



LFRMS SEA Environmental Report

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PURPOSE

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KIRKLEES LOCAL FLOOD RISK MANAGEMENT STRATEGY

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ABBREVIATIONS

Acronym	Description
BAP	<p>Biodiversity Action Plan</p> <p>Plans developed by organisations to protect and enhance the biodiversity of an area.</p>
EA	<p>Environment Agency</p> <p>Non-departmental public body responsible for protecting and improving the environment.</p>
FCERMS	<p>Flood and Coastal Erosion Risk Management Strategy</p> <p>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.</p>
HER	<p>Historic Environment Record</p> <p>Information service that provides access to comprehensive and dynamic resources relating to the archaeology and historic built environment of a defined geographic area.</p>
IMD	<p>Indices of Multiple Deprivation</p> <p>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.</p>
LCA	<p>Landscape Character Assessment</p> <p>The process of identifying and describing variation in character of the landscape, the assessment identifies and explains the unique combination of elements and features that make landscapes distinctive by mapping and describing character types and areas.</p>

Acronym	Description
LFRMS	<p>Local Flood Risk Management Strategy</p> <p>Strategies produced by lead local flood authorities, considering local issues and policy. It should also consider the extent and severity of flood risk and the geography of the authority area including the environmental or social setting.</p>
LGeoS	<p>Local Geological Site</p> <p>Geological sites that are important for historical, scientific research or educational reasons.</p>
LLFA	<p>Lead Local Flood Authority</p> <p>County councils and Unitary Authorities which lead in managing local flood risks.</p>
LNR	<p>Local Nature Reserve</p> <p>Local Nature Reserve are statutory designation under the National Parks and Access to Countryside Act 1949. These can be declared by Parish and Town Councils, but these must be delegated to by principle local authority.</p>
NCA	<p>National Character Area</p> <p>National Character Area is 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.</p>
NFM	<p>Natural Flood Management</p> <p>The utilisation of natural processes to reduce the risk of flooding and coastal erosion</p>
NNR	<p>National Nature Reserve</p> <p>Reserves established to protect some of our most important habitats, species, and geology, and to provide outdoor laboratories for research.</p>
NPPF	<p>National Planning Policy Framework</p> <p>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.</p>
ODPM	<p>Office of the Deputy Prime Minister</p>

Acronym	Description
	Central department to bring together key responsibilities for regional and local government, fire, housing, planning and regeneration, social exclusion, and neighbourhood renewal.
ONS	<p>Office of National Statistics</p> <p>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.</p>
RBMP	<p>River Basin Management Plan</p> <p>River basin management plans set the locally specific environmental objectives that underpin water regulation (such as permitting) and planning activities.</p>
RIGS	<p>Regionally Important Geological Sites</p> <p>Regionally Important Geological Sites are designated by locally developed criteria, and are important educational, historical, and recreational resources. The designation aims to recognise and protect earth science and landscape features.</p>
SAC	<p>Special Area of Conservation</p> <p>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.</p>
SEA	<p>Strategic Environmental Assessment</p> <p>Strategic Environmental Assessment is 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.</p>
SPA	<p>Special Protection Areas</p> <p>Special Protection Area are protected areas are protected areas for birds in the UK, under the Wildlife & Countryside Act 1981 and the Conservation Regulations 2010.</p>
SPZ	<p>Source Protection Zones</p> <p>Areas defined around large and public potable groundwater abstraction sites, to provide additional protection to safeguard drinking water though constraining the proximity of an activity that may impact upon a drinking water abstraction.</p>

Acronym	Description
SSSI	<p>Sites of Special Scientific Interest</p> <p>Sites of Special Scientific Interest is 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.</p>
SuDS	<p>Sustainable Drainage Systems</p> <p>Drainage solutions that provide an alternative to the direct channelling of surface water through networks of pipes and sewers to nearby watercourses.</p>
SWMP	<p>Surface Water Management Plan</p> <p>A plan which outlines the preferred surface water management strategy in each location. In this context surface water flooding describes flooding from sewers, drawings, groundwater and runoff from land small water course and ditches that occurs because of heavy rainfall.</p>
WFD	<p>Water Framework Directive</p> <p>The Water Framework Directive is a European Union directive which aims to get polluted waters clean again, and ensure they stay clean.</p>
WRMP	<p>Water Resources Management Plan</p> <p>Plan developed by water companies which sets out how they intend to achieve a secure supply of water for customers and protect and enhance the environment.</p>

NON-TECHNICAL SUMMARY:

Kirklees Council is developing a comprehensive Local Flood Risk Management Strategy (LFRMS) that covers the risks associated with local flood risk sources, as required by Section 9 of the Flood and Water Management Act 2010. The LFRMS update is required to bring the document in line with the National Flood and Coastal Erosion Risk Management Strategy (NFCERM) for England, published by the Environment Agency in 2020 to set out the principles for flood risk management and which organisations are responsible for implementation.

As the Lead Local Flood Authority (LLFA), the council is responsible for maintaining, applying and monitoring this strategy. The strategy document will be available for public consultation.

To identify any potentially significant environmental effects resulting from the implementation of the LFRMS, a Strategic Environmental Assessment (SEA) has been conducted. This assessment forms stage 'B: Environmental Report' of the SEA process. The report will summarise 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. The Environmental Report evaluates the SEA objectives based on three management approaches: Do Nothing, Maintaining the Current Kirklees Council Local Flood Risk Strategy (2012), and Manage and Reduce Local Flood Risk. The report analyses the potential environmental impacts of these three approaches.

The Do-Nothing approach is deemed unsuitable for managing flood risk and is likely to have overall negative impacts on the environment. This approach would not align with Kirklees Council's responsibilities as LLFA under the Flood and Water Management Act.

