Local Flood Risk Management

Strategic Environmental Assessment

Environmental Report

Draft for public consultation

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Abbreviations

ALS	Agricultural Land Classification
AONB	Area of Outstanding Natural Beauty
BAP	Biodiversity Action Plan
EA	Environment Agency
FCRIP	Flood and Coastal Resilience Innovation Programme
GLNP	Greater Lincolnshire Nature Partnership
GLP	Greater Lincolnshire Partnership
HAR	Heritage at Risk Register
HRA	Habitat Regulations Assessment
IMD	Indices of Multiple Deprivation
INNS	Invasive Non-Native Species
JNCC	Joint Nature Conservation Committee
LIS	Local Industrial Strategy
LLFA	Lead Local Flood Authority
LFRMS	Local Flood Risk Management Strategy
LCA	Landscape Character Assessment
LGS	Local Geological Site
LSOA	Lower Super Output Area
LWS	Local Wildlife Site
NCA	National Character Area
NELC	North East Lincolnshire Council
NFCERM	National Flood and Coastal Erosion Risk Management Strategy
ODPM	Office of the Deputy Prime Minister
ONS	Office for National Statistics
PPG	Planning Policy Guidance
RoFSW	Risk of Flooding from Surface Water
RIGS	Regionally Important Geological Site
RMA	Risk Management Authority
SAC	Special Area of Conservation
SEA	Strategic Environmental Assessment
SEP	Strategic Economic Plan
SFRA	Strategic Flood Risk Assessment
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest

SuDS	Sustainable Drainage System
SWMP	Surface Water Management Plan
WFD	Water Framework Directive
25YEP	25 Year Environment Plan

Definitions

Term	Definition
Area of Outstanding Natural Beauty	Areas of Outstanding Natural Beauty were formally designated under the National Parks and Access to the Countryside Act of 1949. They protect areas of the countryside of high scenic quality that cannot be selected for National Park status because of their lack of opportunities for outdoor recreation. Natural England (formerly The Countryside Agency) is responsible for designating AONBs and advising the Government and others on how they should be protected and managed.
Agricultural Land Classifications	The Agricultural Land Classification is part of the planning system in England and Wales – it provides a method for classifying agricultural land in six categories, or "grades" according to versatility and suitability for growing crops.
Biodiversity Action Plan	Plans developed by organisations to protect and enhance the biodiversity of an area.
Climate Change Risk Assessment	Under the 2008 Climate Change Act, the UK Government is required to publish a UK-wide Climate Change Risk Assessment every five years. The Act specifies that these must assess the risks for the UK from both the current and predicted impacts of climate change.
Environment Agency	Non-departmental public body responsible for protecting and improving the environment.
Flood and Coastal Erosion Risk Management Strategy	The strategy describes what needs to be done by all risk management authorities involved in flood and coastal erosion risk management for the benefit of people and places.
Habitat Regulations Assessment	A process that determines whether the proposed strategy could significantly impact the designated features of protected European sites.
Indices of Multiple Deprivation	The Index of Multiple Deprivation measures relative deprivation in an area. It is a combined measure of deprivation based on 37 separate indices of deprivation, grouped into seven key domains reflecting different aspects of deprivation.
Landscape Character Assessment	The process of identifying and describing variation in character of landscape in a certain area. The assessment identifies and explains the unique combination of elements and features that make landscapes distinctive by mapping and describing character types and areas.

Term	Definition
Local Biodiversity Action Plan	Local plans developed by Local Planning Authorities to protect and enhance the biodiversity of an area.
Local Geological Site	Geological sites that are important for historical, scientific research or educational reasons.
Lead Local Flood Authority	County councils and Unitary Authorities which lead in managing local flood risk.
Local Nature Reserve	Statutory designation under the National Parks and Access to Countryside Act 1949. These can be declared by Parish and Town Council, but these must be delegated to by principle local authority.
Lower Super Output Area	Lower Layer Super Output Area are areas of population household minimum and maximum thresholds. These areas were designed to improve the reporting of small area statistics.
Local Wildlife Site	Areas of land which are especially important for their wildlife.
National Character Area	A natural subdivision of England based on a unique sense of place. The Character Area framework is used to describe and shape objectives for the countryside, its planning and management.
National Planning Policy Framework	The National Planning Policy Framework constitutes all policy statements and guidance documents into one document which forms a core part of the national planning system.
National Nature Reserve	Reserves established to protect some of our most important habitats, species, and geology, and to provide outdoor laboratories for research.
National Recovery Network	The Nature Recovery Network is a commitment of the government's 25 Year Environment Plan. It is a national network of wild-life rich places which aims to help deal with biodiversity loss, climate change and wellbeing.
Office of National Statistics	The Office for National Statistics is the executive office of the UK Statistics Authority, a non-ministerial department which reports directly to the UK Parliament.
Planning Policy Guidance	Planning Policy Guidance Notes are statements of the Government's national policy and principles towards certain aspects of the town planning framework.
Public Right of Way	A public right of way is a right by which the public can always pass along routes over land.
Special Area of Conservation	Special Areas of Conservation are protected in the UK under, the Conservation of Habitats and Species Regulations 2017 (as amended) in England and Wales. The purpose of this designation is to conserve the habitat and species identified in the EU Habitats Directive.

Term	Definition
Strategic Environmental Assessment	A decision support process which aims to promote sustainable development by assessing the extent to which the emerging plan will help achieve relevant environmental, economic, and social objectives.
Special Protection Area	Protected areas for birds in the UK, under the Wildlife & Countryside Act 1981 and the Conservation Regulations 2010.
Site of Special Scientific Interest	A conservation designation legally protected under the Wildlife and Countryside Act 1981 (as amended). These sites are selected for wildlife and natural features in England.
Surface Water Management Plan	A plan which outlines the preferred surface water management strategy in the respective location. Surface water flooding describes flooding from sewers, drains, groundwater, and runoff from land into small watercourses and ditches that occurs because of heavy rainfall.
Sustainable Drainage System	SuDS are designed to manage stormwater, mimicking natural drainage and manage pollution risks resulting from runoff.
Water Framework Directive	The Water Framework Directive is a European Union directive transposed into UK law through The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017. It aims to prevent deterioration of the water environment and improve water quality.

Non-Technical Summary

Introduction

North East Lincolnshire Council is currently in the process of developing a Local Flood Risk Management Strategy (LFRMS) to replace the existing strategy adopted in 2015. The strategy will encompass the risks associated with local flood risk sources and provides an overall strategic approach to the management of flood risk in North East Lincolnshire.

The following Non-Technical Summary outlines the conclusions of the Strategic Environmental Assessment (SEA) undertaken as part of the review of North East Lincolnshire Council's LFRMS, fulfilling the requirements of the SEA Regulations.

Purpose of this assessment

When preparing a LFRMS, it is a statutory requirement to carry out a SEA to identify any potentially significant environmental effects arising from the implementation of the strategy. SEA is an integrated, systematic appraisal of the potential environmental impacts of policies, plans, strategies, and programmes during their development before they are approved. It ensures that implications for the environment have been fully and transparently considered. It considers a range of environmental issues including biodiversity, population, human health, flora and fauna, soils, water, air, climate, material assets, heritage, landscape, and the interactions among these factors.

A Strategic Environmental Assessment of the LFRMS has been undertaken to identify any potentially significant environmental effects arising from the implementation of the measures contained within it. This document forms the Environmental Report stage of the SEA process.

Background to the North East Lincolnshire LFRMS review

The Flood and Water Management Act (2010) determined the need for flood risk to be managed within the framework of National Strategies for England and Wales and within Local Strategies for each Lead Local Flood Authority Area (LLFA).

The National Flood and Coastal Erosion Risk Management Strategy for England, published by the Environment Agency in 2020, sets out the principles for flood risk management and which organisations are responsible for their implementation.

In accordance with the national strategy for England, LLFAs have been allocated responsibility for developing independent strategies to address sources of local flooding (defined as surface runoff, groundwater, and ordinary watercourses).

North East Lincolnshire's first LFRMS was adopted in 2015; since this document was produced, knowledge of the broad nature and extent of flood risk across North East Lincolnshire has grown. It was determined that the 2015 LFRMS should be revised to facilitate continued statutory compliance, improved action planning and partnership working, improved resource efficiency and support for funding applications, and improved

community understanding and engagement to facilitate management of flood risk within North East Lincolnshire.

Summary of the Strategic Environmental Assessment process

SEA is a staged process which ensures that the potential environmental effects of a policy or plan are identified during the development of the plan. It provides a framework through which to consult upon potential environmental effects of the LFRMS and to subsequently amend the strategy prior to its adoption. The stages of SEA can be summarised as follows:

- Stage A: Setting the context, establishing the baseline, and deciding on the scope of the assessment. A Scoping Report is produced at this stage.
- Stage B: Developing and refining options and assessing effects.
- Stage C: Preparing the Environmental Report.
- Stage D: Consulting on the draft plan.
- Stage E: Monitoring significant effects of implementing the plan.

The first stage of the SEA process involved the preparation of a Scoping Report for consultation in July - August 2023. The Scoping Report identified the main plans, policies, and programmes of relevance to the strategy. It also set out the baseline environmental characteristics and key issues. The Scoping Report identified key environmental topics that needed to be assessed in the SEA, and scoped out issues where significant effects were not anticipated.

The Scoping Report was finalised following consultation and after this, Stage B commenced including developing and refining options and assessing effects. This Environmental Report has been prepared as Stage C.

Developing the SEA Framework

The SEA framework is made up of several SEA objectives which are used to test the objectives, policies, and options of the LFRMS. The SEA objectives are outlined in Table 1.

Table 1: SEA Objectives

Receptor	Objective
Landscape and visual amenity	Protect the integrity of local urban and rural landscapes in the area.
Biodiversity, Flora and Fauna	Maintain, enhance, and extend biodiversity, wildlife, and habitat connectivity.
Water environment	Protect and enhance the quality of water features and resources.
Geology and soils	Maintain soil quality and conserve geological designations.
Historic environment	Preserve and where possible enhance important historic and cultural sites.
Population and human health	Protect and enhance human health and wellbeing.
Material assets	Minimise the impacts of flooding on the transport

Receptor	Objective
	network and key critical infrastructure.
Climate change	Reduce vulnerability to the effects of climate change.

Strategic Environmental Assessment

The LFRMS was developed including a series of overarching principles, objectives and actions. The objectives and measures contained within the action plan were subject to the SEA appraisal process.

Three alternative management processes and their associated likely environmental impacts were assessed including: Do nothing, Maintain the current North East Lincolnshire Local Flood Risk Management Strategy (2015), and Manage and reduce local flood risk. It was determined that the development of a new LRMS was the only realistic option for managing flood risk in North East Lincolnshire.

The objectives and actions as set out in the Local Flood Risk Management Strategy were fully assessed against the SEA objectives to identify aspects of the strategy that may require revising because of potential impacts identified. Symbols are used to outline likely impacts and the significance of the impact, as shown in Table 2.

Table 2: SEA Impact Significance Framework

Symbol	Explanation of effect
++	Significantly beneficial to the SEA objective -multiple opportunities for environmental improvement or resolves existing environmental issue.
+	Partially beneficial (not significant) to the SEA objectives – contributes to resolving an existing environmental issue or offers some opportunities for improvement.
O	Neutral effect on the SEA objective and environment.
-	Partially undermines (not significantly) the SEA objective –would contribute to an environmental issue or reduce opportunities for improvement.
--	Significantly undermines the SEA objective – will significantly contribute to an environmental problem or undermine opportunity for improvement.
?	Insufficient detail on the option or baseline – cannot effectively assess the significance of the strategy objective on the SEA objective.

Summary of SEA findings

The result of the assessment concluded that the LFRMS will likely have direct positive effects on the SEA objectives, relating to Population and Human Health and Material Assets and Climate Change. There is also opportunity for the LFRMS actions to contribute positively to other SEA objectives, including: landscape and visual amenity; biodiversity flora and fauna; water environment; soils and geology and historic environment.

There is some uncertainty regarding the scale and location of some of these positive effects. Sometimes this is because for some measures the scale, location and / or process of implementation is currently unclear, also, some indirect positive effects maybe outside

the control of the organisations delivering measures. However, positive effects are generally likely across the implementation of the strategy, across a wider range of the SEA objectives.

The assessment also suggests mitigation should be implemented to avoid any potential adverse effects to SEA objectives resulting from the development of flood alleviation schemes. It also suggests opportunities to better meet objectives relating to carbon reduction should be promoted.

From the assessment, no potential negative effects on any of the SEA objectives were identified from any of the LFRMS objectives or actions at this stage.

Proposed monitoring

This Environmental Report provides some suggested monitoring measures for each SEA objective. These simple, effective, and measurable indicators will aid the future monitoring of the plan.

Concluding statement

The LFRMS has been developed and informed by a clear evidence base of baseline environmental data and complies with relevant national and local planning policy.

The SEA did not identify any significant negative effects of the LFRMS. Many of the proposed measures detailed in the LFRMS have the potential for direct and indirect benefits. The majority of the LFRMS objectives are likely to have indirect beneficial effects upon the environment as they relate to enhanced understanding and awareness of flood risk along with high-level flood risk management measures rather than individual actions. The assessment of the LFRMS objectives and actions against the SEA objectives highlights positive impacts, especially on SEA objectives 2, 6, 7 and 8. By actively managing the flood risk, there will be obvious benefits to biodiversity, the population, human health, material assets and climate change resilience. Through promoting a greater understanding of flood risk, encouraging community involvement, and promoting self-resilience as well as a coordinated county-wide flood risk management approach, communities and responsible parties will be better placed to effectively minimise the risk of flooding in the North East Lincolnshire Council area.

The next stage of the SEA process will involve consultation on the draft SEA Environmental Report and the draft LFRMS with statutory consultees, stakeholders, and the public. This consultation aims to identify any necessary amendments and updates to the documents. All consultation responses received will be reviewed and considered for the next stage of the SEA process, which involves preparing a Post-Adoption Statement.

1 Introduction

1.1 Overview

North East Lincolnshire Council as Lead Local Flood Authority (LLFA) is working to produce an updated Local Flood Risk Management Strategy (LFRMS) under the Flood and Water Management Act 2010, and in accordance with the National Flood and Coastal Erosion Risk Management Strategy for England published by the Environment Agency in 2020. The current LFRMS, which was adopted in 2015, has been reviewed and is being updated to provide an overall strategic approach to the management of flood risk in North East Lincolnshire.

The aim of a LFRMS is to guide the management of local flood risk, reflecting local circumstances such as the level of risk and the potential impacts of flooding. North East Lincolnshire's updated LFRMS must assess local flood risk, set out measures for managing local flooding and determine the costs and benefits associated with the implementation of such measures.

When preparing a flood management plan that will inform decision making and identify actions to be taken to reduce the risk of flooding, it is a statutory requirement to conduct a Strategic Environmental Assessment (SEA) in accordance with the SEA Regulations (implementing the European SEA Directive into UK law).

Due to the scale of the changes proposed in the updated LFRMS and the potential for significant environmental effects, it was considered appropriate that an update to the SEA be undertaken.

The SEA process, culminating in the preparation of this Environmental Report, will inform the preferred long-term flood risk management strategy through the identification of likely significant impacts upon the environment, resulting from the implementation of the LFRMS.

This SEA Environmental Report will outline how objectives, measures and options have been appraised.

2 SEA Process and Methodology

2.1 Background

The Environmental Assessment of Plans and Programmes Regulations 2004, or SEA Regulations, were originally transposed from the European Directive 2001/42/EC (the SEA Directive) into English Law, prior to the UK's departure from the EU. The Environmental Assessment of Plans and Programmes (Amendment) Regulations 2020 (the 'SEA Regulations') now apply to this work. These Regulations require a SEA to be undertaken for certain types of plans or programmes that could have a significant environmental effect.

The SEA Regulations form the basis by which all SEAs are carried out to assess the effects and impacts of certain plans and programmes on the environment. Detailed practical guidance on these regulations can be found in the Office of the Deputy Prime Minister (ODPM) Government publication, A Practical Guide to the Strategic Environmental Assessment Directive (ODPM, 2005). This document has been used as the basis for undertaking this environmental report, in conjunction with the SEA Regulations.

SEA involves the systematic identification and evaluation of the potential environmental impacts of the LFRMS. This information is then used to aid the selection of a preferred option(s) for the strategy, which are those that best meet its economic, environmental, and social objectives, and legal requirements. Carrying out an SEA in conjunction with developing the LFRMS helps influence flood risk management at an early stage and influences the selection of preferred measures or ways forward where alternatives exist.

Schedule 2 of the SEA Regulations sets out the scope of information to be provided by the SEA. This is described in Table 2-1 below, which also identifies where in the SEA process for the LFRMS that the relevant requirement will be met.

Table 2-1: Stages in the SEA Process as identified within Schedule 2 of the SEA Regulations.

SEA Regulation Requirements	Where covered in the SEA Process
a) an outline of the contents, main objectives of the plan or programme and relationship with other relevant plans and programmes;	SEA Scoping Report (Section 2, 3 and 4); SEA Environmental Report (Sections 3, and 5 and Appendix A).
(b) the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme;	SEA Scoping Report (Section 5); SEA Environmental Report (Section 5).
(c) the environmental characteristics of areas likely to be significantly affected;	SEA Scoping Report (Section 5); Environmental Report (Section 5).

SEA Regulation Requirements	Where covered in the SEA Process
(d) any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Directives 79/409/EEC on the conservation of wild birds(a) (amended to 2009/147/EC and transposed into UK law through Part I of the Wildlife and Countryside Act 1981) and the Habitats Directive 92/43/EEC (transposed into UK law through the Conservation of Habitats and Species Regulations 2017 (as amended);	SEA Scoping Report (Section 5); Environmental Report (Section 5).
(e) the environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation;	SEA Scoping Report (Sections 4 and 5); Environmental Report (Section 5 and Appendix A).
(f) the likely significant effects on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape, and the interrelationship between the above factors;	SEA Environmental Report (Section 8)
(g) the measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme;	SEA Environmental Report (Section 8)
(h) an outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information;	SEA Environmental Report (Section 7)
(i) a description of the measures envisaged concerning monitoring in accordance with regulation 17.	SEA Environmental Report (Section 9)
(j) a non-technical summary of the information provided under the above headings.	SEA Environmental Report (Non-Technical Summary)

2.2 Stages in the SEA Process

This report has been produced in conjunction with the SEA Regulations and follows the guidance contained within the OPDM A Practical Guide to the Strategic Environmental Assessment Directive (ODPM, 2005). The guidance outlines the stages that should be carried out in the SEA process; these are outlined in Table 2-2. In accordance with this process, this report addresses 'Stage C' of the SEA process; wherein the predicted environmental effects of the plan, including alternatives, are presented, to be used by decision-makers and in public consultation.

Table 2-2: Stages in the SEA Process and their purpose.

SEA Stages and Tasks	Purpose	Where covered in the SEA
Stage A	Setting the context and objectives, establishing the baseline, and deciding on the scope	SEA Scoping Report
(A1) Identifying other relevant plans, programmes, and environmental protection objectives	To establish how the plan or programme is affected by outside factors, to suggest ideas for how any constraints can be addressed and to help to identify SEA objectives.	SEA Scoping Report
(A2) Collecting baseline information	To provide an evidence base for environmental problems, prediction of effects, and monitoring; to help in the development of SEA objectives.	SEA Scoping Report
(A3) Identifying potential environmental problems	To help focus the SEA and streamline the subsequent problems, prediction of effects, and monitoring; to help in the development of SEA objectives.	SEA Scoping Report
(A4) Developing SEA objectives	To provide a means by which the environmental performance of the plan or programme and alternatives can be assessed.	SEA Scoping Report
Stage B	Developing and refining options and assessing effects	Options development phase
Stage C	**Preparing the Environmental Report**	**SEA Environmental Report**
Stage D	Consulting on the draft LFRMS and the Environmental Report	Consultation phase
Stage E	Monitoring the significant effects of implementing the LFRMS	Monitoring phase

Stage A of the process (scoping) was carried out in March to July 2023, and an SEA Scoping Report was submitted to the statutory consultees - Natural England, Environment Agency, and Historic England - in July 2023 for a 5 week consultation period. Responses were received from all the consultees and their responses have been incorporated into this Environmental Report. Further details of the scoping process are provided in Section 4 of this report.

The purpose of the Environmental Report is to report the findings of the SEA of the North East Lincolnshire LFRMS. This Environmental Report summarises:

- How the SEA has been conducted and how it informs the current emerging LFRMS;

- The likely significant effects on the emerging LFRMS on people, communities, the economy, and the environment; and
- How the SEA will continue to inform the implementation of the emerging LFRMS, such as through recommended mitigation and monitoring.

This report documents Stage B of the SEA process and fulfils the requirements of Stage C..

2.3 Habitats Regulations Assessment

Due to the potential for the LFRMS to have significant effects on sites of international nature conservation importance (Ramsar sites, Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), a Habitat Regulations Assessment (HRA) has been undertaken in parallel with this SEA. This has been produced as a separate standalone report, details of which are summarised in Section 5.3.3. of this report.

3 Background to the North East Lincolnshire LFRMS

3.1 Overview

The Flood and Water Management Act (2010) determined the need for flood risk to be managed within the framework of National Strategies for England and Wales and within Local Strategies for each Local Flood Authority Area.

The National Flood and Coastal Erosion Risk Management Strategy for England, published by the Environment Agency in 2020, sets out the principles for flood risk management and which organisations are responsible for implementation.

In accordance with the national strategy for England, LLFAs have been allocated responsibility for developing independent LFRMSs to address sources of local flooding.

Local flooding is defined by the Flood and Water Management Act 2010 as flood risk derived from:

- surface runoff,
- groundwater, and
- ordinary watercourses.

Surface water flooding often occurs where drainage systems (natural and/or artificial) are unable to cope with the volume of water. Surface water flooding issues are linked to issues of poor drainage (or drainage blocked by debris) and sewer flooding. It can be exacerbated when tide locking occurs where high river and sea levels prevent drainage systems discharging.

Groundwater flooding occurs when the water table within the underlying rock or soil rises above ground level or interacts with properties or infrastructure below ground level. The level of the table varies because of seasonal changes in precipitation, recharge, and groundwater abstraction. When the water level reaches ground level, water can start to emerge causing flooding, which can result in significant property damage.

Flooding from ordinary watercourses occurs when water levels in a non-main river, canal, sewer, lake, ditch, reservoir, or stream rises and overflows onto the neighbouring land.

Flood risk from the sea, main rivers and large reservoirs is therefore not defined as local flood risk and is the concern of the Environment Agency. Such sources of flood risk do, however, need to be considered insofar as they may interact with those flood risks defined as “local”, to ensure that all joint risks of flooding are assessed at the local scale.

Each LFRMS identifies which local organisation is accountable for managing flood risk and establishes roles and responsibilities and partnership agreements, as well as undertaking an assessment of flood risk and developing plans / actions for tackling these risks.

