as being at risk.
- East part of Park Ward – combined system. Some properties were internally flooded on two occasions during the floods of summer 2014.
- South west part of West Marsh Ward - combined system. Some properties were internally flooded on two occasions during the floods of summer 2014.

3.2.23 As the urban area of North East Lincolnshire has gradually expanded more land drainage systems have had to be accommodated within new developments. This entails providing continuity to land drainage systems which run into areas being developed. Failure to adequately accommodate these land drainage systems is likely to result in flooding. In some developments not only have the land drainage systems been piped through the development, rather than around, but the system has acted as a discharge point for surface water run-off from the development and subsequently has been adopted by the sewerage undertaker, Anglian Water.

3.2.24 This has only happened where there is still continuity in the land drainage system right through to an outfall into a watercourse or other body of water. When this has happened the capacity of the original land drainage system is

reduced due to the piping in of the open channel. As a consequence it is very important that regular maintenance regimes are put in place to maximise the capacities of the piped system as the main surface water sewer systems are still receiving run off from the catchment upstream as well as the development. This type of arrangement is more common in the developments on the rural edge of an urban area and dated from a time before there became an increased awareness of the need to future proof drainage systems by controlling discharge rates and having adequate provision for the continued conveyance of land drainage flows through or round the development.

3.2.25 At the following locations there is a significant level of flood risk brought about by the piping/culverting of land drainage systems or ordinary watercourses:

- South of Grimsby Road, Humberston – this area is in the district of the North East Lindsey Drainage Board who have confirmed that the area between Coniston Crescent and upstream to Humberston Avenue is protected from a flood with a 5% annual probability of occurring (1 in 20 chance in any given year). It is felt that this needs improving and a feasibility study is to be carried out into what options may be available.
- Habrough - there is a risk at both ends of the village but this has been lessened in West End Road with the installation of a new surface water sewer.
- Wilton Road Industrial Estate, the Humberston Avenue area and the Tetney Road area of Humberston are all at risk of flooding from surface water drains and sewers.
- The Buck Beck through Waltham; some lengths are culverted and others remain open. A lack of awareness of access requirements for maintenance have led to lengths being extremely difficult to access. However, a maintenance action plan has been developed with different cleaning techniques and access requirements required for different lengths of the system.
- The south end of Stallingborough – various lengths of culverting have been installed which receive run off from the land drains upstream, the public highway and private property and land. A maintenance plan is in place.
- South of Bradley Crossroads, Grimsby – a culvert receives run off from a significant area of land upstream and is then culverted through an urban area where connectivity is unknown.
- Part of the upstream Buck Beck catchment, Waltham – roadside ditch receives run off from a large upstream catchment and culverts have been installed for property access and further development.

3.2.26 The other type of land drainage systems present in the Borough are older brick culverts that were constructed to accommodate the expansion of the urban area. The area of Grimsby and Cleethorpes was criss-crossed with watercourses with significant areas of marsh land being developed upon. For example on the East Marsh, West Marsh and Willows estates where the name indicates the type of land that was built upon. An unknown number of these brick culverts remained unmapped and for the most part inaccessible but those which have been exposed in recent years include:

- East Marsh Drain.
- Park Street culvert.
- B&Q car park.
- Doughty Road entrance.
- Abbey Drive East.
- Lambert Road.

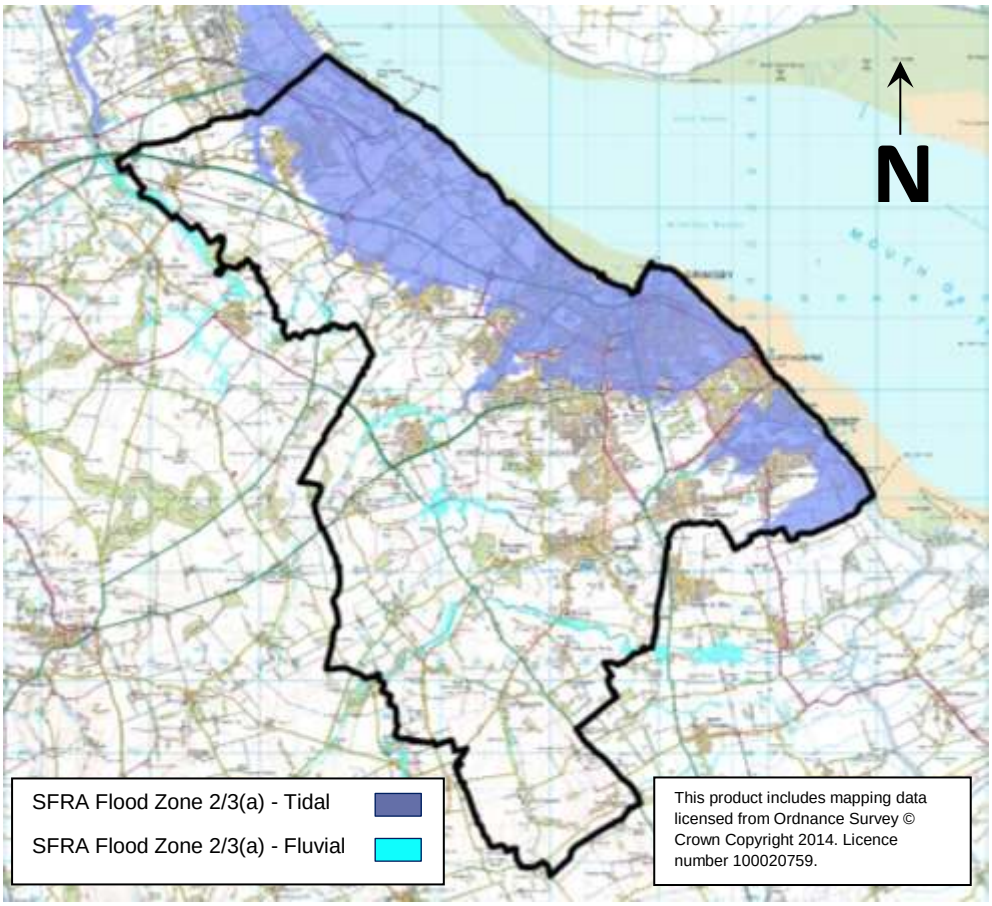
3.2.27 Generally they appear dry but the Park Street culvert has live highway gullies connected, the culvert running east to west under the B&Q car park contains a constantly flowing 225mm diameter pipe and the culvert in Abbey Drive East contains water when it rains. It is clear therefore that the extent of live connectivity into these systems is unknown and future problems may arise.

3.2.28 Some of the culverts described in this section will now be public sewers and others will still be classed as land drainage systems which have been piped or culverted. It is important to make this distinction as there will be differences in who is responsible for maintenance and repair. Land drainage systems, whether they are culverted or not, remain the responsibility of the riparian owner. If it is difficult to establish what type of drainage system it is or who is responsible the Council's Drainage and Coastal Defence team will be able to help.

Coastal Flooding and Erosion

3.2.29 The onset of flooding from the sea can be extremely rapid. Deep, fast-flowing water can create an extreme hazard. The severity of such flooding will depend on a number of factors, often in combination: the height of tides; weather systems (including storm surge); wind and wave conditions and topography. The standard of the sea defences, i.e. condition and height, will ultimately determine if an area is to flood and to what extent. Currently it is a breach of the sea defences which has the capacity to cause the most severe flooding but with the predicted sea level rise over the next 100 years the consequences of defence overtopping will gradually worsen until both types could result in flood water depths of well over 2 metres. If no defence improvements are made both of these scenarios become more likely when taking climate change into account.

3.2.30 The severity of this flood risk has been nationally recognised with works on a multi-million pound scheme to improve the flood defences around the Grimsby docks currently being undertaken. This will protect 14,000 properties in the town. Plans are also currently being considered for the defences which protect Cleethorpes from flooding and coastal erosion. There is a strategic commitment in the Flamborough Head to Gibraltar Point Shoreline Management Plan to maintain the appropriate standards of sea defences for our borough over the next 100 years with a policy to 'hold the line'. The challenge with this will be funding any improvement works that are needed.



Map 3.3. Extent of areas at risk of flooding from rivers and the sea if flood defences were not in place (as shown by Flood Zone 2 on the Environment Agency flood maps for planning).

3.2.31 The coastline of North East Lincolnshire is split into four regions, with responsibility split between three organisations as shown in Map 2.1 in Section 2. Protection from the sea along the northern length (Immingham to Grimsby) is by way of a concrete sea wall, maintained by the Environment Agency. ABP are responsible for the sea walls around their land at Immingham and Grimsby Docks which is offered by concrete sheet piled walls, concrete revetment walls topped with rock filled gabion baskets and

lock gates to control levels within both the Royal and Fish Docks. Both lock structures are protected by an external flood gate. The length from Grimsby Dock to Cleethorpes promenade is a concrete sea wall also maintained by the Environment Agency. This wall was built in the late 1970s to replace the sea wall destroyed by the tidal surges of 1976.

3.2.32 The North and Central Promenades of Cleethorpes are maintained by NELC by way of a concrete sea wall, with timber groynes controlling the sand levels of the amenity beaches. The section between the Humberston Fitties and the Cleethorpes Leisure Centre is protected by a sea defence embankment which is the responsibility of the Environment Agency. To the south of this, Humberston Fitties is protected by a coastal embankment supported by a rock filled gabion toe which forms the front line of the sea defences. This embankment is the responsibility of NELC and lies in front of the strategic Environment Agency flood defence embankment. These two defences work in conjunction with each other. The majority of the chalets on the Fitties lie between the two embankments.

3.2.33 Map 3.3 is an extract from the SFRA showing the area of the borough that could be at risk from tidal flooding if the coastline were not defended. This emphasises the importance of maintaining and improving the sea defences and why discussions on this are already taking place.

The full SFRA document and maps can be found on the NELC website at:

- http://www.nelincs.gov.uk/council/planning-policy/evidence-base/sub-regional-documents/strategic-flood-risk-assessment-2011-sfra/

3.2.34 The Strategic Flood Risk Assessment (SFRA) for the borough contains some further detail on the risk of coastal flooding. This includes maps which show the consequences of breaches in the flood defences during a 0.5% annual probability event (1 in 200 chance of occurring) taking account of climate change up to 2115. This assessment does not show the likelihood of the defences failing but shows where could be affected by flooding in the worst case scenario should the defences fail. This information highlights the importance of investing in sea defences to protect the borough but also in being prepared if the defences were to fail.

3.2.35 The effects of sea level rise and coastal flooding can also impact on fluvial flooding from watercourses with a tidal outfall. There will be an increase in the occurrence and duration of tide locking that prevents watercourses from draining by gravity into the Humber Estuary which when combined with heavy rainfall can cause flooding. In June 2007 this was the case for North Immingham, the Willows Estate in Grimsby and the Humberston Fitties. The watercourses in the borough which could be affected by this are:

- Buck Beck.

- New Cut Drain.
- Old Fleet Drain.
- Habrough Marsh Drain.
- Stallingborough North Beck.

3.2.36 It is likely that in the future as the occurrences of tide locking increase a solution to this potential risk will need to be considered.

3.3 Recent Mitigation Works

3.3.1 These works include measures that have been put into place as a result of past flooding events including those of June 2007. This shows the commitment to increasing the borough's flood resilience to the benefit of the residents and local economy. Much of this was funded using money that was provided by government on a one-off basis. Works have been carried out at the following locations:

Waltham

3.3.2 The construction of an earth flood defence embankment protecting all the properties that flooded in June 2007 at the rear of Mount Pleasant. The standard of protection is such that a similar event to June 2007 would not cause internal flooding as long as a regular maintenance programme is applied downstream. There are restrictions in the form of undersized piped sections downstream but to upgrade these would greatly increase flood risk at downstream locations previously affected by flooding.

North Immingham

3.3.3 The floods of 2007 revealed widespread maintenance requirements needed for the land drainage systems. A programme of works was undertaken to restore the systems to the appropriate standard. Other measures such as overflow swales and channel realignment were also used to enhance the works carried out. It is proposed to negotiate with the relevant land owners to ensure that they are aware of their riparian responsibilities. There are permissive enforcement powers available where flood risk is at an unacceptable level due to watercourse condition.

Habrough

3.3.4 A new surface water drainage system was installed along West End Road by NELC to improve the level of protection to those properties previously flooded. Extensive repairs and cleaning of the surface water systems in the north east

end of the village was carried out. A programme for maintenance is to be put in place.