Maintaining the current flood risk management outlined in the existing Kirklees Council Local Flood Risk Management Strategy (2012) is unlikely to result in significant changes to baseline levels. However, this strategy does not fully account for adaptation to climate change and the associated increase in flood risk. Therefore, this approach is also considered inappropriate.

The implementation of the Local Flood Risk Management Strategy (LFRMS) will have positive impacts on several objectives in the SEA by improving water management and reducing flood risks. This will help to preserve the quality of ecological, visual, heritage, water, and geological receptors in the council area. The majority of LFRMS actions will not impact many SEA objectives, but most will positively affect SEA objectives relating to population and human health and material assets by actively managing flood risks and promoting community involvement and resilience.

The LFRMS presents opportunities for environmental enhancements through the implementation of natural flood management and sustainable drainage schemes. Which may have broad, long-term positive benefits to many SEA objectives.

There are significant uncertainties around actions relating to the implementation of flood alleviation schemes, as the exact location, nature, and scale of these schemes are uncertain, and as such the potential effects on SEA objectives cannot be determined without a specific implementation methodology.

The majority of LFRMS actions do not directly contribute to climate change objectives. It is important to consider the impacts of climate change in decision making around flood alleviation.

INTRODUCTION

OVERVIEW

Kirklees Metropolitan Borough Council as Lead Local Flood Authority (LLFA) is working to produce an updated Local Flood Risk Management Strategy 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 2012, has been reviewed and is being updated to provide an overall strategic approach to the management of flood risk in Kirklees.

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. Kirklees' 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.

SEA PROCESS AND METHODOLOGY

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 Regulations 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 3, 4 and 5); 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 4); SEA Environmental Report (Section 5).
(c) the environmental characteristics of areas likely to be significantly affected;	SEA Scoping Report (Section 4); Environmental Report (Section 5).
(d) any existing environmental problems	SEA Scoping Report (Section 4); 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 3 and 4); Environmental Report (Section 5 and Appendix A).

SEA Regulations Requirements	Where Covered in the SEA Process
(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)

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

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	SEA Scoping Report

SEA Stages and Tasks	Purpose	Where Covered in the SEA
	and alternatives can be assessed.	
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 October 2022 and a SEA Scoping Report was submitted for consultation in November 2022. An updated Scoping Report was then produced in November 2022 to incorporate responses from statutory consultees. Further details on the scoping process are provided in Section 4 of this report.

The purpose of this Environmental Report is to report the findings of the SEA of the Kirklees 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 Stages C and D.

HABITATS REGULATIONS ASSESSMENT (HRA)

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 Habitats Regulations Assessment (HRA) has been undertaken in parallel with this SEA. This has been produced a separate standalone report, details of which are summarised in Section 5.3.3 of this report.

BACKGROUND TO THE KIRKLEES LFRMS

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.

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 as a result 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, Kirklees Council as a 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.

STUDY AREA

Kirklees Metropolitan Borough is a local authority located in West Yorkshire in the northeast region of England. The urban areas in the borough are concentrated to the north and west, the most significant of which is Huddersfield. The south of the borough is more rural and located within the Peak District National Park. According to mid-2020 Office for National Statistics population estimates, 441,290 people live in the local authority area of Kirklees (ONS, 2021).

As part of the LFRMS update, a flood risk appraisal was undertaken to identify and prioritise the areas of Kirklees most at risk of surface water flooding and to help inform where actions should be focussed. The district has been spilt into 19 areas based on the Water Framework Directive (WFD) watercourse catchments to allow for a catchment-based approach to be taken. 10 priority catchments were identified using the EA's Risk of Flooding from Surface Water dataset, modelled surface water climate change impacts, as well as a series of secondary flood risk datasets (Environment Agency, 2021). The secondary datasets included historic flood incidents and flood risk from other sources (fluvial and groundwater). The catchment priority is shown in both Table 3-1 and Figure 3-1.

Table 3-1 Catchments across Kirklees and their associated prioritisation in the LFRMS.

Catchment Affected by Flooding	Priority
Colne from River Holme to River Calder	1
Spenn Beck from Source to River Calder	2
Calder from River Colne to River Chald	3
Batley Beck from Source to River Calder	4
Colne from Wessenden Brook to River Holme	5
Fenay beck from Source to River Colne	6
Wessenden Beckk from Butterly Reservoir to River Colne	7
Holme from New Mill Dike to River Colne	8
Calder from Ryburn Confluence to River Colne	9
Colne from Source to Wessenden Brook	10
Mag Brook from Source to River Holme	11
Holme from Source to New Mill Dike	12

New Mill Dike from Source to River Holme	13
Dearne from Source to Bentley Brook	14
Chald from Source to River Calder	15
Bentley Brook from Source to River Dearne	16
Cawthorne Dyke from Source to River Dearne	17
Smithy Brook from Source to River Calder	18
Black Brook from Source to River Calder	19