As stipulated by the Flood and Water Management Act 2010, North East Lincolnshire Council as LLFA has a responsibility to develop, maintain, apply, and monitor a strategy for

local flood risk management, considering flood risk from surface water, groundwater, and ordinary watercourse.

North East Lincolnshire's previous LFRMS was adopted in 2015. Since the previous LFRMS was produced, the knowledge of the broad nature and extent of flood risk across North East Lincolnshire has grown, and the LFRMS review has now been triggered by the updated National FCERM Strategy, published in 2020, and the associated FCERM Strategy Roadmap to 2026, published in 2022.

3.2 Study Area

North East Lincolnshire is situated in the Northeast of England, bordering the borough of North Lincolnshire and districts of West Lindsey and East Lindsey. The area's population was roughly 157,000 in the 2021 Census, a reduction of 1.7% from (roughly 159,000) from 2011 (ONS, 2021). The administrative centre and largest settlement is Grimsby and the borough includes the towns of Cleethorpes and Immingham, as well as the villages of New Waltham, Waltham, Humberston, Healing and Great Coates. Their locations are shown in Figure 3-1 along with watercourses in the borough.

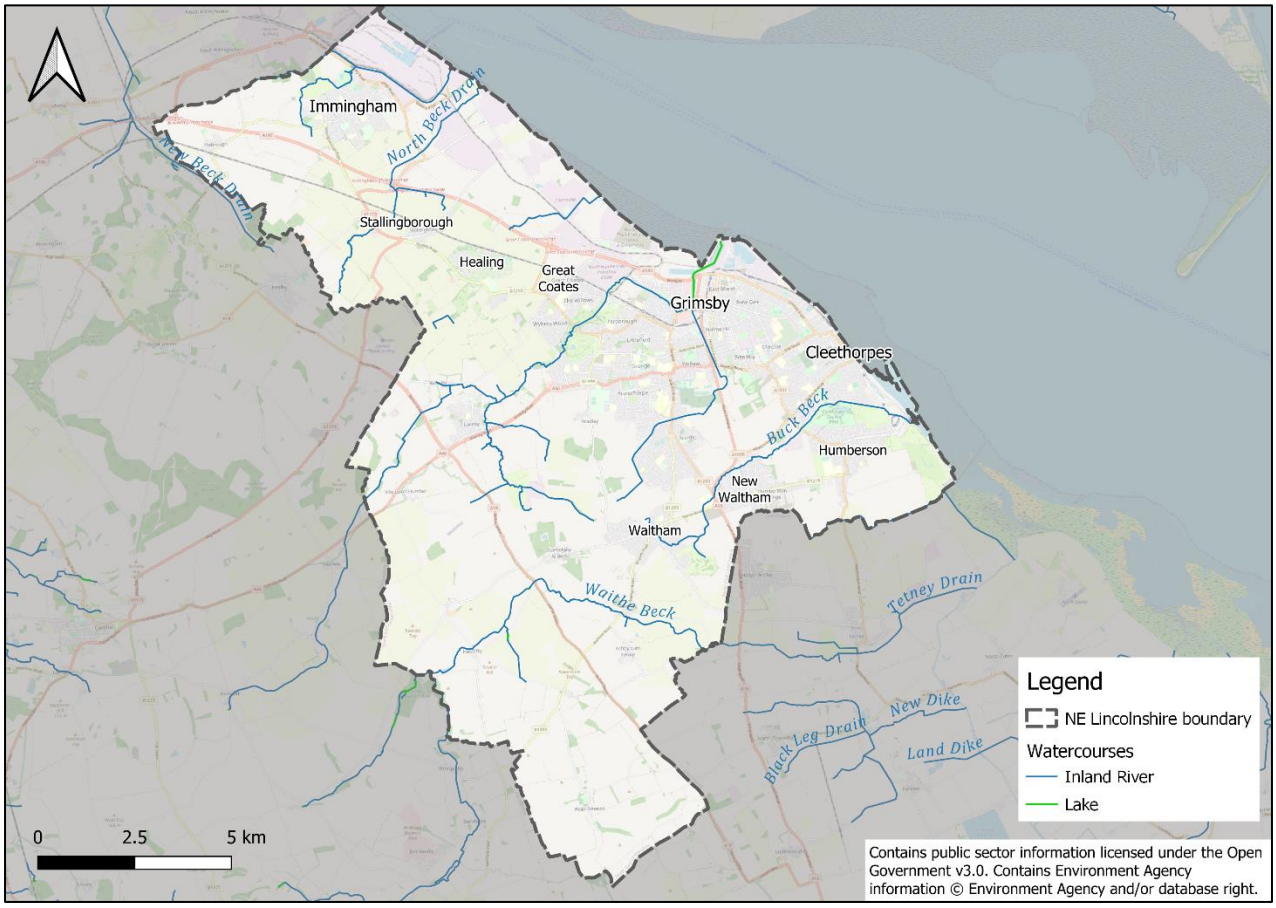

Figure 3-1: NE Lincolnshire Council area and key settlement relative to flood risk.

Figure 3-2 shows the risk of flooding from surface water (RoFSW) and the risk of flooding from rivers and sea shown by Flood Zones 2 and Flood Zone 3. Locations in Flood Zone 2

have a medium probability of flooding, which means that in any year there is between a 1% and 0.1% chance of flooding from rivers and between a 0.5% and 0.1% chance of flooding from the sea. Locations in Flood Zone 3 have a high probability of flooding, which means that in any year there is 1% or more chance of flooding from rivers, or a 0.5% or more chance of flooding from the sea (Environment Agency, 2021).

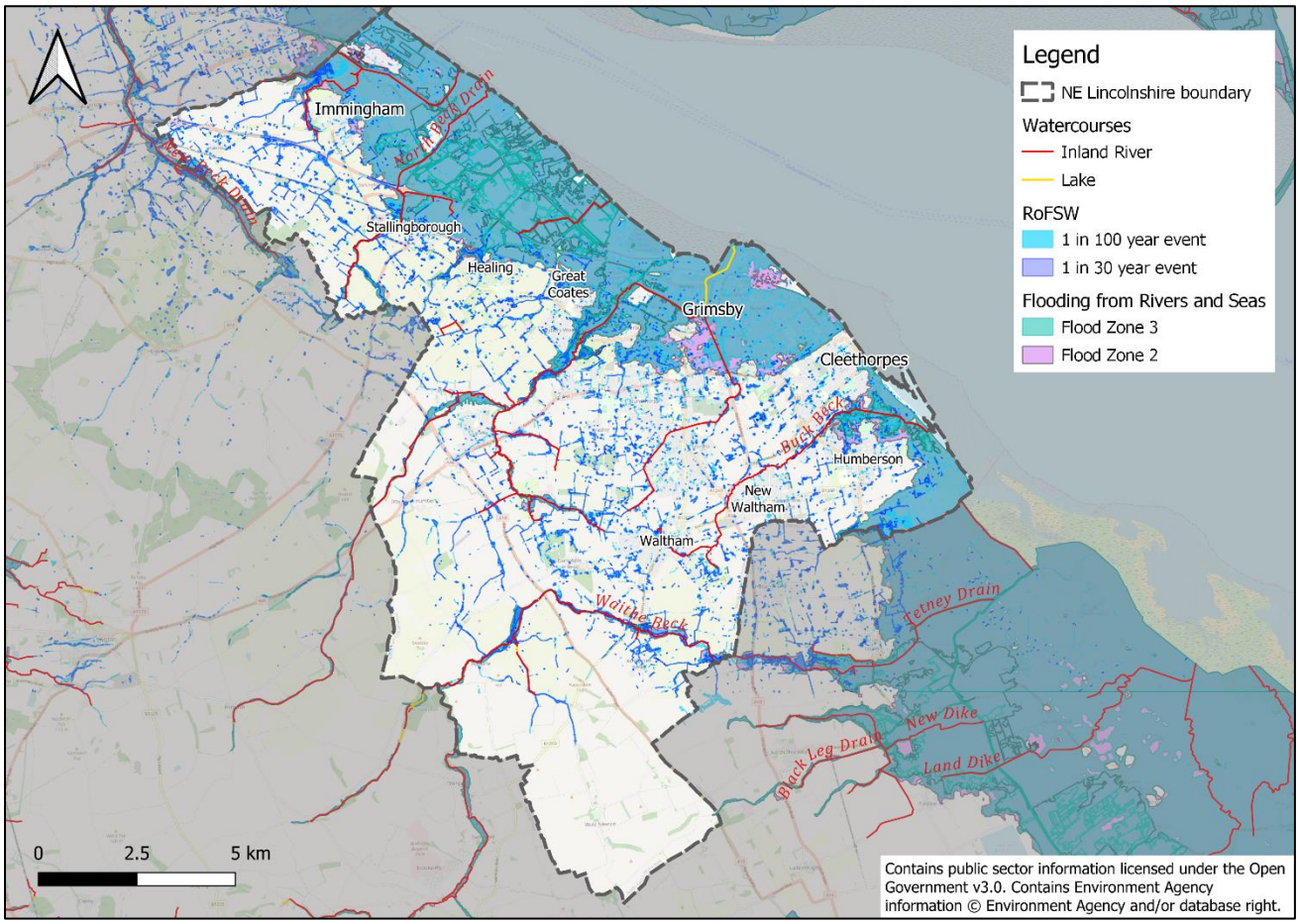

Figure 3-2: Risk of flooding from surface water (RoFSW) and from rivers and seas (Flood Zones 2 and 3) in NELC.

The 2015 LFRMS for North East Lincolnshire identified that approximately 1,350 to 1,850 properties would be at risk from these types of flooding. More recently, the Humber River Basin District FRMP identified that in the Cleethorpes Flood Risk area approximately 18,514 people live in areas at risk of flooding from rivers and the sea, with 6% in areas of high risk. In the Grimsby Flood Risk Area 51,623 people live in areas at risk of flooding from rivers and the sea, although less than 1% of these are in areas of high risk. In the Immingham Flood Risk Area, 5,934 people live in areas at risk of flooding from rivers and the sea, although less than 1% are in areas of high risk (EA, 2023).

3.3 Historic Flooding in the Study Area

This section describes historic and more recent flooding caused by surface water runoff, groundwater, and ordinary watercourses across North East Lincolnshire.

Major flooding of watercourses in the study area includes the summer floods in 2007 of Grimsby, Immingham, Waltham, Brigsley, Great Coates and Stallingborough, as well as the overtopping of the River Freshney's defences in 2007 leading to surface water from the drains flooding 186 properties internally. Following the 2007 floods, several mitigation works were carried out which included:

- An earth flood defence embankment behind Mount Pleasant in Waltham.
- The restoration of land drainage systems in North Immingham such as channel realignments and the introduction of overflow swales.
- A new surface water drainage system in Harbrough to protect previously flooded properties on West End Road, as well as the cleaning and repairs of the surface water system in the north east.
- Maintenance works of the land drainage system in Humberston to increase the system capacity.

Before 2007, the most significant flooding events were at the Willows Estate in Grimsby in March 1979 and February 1981 from the River Freshney and was managed by the road drainage system. A more severe flooding from fluvial and surface water sources occurred in April 1981. This event caused 300 properties in the Estate to flood when both banks of the River Freshney overtopped and no drainage capacity was available due to surcharging of the main sewer system. This led to extensive flood defence improvement works and it is believed that these works reduced the impact of the 2007 floods here (NELC, 2011).

In the summer of 2014, extensive flooding occurred again after heavy rainfall in Immingham and Grimsby. Flood Investigation Reports were carried out for both areas under Section 19 of the Flood and Water Management Act 2010. Both reports concluded that the main cause of flooding was the high rainfall intensity (which only had a 2% chance of occurring annually in a 1 in 50-year event) as well as the forecasting capabilities being unable to pinpoint the exact location for where the heavy rainfall would occur. A secondary cause was the design capacity of the public sewers (some of which were 70 to 110 years old), which were unable to effectively respond to the increase in rainfall, facilitating the flash flood events in both July and August. The recommended mitigation measures were regular maintenance of the existing drainage system and sewers, and for residents to put their own additional protections in place, such as sandbags, when increased rainfall is predicted to occur. Discussions with Anglian Water were also ongoing to increase their pumping capacity (NELC and Cofely, 2015).

In August 2017, the combination of surface water runoff and the overwhelming of surface water sewers / drainage systems caused 11 properties to flood in Immingham, one property in Habrough to flood internally and another 12 at risk with extensive external flooding, four properties internally flooding in Grimsby, and 12 properties affected by external flooding on North Sea Lane in Cleethorpes and Humberston. North Sea Lane has suffered multiple flooding events due to surface water runoff from the adopted highway and private road in 2014, 2015 and 2016 (JBA Consulting, 2023).

On 7th November 2019, an extreme rainfall event occurred. The land drainage catchments in North East Lincolnshire were already saturated due to rain fall in October and much of

the flooding took place in agricultural and amenity land and some areas of the highway network. However, three properties on Great Coates Road; seven properties and a garage on Wells Road; two properties and a garage on Bradley Road; and two chalets at the Humberston Fitties, internally flooded (Equans and NELC, 2020).

In 2022, heavy rain fall overwhelmed the sewerage system in Laceby on the 6th of September. This resulted in 23 reports of external flooding and 21 properties reported internal flooding (JBA Consulting, 2023).

Additionally, petrol contamination of an Anglian Water extraction works near Little Coates has meant extraction had to reduce by 31-32% in 2001, and groundwater flooding has been an ongoing issue since due to the rising groundwater levels here (NELC, 2011; NELC, 2015a).

Figure 3-3 shows the maximum flood extent of recorded flood outlines from rivers and the sea in North East Lincolnshire. Most of the Historic Flood Map records can be dated back to 1946 when the predecessors of the EA began collecting the data. It considers the presence of defences, structures, and other infrastructure where they existed at the time of flooding and will include flood extents that may have been affected by overtopping, breaches, or blockages. Although it does not include flooding from surface water or groundwater, only flooding that has been determined as having a fluvial or tidal source (Environment Agency, 2023), it is still important for the LLFA to be aware of flooding from rivers and seas.

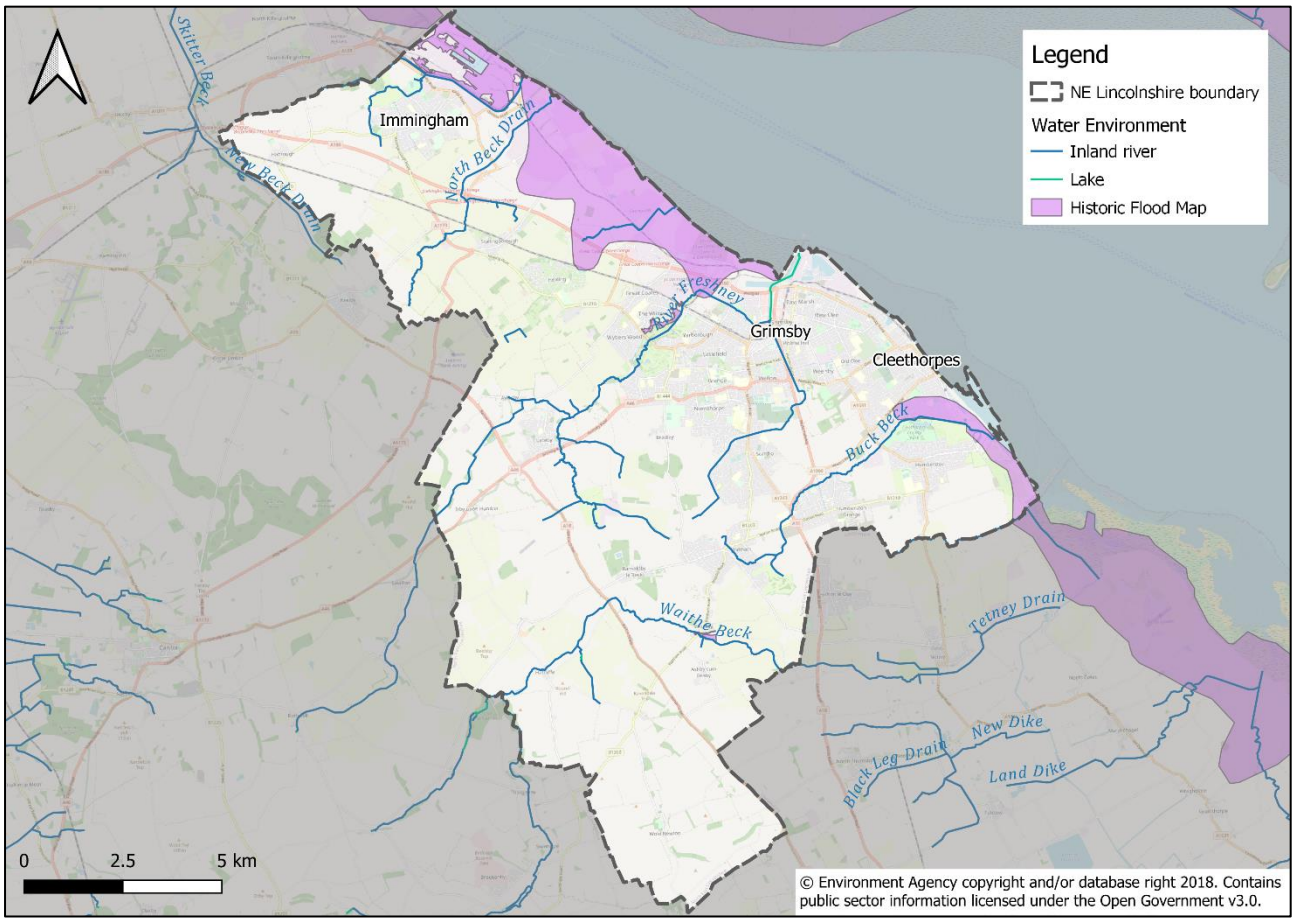

Figure 3-3: Historic flood extent from rivers and the sea in North East Lincolnshire.

3.4 Future Flood Risk

There is considerable uncertainty regarding the localised impact of climate change, but it is likely that the risk of flooding will increase under a climate change scenario. This increased risk could manifest itself as more frequent flooding, increase in flood extent and increase in flood depth.

Climate change is increasing the frequency and magnitude of hazardous weather events such as flood and heatwaves. A review of recent evidence of the anthropogenic intensification of short-duration rainfall extremes concluded that heavy rainfall extremes are intensifying (Fowler et al. 2020). Combined with warmer, generally drier summers, the harder ground struggles to instantly absorb water from rainfall – which in turn intensified the frequency of flash flooding (Met Office, 2022).

4 Stage A: Scoping Stage Findings

4.1 Environmental Topics Scoped In

Stage A of the SEA process involves gathering evidence to help set the context and objectives, establish the environmental baseline, and determine the scope of the SEA.

The Scoping Report produced as part of Stage A outlined the findings of the evidence gathering and the scope of the SEA.

Table 4-1 below describes the SEA topics which were scoped into the assessment. Further details on the environmental baseline for each of the topics is provided in Section 5: Environmental Characteristics and Key Issues.

Table 4-1: Environmental topics scoped in.

Environmental Topic	Definition in relation to this report	Relevance
Biodiversity (including flora and fauna)	Designated nature conservation sites; protected and notable species and habitats; trends in condition and status; invasive non-native species (INNS).	Potential impact on designated and priority habitats both from the LFRMS and a scenario without it. There is the potential for both positive and negative impacts because of the LFRMS. Potential impacts to protected species and sites must be considered throughout development and implementation of the LFRMS.
Climatic factors	As the LFRMS is a flood risk strategy, this topic will focus on greenhouse gas emissions. Flood risk and adaptation to climate change will be assessed under each of the other SEA topics.	Scope to include greenhouse gas emissions only (e.g., embodied carbon and emissions from plant and vehicles). The impact of climate change on flood risk will be considered as part of the LFRMS itself. In addition, the LFRMS is unlikely to have a significant impact on climate.
Cultural heritage	Designated and non-designated heritage assets, including historic landscapes; pressures on heritage assets (including changes to setting).	Flooding and flood risk management measures have the potential to threaten sites and monuments of archaeological and historical importance, including listed buildings and Scheduled Monuments.

Environmental Topic	Definition in relation to this report	Relevance
Population and human health	Population trends and demographics; education; inequality and deprivation; key community facilities; recreation opportunities; trends and patterns in human health, including life expectancy.	People, properties, and settlements potentially affected by flood risk, as well as the community infrastructure around them. The LFRMS has the potential to provide benefits to the population of the study area by managing flood risk.
Landscape	National and local landscape character; protected and notable landscapes; key local landscape features.	Local landscape qualities and integrity across the study area could be affected by changes to the way watercourses and flood risk is managed in the area. Furthermore, impacts on locally important urban and rural landscapes and landscape features may occur, for example because of flood defence construction.
Material assets	Critical infrastructure (including transport and other infrastructure), community services; and Green Infrastructure	The study area contains several important infrastructure assets including ports and motorways. Flooding may compromise the function of these assets and the LFRMS must take this into account.
Geology and Soils	Variety of rocks, minerals and landforms; the quantity and distribution of agricultural land including the highest quality soils; soil health and functions; designated geological sites; land contamination.	Flooding has the potential to affect geodiversity and soil quality, which support designated sites within the area. Flood risk management of potentially contaminating land uses or sources of land (or water) contamination. Conversely, flooding may provide a beneficial effect through mitigation such as natural flood management processes, catchment sensitive farming and soil erosion reduction.
Water	The availability/supply and quality of water. It considers in turn surface and groundwater resources, chemical and biological water quality; surface and groundwater resources.	Flood risk management has the potential to impact on water availability and quality within the study area and achievement of WFD objectives. There is also the potential for indirect impacts on water dependent designated sites/ species. Impact on water resources and quality must be considered in developing the strategy.
Interrelationship between the	The relationship between environmental	The effect of known proposals /

Environmental Topic	Definition in relation to this report	Relevance
above factors	features and issues	commitments.

The LFRMS and SEA have been influenced by many different plans and programmes. This is recognised by the SEA Regulations, which require a review of relevant plans and programmes to be completed in the preparation of documents.

Key international, national, regional, and local documents were reviewed as part of the SEA Scoping stage. The full review can be found in Appendix A. The review process has provided a valuable source of information and a framework for developing different components of the LFRMS and SEA. In particular:

- At a high level, key legislation and national policies provided the planning context for the LFRMS; and
- Regional and local documents provided a valuable source of baseline information and identified local priorities and objectives as well as conditions that the LFRMS and SEA should adhere to'.

As part of the SEA process, an assessment of the integration of existing policies, plans and programmes on the LFRMS has been undertaken. This is required under Schedule 1 of the SEA Regulations:

(i) 'the degree to which the plan or programme sets a framework for projects and other activities either with regard to the location, nature, size and operating conditions or by allocating resources.