Humberston

3.3.5 A programme of land drainage maintenance works was carried out around the Coniston Crescent area to restore the land drainage to its design standard. Here though the land drainage systems discharge into the Anglian Water public surface water sewer so the serviceability and condition of these sewers is of great importance. Anglian Water will be consulted on any maintenance requirements found in future inspections.

3.3.6 In Humberston Avenue an under capacity surface water public sewer was replaced by NELC. This work increased the system capacity by 1300%, greatly increasing the levels of protection for those properties previously internally flooded.

3.3.7 Despite the above work and other improvements in flood resilience at most of the locations affected by the 2007 floods the majority of the mitigation works involved maintenance of the existing infrastructure rather than improvements to it.

Sea Defences

3.3.8 Since the publication of the Humber Flood Risk Management Strategy in 2008 sea wall strengthening works have been carried out on the stretch between Grimsby and Immingham.

3.3.9 NELC carried out replacement works of part of the Humberston Fitties flood defences in 2010/11. These defences provide protection to 225 chalet homes sited in front of the Environment Agency flood embankment.

3.3.10 Work is currently being undertaken to improve the sea defences around the Grimsby Docks, due for completion in 2015. Plans are being considered to improve the standard of defences on the North Promenade of Cleethorpes.

3.3.11 Funding is also being sought for work to replace the terminal groyne which protects the beach at Cleethorpes. This groyne helps to maintain beach levels which protect the sea wall from being undermined, reduces water depths and dissipates wave energy so providing additional protection to the sea defences.

3.3.12 Early discussions have begun about the remaining stretches of the coastal defences. Any works here would be dependent on a partnership working and funding approach.

3.4 The Impacts of Climate Change

3.4.1 Climate change will have a significant impact on all sources of flood risk in the borough. There is clear evidence that global climate change is happening now. It cannot be ignored.

3.4.2 Over the past century around the UK we have seen sea levels rise and more of our winter rain falling in intense wet spells. Seasonal rainfall is highly variable. It seems to have decreased in summer and increased in winter, although total winter amounts changed little in the last 50 years. Some of the changes might reflect natural variation; however the broad trends are in line with projections from climate models.

3.4.3 Greenhouse gas (GHG) levels in the atmosphere are likely to cause higher winter rainfall in future. Past GHG emissions mean some climate change is inevitable in the next 20-30 years. Lower emissions could reduce the amount of climate change further into the future, but changes are still projected at least as far ahead as the 2080s.

3.4.4 We have enough confidence in large scale climate models to say that we must plan for change. There is more uncertainty at a local scale but model results can still help us plan to adapt. For example we understand rain storms may become more intense, even if we can't be sure about exactly where or when. By the 2080s, the latest UK climate projections (UKCP09) are that there could be around three times as many days in winter with heavy rainfall (defined as more than 25mm in a day). It is plausible that the amount of rain in extreme storms (with a 1 in 5 annual chance or rarer) could increase locally by 40%.

3.4.5 In particular for the Humber River Basin District the following is predicted by the **2050s** for the **medium emissions** scenario:

- Winter precipitation increases of around 12% (very likely to be between 2 and 26%).
- Precipitation on the wettest day in winter up by around 12% (very unlikely to be more than 24%).
- Relative sea level at Grimsby very likely to be up between 10 and 41cm from 1990 levels (not including extra potential rises from polar ice sheet loss).
- Peak river flows in a typical catchment likely to increase between 8 and 14%.

3.4.6 The changes described above will have impacts across the borough for households, businesses and infrastructure. Watercourses and drainage systems will need to cope with increased volumes of water exacerbated by a longer tide-locking period and being unable to discharge into the Humber Estuary. More intense rainfall could bring flash floods and surface water flooding which can be difficult to predict. The floods of 2007 also tell us that floods do not just occur in the 'traditional' winter period. Increases in sea levels will reduce the standards of protection provided by the sea defences but as already referred to this risk is currently being managed.

3.4.7 Climate change will be taken account of in any flood risk management works or resilience projects that are carried out. This strategy cannot specify which climate change scenarios will be used as different scenarios and time periods will apply to different situations. This also allows for any new predictions to be considered.

3.5 Future Flood Risk

3.5.1 This section highlights the locations of potential future flooding, taking account of: topography, the locations and characteristics of watercourses and floodplains and effectiveness of flood defence/resilience works.

3.5.2 The Preliminary Flood Risk Assessment and the Grimsby and Ancholme Catchment Flood Management Plan provides a lot of the detail.

Preliminary Flood Risk Assessment

3.5.3 The Preliminary Flood Risk Assessment for North East Lincolnshire was completed in 2011 and is available on the Council and Environment Agency websites. The following areas were identified as at risk of future flooding from local flood risk sources:

- East part of Habrough.
- Various locations in Immingham.
- South end of Stallingborough.
- Healing in the area of Great Coates Road.
- Great Coates – area adjacent to Towns Croft Drain.
- Various locations in Grimsby.
- Humberston Fitties.

Catchment Flood Management Plan

3.5.4 The Grimsby and Ancholme Catchment Flood Management Plan (CFMP) also addresses different aspects of flood risk in the borough. This document was produced by the Environment Agency in 2009. Issues highlighted include:

- The increase in fluvial flood risk due to climate change in the Immingham catchment. One major contributing factor is that climate change will increase sea levels and lead to more frequent tide locking of watercourse gravity outfalls for a longer duration.
- Grimsby's susceptibility to surface water flooding with the potential for sewer systems to be overwhelmed; some of these locations are listed in the above section.
- Possible surface water problems are also recognised in Immingham, Cleethorpes, Humberston, Waltham and Scartho which has historically been recognised as a problem spot. The Immingham surface water flood threat could be exacerbated during periods of watercourse tide locking as all surface water outfalls from Immingham discharge into the local watercourses.
- Grimsby's susceptibility to groundwater flooding – covered in paragraph 3.2.19.
- Localised flood threat from Drainage Board drains, due to the land being low lying and flat it is more difficult and complex to model the risk of flooding in these areas.
- The flood risk in Grimsby with the Laceby Beck/River Freshney. The main flood risk area is to the Willows Estate in Grimsby but will include the Wybers Wood area, Great Coates and the industrial estates around Pyewipe in Grimsby. However, during 2013 a scheme has been completed to increase the capacity of the Freshney Washlands between the river and the Willows. This scheme comprises earth embankments and sheet piling and provides a standard of protection against a flood with an annual probability of 1% (1 in 100 chance of occurring in any given year).
- The flood risk in Cleethorpes and Humberston is associated with the Buck Beck. The CFMP concludes there is no risk to people or property but tide locking, siltation build up or a saturated catchment may exacerbate the level of flood risk.

Future Risk in Drainage Board Districts

3.5.5 As outlined in section 2 approximately 25% of the borough is served by two Drainage Boards. The majority of this low lying area in North East Lincolnshire is the tidal flood plain which is part of the extensive continuous tidal flood plain running down the entire Lincolnshire coast.

3.5.6 All of the villages in or close to the Board's district have locations where there is significant flood risk. These villages are Habrough, Stallingborough, Great Coates and Aylesby. In all instances the flood risk is due to surface water

drains and culverted ordinary watercourses, some with associated trash screens that require regular routine maintenance.

3.5.7 Since 2007 much work has been carried out by NELC in these villages to increase flood resilience. However, a lot of this work involved standard maintenance operations to return an asset (surface water drain/sewer, culvert or open watercourse) back to its optimum condition thereby maximising performance. In a few instances this work was done on a 'without prejudice' basis where responsibility lay elsewhere, riparian owners of watercourses being the usual case. In these instances there was often a reluctance by riparian owners to act within a timescale that would bring about a degree of comfort to residents who had suffered catastrophic internal flooding. Post June 2007 these properties were being extensively renovated at cost up to, or in excess of, £50,000. A repeat of the flooding to the same extent as previously would have been unacceptable for all concerned.

3.5.8 A large part of the town of Immingham is a low lying area in the North East Lindsey Drainage Board's district with the majority of the catchment pumped. All of the town is drained into the surrounding land drainage systems most of which are pumped into the high level Stallingborough North Beck main river. The system serving the areas north and west of Immingham discharges into the Habrough Marsh Drain which has a gravity outfall into the Humber Estuary. During periods of high tide, relief can be given to this drain by opening the Habrough Slide which allows flow to enter the pumped catchment. Likewise, should there be particularly high water levels in the pumped catchment during periods of lower water levels in the Habrough Marsh drain then relief flows from the pumped catchment can enter the Habrough Marsh Drain via the Slide. During flood events the operation of the pumping station is closely monitored.

3.5.9 The North East Lindsey Drainage Board's standards of protection range from a 5% annual probability to a 1% annual probability as shown below:

Immingham Pump Station and Drain	1% (1 in 100 chance)
Habrough Marsh Drain and Outfall	1.3 % (1 in 75 chance)
Habrough Road north of golf course	2% (1 in 50 chance)
Mawmbridge Drain System	1% (1 in 100 chance)
Buck Beck Waltham/ New Waltham	2.5% (1 in 40 chance)
Humberston Avenue to Coniston Crescent	5% (1 in 20 chance)
Little Buck Beck pumped system	1 % (1 in 100 chance)
Middle Drain	1% (1 in 100 chance)

3.5.10 The effects of climate change will reduce these standards without direct intervention.

3.6 Wrongly Connected Drains

3.6.1 There is a flood risk associated with surface water drains wrongly connected to foul sewers. Foul sewers require a much smaller capacity than surface water sewers. Although they are designed with a factor of safety to deal with some wrongly connected surface water sewers, they are not designed to take flows from a heavy rainfall event. The more wrongly connected surface water sewers the greater the risk of flooding from the foul system especially during heavy rainfall. When new developments are built the systems are initially separate but extensions can sometimes be wrongly connected. Conversely foul drains that are wrongly connected to the surface water system can cause pollution of watercourse and other water bodies.

3.6.2 Locations where foul sewers surcharge and flood during periods of wet weather include parts of Humberston and Habrough. Should foul sewers at these, and other, locations start to contribute significantly to flood risk then solutions will need to be sought. Residents are encouraged to disconnect their surface water from foul systems and divert them to a suitable alternative. The Council's Drainage and Coastal Defence team can provide advice about this on a case by case basis.

3.7 Blocked Drains

3.7.1 Much of the flooding of the foul sewer system is caused by blockages which can be avoided. This is caused by fat, oils, grease, baby wipes, disposable nappies and other items which should not be washed down the sink or flushed down the toilet.

3.7.2 Anglian water have a 'Keep it Clear' campaign which is aimed at raising the awareness of this issue. It is something that is the responsibility of all residents in the borough as they have a direct influence on how they use the drainage systems

More information on the Keep it Clear campaign can be found at:

- www.keep-it-clear.co.uk

3.8 Development and Planning

3.8.1 As part of its Local Planning Authority role the Council will need to have regard to this strategy when making decisions. Flood risk will be considered at all stages of the planning process from the development of the Local Plan to individual planning applications. The planning system represents a good opportunity to reduce flood risk by carefully considering where development should be located and mitigating the risk when development needs to go ahead in flood risk areas. New development also presents a good opportunity to reduce the risk of flooding to the wider area concerned.

The Local Planning Authority

3.8.2 Currently when an application is submitted it is determined by the Council's Development Management team where flood risk, and other planning issues, are considered.

3.8.3 Developments in flood risk areas need to demonstrate that occupants will be safe from flooding. Table 3.1 shows the various sources of information which show what the risk of flooding to a site could be.

3.8.4 Developments that are at risk of any source of flooding will need to carry out a flood risk assessment (FRA) as described in footnote 20 of the National Planning Policy Framework (NPPF). The FRA will need to demonstrate how flood risk will be managed and to ensure that those living near to the development will not have their flood risk increased. The Environment Agency is a statutory consultee in the planning process providing advice to the Council on the risk of flooding from main rivers and the sea. The Council's Drainage and Coastal Defence Team will provide advice on the local flood risks of surface water, ordinary watercourses and groundwater.

3.8.5 Paragraph 101 of the NPPF describes how the Sequential Test should be applied to steer new development to areas with the lowest probability of flooding. Following the Planning Practice Guidance this should take account of all sources of flooding. The Council will formalise its approach to applying the Sequential Test as part of the development of the new Local Plan.