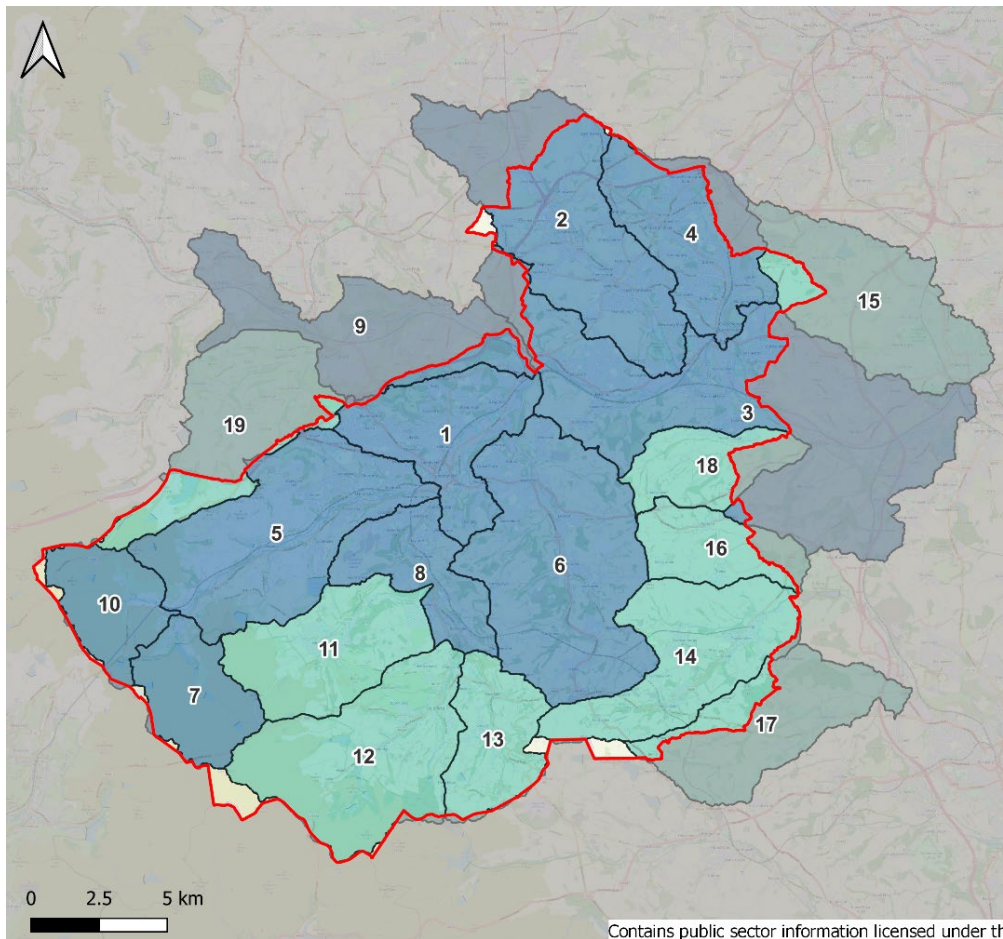


Figure 3-1 Catchments in Kirklees Metropolitan Borough.

HISTORIC FLOODING IN THE STUDY AREA

Kirklees has a history of flooding in many different locations from fluvial, surface water and sewer sources. Information on significant incidents of flooding is recorded by the EA and the LLFA. The following information sources were assessed to understand historic flooding across the borough:

- EA Recorded Flood Outlines dataset (2022) which is mainly associated with fluvial flooding from main rivers, such as the River Calder and its tributaries.

The major flooding events within Kirklees have mainly occurred around the main rivers: the River Colne, River Calder and Spen River.

Notable recorded historic flood incidents include:

- February 2022 – Storms Dudley, Eunice and Franklin; three storm week brought strong winds and rain to the borough. A considerable number of internal property flooding was reported to both residential properties and businesses.
- February 2020 – Storm Ciara and Storm Dennis; channel capacity exceeded on main rivers, including the River Calder, and ordinary watercourses.
- December 2015 – Channel capacity exceeded on the River Calder upstream of Sands.
- June 2007 – An estimated 500 properties flooded due primarily to surface water where rainwater was unable to enter drainage systems due to design capacity being exceeded. The flooding was widespread across the district, but hotspots occurred around Ravensthorpe, Liversedge, Cleckheaton, Chickenley, Mirfield, Milnsbridge, Brockholes, New Mill, Denby Dale, Scissett and Clayton West.

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 climate change scenario. This increased risk could manifest itself as more frequent flooding; an increase in flood extent; and increase in flood depth.

The climate in the UK is generally anticipated to shift toward warmer, wetter winters and hotter, drier summers (Met Office, 2022). Climate change is increasing the frequency and magnitude of hazardous weather events such as floods 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 flood flooding (Met Office, 2022).

This increased risk could manifest itself as more frequent flooding, increase in flood event and increase in flood depth.

STAGE A: SCOPING STAGE FINDINGS

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

SEA Regulations Requirements	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 as a result 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 impact sites and monuments of archaeological and historical importance, including listed buildings and Scheduled Monuments.

SEA Regulations Requirements	Definition in relation to this report	Relevance
Human health	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 as a result 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 motorways and railways. Flooding may compromise the function of these assets and the LFRMS must take this into account.
Population	Population trends and demographics; education; inequality and deprivation; key community facilities; recreation opportunities; trends and patterns in human health.	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.
Soil	Variety of rocks, minerals and landforms; the quantity and distribution of agricultural land including	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

SEA Regulations Requirements	Definition in relation to this report	Relevance
	the highest quality soils; soil health and functions; designated geological sites; land contamination.	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 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. Effects on flood risk have not been considered as an explicit theme or topic within the SEA.
Interrelationship between the above factors	The relationship between environmental features and issues	The effect of known proposals/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.*

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

ENVIRONMENTAL CHARACTERISTICS AND KEY ISSUES

INTRODUCTION

This section covers information on the current environmental baseline in Kirklees and summarises the key information from policies, plans and programmes which need to be considered in the SEA for each environmental topic.