(ii) The degree to which the plan or programme influences other plans and programmes including those in a hierarch;

(iii) The relevance of the plan or programme for the integration of environmental considerations in particular with a view to promoting sustainable development.

5 Environmental Characteristics and Key Issues

5.1 Introduction

This section covers information on the current environmental baseline in North East Lincolnshire and summarises the key information from policies, plans and programmes which have been considered in the SEA for each environmental topic.

A desk-based study of baseline environmental data was undertaken to identify the key environmental characteristics, the findings of which are presented below.

The baseline information may require updating throughout the duration of the SEA process as the LFRMS is developed further and new information becomes available.

5.2 Landscape and Visual Amenity

As shown in Figure 5-1, North East Lincolnshire falls within three National Character Areas (NCA) (Natural England, 2014). These are:

- **NCA 41 Humber Estuary**: the largest estuary in the UK, with a vast area of mudflats, saltmarshes, and intertidal. The landscape is characterised by extensive wetlands, including the North and South Marshes, and the Spurn Peninsula, which forms a narrow spit of land at the mouth of the estuary.
- **NCA 42 Lincolnshire Coast and Marshes**: a coastal landscape characterised by wide sandy beaches, sea cliffs, and estuaries. It includes several historic settlements and landmarks, such as the seaside towns of Cleethorpes and Mablethorpe, and the lighthouses at Spurn Head and Donna Nook.
- **NCA 43 Lincolnshire Wolds**: comprises a landscape characterised by open fields, hedgerows, and small woodlands, and is an important area for agriculture and tourism. The area is also known for its historic buildings and cultural heritage.

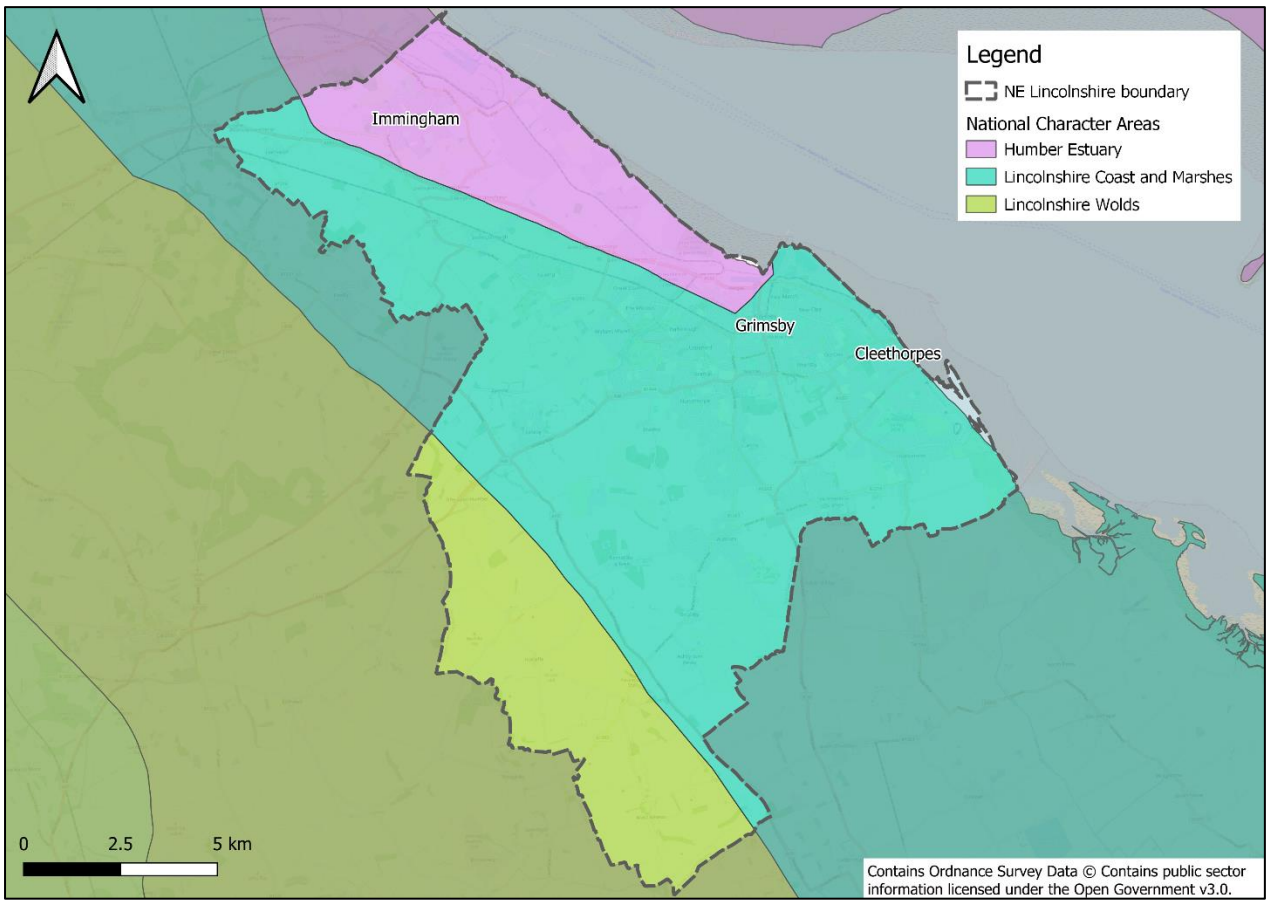

Figure 5-1: National Character Areas in North East Lincolnshire.

The southern part of the Council area falls within the Lincolnshire Wolds AONB, as shown in Figure 5-2, which is generally characterised by open plateau hilltops, ridge-top routeways, and wooded slopes and valleys, with peaks rising to over 150 mabove sea level. The Lincolnshire Wolds was designated an AONB in 1973 for its unique landscape and 'sense of place', with the landscape dominated by open fields, hedgerows, and small woodlands. The area is also important for agriculture and has a long history of cultivated farming practices. The following outstanding qualities underline the vision for the AONB's ongoing management: a unique physiography (geology and topography); a scenic, working landscape; a major archaeological resource; and a valued cultural landscape (Lincolnshire Wolds AONB, 2018).

The features which make up the Lincolnshire Wolds AONB Management Plan are under pressure from climate change (e.g., extreme weather events, new pests, and diseases), continued decline in management of the land and woodland, increased demand for recreation and tourist access, and local housing need.

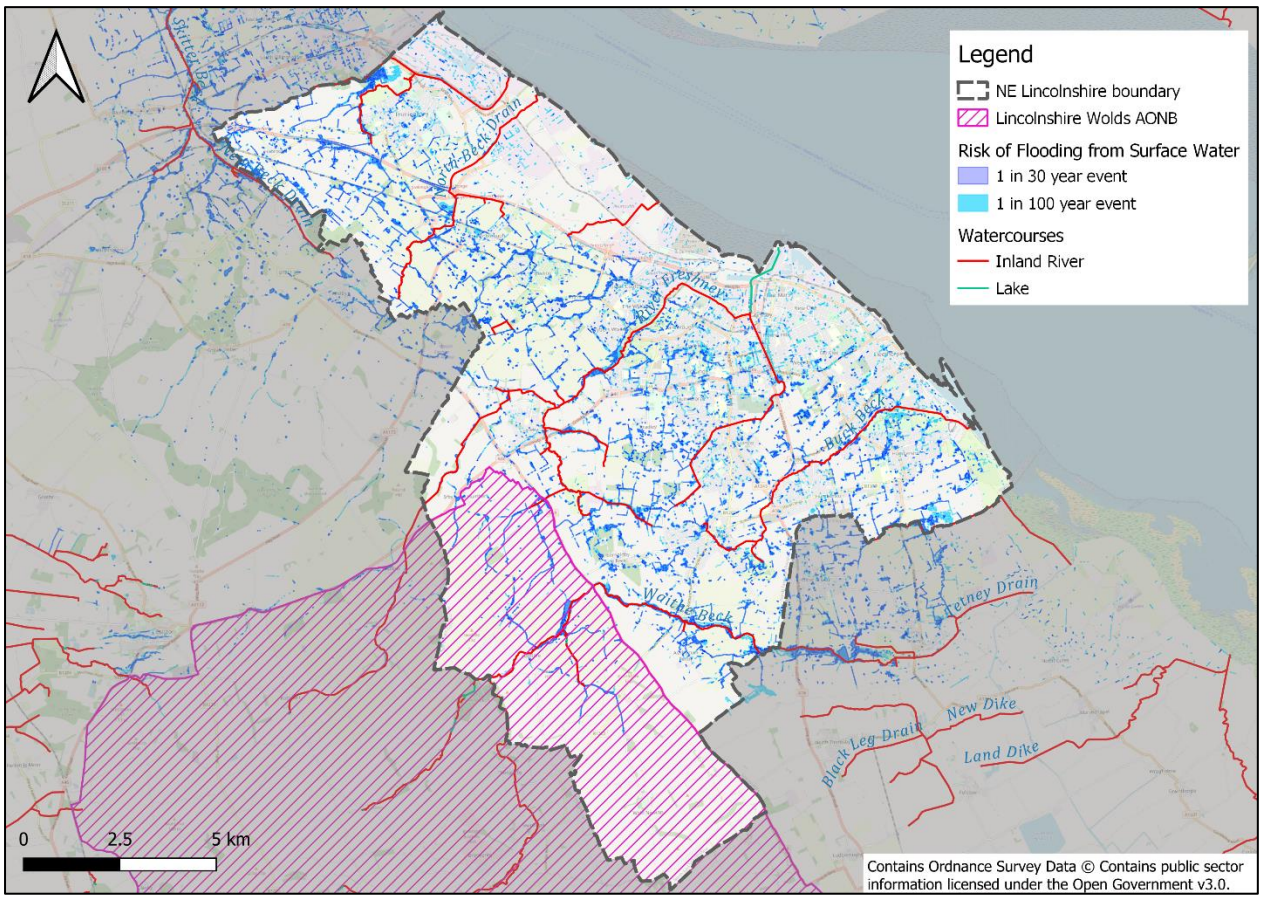

Figure 5-2: Lincolnshire Wolds AONB relative to RoFSW in NE Lincolnshire.

5.2.1 Summary of Key Issues

Coastal flooding resulting from sea level rise and increased storm surge risk, and local flooding from increased precipitation, has the potential to affect local landscape characteristics in North-East Lincolnshire. There is the potential for loss of key landscape and visual assets because of coastal inundation and local flooding.

The key issues relating to landscape and visual amenity are summarised below:

- Alteration of existing landscapes due to increased fluvial, surface water and coastal flooding and coastal erosion.
- Disturbance to existing views.

To maintain the landscape within the borough, the LFRMS should consider and take account of the key issues.

5.3 Biodiversity, Flora and Fauna

5.3.1 Statutory Protected Sites

The NELC area encompasses many high-quality environments which have been recognised through international, national, and local ecological designations.

North East Lincolnshire has several locally designated ecological sites There are five Local Nature Reserves which are Bradley and Dixon Woods, Cleethorpes Country Park, Cleethorpes Sands, Weelsby Woods and Freshney Parkway.

The Humber Estuary is immediately adjacent to the NELC coastline, which is a Site of Special Scientific Interest (SSSI), Special Protection Area (SPA), Special Conservation Area (SCA) and Ramsar.

A list of the statutory designated sites in North East Lincolnshire and a description of their designation are included in Table 5-1. As shown in Figure 5-3, ecologically designated sites may be at an increased risk of flooding from all sources.

Non-statutory sites include Local Wildlife Sites (LWS), which are areas with considerable nature conservation value selected due to important habitats and species within a region (JNCC 2019; The Wildlife Trusts, 2021). There are 1270 LWS in the wider Greater Lincolnshire region (GLNP, 2023).

Table 5-1: Statutory designated sites in North East Lincolnshire.

Site	Designation	Qualifying features
Bradley & Dixon Woods	LNR	Bradley & Dixon Woods is recognised as an important ancient woodland, designated as the first LNR in North East Lincolnshire in 1998 for its mainly broad-leaf woodland and the associated wide variety of wildlife this habitat attracts.
Cleethorpes Sands	LNR	Cleethorpes Sands attracts a wide variety of birds (NELC, 2021a) and comprises saltmarshes, mud flats, sand dunes and sand banks. The sand dunes at Cleethorpes are designated for the presence of nationally scarce bulbous meadow grass (Natural England, 2004).
Cleethorpes Country Park	LNR	Designated in 2008, this 160-acre park is an area of countryside characterised by an open landscape of which its main purpose is for passive recreation (e.g., dog walking, running etc.) for local communities. The management plan for the park outlines a vision of a diverse mosaic of habitats including wetlands, semi-mature broadleaved woodland and species rich grasslands, whilst the western half of the site is predominately livestock grazing (NELC, 2015b).
Freshney Parkway	LNR	Freshney Parkway was recently designated as a Local Nature Reserve comprising mostly grassland; however, the council's long-term objectives are to develop and maintain the meadow introducing species of native wildflowers and grasses, as well as manage the treeline along the southern and eastern borders (NELC, 2023).
Humber Estuary (adjacent to	SSSI, SPA, SCA, Ramsar	The Humber Estuary covers an area of 37,000ha and is the largest coastal plain estuary on Britain's east coast comprising extensive wetland and coastal habitats.

Site	Designation	Qualifying features
North East Lincolnshire coastline)		The estuary supports nationally important numbers of 22 wintering waterfowl and nine passage waders, and a nationally important assemblage of breeding birds of lowland open waters and their margins. The site is also of national importance for the geological interest at South Ferriby Cliff and for the coastal geomorphology of Spurn.
Weelsby Woods Park	LNR	Weelsby Wood Park is an urban public park and woodland comprising open parkland, grassland, and four separated English woodland areas. Donated to the Borough of Grimsby in 1948, the woods offer opportunities for passive recreational activities and the variety of mature trees attracts an abundance of associated wildlife as well as small mammals, foxes and birds (NELC, 2015c).

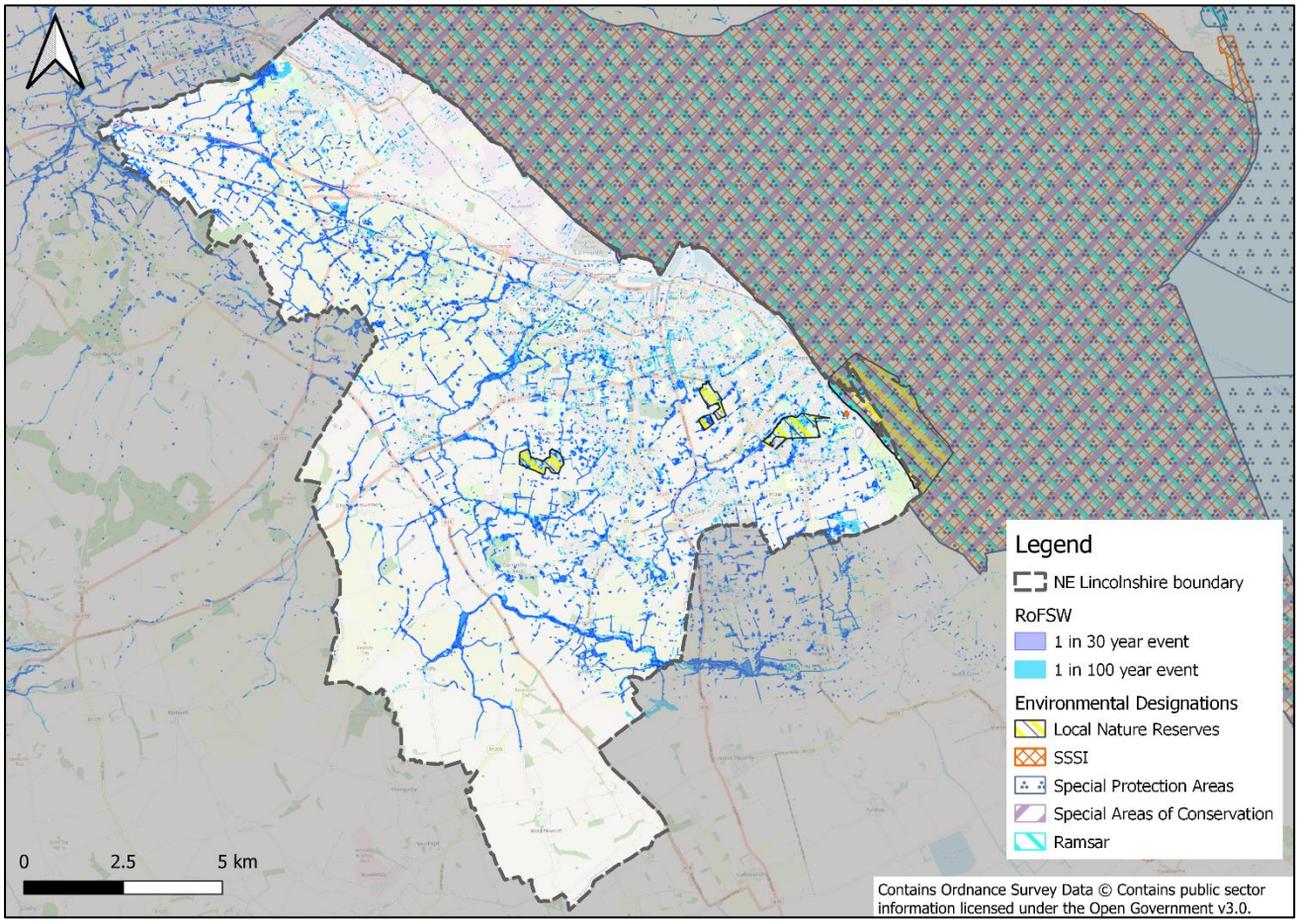

Figure 5-3: Environmental designations relative to RoFSW in North East Lincolnshire.

5.3.2 Lincolnshire Biodiversity Action Plan

The Lincolnshire Biodiversity Action Plan (Lincolnshire Biodiversity Partnership, 2011) aims to conserve and enhance the biodiversity of the county. The plan sets out a vision for a healthy and resilient natural environment in Lincolnshire, where all species and habitats are thriving, and where the benefits of biodiversity are valued and understood. The BAP aims to achieve this vision by identifying key species and habitats that require conservation action and by setting targets and objectives for their protection and management. The plan also aims to raise awareness of the importance of biodiversity and to engage stakeholders and the wider public in its conservation.

Numerous priority species and habitats of principal importance listed in Section 41 of the Natural Environment and Rural Communities (NERC) Act are known to be present in Lincolnshire[1] and are included in the Lincolnshire Biodiversity Action Plan (2011). These are summarised in Table 5-2 below.

Table 5-2: Action plan species and habitats of principal importance, as listed in the Lincolnshire Biodiversity Action Plan (2011).

Type	Species or Habitat Type
Species	
Plants	Greater water-parsnip
Invertebrates	Plaice
	Sole
	White-clawed crayfish
	Lamprey
	European eel
	Spined loach
	Smelt
	Atlantic salmon
	Trout
Vertebrates	Natterjack toad
	Great crested newt
Birds	Curlew
	Skylark
	Linnet
	Yellowhammer
	Bunting
	Sparrow
	Wagtail
	Partridge

1 The Species and Habitats listed are for the wider Lincolnshire region and are not specific to North East Lincolnshire. Nonetheless, many of these species and habitats would be present in North East Lincolnshire.

Type	Species or Habitat Type
	Bullfinch
	Turtle dove
	Starling
	Lapwing
	Song thrush
	Swift
Mammals	Bats
	Seals
	Water vole
Habitats	
	Coastal and marine
	Farmland and grassland
	Heathland and peatland
	Rivers and wetlands
	Trees and woodland
	Urban

5.3.3 Habitats Regulations Assessment

Under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, a screening assessment must be undertaken to consider the potential direct or indirect adverse effects of the LFRMS on protected habitats and species, with a Habitats Regulations Assessment (HRA) to be undertaken if there is a possibility of a significant effect. Mitigation or avoidance measures must then be applied should the HRA determine that significant adverse effects on site integrity, in view of a site's conservation objectives, are likely. HRA screening has been undertaken to consider potential direct or indirect adverse effects of the LFRMS on designated sites. It concludes that:

- Due to the high-level and strategic nature of the objectives and measures proposed, and the lack of proposals for physical works on the ground in the vicinity of European Sites, all of the LFRMS objectives and measures have been screened out.
- North East Lincolnshire LFRMS will not have significant effects, either alone or in-combination with other plans/strategies, on the following European sites: Greater Wash SPA, and Humber Estuary SPA, SAC and Ramsar.
- As no likely significant effects have been identified, there is no need for Appropriate Assessment.

5.3.4 Summary of key Issues

The key issues relating to ecological receptors in North East Lincolnshire are summarised below:

- Sensitive designated sites for nature conservation, including priority habitats and species, which are at increased risk of flooding due to surface water flooding and groundwater flooding.

Many of the statutory and non-statutory designated nature conservation sites within North East Lincolnshire are dependent on specific hydrological regimes and support water-dependent habitats and species. Flooding may introduce contaminated or nutrient enriched waters to designated sites which could adversely impact key features. Flooding and flood risk therefore has the potential to adversely impact upon water levels and hydrological regimes of these sites; however, some sites may also have the potential to be enhanced by the management measures within the LFRMS.

To maintain and improve existing habitats, species, and ecologically designated sites, the LFRMS must consider and take account of the issues outlined above.

Often traditional flood risk management methods can result in the physical modification of water bodies. The LFRMS should consider how to implement natural flood management methods which may deliver multiple benefits such as maintaining and restoring biodiversity whilst providing recreational green infrastructure.

However, measures outlined within the LFRMS should consider how to prevent the spread of Invasive Non-Native species (INNS) particularly those prevalent within the aquatic environment. The Lincolnshire Biodiversity Action Plan (2011) identifies the main aquatic INNS Species for the wider region, which are:

- Floating pennywort
- Giant hogweed
- Himalayan balsam
- Japanese knotweed
- New Zealand pigmyweed
- Water fern
- Parrot's feather
- All non-native crayfish
- Chinese mitten crab
- Zebra mussel
- American mink

5.4 Water Environment

5.4.1 Watercourses

North East Lincolnshire is located within the Humber River basin district which covers an area of 26,100 km^2. The Humber River Basin District River Basin Management Plan (EA, 2022) outlines the significant water management issues in the district. As shown in Table 5-3 below, physical modifications have the most counts for a water body not achieving 'good'

status and pollution from waste water contributed by the water industry is also a large reason for the water bodies in the river basin district not achieving 'good' status.

Table 5-3: The issues preventing waters reaching good status and the sectors identified as contributing to them[2].