3.8.6 All developments need to consider how they propose to manage the additional surface water generated from the increase in impermeable areas. The Council's Drainage and Coastal Defence team currently provide comments and advice to ensure that the risk of flooding from increased surface water is managed to not present a risk to the development or surrounding property. The Environment Agency are also currently a statutory consultee for developments that are over 1 hectare in size.

3.8.7 For redevelopment of brownfield sites the Council has a history of requesting a reduction in the rate of surface water runoff that is permitted to leave the site. This helps to relieve any pressure on the receiving drainage systems which could be over-capacity or have historic flooding problems. Many of the public sewers in Grimsby, Cleethorpes and Immingham range between 30 and 100 years old with their original design capacity used up. Reducing the volume of water into these systems from redevelopment can contribute to reducing flood risk in these systems. Opportunities can also be sought to rectify wrongly connect drains and introduce more sustainable drainage techniques.

Table 3.1. Sources of flood risk information for use in the planning process

Source of Information	Location	Description
Flood Map for Planning (Rivers and the Sea)	EA website	Shows the Flood Zones which depict areas that would flood without defences in place. Used for land use planning purposes.
Strategic Flood Risk Assessment (SFRA)	NELC website	A study carried out by the local planning authority to assess the risk to an area from all sources of flooding for the present day and in the future. Refines the information shown in the Flood Map for Planning by showing the consequences of a failure in flood defences in the form of a hazard rating.
EA Coastal Hazard Maps	By contacting the EA (Lincolnshire and Northamptonshire area)	Shows the consequences of failure in the sea defences. Maps show the velocity, depth and hazard rating of the flood water. The maps show the consequence only and not the likelihood of defence failure.
Risk of Flooding from Surface Water maps	EA website	Show the areas at risk of surface water flooding. This shows the extents, depths and velocities for different probability categories.
Local Knowledge	NELC Drainage and Coastal Defence Team	Information that is held by the Council that is not specifically shown on maps which use modelled data. This will include knowledge of previous flooding and the condition of some assets. This could be on any of the sources of flooding referred to in section 3.1, including groundwater.

3.8.8 Whilst it is recognised that in the past some developments have gone ahead which we now know to be at flood risk this should be avoided in the future. The planning process ensures that a full assessment of all flood risks is undertaken and that these are managed and mitigated.

Sustainable Drainage Systems (SuDS) and Their Approval

3.8.9 Nationally, approximately two thirds of the floods in summer 2007 were caused by surface water and the inability of drains and sewers to cope with the amount of rain falling. Traditionally, drainage systems have comprised underground piped systems designed to remove rainwater as quickly as possible by carrying it to nearby watercourses or public sewers. This can cause flooding downstream and prevents recharge to the ground where conditions would normally allow it.

3.8.10 A history of increased impermeable areas with under capacity drains is a major cause of flooding in the borough. The use of SuDS will prevent this from happening.

3.8.11 The government have announced that they will strengthen existing planning policy contained in the National Planning Policy Framework to secure a greater uptake of SuDS systems on new developments where this is appropriate. This will require the design and maintenance of SuDS to be approved through the planning system where the ongoing maintenance is ensured through the use of planning conditions.

3.8.12 The policy will apply to residential development so of 10 houses or more and major commercial developments. Developers will be expected to choose from a variety of different maintenance options including service management companies, agreements with water companies or the transfer of responsibility of individual household drainage systems to the householder.

3.8.13 These arrangements will be implemented on 6 April 2015 and replace those that were previously legislated for in Schedule 3 of the Flood and Water Management Act 2010. The government is still to produce more guidance to Councils on this change to policy.

3.8.14 Pre-application discussions will be especially important due to the way SuDS will need to work with the landscape. This will in turn influence the layout of sites to take account of overland flow routes.

3.8.15 SuDS aims to replicate how drainage naturally occurs by working with the landscape. The three main aims of SuDS are to reduce the risk of flooding by managing **quantity**; improve water **quality** by treating pollution and provide an **amenity and biodiversity** benefit to the local environment. The various SuDS techniques exist on a hierarchy where above ground features such as wetlands, swales and detention basins are ranked as more sustainable than underground storage tanks. Where possible, infiltration into the ground should be encouraged. However, as much of the soil type throughout the borough is clay this may not always be possible so discharge to a watercourse or sewer will still be necessary. These flows will need to be attenuated to reduce the volumes going to the receiving systems.

3.8.16 SuDS can also be retrofitted in areas at risk of flooding from sewers or surface water to reduce the amount of water entering these systems. This will increase the capacity and prevent overloading during the more intense rain storms which can cause flooding. Under the Water Act 2014 water companies will be able to install and adopt SuDS systems to relieve pressures on sewers which are causing flooding.

3.9 Flood Insurance

3.9.1 Having insurance that covers flooding is one of the ways by which people at risk can ensure that they are able to recover from the damage which can be

caused. However, people who live in flood risk areas or who have experienced flooding in the past can sometimes find it difficult to obtain insurance cover for their property. If still available the premiums can sometimes be unaffordable. This could leave residents vulnerable if they are without cover and their property gets flooded.

3.9.2 The existing voluntary arrangement between the government and insurers who are members of the Association of British Insurers (ABI) is called the 'Statement of Principles'. Under this agreement the ABI members commit to make insurance available to domestic and small business properties in areas not at significant risk of flooding (no worse than a 1.3% annual probability). For those who are at significant risk the ABI members agree to cover existing customers if plans are in place to reduce this risk within five years. For example, new defences such as those at the Grimsby Docks which protect the town. Properties built after 1 January 2009 are not included as part of the government aim to encourage new development to be built away from flood risk areas.

3.9.3 Currently this system does not provide for flood insurance for all at risk and does not apply to companies who entered the market since the agreement was reached in 2008. There is also no limit on premiums as they are able to reflect the level risk. The Statement of Principles was due to expire in June 2013 but agreement has been reached for it to continue until the government introduces a new scheme for flood insurance.

3.9.4 The government have introduced new legislation in the Water Act 2014 to introduce a new system called 'Flood Re'. This fulfils their aim of finding a solution to provide domestic property insurance that was affordable and would not place unsustainable costs on wider policy holders or the tax payer.

3.9.5 Flood Re would limit the price paid by customers for the flood component of their premium which would vary according to the Council tax band for the property. People would be able to see what their maximum premium would be which could remove some of the worry associated with the existing system. The scheme would be funded using a levy on the industry to pay for claims made.

3.9.6 The thresholds will be increased each year over 25 years so that households are encouraged to implement risk reduction measures to reduce their premiums. The aim is for there to be a gradual transition to more risk-reflective prices to encourage the uptake of measures to reduce the flood risk to properties affected. To help with this Flood Re will be providing transitional support to those households at risk.

3.9.7 The government estimates that only 1-2% of domestic households nationally will benefit through Flood Re. For those that do not qualify the government expects that the market will provide cover at more competitive rates although this is still likely to be dependent on a demonstration of how flood risk to these properties has been reduced.

3.9.8 Methods for reducing flood risk include the larger scale measures, such as major coastal defence improvements, and improvements to drainage systems. They also include property level protection measures such as demountable door barriers, air brick covers and flood resilient construction. Therefore all risk management authorities and property owners have a role to play. The objectives and measures outlined in the next section aim to contribute to reducing the risks of flooding and helping insurance be affordable once the government proposals are implemented.

3.9.9 Properties built after 1 January 2009 will not be covered as part of the general aim of preventing inappropriate development in areas at flood risk in line with the National Planning Policy Framework. This does not mean that some development cannot go ahead in flood risk areas but it should only go ahead when the Flood Risk Assessment has demonstrated that the development would be safe. Owners of these properties should be able to demonstrate this to their insurance companies.

Further Advice

3.9.10 If you are having difficulty obtaining insurance for your property prior to the implementation of these proposed changes then further advice is available from the National Flood Forum. They are a national charity who support communities at risk of flooding. Their website contains advice about how to obtain specialist flood cover for your property.

3.9.11 Some insurance companies will request an Insurance Related Request letter which can be provided by the Environment Agency. Other risk management authorities, including the Council, may also be able to provide further detail on work they are carrying out which could help with the discussions with your insurer.

Additional Information

- **National Flood Forum:** http://nationalfloodforum.org.uk/?page_id=36
- **National Government:** https://www.gov.uk/prepare-for-a-flood/get-insurance
- **NELC:** www.nelincs.gov.uk

3.9.12 It is important to remember that the flood risk management authorities have no role in setting the premiums which the insurance companies charge.

3.10 The Use of Sandbags

3.10.1 Sandbags are widely used as temporary defences during flood events as was the case during the summer floods of 2007. Evidence gathered after this event and presented in the Pitt Report found that they were 'relatively ineffective' at preventing floodwater entering properties. They are better suited to diverting the main flow of floodwater away from vulnerable areas.

3.10.2 Sandbags are essentially sacks that are filled with sand or another dense material such as soil. Their success depends on how they are laid. Research by the Environment Agency found that they offer a 40% chance of success when laid by a skilled workforce which is lower when they are laid by householders (source: Pitt Report). They work best when used in conjunction with an impermeable membrane such as plastic sheeting and will only give adequate protection when water levels are low.

Additional Information

- **Pitt Review:**

http://webarchive.nationalarchives.gov.uk/20100807034701/http://archive.cabinetoffice.gov.uk/pittreview/thepittreview/final_report.html

- **Environment Agency sandbag guidance:**

https://www.gov.uk/government/publications/sandbags-how-to-use-them-to-prepare-for-a-flood

3.10.3 Distribution of sandbags during a flood event can have a significant impact on limited resources that can already be stretched. With little warning of flooding happening it can be difficult to get supplies to affected communities in time. They are also time consuming to fill and difficult to carry. These issues have to be considered in the context of their usefulness in actually keeping out water when considering the best methods for managing flood risk. Resources can be better used by preparing with suitable methods in advance rather than reacting when the flood happens when there is little time.

3.10.4 The Pitt Report did not recommend that sandbags have no use but that reliance on them should be phased out. There are alternative flood protection products in the market that are able to offer a better standard of protection and that would often be more suitable than sandbags.

3.10.5 The responsibility for the protection of property from flooding is with the owner so they will ultimately be making the decision about which methods are best to use.

3.10.6 The Council will set out its position with regards to the supplying of sand bags to communities during flood events which will take the above factors into consideration.

4 Objectives and Measures for Managing Flood Risk

4.1 Objectives and Measures

4.1.1 The objectives in this strategy set out how we intend to manage all flood risks and issues identified for across the borough. These have been developed to address the risks and issues identified in the previous section.

4.1.2 A range of measures has been developed to achieve these objectives to manage and reduce the risk of flooding. Not all measures need to be used to achieve the objective but the range identified means that they can be used in varying combinations depending on the nature of the risk in a given location.

OBJECTIVE 1 – All stakeholders (including members of the public) will have an improved understanding of their responsibilities for flood risk management

4.1.3 In order to effectively manage and communicate flood risk across the borough it is important that all the stakeholders, including residents and businesses, know what their roles and responsibilities are. There were notably problems with this nationally for the 2007 floods so this will ensure that in the future there is no doubt about who is responsible for what.

4.1.4 Much of the flooding experienced in the borough in summer 2007 and in 2012 was attributed to a lack of maintenance. This is mainly due to riparian owners being unaware of their responsibilities and of the impacts a lack of maintenance can cause. Well maintained systems will lessen the impacts of flooding.

Measures:

M1.1 Section 2 describes the roles of all the stakeholders to inform people on those best to talk to about particular flooding issues. If there is still doubt North East Lincolnshire Council as the LLFA can be contacted to establish who is responsible.

M1.2 We will actively engage with communities to provide them with further information about the responsibilities of stakeholders, particularly for the riparian owners and those who own structures, who are not always aware of how important their role in local flood risk management can be.

M1.3 The council website will be expanded to provide access to contact details for the authorities in the borough and general flooding advice.

OBJECTIVE 2 – Improve our understanding of local flood risk

4.1.5 Understanding the causes and influences on local flood risk is key to being able to implement appropriate solutions. The Council's Drainage and Coastal Defence team is experienced with a range of flood risk issues including land drainage, groundwater, pluvial flooding and management of coastal defences. As a result significant amounts of data are currently held by the Council on infrastructure, maintenance, flooding incidents and mitigation works. Investigations and analysis will continue to compile, as accurately as possible, a picture of flood risk across the borough.