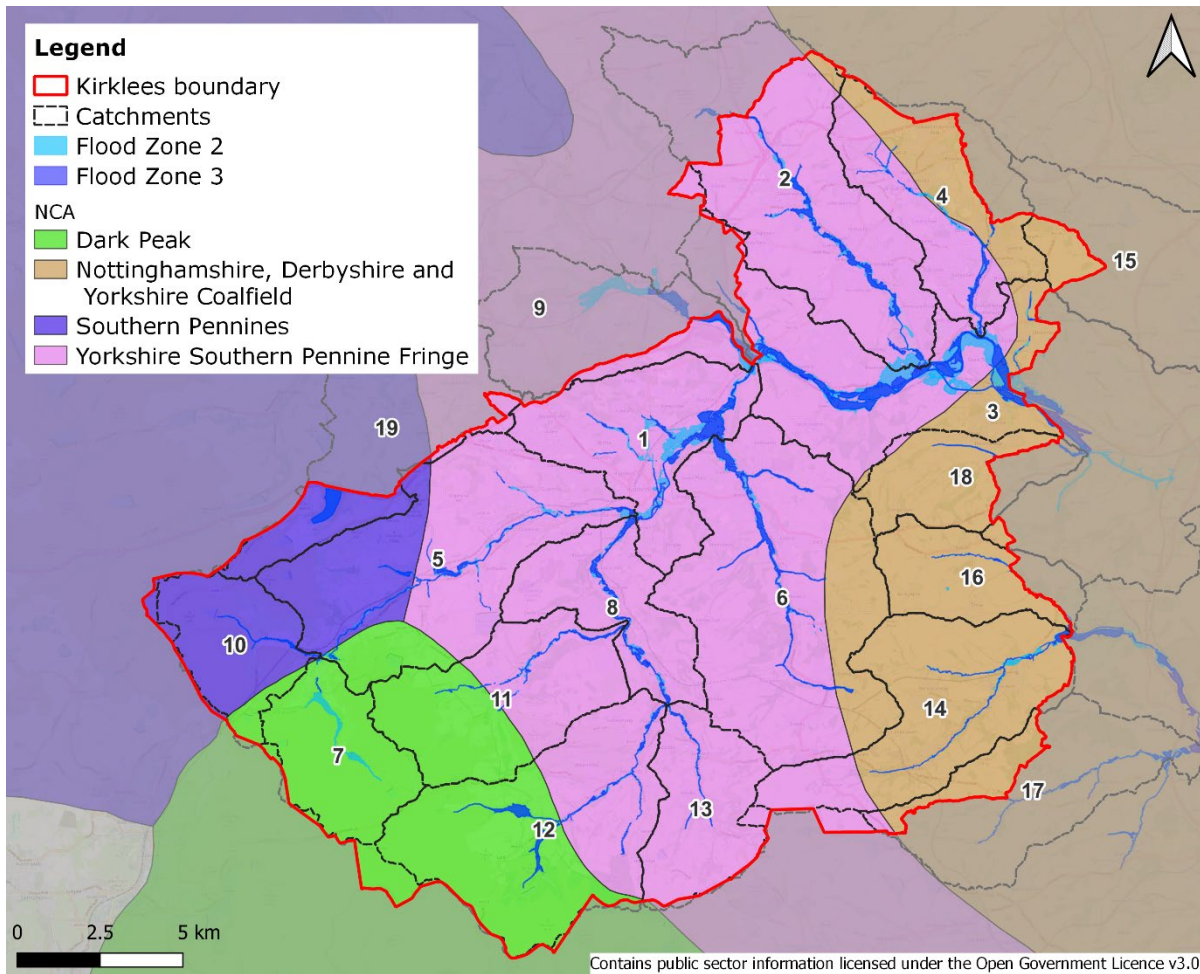
A desk-based study of baseline environmental data was undertaken to identify the key environmental characteristics, the findings of which are presented below.

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

LANDSCAPE AND VISUAL AMENITY

As outlined by Natural England, Kirklees Metropolitan Borough Council falls predominantly within the National Character Area (NCA) 37 Yorkshire Southern Pennine Fringe, with areas of NCA 38 Nottinghamshire, Derbyshire and Yorkshire Coalfields, and smaller areas of NCA 51 and NCA 36. These are described as follows, and shown in Figure 5-1:

- **NCA 37 Yorkshire Southern Pennine Fringe:** comprises a landscape dominated by industrial buildings and structures from former industries, with pastoral treeless hill tops, and wooded valleys.
- **NCA 38 Nottinghamshire, Derbyshire and Yorkshire Coalfields:** over half of the NCA is designated as greenbelt land and is dotted with many pockets and patches of habitat where species find refuge. Often land which was once occupied by industry.
- **NCA 51 Dark Peak:** a landscape of large-scale sweeping moorland, in-by pastures enclosed by drystone walls, and gritstone settlements within the Pennine chain. It forms a large part of the Peak District National Park.
- **NA 36 Southern Pennines:** part of the Pennine ridge of hills, lying between the Peak District National Park and the Yorkshire Dales National Park. A landscape of large-scale sweeping moorlands, pastures enclosed by drystone walls, and gritstone settlements within narrow valleys.



KEY ISSUES

Flooding has the potential to affect local landscape characteristics in Kirklees Metropolitan Borough Council. This includes impacts on existing character areas and on the setting of local landmarks and landscape features. The key issues relating to the landscape and visual amenity are summarised below:

- Alteration of existing landscapes due to increased flooding.
- Disturbance to existing views.