Significant water management issue	Changes to the natural flow and level of water	Invasive non-native species	Physical modifications	Pollution from abandoned mines	Pollution from rural areas	Pollution from towns, cities and transport	Pollution from waste water
Agriculture and rural land management	21	0	223	0	721	0	2
Domestic general public	0	0	4	0	0	107	6
Industry	5	0	39	0	0	61	3
Local & central government	0	0	212	0	0	0	1
Mining and quarrying	0	0	2	71	0	3	0
Navigation	4	0	15	0	0	1	0
No sector responsible	0	9	0	0	0	0	0
Other	3	0	24	0	0	3	0
Recreation	0	0	14	0	0	5	0
Sector under investigation	1	0	45	0	0	0	0
Urban and transport	0	0	211	0	0	294	0
Waste treatment and disposal	0	0	0	0	0	13	0
Water Industry	49	0	143	0	0	0	789
Total	**83**	**9**	**932**	**71**	**721**	**487**	**801**

North East Lincolnshire sits wholly within the Northern Becks operational catchment. The Northern Becks Catchment Management Plan (Lincolnshire Chalk Streams Trust, 2022)

2 The numbers in the table are individual counts of the reasons for not achieving good status with a confidence status of 'confirmed' and 'probable', where the latest classification is less than good status. There may be more than one reason in a single water body. Note, table does not include reasons for deterioration.

describes recent flooding events in the catchment and illustrates key issues leading to flooding events such as physical modifications to channels and sedimentation rates.

5.4.2 Water Resources

Anglian Water is responsible for water supply across the borough. The draft Anglian Water Resources Management Plan (WRMP) 2024 states that the key challenges for water supply in the area are as follows:

- Increase in population of the East of England by approximately 890,000 by 2050.
- Reducing water abstraction volumes from sensitive areas.
- Enhancing supplies in the face of environmental challenges.

5.4.3 Water Quality

The study area falls entirely within the Humber River Basin District which consists of eighteen management catchments. Management catchments are further broken down into operational catchments.

North East Lincolnshire falls within the Northern Becks Operational Catchment. There are 21 water bodies identified within the catchment, of which 14 are heavily modified. Table 5-4 outlines the individual water bodies in detail and their relevant ecological and chemical status.

Table 5-4: Hydro-morphological designation, ecological and chemical status of water bodies within the Northern Becks operational catchment.

Water Body	Hydro-morphological designation	Ecological status (2019)	Chemical status (2019)[3]
Barrow Beck	Heavily Modified	Poor	Fail
Black Dyke Catchment (trib of Louth Canal)	Heavily Modified	Moderate	Fail
Buck Beck from Source to N Sea	Heavily Modified	Moderate	Fail
Covenham Reservoir	Artificial	Moderate	Fail
Laceby Beck / River Freshney Catchment (to N Sea)	Heavily Modified	Bad	Fail
Land Dike Drain	Heavily Modified	Moderate	Fail

3 It is worth noting that all waterbodies in England were given 'Fail' status due to a change in the EA's 2019 method of assessment and an increase in evidence base, so it is not comparable to previous assessments.

Water Body	Hydro-morphological designation	Ecological status (2019)	Chemical status (2019)[3]
Land Dike Drain to Louth Canal (East)	Heavily Modified	Moderate	Fail
Land Dike Drain to Louth Canal (West)	Heavily Modified	Bad	Fail
Louth Canal	Heavily Modified	Poor	Fail
Lud	Not designated artificial or heavily modified	Moderate	Fail
Mawnbridge Drain	Heavily Modified	Moderate	Fail
New Dike Catchment (trib of Louth Canal)	Heavily Modified	Moderate	Fail
North Beck Drain	Heavily Modified	Moderate	Fail
Poulton Drain Catchment (trib of Louth Canal)	Heavily Modified	Moderate	Fail
Seven Towns North Eau	Artificial	Moderate	Fail
Seven Towns South Eau	Artificial	Moderate	Fail
Skitter Beck / East Halton Beck	Heavily Modified	Bad	Fail
Thoresway Beck (trib of Waithe Beck)	Not designated artificial or heavily modified	Moderate	Fail
Waithe Beck lower catchment (to Tetney Lock)	Heavily Modified	Moderate	Fail
Waithe Beck upper catchment	Not designated artificial or heavily modified	Poor	Fail
Welton Le Wold to Louth Catch (trib of Lud)	Not designated artificial or heavily modified	Good	Fail

5.4.4 Summary of Key Issues

The key issues relating to the water environment within the study area are summarised below:

- Poor water quality across the Northern Becks operational catchment.

- Increasing pressures on water resources across the district from population growth and climate change.

To maintain and improve flood management across the district, the LFRMS should consider the issues outlined above.

5.5 Geology and Soils

The geology of a catchment can be an important influencing factor on the way that water runs off the ground surface. This is primarily due to variations in the permeability of the surface material and bedrock stratigraphy.

The bedrock geology of the NELC area is predominately the Flamborough Chalk Formation as well as depositions of Burnham Chalk, Welton Chalk and Ferriby Chalk Formations. The entire study area is designated as being a Principal Aquifer.

Superficial deposits in North East Lincolnshire primarily comprise alluvium (clay, silt, sand, and gravel) and till in the east, tidal flat deposits (clay and silt) in the areas abutting the coast, and beach and tidal flat deposits (clay, silt, and sand) along the coast line.

There are 95 confirmed locally designated geological sites (LGeoS – formerly named Regionally Important Geological and Geomorphological Sites (RIGS)) within Greater Lincolnshire (GLNP, 2023).

The Provisional Agricultural Land Classification (ALC) published by Natural England (2020) classifies agricultural land into five grades with grade one the best quality and grade five the poorest quality. Most of the study area is classified as Grade 3 (good to moderate) with some Grade 2 (very good quality) in the southwest. The areas around Cleethorpes, Grimsby, and Immingham in the north and east of the study area towards the coast are classified as Urban.

This is displayed as Figure 5-4 against the risk of surface water flooding in the study area.

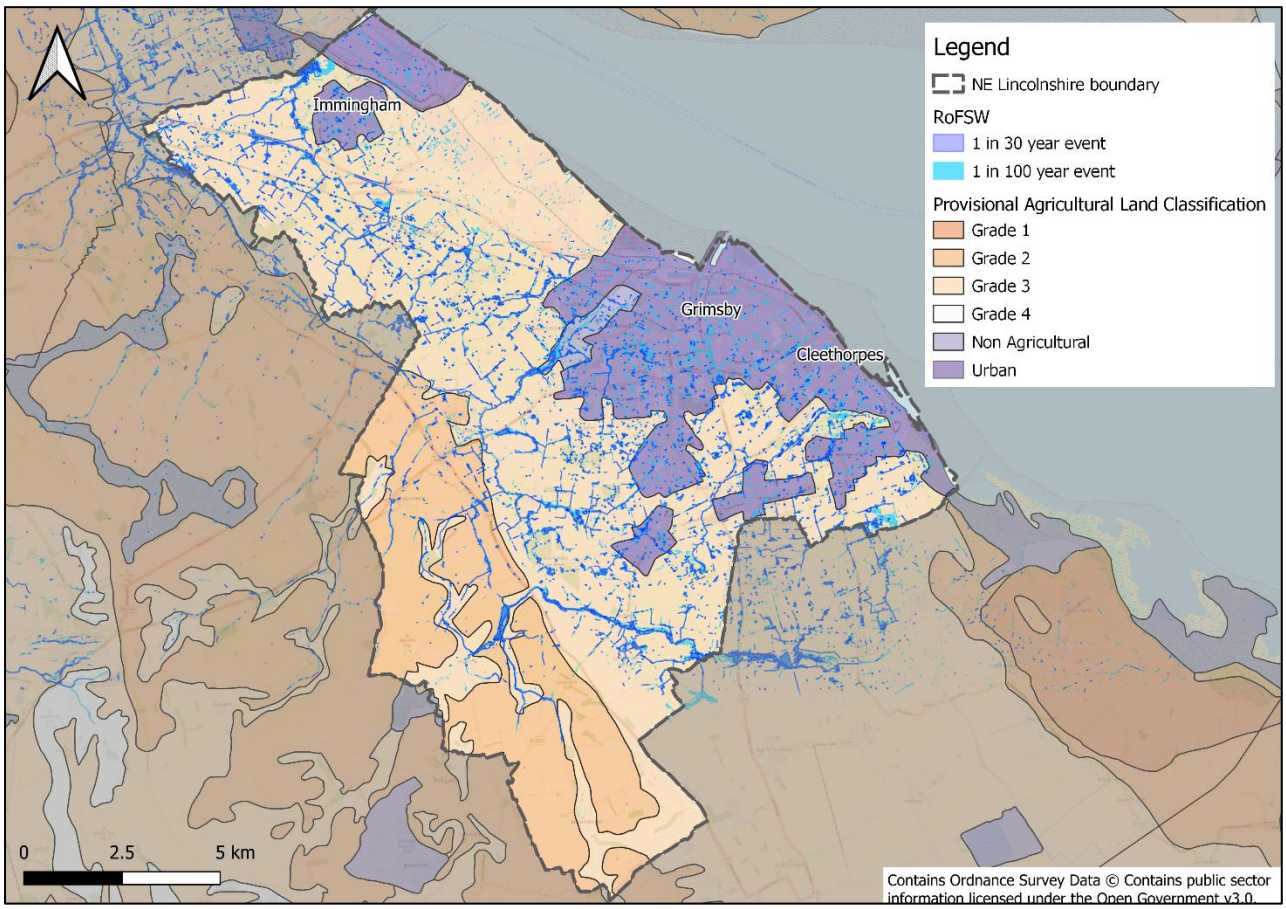

Figure 5-4: Provisional Agricultural Land Classification (ALC) and risk of flooding from surface water in North East Lincolnshire.

Contaminated land contains substances in or under the land that are actually or potentially hazardous to health or the environment. Landfill sites are areas of potential contamination. There are four permitted waste sites, which are in the north of North East Lincolnshire, and 46 historic landfill sites within the study area. Figure 5-5 shows the location of these sites alongside the Environment Agency Flood Zones.

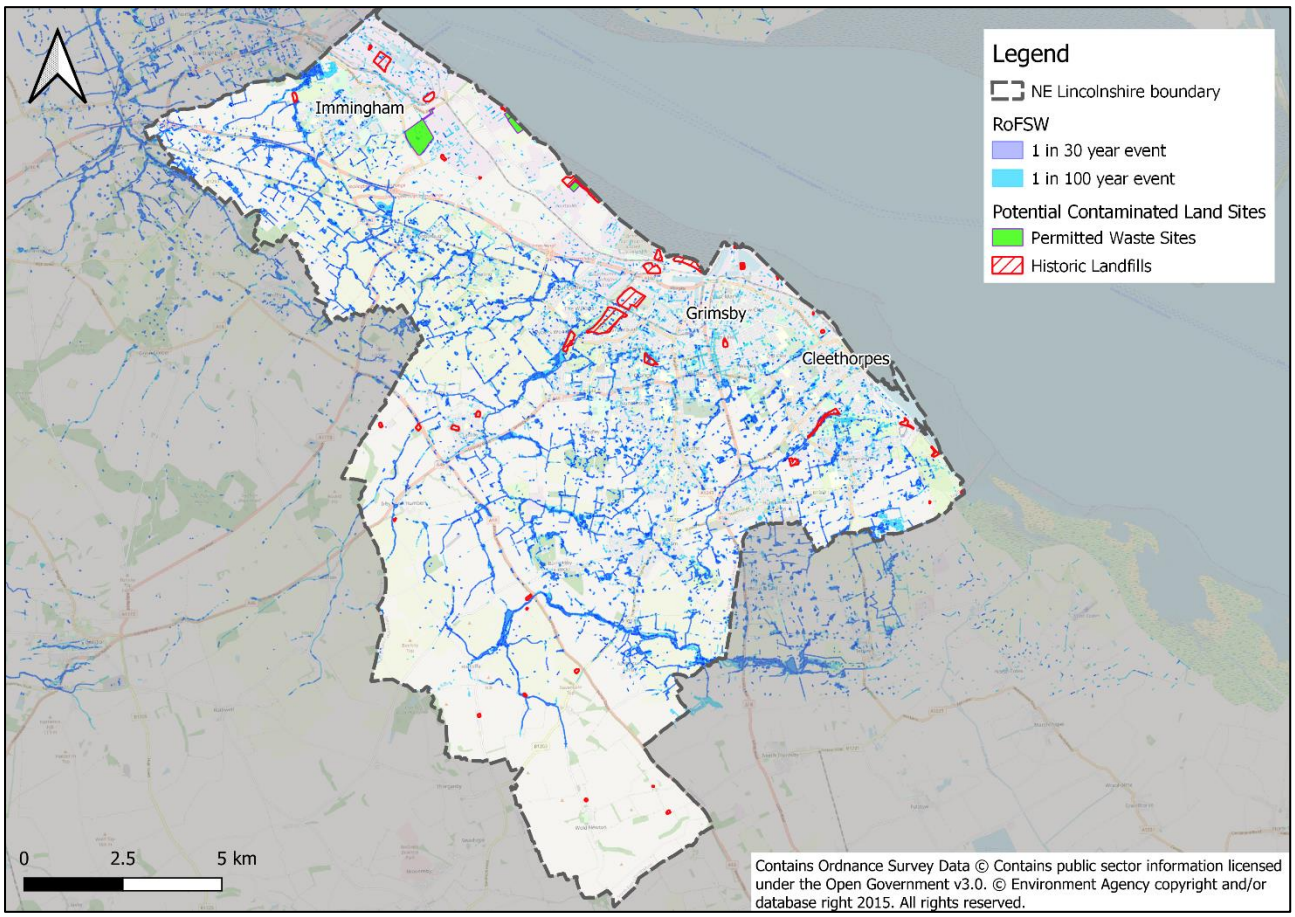

Figure 5-5: Historic landfills and permitted waste sites in NELC relative to surface water flood risk.

5.5.1 Summary of Key Issues

The geological context of the study area, including geological designations is outlined above. The key issues are summarised below:

Local flood risk may result in contaminants leaching into surface water, increasing levels of pollution, and threatening human health and the environment. The LFRMS must consider the issues outlined above to prevent erosion of landfill waste into watercourses which would threaten human health and the environment.

5.6 Historic Environment

There are several heritage assets within the study area, reflecting a rich and diverse built and historic environment. These are shown in Figure 5-6. There are approximately 222 listed buildings of which three are on the Heritage at Risk Register (2022).

The borough also contains 11 Scheduled Monuments. These are awarded protection against potentially damaging activities, including those associated with development, under the Ancient Monuments and Archaeological Areas Act 1979. Two of these Scheduled Monuments are on the Heritage at Risk Register.

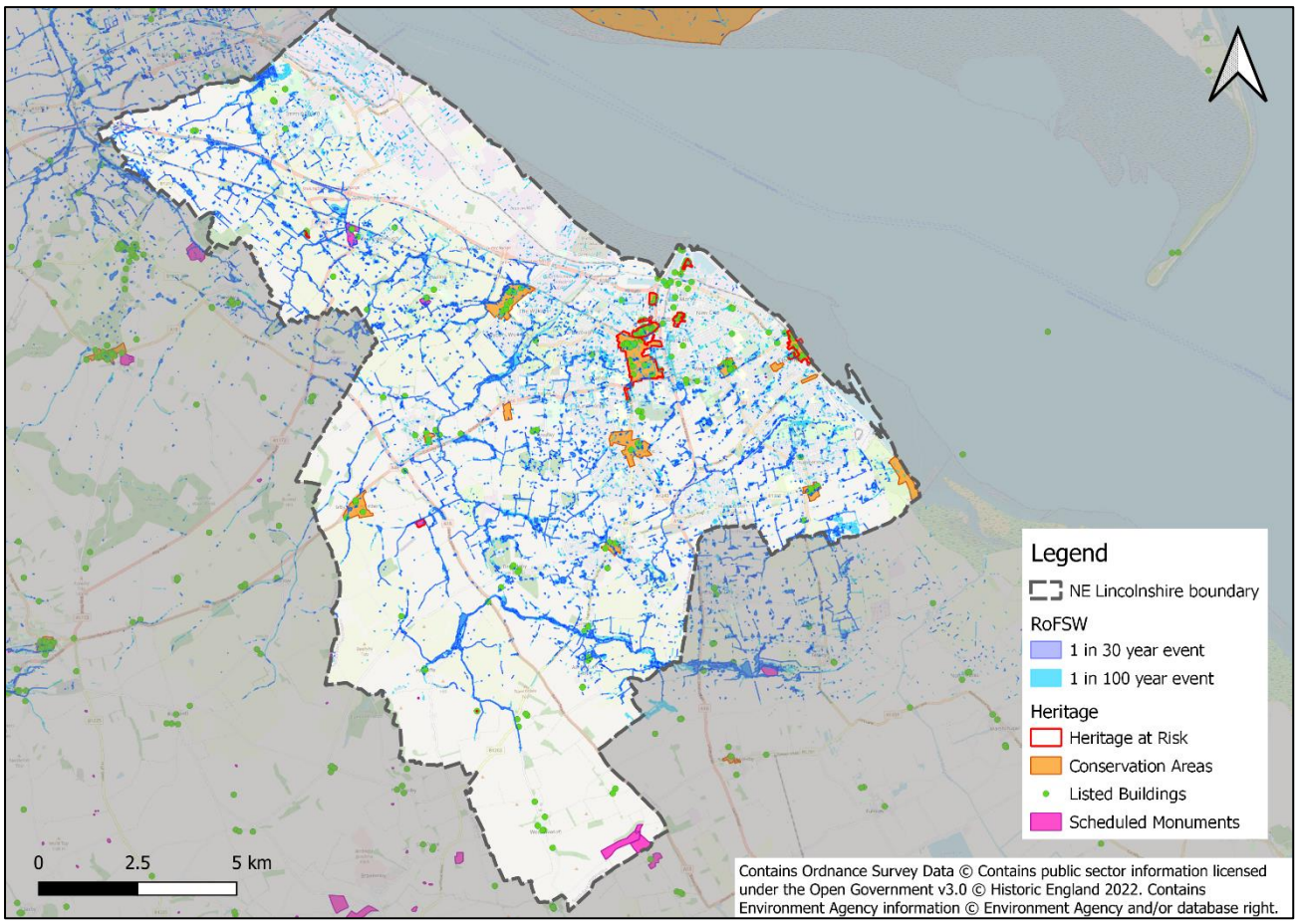

Figure 5-6: Designated Heritage assets relative to surface water flood risk within NELC.

The Register of Historic Parks and Gardens by Historic England identifies historic landscapes of note. This can include gardens, grounds and other planned open species, the emphasis of the Register is on designed landscapes (Historic England, 2022). There is one Registered Historic Parks and Gardens in the borough which is the People's Park.

The Heritage at Risk Register includes historic buildings and sites at risk of being lost through neglect, decay, and deterioration. It includes all types of heritage designations. The overarching purpose of the register to focus attention on assets in the most need. The heritage assets across North-East Lincolnshire featured on the Heritage at Risk Register (2022) are presented in Table 5-5 and outlined in red on Figure 5-6.

Table 5-5: Historic assets in North East Lincolnshire on the Heritage at Risk Register.

Name	Designation	Condition
The Kasbah	Conservation area	Very bad
Civil War earthwork fort 350m northeast of Walk Farm	Scheduled Monument	Generally satisfactory but with significant localised problems
Premonstratensian priory chapel 170m south west of Priory Farm	Scheduled Monument	Generally unsatisfactory with major localised problems

Name	Designation	Condition
Wellow, Grimsby	Conservation area	Very bad
Central Area, Grimsby	Conservation area	Very bad
Central Sea Front, Cleethorpes	Conservation area	Very bad
Holme Hill, Grimsby	Conservation area	Very bad
Victoria Mills, Grimsby	Conservation area	Very bad
Grimsby Haven lock and Dock Walls 58 metres long adjoining to West, Lock Hill	Listed Building grade II*	Poor
The Grimsby Ice Factory, Gorton Street, Grimsby	Listed Building grade II*	Very bad
Former Heavy Anti-Aircraft Gun Site, Keelby Road	Listed Building grade II*	Very bad

North East Lincolnshire have also compiled Local Lists of Historic Assets of Special Interest. These cover assets of lesser importance and does not impose restrictions or provide protection from harm on these assets. Nonetheless, the lists raise awareness for potential developments and the public. The lists identify assets in the following localities:

- Grimsby (176 assets) (Engie and NELC, 2015).
- Villages of Grimsby (22 assets) (Cofely and NELC, 2013).
- Cleethorpes (74 assets) (Engie and NELC, 2013).
- Immingham (18 assets) (Cofely and NELC, 2015).
- The villages - including Ashby cum Fenby, Aylesby, Barnoldby le Beck, Beelsby, Bradley, East and West Ravendale, Habrough, Hatcliffe, Hawerby cum Beesby, Healing, Humberston, Immingham, Irby upon Humber, Laceby, Stallingborough, Waltham and Wold Newton (218 assets) (Cofely and NELC, 2015).

Other non-designated assets which are important to consider include those part of the Inns on the Edge project, which highlights historic pubs along the Lincolnshire coast that are to be added to the Lincolnshire Historic Environment Record (Lincolnshire County Council, 2022).

The intertidal historic environment in Lincolnshire includes multiple coastal archaeological features with submerged peat deposits that may contain diverse plant and animal remains that can provide important information on sea level histories, past environments, and the timings of coastal changes (Historic England, 2023).

5.6.1 Summary of Key Issues

There are a variety of heritage assets present within the study area. The key issues are summarised below:

- Potential flood-related damage to many historical, cultural, and archaeological features within the study area, due to changed water levels or through the force

and inundation of flood waters. This includes the setting of historical assets and buried archaeological remains.

- Watercourses and their surrounding fluvial landscapes can be an important component of the historic environment, containing a wider range of heritage assets.

The provision of flood protection provided by the LFRMS must consider the potential consequences for the historic environment. Where required, early consultation with Local Government Archaeological Officers will help identify the presence of any unknown un-designated archaeological assets and any mitigation to be factored in.

5.7 Population and Human Health

5.7.1 Population

According to the latest data available, the population of NELC in 2021 was approximately 156,966 residents, with most residents living in the urban and coastal towns of Immingham, Grimsby, and Cleethorpes.

The employment rate within North East Lincolnshire is 73.2% which is less than the average for England at 75.7% (NELC Data Observatory, 2022).

Regarding Public Rights of Way, in 2018 the length of the network comprised 138km of Footpaths and 76km of Bridleways. North East Lincolnshire also supports a few recreational promoted paths such as ‘Wanderlust Way’, ‘Nev Cole Way’, a section of the England Coastal Path, and National Cycle Network Routes 1 and 110 (NELC and Engie, 2021).

5.7.2 North East Lincolnshire Joint Strategic Needs Assessment

The North East Lincolnshire Joint Strategic Needs Assessment (JSNA) (2021) provides information about the health and wellbeing of the local population, and the social, economic, and environmental factors that affect their health. It also identifies several priority areas for action, including improving access to services for people with mental health problems, tackling health inequalities, and promoting healthy lifestyles. The JSNA aims to provide a comprehensive understanding of the health needs of the local population, to inform the development of effective and targeted health and social care services.