Measures:

M2.1 Carrying out investigations into flooding under Section 19 of the FWMA 2010 (known as Section 19 investigations). During and soon after a flood event the council will collect data to understand the cause of the flooding. The investigation will be published and will identify the risk management authority (see section 2) with the powers to exercise their functions in response to the flood.

M2.2 A register/database of any flooding reported is currently kept which will be added to with any future flooding. This will help to build up a picture of areas affected and the causes to enable more catchment based solutions. All risk management authorities will be asked to contribute to this.

M2.3 Section 21 of the FWMA 2010 requires the council to keep a register of the structures and features that can have a significant effect on flood risk in the borough. This will include all assets not just those owned and operated by the council. The register will have a record of who owns the structure and its state of repair. This will help to identify who is responsible for carrying out any repairs and during a flood event this will enable quick identification of who is responsible for the operation of the asset.

M2.4 The council will use the most up to date information on flood risk in the borough in order to make decisions and mitigate risks. This information includes the suite of flood risk maps provided by the Environment Agency and investigations and additional mapping and modelling undertaken by the council.

M2.5 The council will carry out a programme of investigating and modelling the areas most at risk of flooding.

4.1.6 Measure M2.1 refers to our duty to carry out invesigations into flooding under Section 19 of the FWMA. This requires the Council as LLFA to investigate flooding **where it considers it necessary** to establish which RMAs have the

relevant functions and whether they propose to exercise these in response to the flood.

4.1.7 The Council has established the following criteria which will trigger an investigation:

- Internal property flooding – residential or commercial.
- Flooding of critical infrastructure.
- Flooding of the public highway where strategically important.
- Flooding that does not meet these criteria will be considered and justified on an individual basis.

4.1.8 For Measure M2.5 the areas for further investigation and modelling work are determined by:

- The current standards of protection.
- The number and types of property at risk.
- The history of flooding at the location.

4.1.9 These investigations will help to determine where resources to reduce the risk of flooding should be prioritised.

OBJECTIVE 3 – Reduce the risks to those most vulnerable to local flooding

4.1.10 This strategy aims to make those who are at risk of flooding more aware so that they are prepared and better able to protect themselves. Those most vulnerable to flooding can be considered in two ways: those who are located in areas at a more frequent flood risk and those who are on low incomes and are unable to implement their own protection measures. Households on lower incomes tend to suffer the most difficulty in recovering financially from flooding and are least likely to be insured. They may also find it difficult to contribute financially to flood defence schemes.

4.1.11 Critical infrastructure that is at risk of flooding can also lead to residents and business being vulnerable from losing water or electricity supplies. This objective will aim to reduce this happening where a risk is identified. This will involve working with the companies responsible for the infrastructure.

4.1.12 Reducing the risk of flooding will need to focus on reducing the likelihood, severity and consequences and will take the effects of climate change into account in line with guidance in section 3.4.

4.1.13 The Government has legislated in the Water Act 2014 for the provision of affordable flood insurance. Premiums would be lower if the flood risk to the property was reduced. This could range from large schemes such as the

Grimsby Docks Flood Alleviation scheme to individual property level protection measures such as demountable door barriers. Reducing the risk should help to make insurance more widely available helping to reduce the vulnerability.

4.1.14 People who are vulnerable to flooding are strongly advised to be prepared in advance of flooding occurring. Detailed advice can be found on the gov.uk website.

For further information see:

- https://www.gov.uk/prepare-for-a-flood

4.1.15 The Environment Agency operates the Floodline Warning Direct service which property owners can register on. This will provide flood warnings from rivers and the sea. This does not currently warn of surface water or groundwater flooding. For these sources people are advised to keep up to date with weather reports and advice in local media. The Council does receive warnings from the Flood Forecasting Centre (jointly run by the Met Office and the Environment Agency) which is provided in our role as a Category 1 responder. This gives a broad idea of flood risk over the coming 5 days so that we can prepare accordingly. If the risk requires it we will also put additional information on our website and publicise it.

Measures:

M3.1 Support residents in obtaining flood insurance under the government's new scheme due to be implemented in 2015.

M3.2 Develop an action plan of flood risk management works, including building physical defences and maintenance, to be undertaken. A method will be developed to ensure that works are prioritised for where they are needed most. The actions will comply with the advice and guidance in section 6 of this strategy.

M3.3 A wide range of funding sources will be considered to contribute to flood mitigation schemes.

M3.4 The council will continue to carry out monthly inspections at all known local flood risk locations with additional inspections carried out on receipt of severe weather warnings. Appropriate actions can then be instigated.

OBJECTIVE 4 – Increase the amount of flood risk management work undertaken, ensuring there is a contribution to wider social, economic and environmental outcomes and sustainable development

4.1.16 Flood risk management work does not only include building new defences or installing new drainage systems to prevent floods from occurring. Managing the risk of flooding uses a range of measures to ensure we are prepared for

when it does happen. For example, we can undertake studies to identify at risk areas, implement warning systems, install property resilience measures and have robust evacuation procedures. Flooding may still occur but the damage is reduced or prevented and people remain safe.

4.1.17 Individual property owners are also responsible for protecting their own property. It may not always be possible for a mitigation scheme promoted by one of the risk management authorities to reduce the risk of flooding to every property. In this instance they will be encouraged to implement their own property level protection measures with support and guidance from the Council. As discussed earlier, under current government proposals, this should have a positive impact on insurance premiums.

4.1.18 The effects of climate change described in Section 3.4 make it more important that flood risk management work is undertaken to reduce the risk in the future.

4.1.19 More work can be undertaken if ways of saving money and resources can be found when undertaking our work. There are also areas in the borough where different authorities will be involved in providing one solution.

Measures:

M4.1 Support the campaigns of other authorities in reducing flood risk. All campaigns would have to be compliant with the environmental requirements outlined in Section 6 of this strategy.

M4.2 Any projects, plans or policies which result as actions from this strategy will be undertaken in a manner that is compliant with section 6 of this strategy including protecting species and enhancing biodiversity. Where necessary, under the Habitats Regulations, they will need to be screened and if a likely significant effect on a European site cannot be ruled out an Appropriate Assessment will be undertaken. Measures to avoid, mitigate or compensate for adverse effects will be carried out as identified within the Appropriate Assessment.

M4.3 Work with other flood risk management authorities to coordinate works across the borough so that resources can be shared and overall costs can be reduced. This will be adaptive and evolve in response to real life events and new technical information. This will allow a greater amount of work to be undertaken.

M4.4 We will actively engage with local communities to inform them about how they can implement their own measures to protect their property. The advice and measures will comply with the advice and guidance in section 6 of this strategy.

4.1.20 It is important that the work that requires changes to the natural environment does not have a negative impact. Appropriate studies will be undertaken to ensure that this is the case.

4.1.21 Measure M4.1 refers to supporting the campaigns and work of other authorities that aim to reduce the risk of flooding. This has been carried out successfully in the past with Anglian Water's 'Keep it Clear' campaign which was support locally by VANEL (Voluntary Action North East Lincolnshire) in the East Marsh ward.

OBJECTIVE 5 – Create a strong collaborative approach across stakeholders to address risks from all sources of flooding

4.1.22 Working closely with other RMAs provides opportunities for saving money but also ensures that expertise can be shared. Since the summer floods of 2007 this has been taking place at the Drainage Infrastructure Group. In October 2013 this transformed into the Local Flood Risk Management Group to better reflect the changes that have been introduced since the FWMA 2010. This enables the Council to take a strategic lead over local flood risk management.

4.1.23 The Council is a member of the East of England Regional Lead Local Flood Authority group where experience is shared amongst many LLFAs in fulfilling our statutory duties. Attendance of the RFCC meeting provides a link between the work that we do and that of other authorities in the area to promote a greater understanding of flood risks and how these can be resolved. There are also organised web forums for sharing information and ideas which the Council utilises.

Measures:

M5.1 Continued attendance of the Local Flood Risk Management Group by all risk management authorities where all flood risk issues can be discussed including recent flooding, mitigation works and effects of new development on flood risk.

M5.2 Work with other relevant authorities where there are links with drainage infrastructure and maintenance activities to take account of all sources of flood risk when implementing flood mitigation measures.

OBJECTIVE 6 – Ensure that local communities are prepared to manage the risks of flooding

4.1.24 Responsibility for protecting private property actually rests with the owner and not organisations such as the Council or the Environment Agency. The

Council also has no duty to provide sand bags to members of the public. Many residents do not currently undertake specific measures to protect themselves and their property. For example, in June 2012 an area of Immingham flooded that was also affected in June 2007 and apart from the odd exception few had implemented their own measures. During a flood event resources will be stretched making it difficult or impossible for assistance to be provided to all those who may request it.

4.1.25 Residents and businesses are therefore strongly encouraged to create their own flood plans. Guidance is contained on the website in the link to the right. The Council will be engaging with local communities to provide further advice on this as set out in measure M6.1 below.

Advice on preparing for flooding and creating a personal flood plan: https://www.gov.uk/prepare-for-a-flood/get-insurance

4.1.26 If a property cannot benefit from a flood mitigation scheme property level protection measures may be the best level of protection. In line with the government's proposals for the future of flood insurance if people implement measures to reduce their flood risk their premiums are likely to be lower than those who don't. This principle can also be applied to those who have been flooded and are having their houses repaired. Incorporating preventative measures into repair works will reduce future repair costs and times if the flood were to happen again. These can comprise resilience measures which includes the use of materials which are not affected by getting wet and resistance measures which aim to keep water out of the building.

4.1.27 The methods used to engage with communities will vary across the borough. Some are represented by town or parish Councils who it will be key to involve. Some communities affected by flooding may form groups to specifically deal with the issue who should be engaged with. The public consultation on the draft of this strategy posed this question to residents where the responses referred to community groups and ward forums. A decision will be made on an individual basis on how this is best carried out.

Measures:

M6.1 We will actively engage with communities to inform them of what their risk is and how they can take measures to protect themselves including property level protection measures. This will be prioritised to those communities who have recently flooded or who are at greatest risk. The advice will comply with the advice and guidance in section 6 of this strategy.

M6.2 The council will produce guidance on the use of sandbags during a flood event to provide clarity to residents and businesses.

OBJECTIVE 7 – Ensure that new development does not increase local flood risk and contributes to a reduction where possible

4.1.28 Any new development, including redevelopment of brownfield sites, has the potential to increase flood risk if this is not considered at the right stage in the planning process. When managed properly the new developments can actually contribute to reduction in overall flood risk for an area. This objective aims to consider all sources of flooding in the borough making allowances for climate change.

Measures:

M7.1 Ensure that new development is appropriately located and safe with residual flood risks mitigated whilst taking climate change into account. New development should not increase flood risk elsewhere and should contribute to a reduction in the risk where possible. For example, this can include: reducing flows to combined and surface water sewers or providing floodplain compensatory storage.

M7.2 The Council will apply the proposed changes to the National Planning Policy Framework to support the use of Sustainable Drainage Systems (SuDS) in major developments.

M7.3 For non-major developments which are not covered by the changes to national planning policy the Council's Drainage and Coastal Defence team will continue to provide advice to planning consultations to ensure that drainage arrangements follow the principles of the national policy and incorporate SuDS.

M7.4 The council will use its ordinary watercourse consenting powers under Section 23 of the Land Drainage Act 1991 to ensure that works proposed on these watercourses do not increase flood risk. The council will also be pro-active with enforcement of unconsented works where this is deemed necessary.

4.1.29 Culverting will only be permitted where absolutely necessary, primarily for access purposes. Further guidance on this will be produced and published on our website. Returning previously culverted watercourses to their natural state will also be encouraged.

OBJECTIVE 8 – Ensure effective emergency flood response plans are in place

4.1.30 It will never be possible to prevent all flooding. We therefore need to be fully prepared for when it does happen. This includes all relevant authorities, members of the public and businesses. The Civil Contingencies Act 2004 designated the Council as a Category 1 Responder which means that we

have a duty to prepare emergency plans for major incidents including flooding. The response is outlined in the Multi Agency Flood Plan which contains actions to be taken for different trigger levels for the authorities involved in flood response. The Humber Local Resilience Forum develops and maintains the Multi-Agency Flood Plan. The Council also has plans to deal with more localised flood events which do not require a multi-agency response.