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

BIODIVERSITY, FLORA AND FAUNA

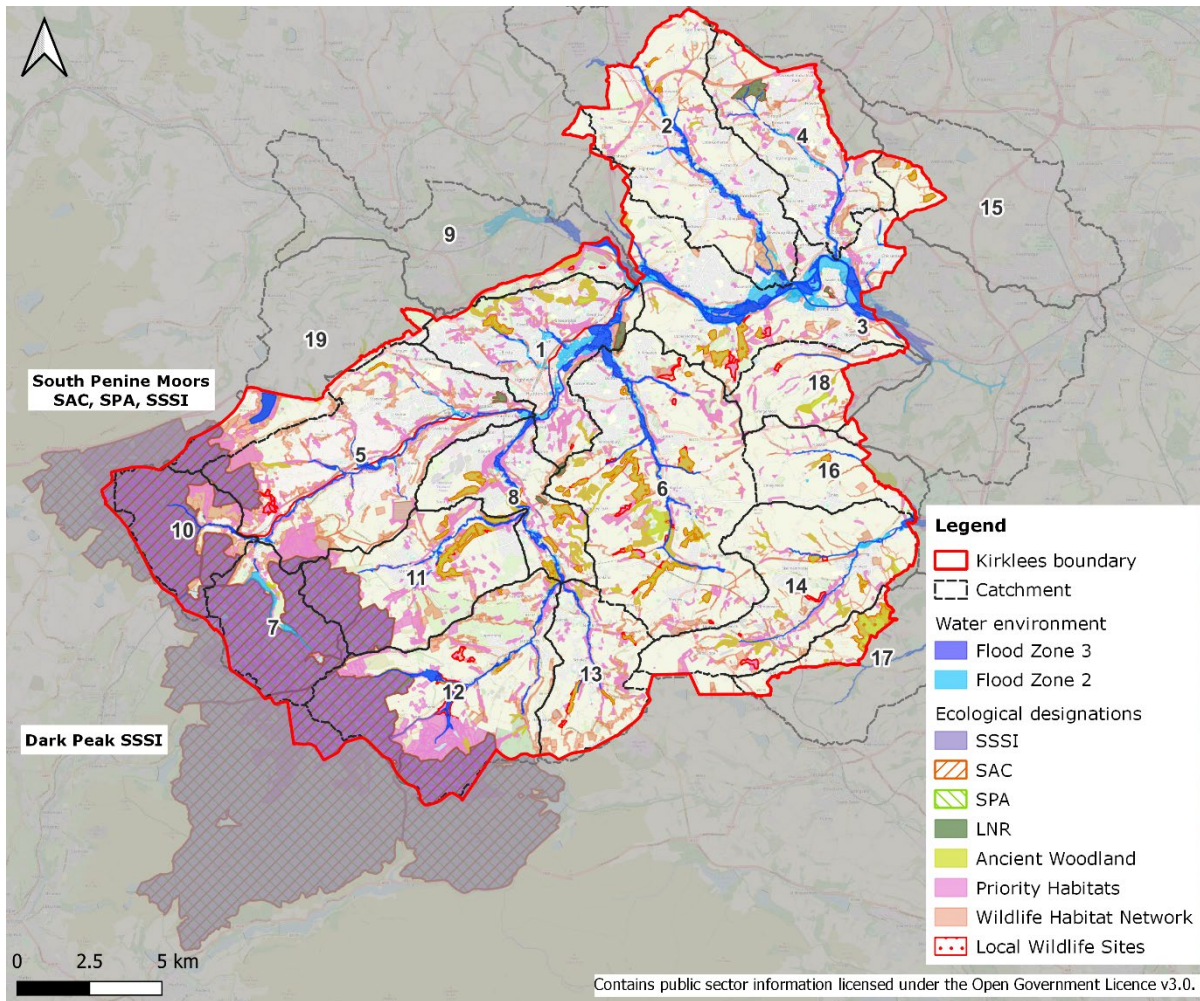
STATUTORY PROTECTED SITES

The Kirklees Metropolitan Borough encompasses many high-quality environments which have been recognised through international, national and local ecological designations. These are outlined in Table 5-1.

Kirklees Metropolitan Borough has several locally designated ecological sites such as Local Nature Reserves (LNR) and Local Wildlife Sites (LWS). There are nine LNRs and 88 LWSs across the borough. A complete list can be found in Appendix B. Ecological designations in Kirklees are outlined on Figure 5-2.

Table 5-1 Internationally and nationally designated ecological assets.

Site	Designation	Condition	Priority Catchment	Qualifying features
South Pennine Moors (Phase 1 and 2)	Special Area of Conservation (SAC), Special Protection Area (SPA), Site of Special Scientific Interest (SSSI),	Unfavourable – Recovering	5, 9, 10, 19, 22, 24, 25, 26, 27	Provides habitat for an important assemblage of breeding moorland birds and moorland fringe birds. The site is primarily designated as an SAC due to the following Annex I habitats: European dry heaths, Blanket bogs, and Old sessile oak woods with Ilex and Blechnum in the British Isles.
Dark Peak	SSSI	Unfavourable – Recovering	5, 7, 10, 11, 12, 23, 25, 27, 28, 29.	This is wild, open and more or less continuous moorland, predominantly at an altitude of 400–600 m and broken only by transpennine roads from Manchester to Sheffield, over the Snake Pass; from Manchester to Barnsley along the Longendale valley and over the Woodhead Pass and from Oldham to Huddersfield over Wessenden Head Moor.



NOTABLE HABITATS AND SPECIES

Numerous priority species and habitats of principle importance listed in Section 41 of the Natural Environment and Rural Communities (NERC) Act are known to be present in Kirklees and are included within the LBAP (Local Biodiversity Action Plan). The species and habitats of principal importance within rivers, riverine corridors and associated habitats are summarised in Table 5-2 below.

Table 5-2 Priority species and habitats of principal importance listed in Section 41 of the NERC Act listed in the Local Biodiversity Action Plan

Priority species and habitats of principal importance within Rivers, Riverine Corridors and Associated Habitats	
Species	
Plants	Floating water plantain
Fish	Various fish species
Birds	Reed Bunting
	Bullfinch
	Song thrush

Priority species and habitats of principal importance within Rivers, Riverine Corridors and Associated Habitats

Mammals	Otter
	Daubenton's bat
	Water Vole

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.