5.7.3 Deprivation

The Indices of Multiple Deprivation (IMD) is based on 39 indicators which cover the seven key themes of deprivation. The IMD splits each local authority into Lower Super Output Areas (LSOA) which have an average population of 1500 people or 650 households, to further breakdown and compare data.

The IMD deciles are calculated by ranking the 32,844 LSOAs in England from most to least deprived. LSOAs in decile 1 fall within the most 10% deprived of LSOAs nationally and

LSOAs in decile 10 falls within the least deprived 10% of LSOAs nationally. The LSOAs (2019) and their respective deciles, across North East Lincolnshire are shown in Figure 5-7.

The percentage of LSOAs in the borough that are among the most deprived in England (decile 1) is high, with 30.2% of areas falling into this category (NELC Data Observatory, 2019), particularly around the towns of Grimsby, Cleethorpes and Immingham which are the most population dense areas in the authority and the most at risk of flooding.

The living environment domain measures the quality of the local environment under two indicators: the quality of housing and the measure of air quality and road traffic accidents. For North East Lincolnshire, the percentage of areas in the most deprived living environment (decile 1) is relatively high at 17.9%. Fuel poverty is also a concern in the region, with 17.8% of households estimated to be in fuel poverty (NELC Data Observatory, 2019).

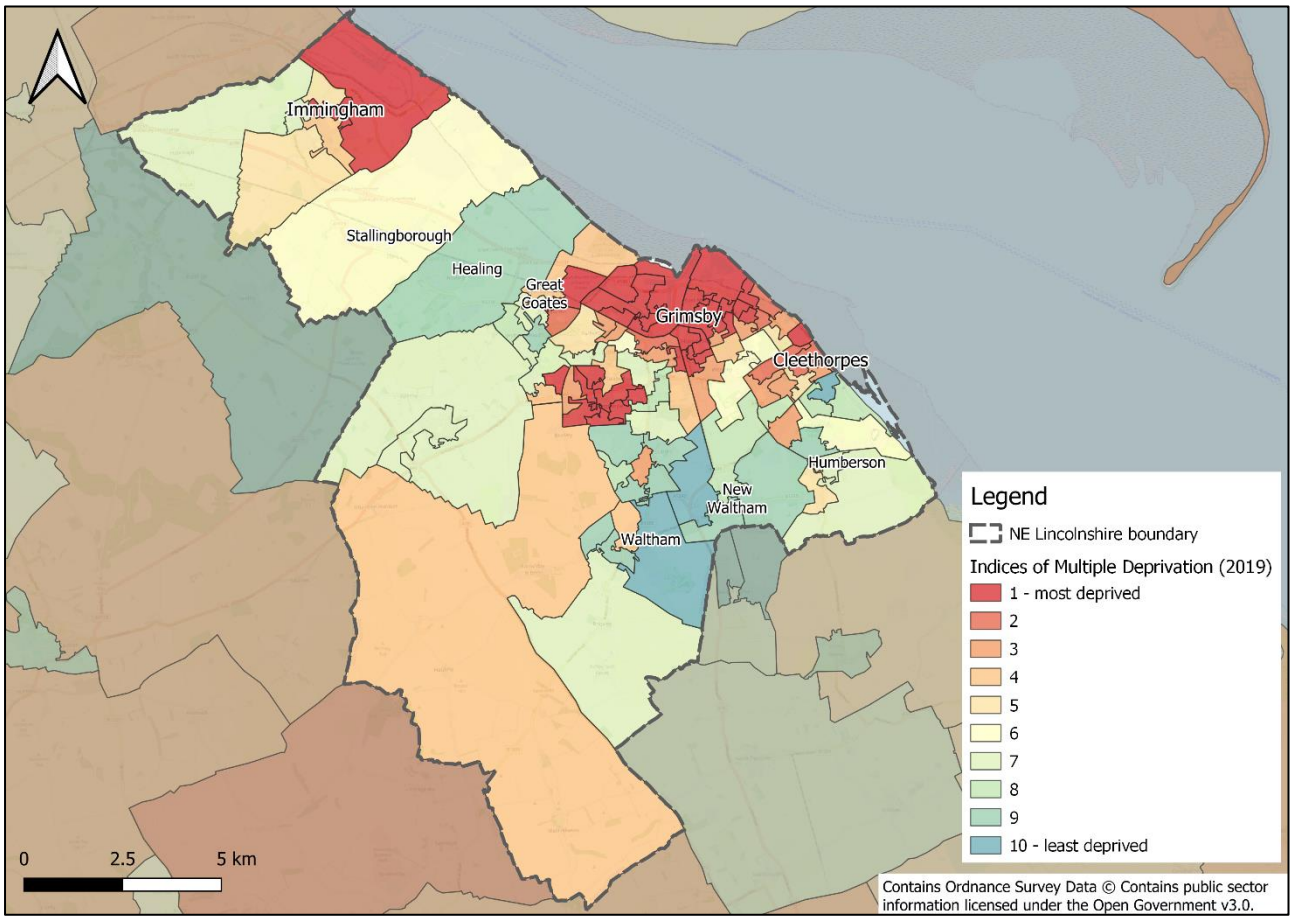

Figure 5-7: IMD Scores (2019) in North East Lincolnshire.

5.7.4 Summary of Key Issues

The key issues relating to the population and health of the study area are outlined above and summarised below:

- Predicted increase in proportion of younger children and older adults within the population, resulting in a relatively small working age population supporting a larger dependent population.

- Consider the sensitivity of areas of deprivation and flood risk exposure across the council area.

The provision of flood management strategies provided by the LFRMS should consider the potential consequences for the local population.

5.8 Material Assets

North East Lincolnshire has eight train stations, with the main rail route being the East/West Trans Pennine Route that connects Grimsby and Cleethorpes to other major cities such as Leeds, York, Manchester, and Manchester Airport. Additionally, there are local rail connections to nearby areas, including a direct connection to London via Wakefield. The Penistone Line also provides a local connection to the Sheffield City Region and Midland Main Line railway.

There is a network of local bus services within the council area, primarily serving the urban areas of Grimsby and Cleethorpes. There are some longer inter-urban services, two of which cross the boundary into the Lincolnshire County Council area. Ridership figures fell from 6.2 million in 2019 to 3 million in 2020, largely due to travel restrictions enforced during the Covid-19 pandemic. However, 2021 figures suggest passenger levels have rebounded to 72% of pre-pandemic levels (NELC and Equans, 2021).

Key roads in the area include:

- The A180 which links Grimsby and Cleethorpes with the M180 to the North West.
- A16 which passes north-south through the borough, connecting the area to the Lincolnshire Wolds AONB.
- A46 which provides direct access to Lincoln and the South East.

Other key infrastructure within the council area includes:

- South Humber Bank Power Station: a 365 MW gas-fired power station at Stallingborough on the southern side of the Humber Estuary.
- Grimsby Port and Immingham Docks: together form the largest port in the UK by tonnage, with 54.1 million tonnes of cargo passing through in 2019.

The key material assets in NELC relative to areas at risk from surface water flooding are shown in Figure 5-8.

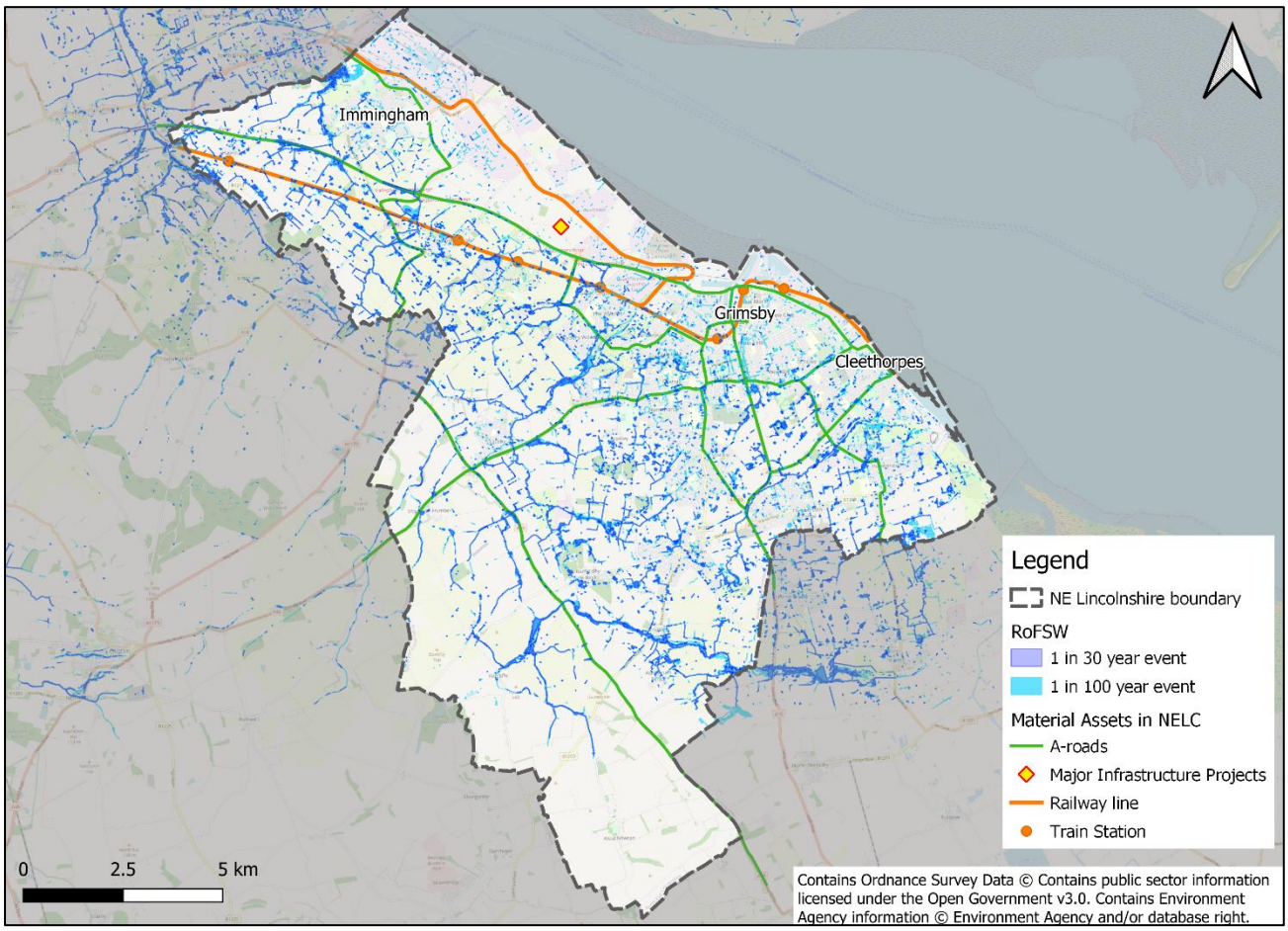

Figure 5-8: Location of material assets relative to surface water flood risk in NELC.

5.8.1 The Greater Lincolnshire Partnership

The Greater Lincolnshire Partnership has produced a Strategic Economic Plan (SEP) (2016) and a Local Industrial Strategy (LIS) (2021) for the region. The SEP sets out the region's ambitions and priorities for growth through a range of major projects and schemes, including the Access to Employment Zones in Grimsby and transport enhancements in North East Lincolnshire. It also sets out the housing ambitions of each Local Authority in the region including an estimated 9,330 new homes anticipated in North East Lincolnshire. The LIS sets out the economic priorities for the region through to 2030 with the aims of boosting the productivity and earning potential for people in the region.

5.8.2 Key Issues

Key issues are summarised below:

- Critical infrastructure including energy infrastructure, industrial areas, public amenity, and transport routes may be vulnerable to flood risk; and
- Sensitivity of infrastructure to damage/disturbance from flooding and associated socio-economic costs.

The provision of flood protection provided by the LFRMS must consider the potential consequences for established and future material assets.

5.9 Climate Change

Recent data suggests that CO2 end-user emissions in North East Lincolnshire are around 0.62 million tonnes per year, equivalent to approximately 3.9 tonnes per capita. This figure is lower than the national average of 4.9 tonnes per capita (North East Lincolnshire Council, 2021). Despite this, continued reduction of emissions will be necessary to achieve the borough's goal of becoming carbon neutral by 2050.

Around 39% of energy consumption in the borough is used for domestic purposes, with domestic electricity accounting for approximately 8% of total energy usage. Currently, renewable and waste sources make up around 2% of energy consumption (North East Lincolnshire Council, 2021).

North East Lincolnshire falls within the UK's Eastern climate region, as defined by the Met Office. The mean annual temperature over the region varies from around 9.5 °C to just over 10.5 °C. Across most of the region there are, on average, about 30 rain days (rainfall greater than 1 mm) in winter (December to February) and less than 25 days in summer (June to August) with the highest averages being at the higher altitude of the Wolds (Met Office, 2016).

North and North East Lincolnshire's Strategic Flood Risk Assessment (SFRA) portrays the potential consequences of climate change for the borough, particularly in relation to sea level rise where new climate change allowance data has been used to inform the updated assessment. Any potential new development should take account of sea level rise as it evolves (North and North East Lincolnshire, 2022).

5.9.1 Summary of Key Issues

The key issue relating to climate change is a projected increased frequency and intensity of precipitation events. Increased precipitation intensity from depression and thunderstorms will likely result in the overwhelming of drains and sewers due to increased surface run-off. In turn, this could result in localised flood events, which will have implications for human health, infrastructure, and designated sites.

To ensure that the region is resilient to impacts of climate change, the LFRMS must consider how to implement measures aimed at coping with them.

6 SEA Framework

6.1 Introduction

The SEA framework is used to identify and evaluate the potential environmental issues associated with the implementation of the LFRMS. The framework comprises a set of SEA objectives that have been developed to reflect the key environmental issues identified through the baseline information review. These objectives are supported by a series of indicators, which are used as a suggested means to measure the potential significance of the environmental issues and can also be used to monitor the implementation of the LFRMS. These LFRMS objectives are tested against the SEA framework to identify whether each option will support or inhibit achievement of each objective. Table 6-1 below summarises the purpose and requirements of the SEA objectives, sub-objectives, and indicators.

Table 6-1: Definition of SEA objectives, sub-objectives and indicators

	Purpose
Objective	Provide a benchmark 'intention' against which environmental effects of the plan can be tested. They need to be fit-for-purpose.
Sub-objective	Aid the assessment of impact significance. Provide a means of ensuring that key environmental issues are considered by the assessment process.
Indicator	Provide a means of measuring the progress towards achieving the environmental objectives over time. They need to be measurable and relevant and ideally rely on existing monitoring networks.

6.2 SEA Objectives and Criteria

SEA objectives and indicators have been compiled for each of the environmental receptors (or groups of environmental receptors) scoped into the SEA. The SEA objectives for the LFRMS are given in Table 6-2 below. These objectives can be refined or revised should any additional information be obtained during the life of the project.

Table 6-2: SEA Objectives and criteria.

Receptor	Objective		Sub-objective	Indicator
Landscape and Visual Amenity	1	Protect the integrity of local urban and rural landscapes in the area.	Prevent changes to the landscape character of NCAs and local landscape character types, in particular the Lincolnshire Wolds AONB.	Changes in the condition and extent of existing characteristic elements of the landscape. The condition and quality of new landscape features introduced to the environment (i.e., new flood defences).
Biodiversity, Flora and Fauna	2	Maintain, enhance, and extend biodiversity, wildlife, and habitat connectivity.	Protect and enhance protected, important, and notable habitats and species and designated nature conservation sites in area. Increase biodiversity by enhancing, expanding, and connecting existing natural areas and wildlife refuges. Increase biodiversity resilience to flood risk and climate change.	Recorded numbers of protected habitats and species. Percentage change in area of priority habitats. 'Condition' of designated wildlife, geological sites, and habitats.
Water Environment	3	Protect and enhance the quality of water features and resources.	Do not inhibit achievement of Water Framework Directive objectives and contribute to their achievement where possible. Do not inhibit the achievement of the Humber Estuary Flood Management Strategy objectives along the North East Lincolnshire coastline and work with the	WFD chemical or ecological status of waterbodies within the catchment. Number of flood management schemes (e.g., flood defence maintenance / upgrades) completed along the coastline.

Receptor	Objective		Sub-objective	Indicator
			Environment Agency to help achieve them.	
Geology and Soils	4	Maintain soil quality and conserve geological designations.	Reduce the risk of contamination from all sources. Safeguard soil quantity and quality. Conserve the condition of geologically designated sites.	Number of contamination incidents. Risk levels of contamination. Soil quality. 'Condition' of geological designated sites.
Historic Environment	5	Preserve and where possible enhance important historic and cultural sites.	No adverse impact on designated heritage sites because of local flooding. No adverse impact on the integrity / setting of designated heritage sites because of local flood risk management measures.	Number of designated heritage sites and their setting at risk from local flooding. Number of heritage sites and their setting adversely impacted by local flood risk management measures.
Population and Human Health	6	Protect and enhance human health and wellbeing.	Conserve and enhance open (including urban amenity areas) and natural green space including PRoW. No increase in the number of households at risk of flooding. Protect key social infrastructure assets and services from flooding and increase resilience to climate change.	Number of open and natural green spaces. Length and condition of PRoW network. Number of residential properties at risk from flooding. Number of key services at risk from flooding. Health and wellbeing statistics.
Material Assets	7	Minimise the impacts of flooding	No increase in the length of road and rail infrastructure at risk from local flooding.	Length of road and rail infrastructure at risk from local flooding.

Receptor	Objective		Sub-objective	Indicator
		on the transport network and key critical infrastructure.	No increase in the number of infrastructure assets at risk from local flooding. No increase in the number of Green Infrastructure assets at risk of local flooding and/or an enhancement of current Green Infrastructure Assets in the area.	Number of key infrastructure assets at risk from local flooding. Number of green infrastructure assets at risk from flooding / created or enhanced through the implementation of the LFRMS
Climate Change	8	Reduce vulnerability to the effects of climate change.	No increase in flood risk (particularly surface water, tidal and fluvial). Reduced impact of major precipitation events on flood extent. Minimise short-term carbon and reduce long-term emissions by preferencing low carbon and carbon neutral solutions.	Number of flood risk infrastructure schemes completed. Extent of flooding after major precipitation events. Number of residential properties affected by flooding after major precipitation event. Carbon dioxide equivalent emissions (CO2e) associated with flood management schemes.

7 Stage B: Developing and Refining Options and Assessing Effects

7.1 Developing Alternatives

The SEA Regulations require an assessment of the plan and its 'reasonable alternatives'. To assess reasonable alternatives, different strategy options for delivering the LFRMS have been considered and assessed at a strategic level against the SEA objectives (see Table 7 1) and environmental baseline. The results of this assessment will be used to inform the decision-making process in choosing a preferred way of delivering the LFRMS.

7.2 Appraisal of Reasonable Alternatives

The LFRMS has the purpose of managing and reducing local flood risk in the study area. A high-level review of the options against the SEA Objectives was undertaken in the form of a simple matrix for each of the following options:

- **Do nothing**: where no action is taken, and existing assets and ordinary watercourses are abandoned.
- **Do minimum - maintain current North East Lincolnshire Council Local Flood Risk Management Strategy (2015)**: existing assets and watercourses are maintained as present in line with the existing local flood risk management plan as an alternative to preparing a new one. Existing infrastructure is not improved over time and the effects of climate change are not considered.
- **Manage and reduce local flood risk**: take action to reduce the social, economic, and environmental impact due to flooding through the preparation of a new LFRMS.

Table 7-1 compares all three strategy options against each of the SEA objectives.

Table 7-1: Assessment of the Strategy and alternative options against the SEA Objectives.

SEA Objectives		Do Nothing	Do Minimum: maintain current LFRMS	Manage and Reduce Flood Risk
1	Protect the integrity of local urban and rural landscapes in the area.	Potential negative effect resulting from no management that could adversely impact sensitive landscape character. Locally important landscape features, including those identified within the LCAs, would likely be exposed to damage and deterioration through increased exposure to flood risk.	Little change to baseline in the short to medium term. However, in the future, because of climate change and increasing flood risk, adverse impacts on local landscapes may arise.	Potential for managing and promoting this objective through sensitively designed flood risk management schemes which enhance local landscape character, such as natural flood management.
2	Maintain, enhance, and extend biodiversity, wildlife, and habitat connectivity.	Potential for both adverse and beneficial impacts. For example, abandonment of assets may allow for the development of more natural watercourses and wetland habitat creation/ enhancement through increased inundation. However, there could be an increased risk of spreading of non-native invasive species through flooding; deterioration of existing wildlife corridors; and detrimental impacts on habitats intolerant of increased inundation.	Little / no change to baseline levels in the short to medium term. However, because of increased flooding in the future due to climate change, new habitats may be created, or existing wetland habitats enhanced. Although, habitats intolerant of increased inundation or changes in water quality may be adversely affected.	Potential for both adverse and beneficial impacts from active management. Opportunities may arise to enhance biodiversity and notable habitats within NELC through the implementation of measures to reduce local flood risk, for example: natural flood management measures, improvements to fish passage; encouraging appropriate management of watercourses by riparian landowners; and undertaking watercourse maintenance.
3	Protect and enhance the quality of water	Potential for both adverse and beneficial impacts.	Little / no change to baseline levels. However, potential deterioration of water quality during flooding	Potential for both adverse and beneficial impacts.

SEA Objectives		Do Nothing	Do Minimum: maintain current LFRMS	Manage and Reduce Flood Risk
	features and resources.		incidents.	
4	Maintain soil quality and conserve geological designations.	Potential negative effect resulting from increased erosion of soils because of increased flooding and no management of land contamination risks and subsequent effects.	Little / no change to baseline in the short to medium term. However, in the future, as a result of climate change, adverse impacts may arise through erosion and land contamination from increased flooding.	Potential for managing and promoting this objective through reduced flood risk, which will help to protect the Council area's soil resource from erosion and its quality.
5	Preserve and where possible enhance important historic and cultural sites.	Heritage assets will likely be exposed to damage and deterioration through increased exposure to flood risk.	Little / no change to baseline in the short to medium term. However, in the future, important heritage assets may be exposed to increased flooding and damage due to climate change.	Potential for both adverse and beneficial impacts from active management. For example, through increased protection of vulnerable heritage assets or reduced inundation resulting in the desiccation of buried archaeology.
6	Protect and enhance human health and wellbeing.	Increased exposure to flood risk from a combination of no management and climate change. This could lead to a greater number of people and their properties at risk of flooding, causing greater damage and disruption, increases in social exclusion, deprivation, and health risks.	No improvements to health and well-being as existing flood risk schemes are maintained but the risk may increase in the future due to climate change.	Active management to reduce local flood risk should help to protect residential properties and key social infrastructure services from flooding. This has the potential to create a range of social benefits including reducing associated health impacts and social deprivation.
7	Minimise the impacts of	This option is likely to result in increased flood risk to key	Maintains the current flood risk levels, although this risk may	Managing and reducing local flood risk will minimise the impact of

SEA Objectives		Do Nothing	Do Minimum: maintain current LFRMS	Manage and Reduce Flood Risk
	flooding on the transport network and key critical infrastructure.	infrastructure, which would cause significant disruption to the county, impacting on human and economic activity, and the environment.	increase in the future due to climate change.	flooding on roads, railways, and other infrastructure assets. This will reduce disruption during flood events and enable a more effective response.
8	Reduce vulnerability to the effects of climate change.	Increased exposure to flood risk may result in increased emissions locally. For example, from emissions associated with the recovery effort following flood events.	Little / no change to baseline levels in the short to medium term. However, future climate change and associated increased flood risk, may lead to an increase in emissions following flood events.	Potential for negative impacts if management is carried out using hard engineering approaches which contribute embodied carbon. Potential for management through low carbon measures such as natural flood management.