Measures:

M8.1 Maintain and update the Multi Agency Flood Plan in line with new information on flood risk and lessons learned from flood events in our borough and other areas.

M8.2 Review and update the Council plans for dealing with events that do not trigger a multi-agency response.

M8.3 Engage with local communities to ensure that they are familiar with both plans and the role that they can play in responding to flooding. This will include promoting the use of Flood Wardens in communities at risk of flooding.

M8.4 Support the production of community emergency plans by providing information held on local flood risks.

4.2 How and When Measures will be Implemented

Standards of Protection

4.2.1 Different sources of flooding are often referred to as having different annual probabilities of occurrence. To protect against these events flood defences or drainage systems are built to provide a specified 'standard of protection' (SoP). An allowance for freeboard is often made on top of this. Freeboard is the difference between the design flood level and the defence level. This is included to allow for uncertainty in predicting the flood level and for any wave action on the water. Flooding will occur once the freeboard allowance has been exceeded. The different standards are given in Table 4.1 but it is important to know that these are advisory and not mandatory - there is no right to be protected to any particular standard. There may be instances where in order to reduce the costs of a scheme and to attract external funding a reduction in the desired standard of protection could make the scheme viable. It will be important to discuss this with the community affected. The SoP is often given as a percentage or chance of the flood occurring in any given year.

4.2.2 When determining what standard of protection should be provided by a flood risk management scheme it is important to include an allowance for the effects of climate change. This is included before freeboard is added.

Table 4.1 Advised standards of protection for different flooding sources.

Source of Flooding	Standard of Protection	Notes
Sewers	3.33% annual probability (1 in 30 chance) to remain below ground.	This is the standard for all new sewers. Over time the increases in rainfall have caused this standard to decrease so older sewers will not provide the same level of protection as newly constructed sewers. For newer development being approved above ground flooding is permitted in controlled areas for the 1% (1 in 100 chance) event.
Ordinary watercourses and main rivers	1% annual probability (1 in 100 chance)	
Sea (coastal)	0.5% annual probability (1 in 200 chance)	This standard can include an allowable overtopping rate caused by wave action

4.3 Flood Risk Management Funding

4.3.1 Funding for flood risk management projects can come from different sources with contributions from more than one source likely to be required to make a project viable. In times of restraint in budgets it becomes even more important to seek out a range of funding sources. Those who benefit will increasingly be asked to make a contribution as also outlined in the National Strategy.

Flood and Coastal Risk Management Grant in Aid (FCRM GiA):

4.3.2 This is the source of funding that comes from central government using the Partnership Funding Approach. Instead of meeting the full costs of a limited number of projects nationally the government will provide a contribution to those projects which have raised additional funds allowing government funding to contribute to greater number of projects. This prevents what happened under the previous system where some projects were fully funded while others received nothing at all. Communities will be given a greater say in what is done to protect them. The funding can be given to the risk management authorities listed in section 2. Three aspects of the project will influence the amount of government funding available:

1) The value of benefits for householders, especially in deprived areas and where risks are significant.

2) The value of other benefits including to businesses and national and local infrastructure.
3) The environmental benefits of a scheme.

4.3.3 These are multiplied to determine the maximum amount of funding with higher payment rates in deprived areas.

4.3.4 Where a scheme only qualifies for partial funding the options are to reduce the costs of the scheme or find an additional contribution. The costs may be reduced by providing a lower standard of protection which is something that would have to be discussed with the community affected.

4.3.5 Under the rules for applying for this money houses that were built after January 2012 are unable to be included in the calculations for determining the costs and benefits for how much funding will be allocated.

4.3.6 Additional contributions can come from a variety of sources which are discussed below.

Local Levy and General Drainage Charge

4.3.7 The Local Levy and the General Drainage Charge are the additional funds which are raised by the Regional Flood and Coastal Committee to support flood risk management projects which are not considered to be national priorities. This allows locally important projects to go ahead when they do not attract government funding.

NELC Contributions

4.3.8 In its role as the Lead Local Flood Authority the Council may also be able to contribute money towards schemes. This would be in addition to existing maintenance and small scale improvements works which we currently carry out.

Drainage Board Contributions

4.3.9 The local Drainage Boards are able to contribute funding to schemes which will contribute to reducing flood risk in their districts.

Anglian Water

4.3.10 Anglian Water have recently undertaken their periodic review (known as PR14) which is carried out every 5 years to set their next business plan. As part of this process they submitted proposals to Ofwat which includes an allocation of funding to be used in conjunction with other funding available

(partnership funding) to reduce flood risk for the benefit of their customers. In December 2014 Ofwat approved their proposal. The Council has shortlisted some potential schemes to be considered for this funding. Anglian Water have also confirmed that they wish to work with others on identifying future schemes for their next business plan for 2020 and beyond.

Central Government Funding

4.3.11 This includes money that comes from central government but not through the FCRM GiA funding previously described. For example, Local Growth Fund money allocated by the Local Enterprise Partnerships (LEPs).

Community Contributions

4.3.12 Some communities may wish to raise additional funds themselves. Although it may seem difficult for communities to raise money, contributions can also come in the form of land for flood attenuation which would then not have a purchase cost.

Private Contributions

4.3.13 Private contributions can come from a variety of sources. This could be businesses which benefit from a scheme or developers contributing to reducing flood risk which enables an area of land to be developed.

4.4 Prioritisation of Work

4.4.1 With limited resources available it is important that resources are prioritised where they can achieve the most benefit. Objective 2 commits the Council to carrying out more investigations of areas at risk of flooding to gain more information. Once this work has been completed we will be able to prioritise where resources are allocated to Measure M3.2 identified for achieving Objective 3.

There may be some occasions where we can gain a ‘quick win’ by carrying out some small scale, lower cost works to reduce the risk of flooding. These types of work will not require the same level of cost benefit analysis and will be quicker or easier to carry out.

5 Consultation on this Strategy

5.1 Engaging with the Public

5.1.1 For the production of the Preliminary Flood Risk Assessment which was published in December 2011 a request for information was made to the residents of North East Lincolnshire to assess the areas at risk of flooding. This data was carried forward to inform the draft strategy.

5.1.2 A public consultation exercise was carried out beginning in March 2014. This gave residents and business opportunity to have their say on what had been included and to suggest amendments.

5.2 Parish and Town Councils

5.2.1 All the borough's Parish Councils plus Immingham Town Council have been consulted for their initial input into the strategy. Letters were sent out asking for information and comment on the following issues:

- Locations prone to flooding.
- Any actions required at any of these locations.
- Concerns regarding drainage infrastructure performance or maintenance.
- Concerns regarding the impact of new development on flood risk.
- Level of awareness of drainage and flood risk management activities carried out by the Council and other flood risk management authorities.
- Do residents need more information on existing flood risk and flood risk management responsibilities?
- Encouraging property and business owners to take measures to protect their property if they are at risk of flooding.

5.3 Flood Risk Management Authorities

5.3.1 There is regular engagement with the other flood risk management authorities through the Local Flood Risk Management Group. This has built up an awareness and picture of flood risk across the borough which will need to be addressed by this strategy.

5.3.2 The members of the group were given the opportunity to comment on the objectives of this strategy and were consulted on the final draft of the strategy prior to the public consultation.

5.4 Other Authorities

5.4.1 The Environment Agency, Natural England and English Heritage were consulted for the Scoping Report for the Strategic Environmental Assessment (SEA). Natural England have also been consulted on the Local Strategy and

the work for the Habitats Regulations Assessment which is described further in Section 6.

5.5 Cabinet Working Group into Flooding

5.5.1 Two heavy rainfall events (19 to 20 July and 8 to 10 August 2014) caused widespread flooding across the borough which affected residential property, business premises and the highway network. During both events around half the monthly average rainfall fell in about one hour. This was a significant volume which overwhelmed the local drainage systems and caused flooding.

5.5.2 A Cabinet Working Group consisting of elected members was set up to review the events and make recommendations for any improvements needed in the response of the risk management authorities.

5.5.3 The outcomes of the Group were used to review this Strategy and a change was made to measure M8.2 to which has now been reworded to ensure that the Council reviews all its plans for dealing with flood events rather than just the Local Extreme Flood Event Plan (LEFE) that was previously referred to.

6 Sustainable Development and the Environment

6.1 Sustainable Development

6.1.1 In undertaking our role as the Lead Local Flood Authority the Council is required under Section 27 of the FWMA 2010 to contribute to the achievement of sustainable development.

6.1.2 Sustainable development was originally defined by the Brundtland Commission in 1987 as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'. This means making decisions to stimulate economic growth, maximise wellbeing and protect the environment without negatively impacting on future generation's ability to do the same. This supports the priorities in the Council Plan as identified in section 1.3.3.

6.1.3 The objectives and measures outlined in Section 4 will enable our flood risk management work to be carried out in a way that supports the aim of achieving sustainable development. They encourage people to help themselves and ensure that any work carried out will be done in a way that does not compromise future generations from protecting themselves from flooding.

6.1.4 Further information is provided in the Defra publication 'Guidance for risk management authorities on sustainable development in relation to their flood and coastal erosion risk management functions'. Decisions will take account of this guidance.

6.2 The Local Environment

6.2.1 There are many groups and organisations who are involved in improving the natural environment in North East Lincolnshire, some have been referred to in section 2.

6.2.2 The Lincolnshire Biodiversity Action Plan identifies local priorities for biodiversity conservation and delivers actions and targets for priority habitats and species and locally important wildlife sites. The Council will ensure that there is consultation with the Biodiversity Action Plan to see if any works can contribute to its actions and targets.

6.2.3 The Council is required to conserve and enhance the environment under Section 61B of the Land Drainage Act 1991 for land drainage work that is carried out. Also, under Section 10 of the Natural Environment and Rural Communities Act 2006 the Council must exercise its functions with regards to conserving biodiversity which means restoring or enhancing a population or

habitat. This is not only important from a legal perspective it is also important to improve the surroundings for where people live and work. Influencing the water environment to reduce flood risk provides a good opportunity to do this.

6.2.4 Flood risk management works can potentially disturb the environment through impacts on water levels and flow regimes, changes in land use and construction works. Schemes could also have a positive impact by enhancing the environment. To ensure that there are no negative impacts and that any enhancements are acceptable where appropriate works will be fully assessed. Environmental enhancements may also bring in additional funding to works so their opportunities will be maximised.

6.2.5 Environmental impacts will also be fully considered for any maintenance activity on existing flood risk management infrastructure.

6.2.6 Impacts on the built environment and heritage features will also need to be carefully considered as some schemes to reduce the risk of flooding will have a noticeable visual impact. The Council has produced a Landscape Character Assessment and also has experts who will be able to advise on individual issues.

6.3 Strategic Environmental Assessment

6.3.1 The Strategic Environmental Assessment (SEA) Directive (2001) (EC Directive 2001/42/EC) is legislation which requires that plans, programmes and strategies are subjected to an SEA. This is a high level strategic exercise to evaluate the potentially significant effects of the strategy and its aims and objectives. We engaged consultants to carry out the SEA for the Local Flood Risk Management Strategy which is published as a separate document.

6.3.2 The SEA is an iterative process which influences what is contained in the strategy rather than an exercise carried out once the final version is complete. This means that potentially significant environmental impacts can be evaluated so that the objectives of the strategy meet environmental concerns and this strategy can be amended accordingly.

6.3.3 The SEA established a set of its own objectives in order to assess the environmental impacts of the strategy. The effects were categorised as minor or significant positive effects, minor or significant negative effects, negligible or uncertain. The full report is available as a separate document.

6.3.4 None of the objectives in the Local Strategy was assessed as having a negative effect although some of the positive effects were described as being

uncertain. This uncertainty has been addressed in the table included in Appendix D.

6.3.5 Since the completion of the SEA (v3 July 2014) some amendments have been made to three of the measures to reflect changes in government policy and the outcomes of the Cabinet Working Group into Flooding. The details of these changes are as follows:

- Changes to measures M7.2 and M7.3 to reflect the change in government policy with regards to the approval of SuDS. Minor changes to the wording were required to remove reference to the SuDS Approving Body (SAB)as this will no longer be introduced.
- Measure M8.2 was changed to remove specific reference to the Local Extreme Flood Event Plan (LEFE). The measure now refers to the need to review all Council plans for dealing with floods that do not trigger a multi-agency response in line with the recommendations from the Working Group.