The assessment identified the potential for hydrological changes, water quality effects and impacts to habitats and species that may arise as an indirect result of the implementation of the LFRMS.

No likely significant effects arising from the KMDC LFRMS's proposed objectives that might significantly affect the European Sites identified within 15km of the District. This was largely due to the high-level nature of the LFRMS and purpose of achieving environmental gain. It was concluded that an Appropriate Assessment was not required.

KEY ISSUES

The key issues relating to ecological receptors in the Kirklees Metropolitan Borough 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 designated nature conservation sites within Kirklees Metropolitan Borough 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 on interest features.

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.

WATER ENVIRONMENT

WATERCOURSES

Kirklees is located within the Humber River basin district which covers an area of 26,100 km². The Humber River Basin Management Plan (2016) outlines the significant water management issues in the region these are categories as follows:

- Physical modifications are currently affecting 42% of water bodies. Physical modifications to water bodies alter the natural flow levels causing additional sediment to build up, and loss of habitats and recreational opportunities.
- Pollution from wastewater – affecting 38% of water bodies. Wastewater or sewage can contain large amounts of nutrients, ammonia, bacteria, harmful chemicals and substances. Additional pressure is being placed on sewer networks due to population growth and changes to rainfall patterns as a consequence of climate change.
- Pollution from towns, cities and transport – affecting 16% of water bodies. Surface water which passes over roads and pavements accumulate pollutants and drains to surface waters.
- Changes to the natural flow and level of water – affecting 6% of water bodies. Reduced flow and water levels can have consequences for water abstraction, and wildlife.
- Negative effects of invasive non-native species – affecting <1% of water bodies. Invasive non-native species can have significant consequences for the natural environment. The process of controlling invasive species can have significant economic impacts.
- Pollution from rural areas – affecting 32% of water bodies. Soils and sediment are being washed off the land carrying phosphorus and nitrate from fertilisers into water bodies. Other impacts include sedimentation from erosion, and compacted fields. There are also bacteriological contaminants from faecal matter.
- Pollution from abandoned mines – affecting 4% of water bodies. Surface waters and groundwater flooding abandoned mines are becoming contaminated with dissolved metals.

At a more local level, Kirklees lies predominantly within the Calder catchment, with a small area to the south-east of the borough within the Don catchment.

The Calder Catchment Flood Management Plan (2010) describes a long history of flooding within the catchment. The most damaging floods occurred in 2007, when 1,700 properties across the catchment flooded from surface water, sewers and rivers. In June 2020, over 700 properties flooding from surface water. At present the two main sources of flood risk are flooding from rivers especially within urban communities, and surface water and sewer flooding (Environment Agency, 2010).

The Don Catchment Flood Management Plan (2010) also describes a long history of flooding. In 2007, over 6750 properties flooding across the catchment, and in 2000 over 240 properties were flooded across the catchment. The primary sources of flooding across the catchment include; rapid river flooding in urban watercourse, sewer and surface water drainage, groundwater and artificial sources.

WATER RESOURCES

Yorkshire Water is responsible for water supply across the area, water is obtained from three main water sources, reservoirs, river abstractions and boreholes. According to the Water Resources Management Plan (2019), the key challenges water resources challenges in Kirklees are as follows:

- Increasing population of Yorkshire by approximately one million by 2050;
 - Increased loss of deployable output as a result of climate change;
-

- Environmental pressure (ongoing) to reduce the amount of water abstracted;
- Providing a resilient service.

According to the plan, climate change remains the biggest single influence on long-term future water resource prospects.

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.

Kirklees Metropolitan Borough is within the Colne and Holme Operational Catchment of which there are 21 water bodies. As shown in Table 5-3, all of the water bodies are heavily modified and according to the most recent testing (2019), of moderate ecological status, and fail chemical status.

Table 5-3 Hydromorphological designation, ecological and chemical status of water bodies within the Colne and Holme operational catchment

Water Body	Hydromorphological designation	Ecological Status (2019)	Chemical Status (2019)
Bilberry Reservoir	Heavily modified	Moderate	Fail
Blackmoorfoot Reservoir	Heavily modified	Moderate	Fail
Blakeley Reservoir	Heavily modified	Moderate	Fail
Brownhill Reservoir	Heavily modified	Moderate	Fail
Butterly Reservoir	Heavily modified	Moderate	Fail
Colne from River Holme to River Calder	Heavily modified	Moderate	Fail
Colne from Source to Wessenden Brook	Heavily modified	Moderate	Fail
Deer Hill Reservoir	Heavily modified	Moderate	Fail

Water Body	Hydromorphological designation	Ecological Status (2019)	Chemical Status (2019)
Digley Reservoir	Heavily modified	Moderate	Fail
Fenay beck from Source to River Colne	Heavily modified	Moderate	Fail
Holme from New Mill Dike to R Colne	Heavily modified	Moderate	Fail
Holme from Source to New Mill Dike	Heavily modified	Moderate	Fail
Mag Brook from Source to River Holme	Heavily modified	Moderate	Fail
New Mill Dike from Source to River Holme	Heavily modified	Moderate	Fail
Ramsden Reservoir	Heavily modified	Moderate	Fail
Riding Wood Reservoir	Heavily modified	Moderate	Fail
Wessenden Bk from Butterly Resr to River Coln	Heavily modified	Moderate	Fail
Wessenden Head Reservoir	Heavily modified	Moderate	Fail
Wessenden Reservoir	Heavily modified	Moderate	Fail
Yateholme Reservoir	Heavily modified	Moderate	Fail

SUMMARY OF KEY ISSUES

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

- Poor water quality across the Colne and Holme 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.

GEOLOGY AND SOILS

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

There are five nationally designated sites for geological importance within Kirklees Metropolitan Borough. Table 5-4 shows the designation and qualifying features of each of the sites.