The assessment detailed in Table 7-1 indicates that Option 1 (do nothing) is likely to result in several significant adverse impacts, particularly in relation to people and property, and other environmental assets including heritage assets and biodiversity, where increased flooding may create new pathways for the spread of invasive non-native species. Surface water and groundwater quality could also be adversely affected, with increased flooding of contaminated sites leading to greater impacts on water resources. Given it is a statutory requirement under the Flood Management Act for the LLFA to maintain a strategy for local flood risk management in North East Lincolnshire, it is not an appropriate option to pursue.

Option 2, maintaining the current Local Flood Risk Management Strategy (2015), is likely to result in little or no change in the environmental baseline in the short to medium term as the existing flood risk strategy would maintain existing levels of flood protection. However, because of climate change, flood risk will increase, resulting in many of the impacts identified under Option 1, although potentially to a lesser extent and significance. Whilst the existing LFRMS meets the statutory requirements for a flood management plan, it does not take into consideration updates to the national strategy and improved knowledge and understanding of flood risk in North East Lincolnshire and how it can be managed.

Option 3 requires the preparation of a new plan and has the potential to provide a range of environmental benefits. If designed and implemented appropriately, this could include reducing flood risk to people and property, contributing to the protection of heritage assets and improvements in water quality, and providing new opportunities for habitat creation and the provision of recreation and amenity assets. However, if implemented in an inappropriate manner, this could result in adverse effects on a range of environmental features. This risk is managed through the preparation of this SEA and through the correct application of the strategy, and associated policies and guidance, which is likely to require consideration of the sustainability of a project prior to its implementation. Therefore, it is evident that by doing nothing or maintaining existing management strategies, there are likely to be detrimental effects on the SEA objectives, which are likely to be prevented by carrying out active management measures as detailed in the LFRMS.

8 Appraisal of LFRMS Objectives, Measures and Actions to Improve Flood Risk

8.1 Appraisal

The LFRMS comprises a framework of seven objectives, informed by three overarching principles, covering the main ways in which local flood risk is managed in North East Lincolnshire.

They are strategic objectives implemented through the long-term measures and short-term actions detailed in the Strategy action plan. The objectives and the strategy's measures and actions have been compared against the SEA objectives to assess the potential effects and to understand how the objective considers and protects the environment, ensuring the principles of sustainability.

8.2 Impact Significance

The appraisal seeks to identify significant effects as required by the SEA Regulations and sets out potential mitigation measures (potential improvements), as detailed in Section 8.5.

The degrees of significance for an effect have been considered. Table 8-1 below lists the five significance categories that have been used to determine effects of the LFRMS.

The unmitigated impacts of the LFRMS Actions on achieving the SEA objectives will be identified through the analysis of the baseline environmental conditions and use of professional judgement. The significance of effects will be scored using the five-point scale summarised in Table 8-1 below. If there is high uncertainty regarding the likelihood and potential significance of an impact (either positive or negative), it will be scored as uncertain.

Table 8-1: Impact significance key.

Impact Significance	Impact Symbol	Description
Significant positive impact	++	Significantly beneficial to the SEA objective -multiple opportunities for environmental improvement or resolves existing environmental issue.
Minor positive impact	+	Partially beneficial (not significant) to the SEA objectives – contributes to resolving an existing environmental issue or offers some opportunities for improvement.
Neutral impact	O	Neutral effect on the SEA objective and environment.
Minor negative impact	-	Partially undermines (not significantly) the SEA objective – would contribute to an environmental issue or reduce opportunities for improvement.

Impact Significance	Impact Symbol	Description
Significant negative impact	--	Significantly undermines the SEA objective – will significantly contribute to an environmental problem or undermine opportunity for improvement.
Uncertain impact	?	Insufficient detail on the option or baseline – cannot effectively assess the significance of the strategy objective on the SEA objective.

8.3 Assessment Approach

The LFRMS objectives and actions have been evaluated in light of their potential cumulative, synergistic, direct and indirect environmental effects on the different SEA receptors selected for further assessment. The assessment of these environmental effects has been informed by the baseline data collected at the scoping stage, professional judgement and experience with other water level management and flood risk related SEAs, as well as an assessment of national, regional and local trends. In some cases, the assessment has drawn upon mapping data and GIS to identify areas of potential pressure, for example due to presence of environmental designations.

Throughout the assessment the following will apply:

- Positive, neutral and negative impacts will be assessed, with uncertain impacts highlighted;
- The duration of the impact will be considered over the short, medium and long term;
- Consideration of whether the impact would be direct on a receptor or indirect;
- The reversibility and permanence of the impact will be assessed. For example, temporary construction impacts, such as during decommissioning pumping stations; impacts which can be mitigated against / restored over time such as altered drainage pressures; or completely irreversible changes to the environment; and
- In-combination effects.

The significance of effects upon each of the SEA objectives will then be evaluated and used to inform option selection.

8.4 Limitations and Assumptions

The LFRMS actions are fairly high-level and generic and do not include specific details such as location, scale and/or implementation methods. As such, any assessment is based upon a high-level understanding of the individual actions.

It is assumed that actions will be undertaken in accordance with local and national policies, and to best practice guidance.

8.5 Assessment

The assessment of the LFRMS objectives and longer-term measures against the SEA objectives are shown below in Table 8-2 and Table 8-3. Table 8-4 is an assessment of the SEA objectives against the near-future LFRMS actions.

Cumulative effects of the actions against the SEA objectives are shown in Table 8-5.

These are qualitative assessments that identify the range of potential effects that the LFRMS may have on delivering the SEA objectives.

Table 8-2: Assessment of LFRMS Objectives and SEA Objectives.

Theme	LFRMS Objective	1	2	3	4	5	6	7	8	Comments
Climate Resilient Places	We will increase our skills, capabilities and understanding of local flood risk through investigations and continually improving data.	O	O	O	O	O	+	+	O	Increasing skills and collecting and maintaining asset data will not have any identified direct effect on SEA receptors. However, this objective should promote better flood management in the area, particularly if there is a focus on assets which have a significant effect upon local flood risk.
	We will work with development planning to seek opportunities to improve resilience through new and existing development, to encourage environmental net gain.	+	+ +	+ +	+	+	+ +	+	+ +	Encouraging environmental net gain should positively directly benefit all SEA objectives, particularly if the development is considering the existing environmental baseline and likely future issues. Improved resilience will reduce the impact of flood events on population and human health, as well as material assets, allowing for faster recovery from floods.
	We will strive for sustainability in all aspects of flood risk management in order to meet the Council's goals of cutting carbon emissions to net zero by 2040.	+	+ +	+ +	+	+	+ +	+	+ +	Promoting sustainable development should positively benefit all SEA objectives, particularly if flood risk measure takes into consideration the existing environmental baseline and likely future issues. Sustainable development through implementation of flood risk management, for example SuDS, would provide significant benefits to biodiversity, improve water quality and sequester carbon.

Theme	LFRMS Objective	1	2	3	4	5	6	7	8	Comments
Today's growth and infrastructure resilient in tomorrow's climate	We will seek opportunities for innovation in flood risk management duties and schemes to adapt to a changing climate.	+	+	+	+	+	++	+	++	This objective should promote better flood management in the area through implementation of appropriate measures. This has the potential to have direct long-term positive benefits on population and human health and material assets by improving resilience to future flooding. There is also potential for there to be benefits to other receptors including biodiversity, landscape, historic environment, water environment, geology and soils and climate if appropriate and innovative flood management measures are implemented to facilitate climate change resilience.
	Plan and adapt to a changing climate through developing longer term adaptive approaches.	+	+	+	+	+	++	+	++	This objective should positively benefit population and human health and material assets in the long-term through improved resilience to flood events which may minimise impacts of flooding on communities and infrastructure. This will also have potential benefits for other receptors - biodiversity, landscape, historic environment, water environment, geology and soils and climate - should long term adaptive flood management measures be implemented to reduce vulnerability to climate change.

Theme	LFRMS Objective	1	2	3	4	5	6	7	8	Comments
A nation ready to respond and adapt to flooding and coastal change	We will build upon and improve existing resilience at a community level through increasing awareness and understanding of flood risk and working together to embed resilience in buildings and planning.	O	O	O	O	O	++	+	O	This objective should positively benefit population and human health and material assets through improved resilience to flood events which may minimise impacts of flooding on communities and infrastructure. This objective will have neutral effects for the rest of the SEA objectives as it will not have any direct effect on the respective receptors.
	We will continue to review preparedness in responding to flood events and update accordingly through working with the Local Resilience Forum and communities so that communities and RMAs alike can better prepare and respond to flooding and coastal change.	O	O	O	O	O	++	+	O	This objective should also positively benefit population and human health and material assets through improved preparedness to flood events which may minimise impacts of flooding on communities and infrastructure. There will also be benefits through support provided during recovery from flood events. These measures are likely to significantly enhance human health and wellbeing. This objective will have neutral effects for the rest of the SEA objectives as it will not have any direct effect on the respective receptors.

Table 8-3: Assessment of LFRMS long-term measures and SEA Objectives.

Strategic Theme	LFRMS Measures	1	2	3	4	5	6	7	8	Comments
Climate Resilient Places	By 2040, NELC will, where possible, minimise carbon emissions in undertaking flood risk mitigation works in order to meet North East Lincolnshire Council's goal of reducing carbon emissions to net zero by 2040 as set out in the Net Zero Carbon Roadmap.	O	O	O	O	O	+	O	+ +	Maximising opportunities to reduce carbon emissions in flood risk mitigation works will have a positive long term impact on population and human health, and the climate. This will not directly impact on other identified SEA receptors.
	By 2030, Lincolnshire Wildlife Trust will use the Natural Environmental Investment Readiness Fund (NEIRF) in order to expand current environmental initiatives and support new investment into the natural environment in North East Lincolnshire.	+	+ +	+	+	+	+	+	+	Maximising opportunities for environmental initiatives will have direct, long-term benefits to ecological receptors and will also likely lead to improvements in water quality. New investment in the natural environment in NELC will also have indirect positive effects on landscape, cultural assets, amenity, population, human health and material assets.
	North East Lincolnshire Local Planning Authority in consultation with RMAs will encourage SuDS retrofit on brownfield sites and enhanced green infrastructure to mitigate the existing flood risk to urban areas.	+	+ +	+	+	+	+	+	+ +	Maximising opportunities for SUDS on brownfield sites in urban areas will have positive effects on all SEA receptors. The implementation of SUDS on brownfield land would provide opportunity for habitat creation and ecological enhancement in areas likely to have poor quality baseline habitat due to being brownfield. The implementation of SUDs may also lead to a reduction and/or

Strategic Theme	LFRMS Measures	1	2	3	4	5	6	7	8	Comments
										sequestration of carbon.
	By 2026, NELC LPA and LLFA will encourage the use of nature-based solutions and reduction of carbon emissions by setting out in the planning system guidance and NELC requirements for use of SuDS and nature-based solutions for new development to incorporate these in preference to hard engineering in NE Lincolnshire.	+	+ +	+ +	+ +	+	+	+	+ +	Maximising opportunities for natural flood management will have direct, long-term benefits to ecological receptors and will also likely lead to improvements in water quality, along with sequestering carbon. Implementation of natural flood management may also have indirect positive effects on landscape, cultural assets, amenity, population, human health and material assets.
	By 2030, NELC LLFA will increase the uptake of green infrastructure on new and existing development in order to maximise biodiversity net gain and water quality by working with the Green Infrastructure in Greater Lincolnshire (GIGL) scheme.	+	+ +	+ +	+ +	+	+	+	+ +	Implementing green infrastructure projects and maximising biodiversity net gain will have direct, long-term benefits to ecological receptors and will also likely lead to improvements in water quality, along with sequestering carbon. Implementation of natural flood management may also have indirect positive effects on landscape, cultural assets, amenity, population, human health and material assets.

Strategic Theme	LFRMS Measures	1	2	3	4	5	6	7	8	Comments
	By 2023, NELC will establish and monitor the ongoing maintenance of SuDS by working with the Doncaster, Immingham, and Grimsby (DIG) surface water resilience project in order to assess resource requirements and install SuDS that will be functional and efficient for longer.	+	+ +	+	+	+	+	+	+ +	Developing and implementing integrated approaches to flood management, incorporating input from multiple stakeholders, to maintain SUDS will lead to benefits for all SEA objectives. This will lead to long-term direct benefits for biodiversity and carbon through maintenance of any planting.
	The North East Lincolnshire Strategic Flood Risk Board will identify funding opportunities in North East Lincolnshire by sharing information of upcoming grants and working with wider stakeholders including the RFCC.	O	O	O	O	O	+	+	O	This measure will ensure that funding will be provided for management measures.. This should help reduce the magnitude and likelihood of flooding and will have positive benefits to population and human health and material assets.
	NELC will continue to maintain existing traditional drainage infrastructure and new SuDS infrastructure in NE Lincolnshire in order to preserve functionality and efficiency.	+	+	+	+	+	+	+	+	Continuing to maintain the existing drainage infrastructure and new SUDS will have direct positive impacts on the SEA receptors as condition of existing assets will not be reduced.
	The North East Lincolnshire Strategic Flood Risk Board will maximise the benefits of funding through partnership working and identifying opportunities to work	O	O	O	O	O	+	+	O	Using funding effectively by developing and implementing integrated approaches to flood management, incorporating input from multiple stakeholders will have benefits for population and material assets, and will likely lead to

Strategic Theme	LFRMS Measures	1	2	3	4	5	6	7	8	Comments
	together to achieve common goals in reducing local flood risk and increasing local flood resilience.									indirect benefits for all SEA objectives.
Today's growth and infrastructure resilient in tomorrow's climate	By 2030, the North East Lincolnshire Strategic Flood Risk Board will undertake a coordinated approach to flood risk mitigation works through consideration of the objectives and requirements within all relevant plans and strategies when undertaking flood defence works, development or future environmental changes in the Humber Estuary.	+	+	+	+	+	+	+	+	Developing and implementing integrated approaches to flood management, incorporating input from multiple stakeholders, and bringing together the objectives of relevant plans and strategies will lead to benefits for all SEA objectives.
	By 2030, North East Lincolnshire Council LLFA will lead Property Flood Resilience schemes where appropriate, to mitigate the risk of flooding to individual properties, applying to local sources of funding in order to address the flood risk to key residential areas in North East Lincolnshire.	O	O	O	O	O	+	+	O	This measure will ensure that funding will be provided to protect the most at risk residential and commercial receptors. This should help reduce the magnitude and likelihood of flooding and will have positive benefits to population and human health and material assets.

Strategic Theme	LFRMS Measures	1	2	3	4	5	6	7	8	Comments
	The Local Planning Authority and Lead Local Flood Authority will work with developers through the planning process and provision of pre-application advice to achieve biodiversity net gain and encourage use of green infrastructure and SuDS in all new developments across North East Lincolnshire.	+	+ +	+	O	O	+	+	+	Reviewing pre-application arrangements should result in early consideration of flood risk and drainage in development proposals and would result in benefits to human and material receptors by ensuring that developments appropriately consider flood risk management measures. A focus on biodiversity net gain will have a significant positive impact on biodiversity. Implementation of green infrastructure and SUDs would also have direct beneficial impacts on biodiversity and visual amenity (landscape). Use of SUDS may also improve water quality by reducing the transport of pollution to the water environment.
	Anglian Water will invest £12 million to improvements to the drainage and wastewater network between 2025-2050 as set out in the Drainage and Wastewater Management Plan.	O	O	O	O	O	+	+	O	Improvements to the drainage and wastewater network will result in reduced risk to the local community for the benefit of population, human health and material assets. This will likely also lead to indirect positive impacts on other SEA receptors as a result of reduced flood risk. However, the details surrounding these improvements are unknown including location, physical works to install, manage and maintain assets are unknown and may have adverse impacts on designated sites (both ecological and cultural), watercourses and soils in the proximity of the works.

Strategic Theme	LFRMS Measures	1	2	3	4	5	6	7	8	Comments
	The North East Lincolnshire Strategic Flood Risk Board will improve understanding of local flood risk from reservoirs and use this alongside planning considerations, through the use of updated reservoir inundation mapping.	O	O	O	O	O	+	+	O	Reservoir inundation mapping will not have any identified direct effects on the SEA objectives; however, the action should increase understanding of flood risk in the area (including flood risk to sensitive receptors). The results will inform better flood management which may lead to indirect benefits to multiple SEA objectives.
	By 2025, as part of the Grimsby study, Anglian Water will assess the efficiency and capacity of water infrastructure across North East Lincolnshire and identify actions to address limitations across the North East Lincolnshire area.	O	O	O	O	O	+	+	O	Collecting and maintaining water infrastructure data will not have any identified direct effect on SEA receptors; however, this action should promote better flood management in the area, particularly where there is a focus on limitations in the network which have a significant effect upon local flood risk.
	Planners will work with internal and external Risk Management Authorities to reduce flood risk, where suitable, when redeveloping brownfield sites.	+	+	+	+	+	+	+	+	Ensuring coordinated standards regarding flood risk will ensure that development does not increase, and / or has the opportunity to decrease flood risk. Standards and guidance may also include measures to ensure development on brownfield sites delivers wider environmental, social, and economic benefits which can be ensured for the long-term.
A nation ready to respond and adapt to	By 2030, the Lead Local Flood Authority will improve the resilience of communities responding to flooding by	O	O	O	O	O	++	+	O	Enhancing community preparedness and resilience to flooding will reduce the impact of flooding on communities and allow them to respond more effectively to flood events. This

Strategic Theme	LFRMS Measures	1	2	3	4	5	6	7	8	Comments
flooding and coastal change	engaging with communities and the National Flood Forum to support new emergency flood plans so that residents know how and when to respond in flood events in North East Lincolnshire.									will lead to increased community health and wellbeing and enable measures to be taken to protect infrastructure.
	Following flood events, the Lead Local Flood Authority alongside the Environment Agency will work with homeowners and insurers to look to build back better, to fund future mitigation works and encourage flood resistance and resilience.	O	O	O	O	O	++	+	O	Providing flood recovery support will directly help communities recover after flooding and respond more effectively to future flood events, leaving them less vulnerable to further events in the future.
	By 2025, the North East Lincolnshire Strategic Flood Risk Board and Local Planning Authority will consult with the EA on planning applications in the floodplain to seek to reduce displacement of flood risk.	+	+	++	+	+	+	+	+	Ensuring ongoing involvement with the Environment Agency on potential new developments in the floodplain will have indirect positive benefits to material assets as a result of minimising surface water flooding impacts on infrastructure.

Strategic Theme	LFRMS Measures	1	2	3	4	5	6	7	8	Comments
	By 2025, RMAs will encourage the next generation of RMAs to support future resource by working with higher education programmes and placement providers to influence and tailor course content to the requirements of local flood risk management and make contacts for attendees to consider the career path.	O	O	O	O	O	++	+	O	Supporting long-term flood risk management awareness and education will ensure future generations are equipped to maintain flood management schemes, prepare for and respond more effectively to future flood events, leaving them less vulnerable to further events in the future.
	The Local Resilience Forum will continue to increase community flood resilience by encouraging residents to sign up for flood warnings, where suitable to increase preparedness and resilience during flood events in NE Lincolnshire.	O	O	O	O	O	++	+	O	Enhancing community preparedness and resilience to flooding will reduce the impact of flooding on communities and allow them to respond more effectively to flood events. This will lead to increased community health and wellbeing and enable measures to be taken to protect infrastructure.

Table 8-4: Assessment of LFRMS Actions against SEA Objectives.

Strategic Theme	LFRMS Action	1	2	3	4	5	6	7	8	Comments
Climate Resilient Places	By 2024, NELC LLFA will produce a detailed surface water model for Grimsby to inform future flood risk mitigation schemes and studies in the area, in order to reduce the risk of flooding to properties.	?	?	?	?	+	+	+	+	Surface water modelling will not have any identified direct effects on the SEA objectives; however, the action should increase understanding of flood risk in Grimsby (including flood risk to sensitive receptors such as the Church of St James (Grade I) and the numerous Grade II listed buildings in the town centre, and also material assets such as the A16 and A1136). The results will inform better flood management which may lead to indirect benefits to multiple SEA objectives. Delivery of flood risk mitigation schemes will result in reduced risk to residents in Grimsby for the benefit of population, human health, material assets and heritage assets in Grimsby. However, the exact project location, physical works to install, manage and maintain flood assets are unknown and may have adverse impacts on designated sites (both ecological and cultural), watercourses and soils in the proximity of the works. There is the potential that works will promote positive impacts for these receptors through managing water within the locality for their benefit and the modelling could result in heritage assets being better protected.