6.3.6 In both cases the wording of the measure has been changed but not the meaning or the potential impact on the environment. It is therefore not necessary to repeat the exercise undertaken in the SEA.

6.4 Water Framework Directive

6.4.1 The European Water Framework Directive (WFD) came into force in 2000 and was transposed into UK law in 2003. It aims to protect and enhance the quality of lakes, streams, rivers, groundwater and coastal waters by setting a target of achieving a minimum of good ecological status or potential. The Environment Agency is the competent authority for this in England. It is coordinated through the River Basin Management Plans (RBMP) which contain measures to achieve the objectives of the WFD – North East Lincolnshire is part of the Humber river basin.

6.4.2 A WFD assessment has not been undertaken on the strategy due to the high level nature of the objectives and measures. The WFD requires that water bodies achieve good status or potential with regards to biological, chemical and physical standards which have an impact on water quality. The strategy has specifically been assessed against the SEA objective ‘to maintain and enhance soil and water quality’ for which no negative effects have been found. They are therefore unlikely to be detrimental to the achievements of the WFD. It is recognised in the SEA that some measures such as the introduction of the sustainable drainage will positively improve water quality.

6.4.3 Any specific studies or flood risk management projects that follow the production of this strategy will be assessed to see if a full WFD assessment is

required. At this stage more detailed information will be available to assess and mitigate any impacts and to specifically incorporate any measures that are outlined in the RBMP.

6.4.4 The Council will also contribute to the WFD though the ordinary watercourse consenting process where the effect of proposed works will be assessed for compliance with the WFD.

6.5 Habitats Regulations

6.5.1 The European Habitats Directive was transposed into UK law in the Conservation of Habitats and Species Regulations (2010). The aim being to conserve natural habitats, flora and fauna. To comply with regulation 61 of the UK Habitats Regulations this strategy has been subject to a Habitats Regulations Assessment (HRA) to screen the objectives and measures for any likely significant effects on any European designated sites.

6.5.2 In North East Lincolnshire the Humber Estuary is the only European site. It is designated a Special Area of Conservation (SAC), Special Protection Area (SPA), Site of Special Scientific Interest (SSSI), Natura 2000 site and a Ramsar site.

6.5.3 The Saltfleetby-Theddlethorpe Dunes and Gibraltar Point European site is south of North East Lincolnshire but is an important consideration due to its proximity. It is designated as an SAC and Natura 2000 site.

6.5.4 The HRA determined that there would be no likely significant effects on a European site and so further detailed assessment was not required. The full report is available in a separate document.

6.5.5 Whilst the HRA found no significant likely effects from the Local Strategy itself, works that are undertaken to fulfil the aims of the strategy will need to be subject to their own HRA to assess their own likely significant effects on the European sites. The presence of the designations will present challenges around the type of works that can be undertaken and how any adverse effects can be mitigated. In North East Lincolnshire works on improving sea defences are more likely to trigger the need for an HRA due to their proximity to the designations. Work is still on-going on the review of the Humber Flood Risk Management Strategy and accompanying HRA to take a holistic look at the flood risk and defences in the estuary and how proposals would impact on the environment. Works to reduce other sources of flood risk will also need to be screened to see if there are impacts, for example by altering flow regimes in rivers which could impact on the supply of water to a site.

6.5.6 Natural England were consulted on the HRA and confirmed that they agreed with the conclusion that the Local Strategy would be unlikely to have a significant effect on the designated sites.

7 Next Steps

7.1 Action Plan

7.1.1 An Action Plan will be published separately to this this strategy to fulfil Measure M3.2. This will detail the works that the Council and other partners have identified which need to be carried out to reduce flood risk in the borough. The proposed sources of funding will be identified on the plan. This will include work such as maintenance, studies and investigations, new mitigation works and works needed to enable future development.

7.1.2 The Action Plan will give approximate timescales for delivery based on the short, medium and long term. Some actions require further investigation to assess their viability and once this is done more certainty will be known about timescales and potential funding sources.

7.1.3 The plan will inform local communities of what work is proposed to reduce flood risk to fulfil some of the objectives of the strategy.

7.1.4 As described under Objective 2 more detailed investigations will be carried out into areas at risk which will help to set the priorities for what gets done as referred to in section 4.4. At this stage more work could be added to the Action Plan once we know more about the detail of the risks and have identified resources available. This will also be the opportunity to consult directly with communities who will be affected.

7.1.5 The Action Plan will be a living document that will be updated more frequently than the strategy itself and will be published on the Council website. When further work is carried out on prioritising the plan this will lead to better targeting of the resources that are available.

7.2 Monitoring of the Progress the Strategy

7.2.1 The outcomes and measures in this strategy will be monitored using the Local Flood Risk Management Group. Partners will be able to update on their work which contributes to the strategy. The progress will be reported annually to the relevant Scrutiny Panel.

Timescales

7.2.2 It is important that the measures have a target timescale for their delivery or completion so that their progress can be monitored. Table 7.1 outlines the timescales for which the measures aim to be achieved.

Table 7.1. Timescales for achieving the measures.

Objective	Measure		Timescale
1	M1.1	Section 2 describes the roles of all the stakeholders to inform people on those best to talk to about particular flooding issues. If there is still doubt North East Lincolnshire Council as the LLFA can be contacted to establish who is responsible.	Will be complete on publication of the strategy but information will also be put on the website.
	M1.2	We will actively engage with communities to provide them with further information about the responsibilities of stakeholders, particularly for the riparian owners and those who own structures, who are not always aware of how important their role in local flood risk management can be.	Engagement will commence on the publication of the strategy. Prior to the review 2 years after publication contact and engagement will have been established.
	M1.3	The Council website will be expanded to provide access to contact details for the authorities in the borough and general flooding advice.	Within 6 months of Strategy publication.
2	M2.1	Carrying out investigations into flooding under Section 19 of the FWMA 2010 (known as Section 19 investigations). During and soon after a flood event the Council will collect data to understand the cause of the flooding. The investigation will be published and will identify the risk management authority (see section 2) with the powers to exercise their functions in response to the flood.	Routine work when flooding occurs.
	M2.2	A register/database of any flooding reported is currently kept which will be added to with any future flooding. This will help to build up a picture of areas affected and the causes to enable more catchment based solutions. All risk management authorities will be asked to contribute to this.	Routine work when flooding occurs.
	M2.3	Section 21 of the FWMA 2010 requires the Council to keep a register of the structures and features that can have a significant effect on flood risk in the borough. This will include all assets not just those owned and operated by the Council. The register will have a record of who owns the structure and its state of repair. This will help to identify who is responsible for carrying out any repairs and during a flood event this will enable quick identification of who is responsible for the operation of the asset.	The register has been set up but will need to be kept up to date. It continues to be populated with data from other organisations.
	M2.4	The Council will use the most up to date information on flood risk in the borough in order to make decisions and mitigate risks. This information includes the suite of flood risk maps provided by the Environment Agency and investigations and additional mapping and modelling undertaken by the Council.	Routine work is being carried out to improve the amount and quality of information that the Council has.
	M2.5	The Council will carry out a programme of investigating and modelling the areas at risk of flooding.	Within 2 years for the higher priority areas.
3	M3.1	Support residents in obtaining flood insurance under the government's new scheme due to be implemented in 2015.	We will provide people with information they may need to support an insurance application when requested.

Objective	Measure		Timescale
	M3.2	Develop an action plan of flood risk management works, including building physical defences and maintenance, to be undertaken. A method will be developed to ensure that works are prioritised for where they are needed most. The actions will comply with the advice and guidance in section 6 of this strategy.	The Action Plan will be published with this strategy and kept up to date. This already outlines planned works with estimated timescales. As new actions are added in the future these will be able to be prioritised further using the outcomes from Measure M2.5.
	M3.3	A wide range of funding sources will be considered to contribute to flood mitigation schemes.	This is currently the case and will remain so for future works.
	M3.4	The Council will continue to carry out monthly inspections at all known local flood risk locations with additional inspections carried out on receipt of severe weather warnings. Appropriate actions can then be instigated.	Routine work carried out monthly and upon receipt of a weather or flood warning.
4	M4.1	Support the campaigns of other authorities in reducing flood risk. All campaigns would have to be compliant with the environmental requirements outlined in Section 6 of this strategy.	When appropriate campaigns are launched by other authorities.
	M4.2	Any projects, plans or policies which result as actions from this strategy will be undertaken in a manner that is compliant with section 6 of this strategy including protecting species and enhancing biodiversity. Where necessary, under the Habitats Regulations, they will need to be screened and if a likely significant effect on a European site cannot be ruled out an Appropriate Assessment will be undertaken. Measures to avoid, mitigate or compensate for adverse effects will be carried out as identified within the Appropriate Assessment.	This will be incorporated into all of our work.
	M4.3	Work with other flood risk management authorities to coordinate works across the borough so that resources can be shared and overall costs can be reduced. This will be adaptive and evolve in response to real life events and new technical information. This will allow a greater amount of work to be undertaken.	Routine work.
	M4.4	We will actively engage with local communities to inform them about how they can implement their own measures to protect their property. The advice and measures will comply with the advice and guidance in section 6 of this strategy.	Engagement will commence on the publication of the strategy. Prior to the review 2 years after publication contact and engagement will have been established.
5	M5.1	Continued attendance of the Local Flood Risk Management Group by all risk management authorities where all flood risk issues can be discussed including recent flooding, mitigation works and effects of new development on flood risk.	Meetings held every 3 months.

Objective	Measure		Timescale
	M5.2	Work with other relevant authorities where there are links with different drainage infrastructure and maintenance activities to take account of all sources of flood risk when implementing flood mitigation measures.	Routine work.
6	M6.1	We will actively engage with communities to inform them of what their risk is and how they can take measures to protect themselves including property level protection measures. This will be prioritised to those communities who have recently flooded or who are at greatest risk. The advice will comply with the advice and guidance in section 6 of this strategy.	Engagement will commence on the publication of the strategy. Prior to the review 2 years after publication contact and engagement will have been established.
	M6.2	The Council will produce guidance on the use of sand bags during a flood event to provide clarity to residents and businesses.	Within 1 year of publication.
7	M7.1	Ensure that new development is appropriately located and safe with residual flood risks mitigated whilst taking climate change into account. New development should not increase flood risk elsewhere and should contribute to a reduction in the risk where possible. For example, this can include: reducing flows to combined and surface water sewers or providing floodplain compensatory storage.	Routine work carried out as part of the planning process.
	M7.2	The Council will apply the proposed changes to the National Planning Policy Framework to support the use of Sustainable Drainage Systems (SuDS) in major developments.	Changes to the National Planning Policy Framework are due to commence from 6 April 2015.
	M7.3	For non-major developments which are not covered by the changes to national planning policy the Council's Drainage and Coastal Defence team will continue to provide advice to planning consultations to ensure that drainage arrangements follow the principles of the national policy and incorporate SuDS.	Routine, currently being undertaken.
	M7.4	The Council will use its ordinary watercourse consenting powers under Section 23 of the Land Drainage Act 1991 to ensure that works proposed on these watercourses do not increase flood risk. The Council will also be pro-active with enforcement of unconsented works where this is deemed necessary.	Carried out when we receive an application.
8	M8.1	Maintain and update the Multi Agency Flood Plan in line with new information on flood risk and lessons learned from flood events in our borough and other areas.	The review and update of the plan will be complete by the end of 2014.
	M8.2	Review and update the Council plans for dealing with events that do not trigger a multi-agency response.	To be complete within 1 year of the publication date of the strategy.
	M8.3	Engage with local communities to ensure that they are familiar with both plans and the role that they can play in responding to flooding. This will include promoting the use of Flood Wardens in communities at risk of flooding.	Engagement will commence on the publication of the strategy. Prior to the review 2 years after publication contact and engagement will have been established.

Objective	Measure		Timescale
	M8.4	Support the production of community emergency plans by providing information held on local flood risks.	On-going.

7.2.3 The objectives for the SEA will also be monitored using the criteria identified as part of that process.

7.3 Review of the Strategy

7.3.1 The strategy will first be reviewed within 2 years of the publication date to determine whether any amendments need to be made. This could be due to changes in legislation, information available or a significant flood event which may require the strategy to be updated.