Table 5-4 Nationally designated geological assets.

Site name	Designation	Catchment	Qualifying features
Park Clough	SSSI	10	The rock sequence shown at Park Clough shows exposures of sandstone and shales of the Namurian Series formed during the Carboniferous Period. The sequence of rock layers includes an important junction between the two major subdivisions of the Carboniferous Period.
Dark Peak	SSSI	5, 7, 11, 12, 23, 25, 27, 28, 29	Six locations of special geological interest are identified within the Dark Peak: a landslip, the rocks exposed behind the land-slip, a classic example of stream erosion on peat, an area of delta-formed sedimentary rock, an area of river evolution and an area of classic peat erosion.
Honley Station Cutting	SSSI	8	It is a site of great importance for understanding this part of the lower Westphalian A and is significant to geologists working in most of the coal-fields in northern and central Europe, and in eastern North America.
Rake Dike	SSSI	12	The Rake Dike valley contains exposures of rocks of the Namurian Series of the Carboniferous Period laid down some 320 million years ago. The rocks consist of layers of sandstone and shale, some of the shale layers

Site name	Designation	Catchment	Qualifying features
			containing important fossil remains.
Standedge Road Cutting	SSSI	10	This road cutting provides important exposures of the Kinderscout Grit which formed during the Carboniferous Period of geological time, about 320 million years ago.

There are 18 Local Geological Sites (LGeoS) in Kirklees Metropolitan Borough.

The Agricultural Land Classification (ALC) provisional data outlines the agricultural potential of land, categorising it into five grades (Natural England, 2020). The best and most versatile land is defined as Grades 1 (excellent quality agricultural land), 2 (very good quality), 3a (good), 3b (moderate), 4 (poor) and 5 (very poor). There are no areas of Grade 1 or 2 in the borough as shown in Figure 5-3. Therefore, the highest-grade agricultural land in Kirklees is located within the north and east of the borough. These areas are classified as Grade 3.

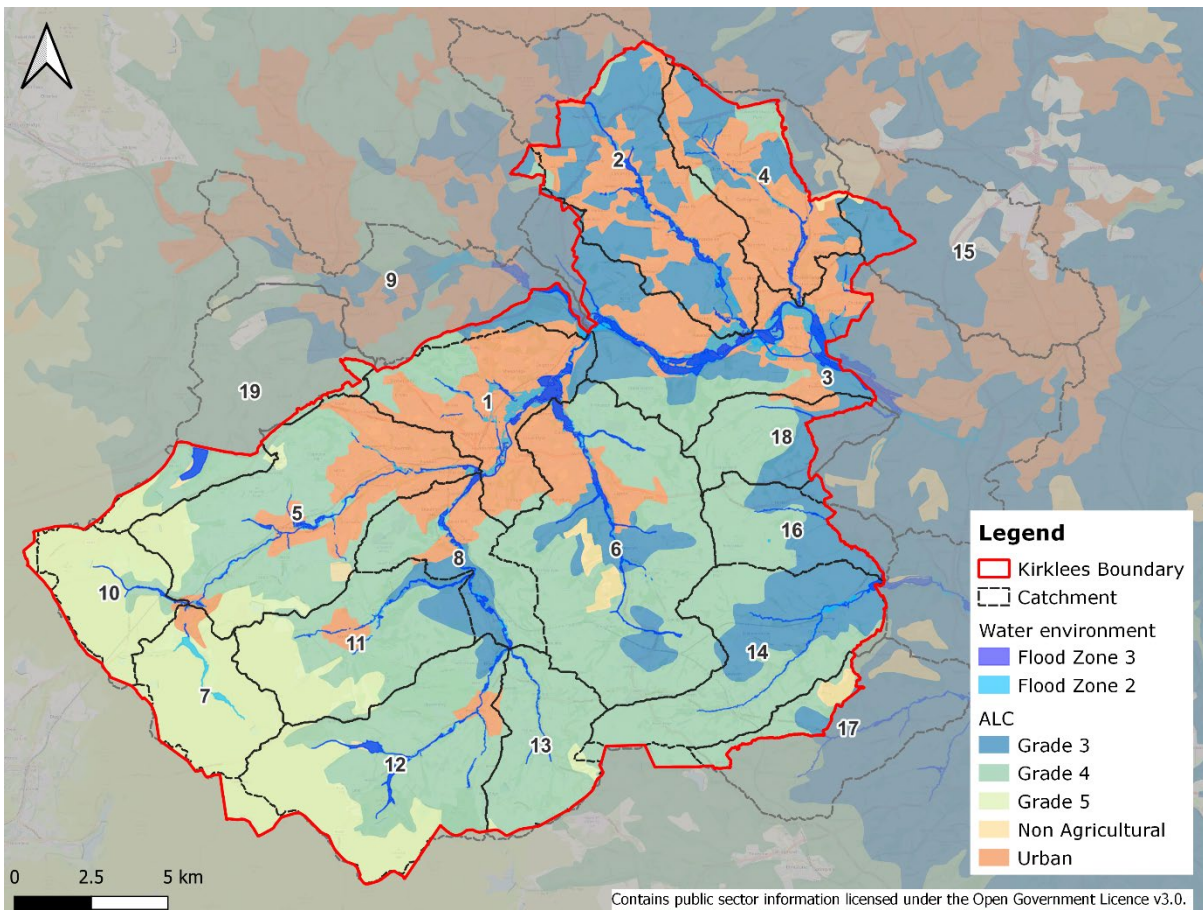


Figure 5-3 ALC in Kirklees Metropolitan Borough

Soil classifications by the Soil Landscapes Online Viewer (Defra, 2022) have classified the study area as containing multiple soil landscapes, but the study area predominantly consists of freely draining slightly acid loamy soils. This soil landscape is freely draining, of loamy texture, mainly covered by arable and grassland.