Strategic Theme	LFRMS Action	1	2	3	4	5	6	7	8	Comments
	By 2027, NELC will use the FCRIP to increase the use of SuDS in order to manage local surface water flooding issues in NE Lincolnshire.	+	+ +	+	+	+	+	+	+ +	Incorporating sustainable drainage systems (SuDS) into local flood risk management will help contribute to reduced flood risk while being considerate of ecological, heritage and visual receptors, water resources and carbon. This action has the potential to positively benefit all SEA objectives.
Today's growth and infrastructure resilient in tomorrow's climate	By 2025, NELC will identify measures to increase capacity to support the introduction of the SuDS Approval Body through the enactment of Schedule 3 of the FWMA in 2024 by working with local training programmes and universities to increase resources.	+	+	+	O	O	O	O	+ +	Preparation for implementation of Schedule 3 and identification of measures for the implementation of sustainable drainage would indirectly positively impact on several SEA objectives. The implementation of sustainable drainage measures would be beneficial for biodiversity, water quality and amenity improvements along with carbon sequestration.
	By 2025, NELC LLFA will work with local planning officers to increase awareness and knowledge of sustainable drainage by developing toolkits and standing advice for the authority area.	+	+	+	+	+	+	+	+	Ensuring coordinated advice and toolkits regarding flood risk will ensure development does not increase, and/or can decrease flood risk. Advice may also include measures to ensure development delivers wider environmental, social and economic benefits which can be ensured for the long-term.
	By 2024, all RMAs will improve understanding of local flood risk and the implications of climate change through the use of the upcoming NaFRA2 data.	O	O	O	O	O	+	+	O	This action will ensure that flood risk schemes will be focused to protect the most at-risk receptors. This should help reduce the magnitude and likelihood of flooding and will have positive benefits to population and human

Strategic Theme	LFRMS Action	1	2	3	4	5	6	7	8	Comments
										health and material assets.
	By 2025, as part of the Grimsby study, Anglian Water will assess the efficiency and capacity of water infrastructure across North East Lincolnshire and identify actions to address limitations to the drainage and wastewater network across the North East Lincolnshire area.	O	O	O	O	O	+	+	O	Collecting and maintaining water infrastructure data will not have any identified direct effect on SEA receptors; however, this action should promote better flood management in the area, particularly where there is a focus on limitations in the network which have a significant effect upon local flood risk.
A nation ready to respond and adapt to flooding and coastal change	By 2027, the North East Lincolnshire Strategic Flood Risk Board will improve the resilience of communities to flood events by engaging with and supporting flood awareness campaigns in North East Lincolnshire.	O	O	O	O	O	+ +	+	O	Campaigns will promote awareness of flood risk and understanding of response plans. This will not have any identified direct effect on most SEA receptors. However, this action should directly promote better understanding of flood risk and management plans in the area and should promote direct engagement of the community in flooding issues.

Strategic Theme	LFRMS Action	1	2	3	4	5	6	7	8	Comments
	By 2026, the Lead Local Flood Authority and other organisations involved through the DIG and Groundwater Flood and Coastal Resilience Innovation Programmes will support and encourage communities to take on additional responsibilities regarding the flood risk to their area, by involving the community in the FCRIPs and monitoring the success.	O	O	O	O	O	++	+	O	Enhancing community preparedness and resilience to flooding will reduce the impact of flooding on communities and allow them to respond more effectively to flood events. This will likely lead to increased community health and wellbeing and enable measures to be taken to protect infrastructure.
	By 2024, NELC LPA and LLFA raise awareness of development on the floodplain and the consequences of raising land in the floodplain in North East Lincolnshire.	+	+	+	+	+	+	+	O	Raising awareness of the consequences of development in the floodplain and land raising activities will have a positive impact on all SEA objectives. It will maintain resilience by preventing an increase in infrastructure at risk of flooding and the risk of land contamination to occur which could lead to negative effects on biodiversity, landscape, and water quality.
	By 2025, the Lead Local Flood Authority with the Local Resilience Forum will increase the preparedness of RMAs through reviewing and updating multi-agency flood plans where required and increasing the awareness of planned responses for RMAs.	O	O	O	O	O	+	+	O	Coordinating flood plans will not have any identified direct effects on the SEA objectives. However, there is the potential to identify opportunities for environmental enhancement through promotion of natural flood management and SuDS measures. Increasing awareness of planned responses will have a positive impact on population and human health and material assets.

8.6 Summary of Assessment

A summary of effects of LFRMS Actions on SEA Objectives is outlined in Table 8-5 below.

Table 8-5: Cumulative effects of LFRMS actions against SEA objectives.

Receptor	SEA Objective	Overall Score	Justification
Landscape and visual amenity	Protect the integrity of local urban and rural landscapes in the area.	O	The majority of LFRMS measures will not have any direct impacts upon this objective, although objectives will have broad positive impacts upon landscape and visual receptors through reduced flood risk and associated reduction in the scale of visual impacts from flood events. The LFRMS has potential for landscape enhancements through the implementation of SuDS, which may enable the protection and enhancement of green spaces, river corridors and woodland to enhance visitor experience and provide recreational amenity. There is the potential for impacts to arise through the construction of new defence schemes. New schemes should be designed to avoid the potential for significant landscape impacts, minimising hard engineering and encouraging nature-based solutions, and where impacts are identified, they should be mitigated appropriately.

Receptor	SEA Objective	Overall Score	Justification
Biodiversity, Flora, and Fauna	Maintain, enhance, and extend biodiversity, wildlife, and habitat connectivity.	+	In general, most of the LFRMS measures will have an identified positive effect on this SEA objective. By promoting better flood management and reducing flood risk to key ecological receptors, including designated sites, the LFRMS may help enhance biodiversity whilst safeguarding habitat connectivity corridors. The LFRMS provides direct opportunities for ecological enhancements through the implementation of SuDS, which would help deliver policy objectives for the natural environment including habitat enhancements, improved ecological connectivity and increased biodiversity resilience to flood risk and climate change. There are uncertainties around the measures / actions relating to the delivery of flood alleviation schemes. Without specific details of these projects adverse impacts to ecological receptors cannot be ruled out. Impacts may arise due to disruption of species and habitats from construction activities. New schemes should be designed to avoid the potential for significant ecological impacts, and where impacts are identified, they should be mitigated appropriately.
Water environment	Protect and enhance the quality of water features and resources.	O	The actions will mostly have a neutral impact upon this objective due to their nature, however, by promoting better flood management and reducing flood risk, the LFRMS may help to improve water quality and WFD status across the Council area. A reduction in the frequency and magnitude of flood events will help prevent sewage spillage incidents and entry of litter into watercourses. The LFRMS provides opportunities for enhancement to the water environment through the implementation of natural flood management, SuDS and drainage management schemes. Such schemes

Receptor	SEA Objective	Overall Score	Justification
			would help reduce flood risk whilst providing water quality benefits by improvements such as: restoring natural sediment processes; reducing surface runoff and increasing infiltration rates; and reconnection of floodplains. However, there are uncertainties around the measures / actions relating to the delivery of flood alleviation schemes. Without specific details of these projects, adverse impacts to the water environment cannot be ruled out. Impacts may arise from spillages and dust pollution during construction activities. New schemes should be constructed in line with industry best practice guidance to avoid the potential for significant impacts, and where impacts are identified, they should be mitigated appropriately.
Geology and soils	Maintain soil quality and conserve geological designations.	O	The LFRMS will contribute to objectives relating to geology and soils by reducing flood risk and promoting better flood management. Reduction in the frequency and magnitude of flooding events will help prevent soil contamination incidents, soil erosion, and help conserve the condition of geological designated sites. There are opportunities for enhancement of soil quality through natural flood management and SuDS schemes which may improve the quality of infiltrating water and hence provide improvements to the soil. However, there are uncertainties around the measures / actions relating to the delivery of flood alleviation schemes. Without specific details of these projects, adverse impacts to geology and soils cannot be ruled out. Impacts may arise from contamination and disturbance of soils during construction activities.
Historic environment	Preserve and where possible enhance	O	Most of the measures and actions will have a neutral impact upon this objective due to their nature; however, there is the potential for the LFRMS to benefit historic

Receptor	SEA Objective	Overall Score	Justification
	important historic and cultural sites.		environment assets due to better flood management and reduced flood risk. Reduction in flood frequency and magnitude will help prevent damage to cultural heritage receptors, including listed buildings and Scheduled Monuments, which are prone to loss of stability, collapse, biodegradation, and moisture-induced damage following flooding. LFRMS actions will also help to improve the setting of heritage assets. Conversely, there is the potential for adverse impacts to the setting of historic assets during construction activities. New schemes should be constructed in line with industry best practice guidance to avoid the potential for significant impacts.
Population and human health	Protect and enhance human health and wellbeing.	+	The LFRMS measures will directly benefit population and human health receptors through reduced flood risk. A reduction in the frequency and magnitude of flood events will reduce flooding impacts to residential and commercial properties, and key infrastructure such as educational and healthcare facilities. Flood risk reduction and community involvement in planning and recovery will also help to decrease the cost and stress of living in high flood risk areas and dealing with flooding consequences. The construction of new flood defence schemes will improve infrastructure resilience to climate change.
Material assets	Minimise the impacts of flooding on the transport network and key critical infrastructure.	+	Overall, the LFRMS objectives are likely to have a positive impact in relation to this SEA objective as the LFRMS includes several measures that seek to improve the resilience of material assets in the county. Reduction in flood risk will reduce impacts to key infrastructure such as road, rail and the power grid.

Receptor	SEA Objective	Overall Score	Justification
Climate change	Reduce vulnerability to the effects of climate change.	+	The majority of LFRMS measures have a positive impact on climate change objectives as they focus on local carbon emissions, environmental net gain, SuDs and natural flood management which will improve local carbon sequestration. In addition, further reductions in flood risk may indirectly reduce emissions by reducing the requirement for rebuilding / redevelopment after large flood events.

8.7 Mitigation

There were not any negative effects identified in the assessment and, on this basis, no specific mitigation measures are required. However, potential areas of improvement and consideration for refining the LFRMS objectives and actions are included below. This is in accordance with Schedule 2 of the SEA Regulations (7), which states that the Environmental Report should include "the measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme".

The assessment of LFRMS objectives, measures and actions has identified a number of areas where the LFRMS could be strengthened to ensure delivery of a sustainable approach. These areas are associated with potential physical interventions to reduce flood risk, which have been identified in this assessment as having neutral effects. The uncertainty of the impacts in this assessment associated with these measures arises from a lack of specific information relating to their delivery. These measures could conceivably cause a range of negative and positive environmental effects depending on how they are implemented. It should be ensured that any flood risk improvement schemes be designed to avoid impacts to SEA receptors and take steps to actively enhance them. Where necessary, proposals should be assessed to determine their potential environmental effects in advance of their implementation and that appropriate mitigation measures are built into their delivery as required. This may be completed through an Environmental Impact Assessment (EIA) methodology.

Natural flood management and SuDS approaches should be implemented where possible to best work with the natural and built environment and reduce impacts of flood alleviation schemes on the environment.

9 Conclusion and Recommendations

9.1 Summary

The key aim of the LFRMS is to manage local flood risk by technically, economically, socially, and environmentally appropriate options. The intention of the strategy is to set out the roles and responsibilities and to improve local flood risk management to minimise the impact of flooding on infrastructure, businesses, and properties.

The SEA has been undertaken to identify the likely significant environmental effects of the implementation of the LFRMS. A proportionate approach was adopted towards establishing the scope of the SEA, reflecting the high-level nature of the LFRMS.

A range of different strategy options for delivering the LFRMS have been assessed at a strategic level against the SEA objectives. These alternatives include the ‘do nothing’ scenario, where no action is taken and existing assets and ordinary watercourses are abandoned, and the ‘maintain current Local Flood Risk Management Strategy (2015)’ scenario, where existing assets and watercourses are maintained as present in line with current levels of flood risk.

The 'Do Nothing' approach would promote an overall negative effect on the SEA objectives because of abandoning current management practices, increasing the risk of local flooding. This impact would be likely to increase over time as responsible bodies will be unable to incorporate precautionary measures in existing or new developments in a response to climate change pressures. The mid-way option of 'Maintain Current Flood Risk Strategy' is unlikely to worsen the current impacts on SEA receptors or have significant change on baseline levels. However, by not fully considering the adaptation to climate change pressures, the current level of flood risk management may be insufficient to prevent detrimental impacts on the environment, socially and ecologically, in the future. The only realistic approach to be employed by NELC is the 'Manage and reduce flood risk' option, which offers more beneficial environmental outcomes and a pro-active approach to flooding pressures.

The LFRMS will have broad positive impacts to many SEA objectives by encouraging better water management and reducing flood risk. By reducing the magnitude and likelihood of flooding, impacts to key ecological, visual, heritage, water and geological receptors in the council will be reduced, and the quality of these receptors may be preserved. The majority of LFRMS actions relate to enhanced understanding, awareness and response to flood events and will not have impacts on many of the SEA objectives but will positively impact SEA objectives 2, 6, 7 and 8. By actively managing the flood risk, there will be obvious benefits to the biodiversity, population, human health, material assets and climate change resilience. Through promoting a greater understanding of flood risk, encouraging community involvement, and promoting self-resilience as well as a coordinated borough-wide flood risk management approach, communities and responsible parties will be better placed to effectively minimise the risk of flooding in the North East Lincolnshire area.

The LRFMS provides opportunities for environmental enhancements through the implementation of natural flood management and SuDS schemes. Such schemes reduce flood risk whilst also allowing for sensitive consideration of ecological, visual, water, heritage, and geological assets.

There is some uncertainty regarding the scale and location of some of these likely positive effects. Sometimes this is because for some measures, the scale, location and/or process of implementation is currently unclear. Also, some indirect positive effects may be outside of the control of the organisations delivering measures. However, positive effects are generally likely across the implementation of the strategy, across a wide range of SEA objectives.

9.2 Recommendations

The assessment of the objectives and actions has identified a couple of areas where the LFRMS could be strengthened to promote a more sustainable approach:

- Fully consider climatic factors in the development of both existing and new infrastructure, to ensure appropriate and adaptable flood risk management in the future.
- Ensure that low-carbon approaches to flood alleviation are prioritised to limit local contribution to climate change.
- Take steps to ensure that all relevant stakeholders, including both statutory and non-statutory entities, are involved in sustainability discussions during new development. This collaborative approach will help to promote effective communication and engagement among stakeholders.

To prevent adverse effects from the LFRMS, it is essential to integrate all strategy actions and ensure that the delivery of individual actions aligns with the wider strategy objectives. This includes flood risk improvement schemes in specific areas. Effective management of the development and implementation of these actions is crucial, including the assessment of proposals for their potential positive and negative environmental effects before implementation. If necessary, appropriate mitigation measures should be incorporated into their delivery.

The LFRMS should aim to maximise the potential environmental benefits of its objectives and measures. This can be best achieved through the integration of LFRMS objectives and close partnership working, ensuring that appropriate resources and funding are effectively allocated.

9.3 Monitoring

As per the SEA Regulations, NELC is required to monitor the significant environmental effects of implementing the LFRMS. Monitoring should include key indicators and targets based on those used in the SEA framework.

The indicators and targets will facilitate the monitoring of the LFRMS, enabling early identification and remediation of any problems or shortfalls. If any failings are identified, it will be necessary to revise the LFRMS to ensure that the SEA objectives are not compromised. It is important to note that the effects, whether negative or positive, are unlikely to be immediately visible, and the relative timescale for monitoring will vary for each criteria / target.

Possible Monitoring partners are indicated against the SEA objectives in Table 9-1. These will be refined subject to the outcomes of the consultation process.

Table 9-1: Possible monitoring partners for facilitating the indicators and targets of the SEA Objectives.

Receptor	SEA Objective		Monitoring Indicator / Criteria	Target resulting from local flood risk management measures	Possible Management Partners
Landscape and Visual Amenity	1	Protect the integrity of local urban and rural landscapes in the area.	Changes in the condition and extent of existing characteristic elements of the landscape. The condition and quality of new landscape features introduced to the environment (i.e., new flood defences).	No adverse impacts on landscape character of the NCAs, LCAs or other locally important landscapes/features as a result of implementation of the LFRMS.	Environment Agency Natural England

Receptor	SEA Objective		Monitoring Indicator / Criteria	Target resulting from local flood risk management measures	Possible Management Partners
Biodiversity, Flora and Fauna	2	Maintain, enhance, and extend biodiversity, wildlife, and habitat connectivity.	Recorded numbers of protected habitats and species. Percentage change in area of priority habitats. 'Condition' of designated wildlife, geological sites, and habitats.	No adverse impact on designated nature conservation sites as a result of changes to the current local flooding regime. No deterioration in the conservation status of designated sites as a result of implementation of the LFRMS. No adverse impact on designated nature conservation sites because of local flood risk management measures. Increase in area of good wildlife habitat from the implementation of the LFRMS. No new impediments to fish and eel passage.	Environment Agency Natural England
Water Environment	3	Protect and enhance the quality of water features and resources.	WFD chemical or ecological status of waterbodies within the catchment. Number of flood management schemes (e.g., flood defence maintenance / upgrades) completed along the	No deterioration to the WFD status of water bodies within the catchment as a result of implementation of the LFRMS.	Environment Agency Natural England Anglian Water

Receptor	SEA Objective		Monitoring Indicator / Criteria	Target resulting from local flood risk management measures	Possible Management Partners
			coastline.		
Geology and Soils	4	Maintain soil quality and conserve geological designations.	Number of contamination incidents. Risk levels of contamination. Soil quality. 'Condition' of geological designated sites.	No reduction in the condition of geological designated sites as a result of implementation of the LFRMS. No reduction in condition of soils in designated sites within the Council area as a result of implementation of the LFRMS.	Environment Agency Natural England Internal Drainage Boards
Historic Environment	5	Preserve and where possible enhance important historic and cultural sites.	Number of designated heritage sites and their setting at risk from local flooding. Number of heritage sites and their setting adversely impacted by local flood risk management measures.	No adverse impact on designated heritage sites or their setting as a result of flooding. No adverse impact on the integrity / setting of designated heritage sites as a result of flood risk management measures.	Environment Agency Natural England Historic England

Receptor	SEA Objective		Monitoring Indicator / Criteria	Target resulting from local flood risk management measures	Possible Management Partners
Population and Human Health	6	Protect and enhance human health and wellbeing.	Number of open and natural green spaces. Length and condition of PRoW network. Number of residential properties at risk from flooding. Number of key services at risk from flooding. Health and wellbeing statistics.	No increase in open and natural green spaces at risk from flooding. No increase in number of residential properties at risk from flooding.	Environment Agency National Health Service
Material Assets	7	Minimise the impacts of flooding on the transport network and key critical infrastructure.	Length of road and rail infrastructure at risk from local flooding. Number of key infrastructure assets at risk from local flooding. Number of green infrastructure assets at risk from flooding /	No increase in length of road and rail infrastructure at risk from flooding. No increase in number of infrastructure assets at risk from flooding. An enhancement of current Green Infrastructure Assets in the Council area.	Environment Agency Network Rail National Highways

Receptor	SEA Objective		Monitoring Indicator / Criteria	Target resulting from local flood risk management measures	Possible Management Partners
			created or enhanced through the implementation of the LFRMS.		
Climate Change	8	Reduce vulnerability to the effects of climate change.	Number of flood risk infrastructure schemes completed. Extent of flooding after major precipitation events. Number of residential properties affected by flooding after major precipitation event. Carbon dioxide equivalent emissions (CO2e) associated with flood management schemes.	Reduction in carbon dioxide equivalent emissions (CO2e). Number of flood management measures implemented that will also sequester carbon.	Environment Agency Natural England

10 Next Steps

10.1 Consultation

The next stage of the SEA process (Stage D) will involve consultation on the draft SEA Environmental Report and the draft LFRMS with statutory consultees, stakeholders, and the public. This consultation aims to identify any necessary amendments and updates to the documents.

All consultation responses received will be reviewed and considered for the next stage of the SEA process, which involves preparing a Post-Adoption Statement. The statement will outline how the Environmental Report's findings and the views expressed during the consultation have been considered while finalising and formally approving the LFRMS. The Post-Adoption Statement will also identify any additional monitoring requirements necessary to track the significant environmental effects of the strategy.

A Appendix A: Planning Policy

Table 10-1: Detailed review of plans, policies, and programmes relevant to the SEA / LFRMS.

Source	Key objectives or requirements relevant to the SEA / LFRMS	Implications for the SEA / LFRMS
International		
EU Groundwater Directive – Directive 2006/118/EC	This Directive establishes specific measures as provided for in Article 17(1) and (2) of Directive 2000/60/EC (Water Framework Directive) in order to prevent and control groundwater pollution. This Directive is designed to prevent and combat groundwater pollution.	The SEA should take account of the need to maintain, protect and improve water quality across the LFRMS area.
EU Water Framework Directive - Directive 2000/60/EC	This Directive establishes a framework for the protection of inland surface waters, transitional waters, coastal water, and groundwater. It also encourages the sustainable use of water resources. Key objectives are general protection of the aquatic ecology, specific protection of unique and valuable habitats, protection of drinking water resources, and protection of bathing water.	The SEA should seek to promote the protection and enhancement of all water resources.

Source	Key objectives or requirements relevant to the SEA / LFRMS	Implications for the SEA / LFRMS
European Commission, Nitrates Directive 91/676/EEC, 1991 (transposed into UK legislation through the Nitrate Pollution Prevention Regulations 2015).	The Nitrates Directive is designed to reduce water pollution caused by nitrate from agriculture. The directive requires Defra and the Welsh Assembly Government to identify surface or groundwaters that are, or could be, high in nitrate from agricultural sources. Once a water body is identified as being high in nitrate all land draining to that water is designated a Nitrate Vulnerable Zone. Within these zones, farmers must observe an action programme of measures which include restricting the timing and application of fertilisers and manure and keeping accurate records.	The SEA assessment framework should include water quality.
National		
Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations, 2019	The aim of this regulation is to designated zones in which ambient air will be protected by limiting the concentrations of pollutants within them.	The LFRMS should seek to ensure that the region's air quality is maintained or enhanced, and that emissions of air pollutants are kept to a minimum.
A Green Future: Our 25 Year Plan to Improve the Environment	The 25-Year Environment Plan sets out planned government action to deliver nature recovery. This covers several areas including climate change mitigation and adaptation, on which it outlines plans to continue to reduce	The SEA should help achieve targets set out in the 25-Year Plan, including reducing risk from environmental hazards and mitigating and adapting to climate change. The SEA should consider its impact upon clean air, clean

Source	Key objectives or requirements relevant to the SEA / LFRMS	Implications for the SEA / LFRMS
	greenhouse gas emissions, incorporate climate change in all policy, programme, and investment decisions and implement an effective National Adaptation Programme. The Plan should help achieve targets set out in the plan including reducing risk harm environmental hazards and mitigating and adapting to climate change. The plan impacts upon clean air, clean and plentiful water, thriving plants and wildlife, using resources from nature more sustainably and efficiently and enhancing beauty, heritage, and engagement with the natural.	and plentiful water, thriving plants and wildlife, using resources from nature more sustainably and efficiently and enhancing beauty, heritage, and engagement with the natural environment.
The Environmental Improvement Plan 2023 (First revision of the 25 Year Environment Plan)	The first revision of the Environmental Improvement Plan builds on the 25-year plan's vision with a new plan setting out how the government will work with landowners, communities, and businesses to deliver each of the goals for improving the environment, matched with interim targets to measure progress.	As well as the above, the SEA should ensure environmental outcomes achieve the interim targets set out in the revised plan.
Ancient Monuments and Archaeological Areas Act, 1979 (as amended)	Under this legislation schedules monuments are protected based on their	The SEA should consider how the proposed works could negatively impact Scheduled Monuments and

Source	Key objectives or requirements relevant to the SEA / LFRMS	Implications for the SEA / LFRMS
	archaeological or historical interest.	seek to mitigate or minimise these impacts.
Biodiversity 2020: A Strategy for England's Wildlife and Ecosystems, 2011	The objective of this strategy is to stop biodiversity loss, support the establishment of healthy ecosystems and create/improve nature spaces to benefit both people and wildlife. As well as strategising a more integrated approach to conservation, reducing environmental pressures, and improving our knowledge.	The SEA could impact upon the objectives of the biodiversity strategy. This impact could be either positive or negative. Important opportunities to create or improve natural spaces should be taken where possible.
Cabinet Office, National Strategy Action Plan for Neighbourhood Renewal (2001)	A government policy which aimed to remove disadvantages people experienced because of where they lived.	The plan will need to consider the impact it may have on areas already experiencing disadvantages.