8 Further Information

The following sources of information have been referred to in this strategy which can be looked up if you require further information:

- The Flood and Water Management Act 2010
  http://www.legislation.gov.uk/ukpga/2010/29/contents
- The Flood Risk Regulations 2009
  http://www.legislation.gov.uk/uksi/2009/3042/contents/made
- The Water Act 2014
  http://www.legislation.gov.uk/ukpga/2014/21/contents/enacted
- The Land Drainage Act 1991
  http://www.legislation.gov.uk/ukpga/1991/59/contents
- Water Industry Act 1991
  http://www.legislation.gov.uk/ukpga/1991/56/contents
- Civil Contingencies Act 2004
  http://www.legislation.gov.uk/ukpga/2004/36/contents
- Coast Protection Act 1949
  http://www.legislation.gov.uk/ukpga/Geo6/12-13-14/74
- National Flood and Coastal Erosion Risk Management Strategy for England
  https://www.gov.uk/government/publications/national-flood-and-coastal-erosion-risk-management-strategy-for-england
- Humber Emergency Planning Service (HEPS)
  http://www.heps.gov.uk
- Council Plan 2013- 2016
  http://www.nelincs.gov.uk/Council/planning-policy/evidence-base/local-documents/Council-documents/north-east-lincolnshire-Council-plan/
- NELC Preliminary Flood Risk Assessment
  http://www.nelincs.gov.uk/Council/planning-policy/evidence-base/local-documents/environment/preliminary-flood-risk-assessment/

- NELC Strategic Flood Risk Assessment 2011
  http://www.nelincs.gov.uk/Council/planning-policy/evidence-base/sub-regional-documents/strategic-flood-risk-assessment-2011-sfra/

- NELC Landscape Character Assessment
  http://www.nelincs.gov.uk/business/planning-and-development/find-out-about-the-importance-of-landscape-in-development/landscape-character-assessment/

- Grimsby and Ancholme Catchment Flood Management Plan
  https://www.gov.uk/government/publications/grimsby-and-ancholme-catchment-flood-management-plan

- National Flood Forum
  http://nationalfloodforum.org.uk/

- Environment Agency Floodline Warnings Direct
  https://fwd.environment-agency.gov.uk/app/olr/home

- The Pitt Review – Lessons learned from the 2007 floods
  http://webarchive.nationalarchives.gov.uk/20100807034701/http://archive.cabinetoffice.gov.uk/pittreview/thepittreview/final_report.html

- Living on the Edge – Environment Agency advice booklet
  https://www.gov.uk/government/publications/riverside-ownership-rights-and-responsibilities

- Guidance for risk management authorities on sustainable development in relation to their flood and coastal erosion risk management functions 2011
  https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69447/pb13640-sdg-guidance.pdf

- UK Climate Projections website
  http://ukclimateprojections.metoffice.gov.uk/

- Anglian Water Keep it Clear campaign
  http://keep-it-clear.co.uk/

- Lincolnshire Biodiversity Action Plan
  http://www.glnp.org.uk/partnership/nature-strategy/index.php

9 Glossary

Catchment	A catchment is the total area that drains into a river or other drainage system.
Catchment Flood Management Plan (CFMP)	A strategic planning tool through which the Environment Agency works with other key decision-makers within a river catchment to identify and agree policies for sustainable flood risk management.
Chance of flooding	The chance of flooding is used to describe the frequency of a flood event occurring in any given year, e.g. there is a 1 in 100 chance of flooding in this location in any given year. This can also be described as an annual probability and be given as a percentage, e.g. a 1% annual probability of flooding in any given year.
Climate Change	The climate is the average weather experienced in a region over a long period (for example 30 years). Climate change refers to recent changes in this long term average weather. The climate of the earth does experience a 'natural variability' which is not due to climate change. See Section 3.4 for how climate change is predicted to affect the borough.
Critical infrastructure	Infrastructure which is considered vital or indispensable to society, the economy, public health or the environment, and where the failure or destruction would have a large impact. This would include services such as hospitals, communications, electricity sub-stations, water and wastewater treatment works, transport infrastructure and reservoirs.
Department for Environment, Food and Rural Affairs (Defra)	The UK government department responsible for policy and regulations on the environment, food and rural affairs - including flood risk.
Department of Communities and Local Government (DCLG)	Government department which sets national policy for planning through the National Planning Policy Framework (NPPF).
DG5 Register	A register of properties and areas that have suffered or are likely to suffer flooding from foul, combined or surface water sewers due to overloading of the sewerage system more frequently than the relevant period.
Drainage Boards (IDB)	Drainage Boards are established in particularly low lying areas of England where land drainage and flood defence

	are necessary to protect both agricultural and developed land.
Environment Agency	The Environment Agency was established under the Environment Act 1995, and is a non-departmental public body of Defra. They are responsible for regulating major industry; flood and coastal risk management; water quality and resources; waste regulation; climate change; fisheries; contaminated land; conservation and ecology and navigation. For more information on their role in flood risk management see Section 2.1.
Flood and Water Management Act 2010 (FWMA)	Formed the main government response to the Pitt Review. Clarified the roles with regards to all forms of flood risk and designated the Council as the Lead Local Flood Authority (LLFA).
Flood Risk Maps	The Environment Agency has range of maps on the 'What's in Your Backyard' section of their website which shows different sources of flood risk. Explanation of these maps is given in Table 1, Section 2.
Flood Risk Management Plan (FRMP)	Production is required by the Flood Risk Regulations 2009. FRMPs will provide a strategic overview of the management of all sources of flood and coastal erosion risk. The FRMP will include: • conclusions about all sources of flood and coastal erosion risk; • the objectives for managing the risk, and • the measures proposed to achieve the risk management objectives for 2015 to 2021. Information from this strategy will contribute to the FRMP.
Flood Risk Regulations 2009	Legislation that transposed the European Floods Directive into English law in 2009.
Fluvial Flooding	Resulting from excess water leaving the channel of a river and flooding adjacent land.
Groundwater Flooding	Caused by water levels in rocks and soil rising until it appears above the ground surface.
Habitats Regulations	The Regulations provide for the designation and protection of 'European sites', the protection of 'European protected species' and the adaptation of planning and other controls for the protection of European Sites.

Lead Local Flood Authority (LLFA)	The authority, either the unitary Council, or county Council, with responsibility for local flood risk management issues in its area, as defined in the Flood and Water Management Act 2010.
Local Resilience Forums (LRF)	Group of risk management authorities which plan for a range of emergency situations of which flood risk is one. Responsible for producing the Multi-Agency Flood Plan.
Main River	Main Rivers are watercourses marked as such on a main river map. Generally main rivers are larger streams or rivers, but can be smaller watercourses in critical locations.
National Flood and Coastal Erosion Risk Management Strategy	A national framework produced by the Environment Agency regarding flood and coastal erosion risk management. See Section 1.4 for more information.
National Planning Policy Framework (NPPF)	Sets out the government's planning policies for England.
Ordinary watercourse	Every river, stream, ditch, drain, cut, dyke sluice and passage through which water flows that is not part of a main river. NELC has powers under the Land Drainage Act 1991 for regulation of these watercourses.
Pitt Review	A review carried out into the floods of summer 2007 by Sir Michael Pitt. The review led to 92 recommendations for improving flood risk management in England.
Resilience measures	Constructing a building to reduce the impact of floodwater entering the building so that no permanent damage is caused and the building can be cleaned and dried without much difficulty.
Resistance measures	Constructing a building to prevent floodwater entering and damaging its fabric.
Riparian owners	A riparian owner is someone who owns land or property adjacent to a watercourse. A riparian owner has a duty to maintain the watercourse and allow flow to pass through their land freely.
Risk	In flood risk management, risk is the probability of a flood occurring x consequence of the flood.
Sewer flooding	Flooding from the public sewer system which can be caused by limited capacity or blockages.

Shoreline Management Plan (SMP)	A plan for managing flood and erosion risk for our particular stretch of shoreline, looking at the short, medium and long term. The main aim is to develop a sustainable management approach for the coastline.
Strategic Flood Risk Assessment (SFRA)	Refines areas of flood risk to provide more information for planning purposes. Used to inform the Local Plan with regards to site allocations. Covers all sources of flooding.
Surface water flooding (also known as Pluvial flooding)	Occurs when usually intense precipitation falls onto the ground, flows over or collects on the surface and does not enter a watercourse or drainage system.
Sustainable Drainage Systems (SuDS)	A sequence of drainage techniques aimed at mimicking natural processes for surface water management. Where possible this should involve returning water to the ground by infiltration. SuDS will manage flood risk, improve water quality and improve amenity and biodiversity.
Water Framework Directive (WFD)	A European Community Directive (2000/60/EC) of the European Parliament and Council designed to integrate the way water bodies are managed across Europe. It requires all inland and coastal waters to reach “good status” by 2015 through a catchment-based system of River Basin Management Plans.

Appendix A - Legislation

The table below is a quick guide to the legislative changes that have occurred because of the two key pieces of legislation: the Flood and Water Management Act 2010 and the Flood Risk Regulations 2009. It also highlights other pieces of legislation that should be considered when developing the strategy.

Requirement	Action	Legislation
Local Flood Risk Management Strategy	Develop, maintain, apply and monitor a strategy for local flood risk management of the area. Local flood risk means flood risk from surface runoff, groundwater and ordinary watercourses.	Flood and Water Management Act 2010
Preliminary Flood Risk Assessment (PFRA) Report	Prepare a PFRA in relation to flooding in the LLFA's area. The LLFA is not required to include information about flooding from the sea, Main Rivers and reservoirs unless the authority thinks that it may affect flooding from another source. The environment Agency must review the PFRA report and may recommend modifications, following which the LLFA may revise its PFRA.	Flood Risk Regulations 2009
Identify areas of significant flood risk	A LLFA must determine whether, in its opinion, there is a significant flood risk in its area, and identify the part of the area affected by the risk (the "flood risk area"). Flood risk from sources including Main Rivers, the sea and reservoirs do not need to be taken into account unless the authority thinks that it may affect flooding from another source. The authority may have regard to any guidance issued by the Minister about the criteria for assessing whether there is such a risk – no nationally significant Flood Risk Area was identified in North East Lincolnshire.	Flood Risk Regulations 2009
Prepare flood hazard maps and flood risk maps	A LLFA must prepare, in relation to each identified area of significant risk, a flood hazard map and a flood risk map. Flood risk from sources including Main Rivers, the sea and reservoirs do not need to be taken into account unless the authority thinks that it may affect flooding from another source. The Environment Agency must review flood hazard maps and flood risk maps and may recommend modifications.	Flood Risk Regulations 2009
Prepare flood risk management plans	A LLFA must prepare a flood risk management plan for each area of significant risk. The Environment Agency must review a flood risk management plan prepared under this regulation and may recommend modifications. The LLFA must consult the authorities that may be affected by the plan, and the public regarding the content of the flood risk management plan and have regard for guidance issued by the EA.	Flood Risk Regulations 2009
Co-operation	Authorities must co-operate with each other in exercising functions under both the Act and the Regulations.	Flood and Water Management Act 2010

Power to request information	LLFAs and the Environment Agency may request a person to provide information in connection with the authority's responsibilities.	Flood and Water Management Act 2010
Duty to maintain a register of assets	Establish and maintain a register of structures, including ownership which are believed to have a significant effect on a local flood risk.	Flood and Water Management Act 2010
Investigations into flooding	To ensure greater co-ordination of information and avoid situations where authorities do not accept responsibility, the LLFA is required to investigate flooding incidents in its area to the extent that it considers necessary or appropriate to identify which authorities have relevant functions to deal with the flood and whether each of them intends to respond.	Flood and Water Management Act 2010
Sustainable development	In exercising its risk management functions, LLFAs must contribute towards achievement of sustainable development.	Flood and Water Management Act 2010
Incidental flooding	A LLFA may plan, erect, maintain, alter or remove buildings or other structures (including those built for flood defence purposes) in a way that will or may cause flooding, and increase in the amount of water below ground or coastal erosion.	Flood and Water Management Act 2010
Designation of features	LLFAs have powers to designate structures and features that affect flooding, to overcome the risk of a person altering or removing a structure or feature without consent. For example, it may be on private land and relied on for flood risk management.	Flood and Water Management Act 2010
General powers: flood risk management works	LLFAs have powers to undertake works to manage flood risks from surface runoff and groundwater. Powers to do works on ordinary watercourses remain with either district authorities or IDBs (but all works must be consistent with the Local Flood Risk Management Strategy).	Flood and Water Management Act 2010