Source	Key objectives or requirements relevant to the SEA / LFRMS	Implications for the SEA / LFRMS
The Carbon Plan, 2011 (updated 2013)	The Carbon Plan is a government-wide plan of action on climate change, including domestic and international activity. It sets out department by department actions and deadlines for the next five years. The plan represents ongoing and planned cross-Government action on climate change with specific deadlines providing for both internal accountability and public transparency. The three main objectives are: Transforming the generation of energy by moving towards low carbon alternatives; changing the way how buildings are heated by better insulation the use of low carbon energy alternatives; changing the transportation sector by means of better public transport, reducing emissions from petrol and diesel engines and moving towards alternative technologies such as electric vehicles.	The SEA should include objectives that would promote the reduction of emissions from National Networks and transformation to a low carbon economy. The SEA should include objectives for reducing the generation of waste. Finally, the SEA should include objectives for protecting the natural environment.
Clean Air Strategy, 2019	The Clean Air Strategy provides a way in which the UK will tackle all sources of air pollution with the main aims of making	The SEA should consider the impact it may have on air quality.

Source	Key objectives or requirements relevant to the SEA / LFRMS	Implications for the SEA / LFRMS
	UK air healthier to breathe, protecting nature and boosting the economy.	
Climate Change Act, 2008	The act established a legally binding target to reduce the UK's greenhouse gas emissions by at least 80% in 2050 from 1990 levels. The act also requirements for the government which are fulfilled by the UK climate change risk assessment and the national adaption programme report.	To comply with UK legislation, the Strategy's SEA objectives should consider how to minimise greenhouse gas emissions.
Climate Change Adaption Strategy (2020)	A government policy aimed at reducing all sources of carbon emissions and eventually becoming net zero by 2050.	The plan will need to consider how it will minimise its carbon emissions and options for operating at net zero.
Conservation of Habitats and Species Regulations (amendment- EU Exit), 2019	To ensure the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended) were operable after the end of the EU transition period, changes were made by the Conservation (Natural Habitats, etc.)	The impacts on biodiversity and protected species and sites must be considered as part of the SEA.
Contaminated Land (England) Regulations, 2006 (as amended)	These Regulations, which apply to England only, also set out provisions relating to the identification and remediation of contaminated land under Part 2A of the Environmental Protection Act 1990.	The SEA should include objectives relating to the identification of possible sources, pathways and receptors of contamination.

Source	Key objectives or requirements relevant to the SEA / LFRMS	Implications for the SEA / LFRMS
Environment Act, 1995 (as amended)	The Environment Act 1995 led to the creation of several government agencies, including: The Environment Agency, The Scottish Environment Protection Agency (SEPA) and The National Park authorities. The Act also brought in requirements for the government to prepare strategies on air quality, national waste, and hedgerow protection.	The SEA must promote the sustainable management of natural resources.
Floods and Water (Amendment- EU Exit) Regulations, 2019	These regulations aim to ensure that, following the withdrawal of the UK from the EU, legislation concerning floods and water continues to operate correctly.	The SEA should seek to ensure that flood risk in the region is not adversely affected. The SEA assessment framework should include flood risk.

Source	Key objectives or requirements relevant to the SEA / LFRMS	Implications for the SEA / LFRMS
Environment Act, 2021	The Environment Act has been implemented with the intention of protecting and enhancing the environment for future generations. The Act brings many of the objectives in the 25-year environment plan into UK law, setting legal targets to halt species declines and implementing laws to ensure water companies deliver reductions in the frequency of sewerage discharges.	The acts aim of halting nature decline is particularly relevant to the Plan which has the potential to impact upon nature either positively or negatively depending upon the options chosen. The integration of 'softer' solutions that look to work with nature where possible could see the study contribute towards nature recovery, such as providing insight as to the potential of natural flood management, green / blue infrastructure SuDS and nature-based solutions.
Flood Risk Regulations, 2009	The Flood Risk Regulations 2009 implement the EU Flood Directive in England. They provide a framework for managing flood risk over a 6-year cycle, and require: production of a Preliminary Flood Risk Assessment (PFRA); identification of potential significant risk, referred to flood risk areas (FRAs); mapping of flood hazard and risk; and Flood Risk Management Plans, setting out measures and actions to reduce the risk. The Regulations require that each of the four elements above to be reviewed and	The LFRMS needs to take local flood management strategy and the production of flood materials into consideration.

Source	Key objectives or requirements relevant to the SEA / LFRMS	Implications for the SEA / LFRMS
	updated where necessary, at minimum every six years.	
Flood risk and coastal change Planning Practice Guidance, 2022	Advises how to take account of and address the risks associated with flooding and coastal change in the planning process.	The LFRMS needs to take local flood management strategy and coastal strategy into consideration.
Future Water: The Government water strategy for England, 2008	This strategy is the high-level Government document which outlines how the Government wants the water sector to look by 2030, considering issues of water demand, water supply, water quality in the natural environment, surface water drainage, river and coastal flooding, greenhouse gas emissions and charging. It states that “by 2030 at the latest, we have: - Improved the quality of our water environment and the ecology which it supports and continued to provide high levels of drinking water quality from our taps. - Sustainably managed risks from flooding and coastal erosion, with greater understanding and more effective management of surface water. - Ensured a sustainable use of water resources, and implemented fair, affordable and cost-reflective charges.	The SEA should seek to ensure that the themes included in the strategy objectives are also reflected in the SEA objectives; particularly around water quality in the region, the quality of aquatic ecology, drinking water quality, resource use, energy use and greenhouse gas emissions, and adaptation to climate change.

Source	Key objectives or requirements relevant to the SEA / LFRMS	Implications for the SEA / LFRMS
Heritage Protection for the 21st Century, White Paper, 2007	The proposals in this White Paper reflect the importance of the heritage protection system in preserving our heritage for people to enjoy now and in the future. They are based around three core principles: - Developing a unified approach to the historic environment. - Maximising opportunities for inclusion and involvement. - Supporting sustainable communities by putting the historic environment at the heart of an effective planning system.	The SEA should reflect the broad objectives of this white paper.
Land Drainage Act 1991 (as amended)	The Land Drainage Act 1991 requires that a watercourse be maintained by its owner in such a condition that the free flow of water is not impeded. The riparian owner must accept the natural flow from upstream but need not carry out work to cater for increased flows resulting from some types of works carried out upstream, for example a new housing development.	The SEA / LFRMS should seek to ensure that these legislative principles are reflected.

Source	Key objectives or requirements relevant to the SEA / LFRMS	Implications for the SEA / LFRMS
Making Space for Nature: A Review of England's Wildlife Sites and Ecological Network, 2010	This independent review of England's wildlife sites, networks and the connections between them sets objectives and recommendations to help achieve a healthy natural environment, to allow our plants and animals to thrive.	The SEA should seek to maintain and enhance the quality of habitats and biodiversity.
Natural Environment and Rural Communities (NERC) Act, 2006	The Act establishes an independent body – Natural England – responsible for conserving, enhancing, and managing England's natural environment for the benefit of current and future generations. The Act makes provision in respect of biodiversity, pesticides harmful to wildlife and the protection of birds, and in respect of invasive non-native species. It alters enforcement powers in connection with wildlife protection and extends time limits for prosecuting certain wildlife offences.	The SEA should include objective relating to increased access to rural areas and to the minimisation of impacts to the environment.
The National Flood and Coastal Erosion Risk Management Strategy for England, 2020 (updated 2022)	When and how risk management authorities should use climate change allowances for flood and coastal risk projects, schemes, and strategies. It has three long term ambitions, underpinned by evidence about future risk and investment needs.	The plan must consider mitigation strategies for reducing impacts of flooding and coastal erosion.

Source	Key objectives or requirements relevant to the SEA / LFRMS	Implications for the SEA / LFRMS
The National Flood Emergency Framework for England, 2013 (updated 2014)	Forward looking policy framework bringing together information, guidance and key policies, and is to be used as a resource for all involved in flood emergency planning.	The plan must consider any emergency flooding strategies and responses where appropriate.
National Planning Policy Framework (2021)	Sets the Government's planning policies for England and how they should be applied, providing a framework within which locally prepared plans for housing and other development can be produced. This framework must be considered when preparing the development plan alongside international obligations and statutory requirements.	The SEA should consider the planning policies contained within the NPPF and take the, and their objectives, into account in identifying a preferred option.
Planning (Listed Buildings and Conservation Areas) Act 1990	This Act consolidates certain enactments relating to special controls in respect of buildings and areas of special architectural or historic interest. This document ensures that when deciding on a planning application for development that affects a listed building or its setting, a local planning authority must have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses.	The SEA objectives should seek to mitigate to minimise impacts to listed buildings.

Source	Key objectives or requirements relevant to the SEA / LFRMS	Implications for the SEA / LFRMS
Safeguarding our Soils – A strategy for England, 2009	The strategy outlines the Government's approach to safeguarding our soils for the long term. It provides a clear vision to guide future policy development across a range of areas and sets out the practical steps that we need to take to prevent further degradation of our soils, enhance, restore, and ensure their resilience, and improve our understanding of the threats to soil and best practice in responding to them. The Governments vision is that: By 2030, all England's soils will be managed sustainably, and degradation threats tackled successfully. This will, therefore, improve the quality of England's soils and safeguard their ability to provide essential services for future generations.	The SEA should seek to ensure that the quality of the regions soils and their management is protected or enhanced.
Salmon and Freshwater Fisheries Act 1975 – the Eels (England and Wales) Regs 2009	A law passed by the government to protect salmon and trout from commencing poaching, to protect migration routes, to prevent wilful vandalism and neglect of fisheries, ensure correct licencing and water authority approval.	The policy should consider its potential impact on salmon trout fishers and include mitigation measures where necessary.

Source	Key objectives or requirements relevant to the SEA / LFRMS	Implications for the SEA / LFRMS
Securing the future: delivering UK sustainable development strategy, 2011	This strategy for sustainable development aims to enable all people to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations. Also, this strategy places a focus on protecting natural resources and enhancing the environment.	The SEA must seek to ensure that objectives relating to sustainable development, sustainable resource use and protecting the natural environment, are considered when assessing the potential impacts of the LFRMS.
Water Act, 2014	The aim of the Act was to reform the water industry to make it more innovative and responsive to customers and to increase the resilience of water supplies to natural hazards such as droughts and floods. The Act was intended to introduce competition into the market and bring benefits to businesses and the economy.	The SEA should take account of emerging neighbouring plans where appropriate.
The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017	The WFD Regulations provide a framework for managing the water environment in England. This includes environmental objectives and a summary of the programmes of measures required to achieve those objectives.	The plan will need to ensure the qualitative and quantitative status of local water bodies are not negatively impacted by any proposed works.
Water for Life, Water White Paper, 2011	This sets out market reform in the water sector.	The SEA should consider the contents of this paper.

Source	Key objectives or requirements relevant to the SEA / LFRMS	Implications for the SEA / LFRMS
Wildlife and Countryside Act 1981 (as amended)	The Act is the principal mechanism for providing legislative protection of wildlife in Great Britain. Species listed in Schedule 5 of the Act are protected from disturbance, injury, intentional destruction or sale. Other provisions outlaw certain methods of taking or killing listed species. This Act is brought up to date regularly to ensure the most endangered animals are on the schedule. The Act also improved protection for the most important wildlife habitats.	Some aspects of the LFRMS may have effects on habitats and species. The SEA should seek to maintain or enhance the quality of habitats and biodiversity and take regard of protected species and habitats.
Regional		
Anglian Water: Drainage and Wastewater Management Plan (DWMP), 2022	Management plan to help understand the scale and extent of drainage and wastewater now in the future. Includes priorities for the basin catchment	The SEA should consider the priorities for managing the Anglian Water catchment.
Greater Lincolnshire LEP Strategic Economic Plan 2014 to 2030, 2016	The Strategic Economic Plan was developed in 2014 and refreshed in 2016 to reflect the ongoing priorities for continued growth and investment.	The SEA should seek to ensure that objectives relating to economic growth are considered when assessing the potential impacts of the LFRMS.

Source	Key objectives or requirements relevant to the SEA / LFRMS	Implications for the SEA / LFRMS
Greater Lincolnshire Local Industrial Strategy, 2021	Greater Lincolnshire and government partnership to produce a long-term plan to boost the productivity and earning power of people. It sets out the economic priorities through to 2030 and beyond.	The SEA should seek to ensure that objectives relating to economic growth are considered when assessing the potential impacts of the LFRMS.
Greater Lincolnshire Nature Strategy 2020 – developing a Local Nature Recovery Strategy	A new system of spatial strategies for nature, established in the Environment Bill 2020, covering the whole of England. They are designed as tools to drive more coordinated, practical, and focussed action to help nature.	The SEA should seek to ensure that objectives relating to protecting the natural environment are considered when assessing the potential impacts of the LFRMS.
Lincolnshire Biodiversity Action Plan 2011 to 2020 (3rd edition)	A local government plan to prevent the loss of biodiversity.	The SEA should consider mitigation strategies to minimise any possible negative impacts on biodiversity.
Lincolnshire Wolds Area of Outstanding Natural Beauty Management Plan 2018 to 2023, 2018	A management plan by the Lincolnshire Wolds Joint Advisory Committed and adopted by NELC, identifying a vision for the future and the action plan to secure the vision.	The SEA should consider the vision and actions of the AONB.

Source	Key objectives or requirements relevant to the SEA / LFRMS	Implications for the SEA / LFRMS
Northern Becks Catchment Management Plan, 2022	The plan describes the Northern Becks catchment and the issues that need to be tackled by using relevant data to determine future projects, as well as providing a collection of completed projects, to provide a set of aims agreed by the catchment partnership to improve the catchment.	The SEA should seek to ensure that the aims for improving the catchment are considered when assessing the potential impacts of the LFRMS.
The Humber Flood Risk Management Strategy, 2008	This strategy outlines flood risk management plan for the Humber Estuary for the next 25 years and beyond. It looks at different ways of managing flood risk; raising defences where appropriate, but also introducing sites for managed realignment and flood storage which will help maintain valuable habitats.	The LFRMS should consider strategies outlined in the plan.
Humber River Basin District Flood Risk Management Plan 2021 to 2027, 2022	Management plan to help understand the scale and extent of flooding now in the future. Includes set policies for management flood risk within the catchment.	The SEA should consider the priorities for managing the Humber River basin catchment.

Source	Key objectives or requirements relevant to the SEA / LFRMS	Implications for the SEA / LFRMS
Local		
Cleethorpes Country Park Management Plan 2015 to 2020	This management plan sets out a programme for the future management, maintenance, and development of Cleethorpes Country Park. It is a guide for staff, park users and everyone involved with the site, to see how it will be managed and improved and what the priorities are for its future.	The plan should not conflict with the priorities of the park's management plan.
Grimsby and Ancholme Catchment Flood Management Plan: Summary report, 2009	Management plan to help understand the scale and extent of flooding now in the future. Includes set policies for management flood risk within the catchment.	The SEA should consider the priorities for managing the Grimsby and Ancholme catchment.
North East Lincolnshire Air Quality Action Plan, 2020	The plan outlines the actions the council will take to improve air quality in the authority area.	The LFRMS should seek to ensure that the region's air quality is maintained in line with the action plan.
North East Lincolnshire Air Quality Strategy 2021 to 2026, 2022	Local government strategy for managing air quality.	The LFRMS should seek to ensure that the region's air quality is maintained in line with the strategy.
North East Lincolnshire Contaminated Land Inspection Strategy, 2016	Local government strategy for identifying and removing unacceptable risk to human health and the environment by seeking to ensure contaminated land is made suitable for its current use.	The LFRMS should seek to ensure that contaminated land is maintained in line with statutory guidance.
North East Lincolnshire Habitats Regulations Assessment Report, 2017	A local government plan to prevent the loss of habitats.	The SEA should consider mitigation strategies to minimise any possible

Source	Key objectives or requirements relevant to the SEA / LFRMS	Implications for the SEA / LFRMS
		negative impacts on habitats.
North East Lincolnshire Landscape Character Assessment, 2010	The purpose of the study is to provide a more detailed and refined understanding of the landscapes contained within the Borough to provide the context for policies and proposals within the Local Plan for NELC.	The SEA should consider mitigation strategies to minimise any possible negative impacts on landscape characters.
North East Lincolnshire Landscape Character Assessment, Sensitivity and Capacity Study, 2015	The study considers landscape sensitivity and the capacity to change in the form of new development. It builds on the landscape characterisation work undertake at a national and local level.	The SEA should consider mitigation strategies to minimise any possible negative impacts on landscape characters.
North East Lincolnshire Local Flood Risk Management Strategy, 2015	Management strategy to help understand the scale and extent of flooding now in the future. Includes objectives and measures for management of flood risk within the authority.	The plan will need to consider the measures included in the strategy.
North East Lincolnshire Local Plan 2013 to 2032, Adopted 2018	A local government plan aimed at setting policies for the development of the metropolitan borough for the medium term. A part of the plan involves setting designations which will restrict developments.	The plan will need to consider the extent of these designations and prevent any development in these areas.

Source	Key objectives or requirements relevant to the SEA / LFRMS	Implications for the SEA / LFRMS
North East Lincolnshire Natural Assets Plan, 2021	A plan for how the Council and its partners can improve the area's unique natural environment for the benefit of everyone. It explains why they are important, what the current situation is and what actions the Council plans to do in the short, medium, and long-term to improve it.	The SEA should consider mitigation strategies to minimise any possible negative impacts on natural assets.
North East Lincolnshire Rights of Way Improvement Plan 2021 to 2031	The plan considers the status of the rights of way network in North East Lincolnshire, including the needs of its users, and how the network could be improved to reflect changing patterns of use, and the changing requirements being placed upon it.	The plan should consider the routes and use patterns of the rights of way network in North East Lincolnshire.
North East Lincolnshire Joint Strategic Needs Assessments, 2021	A suite of assessments regarding local health and wellbeing and social care needs.	The SEA should consider the health and wellbeing needs of the North East Lincolnshire residents, and ensure negative impacts are mitigated.
People's Park, Grimsby Management & Maintenance Plan 2007 to 2017	The plan sets out the vison, aims and objectives of the park, and how these are to be achieved.	The plan should not conflict with the priorities of the park's management plan.

Source	Key objectives or requirements relevant to the SEA / LFRMS	Implications for the SEA / LFRMS
Weelsby Woods Park Management Plan 2015 to 2020	This management plan sets out a programme for the future management, maintenance, and development of Weelsby Woods Park. It is a guide for staff, park users and everyone involved with the site, to see how it will be managed and improved and what the priorities are for its future.	The plan should not conflict with the priorities of the park's management plan.

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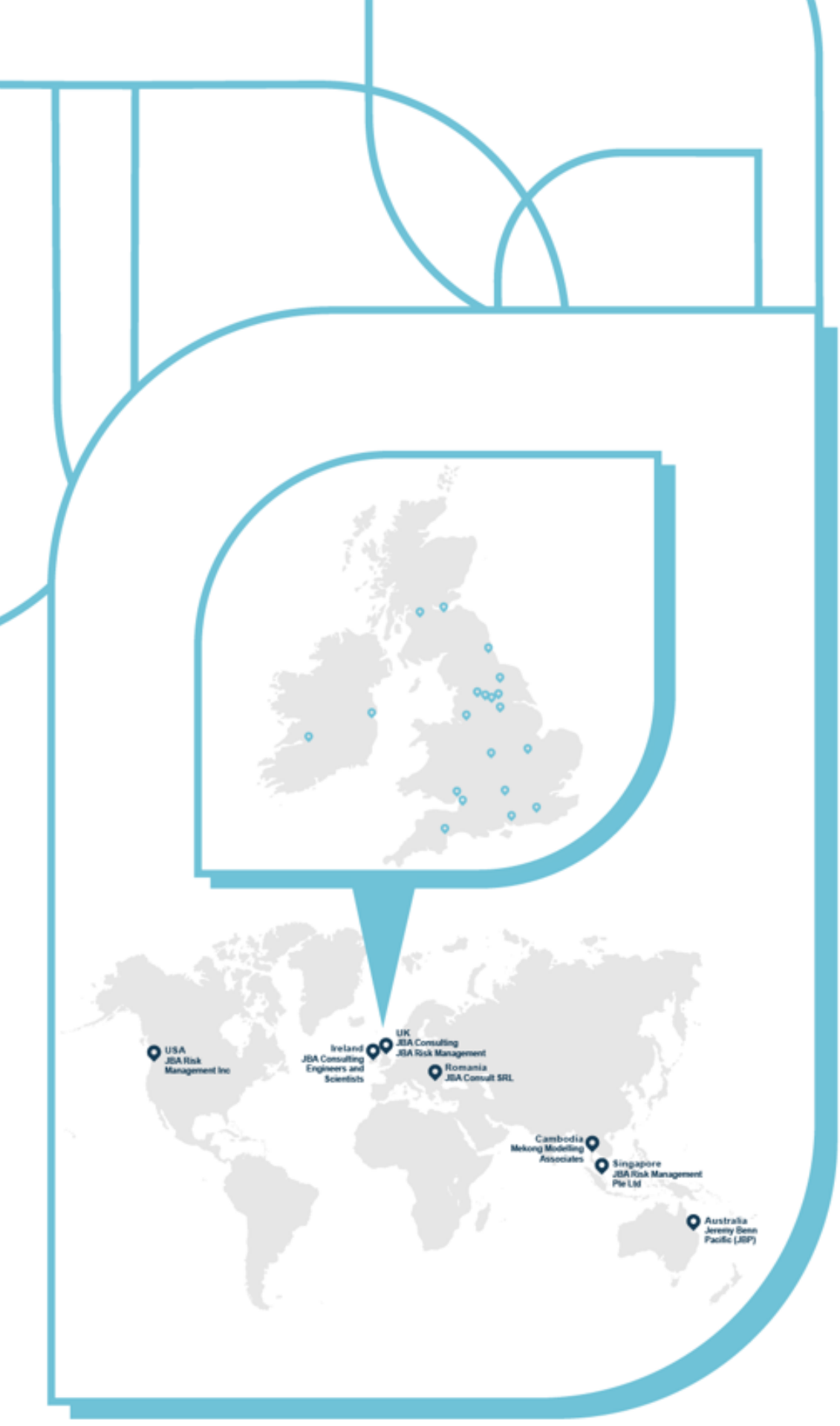

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