Appendix B – Contact Details

North East Lincolnshire Council

Report drainage / flooding problems (Office hours)	01472 326300 (select option 2)
Out of hours emergencies	01472 313131
Address	Municipal Offices Town Hall Square Grimsby North East Lincolnshire DN31 1HU
Website	http://www.nelincs.gov.uk/contact-us/
Email	customerrequests@nelincs.gov.uk

Anglian Water

Reporting a leak	0800 771 881 (Freephone number but charges may apply to mobiles)
Water supply and sewerage service queries and emergencies	08457 145 145 (Charges are between 1p and 11p per minute depending on the time of day for landline customers. Charges for mobiles are between 12p and 41p per minute)
Address	Anglian Water Customer Services PO Box 10642 Harlow CM20 9HA
Website	www.anglianwater.co.uk

North East Lindsey Drainage Board

Telephone	01469 588991
Address	North East Lindsey Drainage Board High Street Ulceby North Lincolnshire DN39 6TG

Website	http://www.northeastlindsey-idb.org.uk

Lindsey Marsh Drainage Board

Telephone	01507 328095
Email	enquiries@lmdb.co.uk
Address	Lindsey Marsh Drainage Board Wellington House Manby Park Louth LN11 8UU
Website	http://www.lmdb.co.uk

Environment Agency

General Enquiries	03708 506 506 (Weekday Daytime calls cost 5p plus up to 6p per minute from BT Weekend Unlimited. Mobile and other providers' charges may vary)
Floodline	0845 988 1188 (Charges are between 1p and 11p per minute depending on the time of day for landline customers. Charges for mobiles are between 12p and 41p per minute)
Address	Northern Area Office Waterside House Waterside North Lincoln LN2 5HA
Email	enquiries@environment-agency.gov.uk
Website	gov.uk/government/organisations/environment-agency

Call charge information was obtained from https://www.gov.uk/call-charges.

Appendix C – Anglian Water Maintenance Information

Planned, proactive maintenance that is carried out by Anglian Water in the North East Lincolnshire area:

- 113 separate sections of sewer are regularly cleaned (see table below)
- Majority of work carried out in Grimsby
- Over 33 km of sewer proactively cleaned
- Sewers are, wherever appropriate:
    - Jetted
    - Surveyed using CCTV
    - Roots cut and removed
    - Descaled
- Frequency of cleans ranges from every month to every 5 years.

Locations of where proactive work is carried out:

Grimsby	54
Immingham	21
Cleethorpes	20
Humberston	6
Waltham	6
Laceby	5
Stallingborough	1
TOTAL	**113**

Appendix D – Response to the SEA

The SEA was undertaken on Draft (v1) November 2013 of the Local Strategy. The following table outlines the response to this which have been incorporated into the final version.

LFRMS Objective	SEA Objective	SEA Score	Justification	Response
1	4) To minimise the potential impact of flooding on existing and future critical infrastructure	+?	Although the measures associated with this LFRMS objective are unlikely to lead to physical works that would minimise the risk of flooding to critical infrastructure within the District (e.g. the transport network, utilities, healthcare facilities), the measures should combine to contribute to an indirect positive effect on this objective by improving the level of understanding of flood risk amongst stakeholders, and thereby increasing the likelihood of those stakeholders fulfilling their responsibilities in relation to flood risk management. In this way, the measures associated with this LFRMS objective should help to protect critical infrastructure by reducing the likelihood of adverse impacts occurring from flooding events. Section 2 of the LFRMS describes the roles of stakeholders, including water and sewerage companies (responsible for managing the risk of flooding from public sewer systems) and the Highways Agency (responsible for dealing with surface water run-off from roads). If those particular stakeholders' understanding of their responsibilities in relation to flood risk management is improved through the measures associated with this objective, particularly positive effects in relation to the protection of critical infrastructure are likely; however it is not currently certain which stakeholders this would relate to. Therefore, there is currently some uncertainty associated with the minor positive effect.	The reference to the Highways Agency will remain as they are considered in the FWMA to be a Risk Management Authority. A section on 'Utility/Infrastructure Providers' has been added to make other organisations aware of their responsibilities with regards to critical infrastructure.

LFRMS Objective	SEA Objective	SEA Score	Justification	Response
3	6) To protect and enhance the landscape, townscape, seascape and open space.	?	The measures associated with this LFRMS objective will support the delivery of flood risk management works, including by developing an action plan of specific works and identifying funding sources that would increase the certainty of schemes going ahead. Depending on the nature of those schemes, there could potentially be impacts on local landscape, townscape or seascape character. For example, some of the actions proposed in the draft action plan involve repairing and improving flood risk management infrastructure such as sea walls and groynes. However, the potential effects are uncertain without more information about the exact nature of such proposals.	The schemes on the Action Plan are an outline of works that are proposed to be carried out which are still at an early stage in design terms. At this stage their impacts on local landscape, townscape or seaside character are unknown. Section 6 of the Local Strategy now outlines how the works will have to comply with all environmental legislation including carrying out the necessary assessments to determine impacts. Text has been included in this section to cover issues on the built environment and heritage features to ensure that these impacts are managed. Whilst the specific impacts are not known at this stage there is now a commitment in the Local Strategy and the Action Plan that all impacts will be considered with the aim to mitigate and manage any impacts which are found.

LFRMS Objective	SEA Objective	SEA Score	Justification	Response
3	7) To maintain and/or enhance the quality and character of the built environment and cultural heritage assets.	+?	By combining to contribute to an overall reduction in flood risk (by supporting the delivery of flood risk management works), the measures associated with this LFRMS objective should help to reduce the risk that both designated and undesignated heritage assets within North East Lincolnshire (as well as the wider built environment) face from flooding, thereby having a positive effect on this SEA objective. However, there is currently some uncertainty attached to the potential positive effect as the measures are likely to result in direct physical works which, depending on their nature and location (for example in relation to heritage features such as listed buildings), could affect the quality and character of the built environment, including the setting of heritage features.	The schemes on the Action Plan are an outline of works that are proposed to be carried out which are still at an early stage in design terms. At this stage their impacts on local landscape, townscape or seaside character are unknown. Section 6 of the Local Strategy now outlines how the works will have to comply with all environmental legislation including carrying out the necessary assessments to determine impacts. Text has been included in this section to cover issues on the built environment and heritage features to ensure that these impacts are managed. Whilst the specific impacts are not known at this stage there is now a commitment in the Local Strategy and the Action Plan that all impacts will be considered with the aim to mitigate and manage any impacts which are found.
3	8) To adapt development to the impacts of climate change, ensuring that new development does not contribute to increased risk of flooding for existing property and people elsewhere.	+?	The measures associated with this LFRMS objective are not expected to have a direct effect on this SEA objective; however depending on the nature of the flood mitigation schemes for which funding sources will be investigated, there may be a minor positive effect, i.e. if these schemes were to involve reducing the potential flood risk associated with new developments.	The measures associated with this objective are designed to reduce the risk of flooding and mitigate its effects. The works that result from LFRMS Objective 3 will take account of climate change - text has been added under this objective to refer to climate change and the guidance in section 3.4. The risk of flooding to new developments (including climate change) is covered by Objective 7 and is not intended to be covered by Objective 3. This includes ensuring that all new development is safe with residual risks mitigated. Flood mitigation measures that benefit new development are likely to be proposed as part of the development and will need to make an allowance for climate change. Reference to climate change has been added to this section.

LFRMS Objective	SEA Objective	SEA Score	Justification	Response
4	2) To maintain and enhance soil and water quality.	+?	By combining to contribute to an overall reduction in flood risk (by educating communities and working in a co-ordinated way with other authorities and campaigns), the measures associated with this LFRMS objective should have an indirect positive effect on the protection of water quality by reducing the likelihood of adverse impacts that can otherwise occur from flooding events (e.g. as a result of soil erosion or run-off washing chemical fertilisers into watercourses). It is also noted that flood risk management works will be undertaken in a way that enhances the environment – it is possible that this could involve bringing about improvements to soil and water quality, although this is not yet known. It is also possible that supporting campaigns by other authorities that aim to reduce flood risk could affect soil and water quality, depending on the nature of the campaigns/works that are being supported and encouraged. However, this is uncertain at this stage. An overall minor positive effect is therefore likely, with some uncertainty attached.	We will carefully select any campaigns that we choose to support so that we know what their impacts on the environment might be. If impacts are identified these should be mitigated. The measure has been revised to ensure compliance with the environmental requirements in Section 6 of the strategy. It is not possible to resolves the 'unknowns' associated with the impacts of future works until these are planned in more detail. There are firm commitments in the Local Strategy (section 6) to fully assess and mitigate any impacts as individual works develop and more detail is known.

LFRMS Objective	SEA Objective	SEA Score	Justification	Response
4	5) To protect and enhance biodiversity.	+?	By combining to contribute to an overall reduction in flood risk (by educating communities and working in a co-ordinated way with other authorities and campaigns), the measures associated with this LFRMS objective should have an indirect positive effect on biodiversity by reducing the likelihood of adverse impacts that can otherwise occur from flooding events (including both direct impacts such as inundation from flood waters and indirect impacts such as water pollution caused by flooding that can affect biodiversity). It is also noted that flood risk management works will be undertaken in a way that enhances the environment – it is possible that this could involve bringing about improvements to biodiversity, although this is not yet known. It is also possible that supporting campaigns by other authorities that aim to reduce flood risk could affect biodiversity, depending on the nature of the campaigns/works that are being supported and encouraged. An overall minor positive effect is therefore likely, with some uncertainty attached. A Habitats Regulations Assessment is being undertaken by North East Lincolnshire Council in relation to the Draft LFRMS in order to identify any significant effects associated with this objective on the integrity of European sites (SACs, SPAs and Ramsar sites) in and around North East Lincolnshire. The findings of the HRA will feed into the SEA as they become available.	The Habitats Regulations Assessment (HRA) has now been undertaken by the Council and will be ready to feed into the final version of the SEA. This should provide some more certainty of the potential effects of the Local Strategy on European sites and what need to be done (if anything) to mitigate effects. Section 6 of the Local Strategy now outlines how the works will have to comply with all environmental legislation including carrying out the necessary assessments to determine impacts. Campaigns of other organisations will be selected carefully to see what the impacts will be. Text has been added to this measure (M4.1) to ensure that the campaigns comply with the guidance in section 6 of the Local Strategy.

LFRMS Objective	SEA Objective	SEA Score	Justification	Response
4	6) To protect and enhance the landscape, townscape, seascape and open space.	?	Although most of the measures associated with this LFRMS objective will not affect the landscape, townscape, seascape or open space within North East Lincolnshire, as they relate to community engagement and improving levels of public understanding, it is possible that supporting campaigns by other authorities that aim to reduce flood risk could affect this SEA objective, depending on the nature of the campaigns/works that are being supported and encouraged. However, this is uncertain at this stage.	Section 6 of the Local Strategy now covers issues on the built environment and heritage features to ensure that these impacts are managed and specialist advice is sought where needed. Text has been added to this measure (M4.1) to ensure that the campaigns comply with the guidance in section 6 of the Local Strategy.
4	7) To maintain and/or enhance the quality and character of the built environment and cultural heritage assets.	+?	By combining to contribute to an overall reduction in flood risk (by educating communities and working in a co-ordinated way with other authorities and campaigns), the measures associated with this LFRMS objective should have an indirect positive effect on protecting the built environment, including heritage features, from the potential impacts of flooding events. It is also noted that flood risk management works will be undertaken in a way that enhances the environment – it is possible that this could involve bringing about improvements to the built environment (including cultural heritage), although this is not yet known. In addition, it is possible that supporting campaigns by other authorities that aim to reduce flood risk could affect the built environment, depending on the nature of the campaigns/works that are being supported and encouraged. An overall minor positive effect is therefore likely, with some uncertainty attached.	Section 6 of the Local Strategy now covers issues on the built environment and heritage features to ensure that these impacts are managed and specialist advice is sought where needed. Text has been added to this measure (M4.1) to ensure that the campaigns comply with the guidance in section 6 of the Local Strategy.