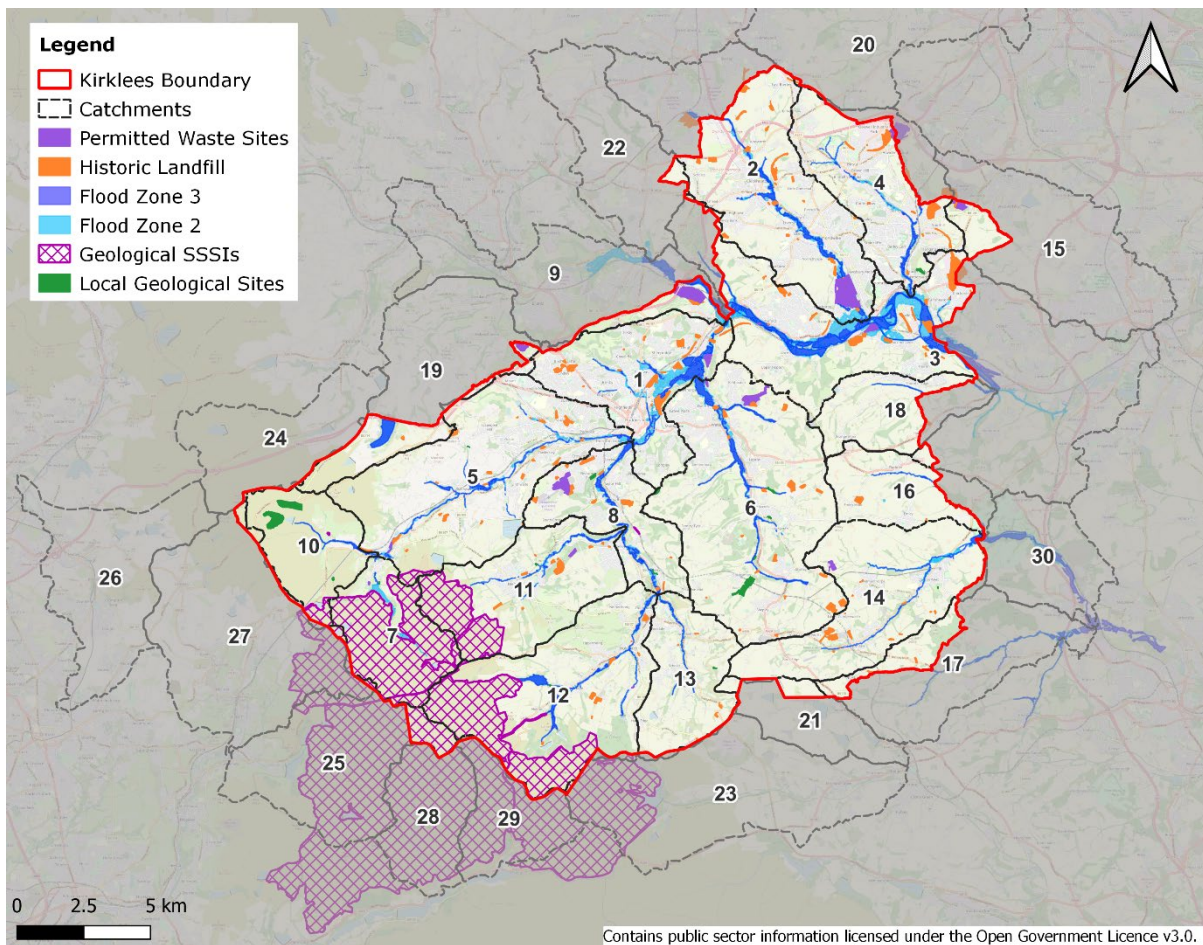


Figure 5-4 Geological SSSIs, Historic and Current Landfill sites in Kirklees.

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 19 permitted waste sites, 222 historic landfill sites, and 19 Local Geological Sites within the study area, as shown on Figure 5-4.

5.5.1 Key Issues

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

- Flood risk may result in contaminants leaching into surface water, increasing levels of pollution, and threatening human health and the environment; and
- Risk of damage or disturbance to geologically designated SSSIs or LGeoS.

The LFRMS must consider the issues outlined above to prevent erosion of landfill waste into the water course, which would threaten human health and the environment.

HISTORIC ENVIRONMENT

There are a number of heritage assets within the study area, reflecting a rich and diverse built and historic environment. There are approximately 2,974 listed buildings of which 18 are on the Heritage at Risk Register (2021).

The borough also contains 22 Scheduled Monuments. These are awarded protection against potentially damaging activities, including those associated with development, under the Ancient Monuments and Archaeological Areas Act 1979. Three of these Scheduled Monuments are on the Heritage at Risk Register.

The Register of Historic Parks and Gardens by Historic England identifies historic landscapes of note. This can include gardens, grounds and other planned open spaces, the emphasis of the Register is on designed landscapes (Historic England, 2022). There are also six Registered Historic Parks and Gardens in the borough, these are as follows:

- Beaumont Park (8)
- Bretton Hall (14,16)
- Crow Nest Park (2,3)
- Dewsbury Cemetery (2,3)
- Greenhead Park (1,5)
- Kirklees Park (3,9)

The Heritage at Risk Register includes historic buildings and sites 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. These heritage assets are outlined in Table 5-5 and on Figure 5-4.

Table 5-5 Historic assets in Kirklees Metropolitan Borough on the Heritage at Risk Register

Name	Designation	Catchment	Condition
Former Huddersfield Infirmary	Listed building Grade II*, CA	1	Poor
New House Hall, Newhouse Road	Listed building Grade II*	1	Very bad
Boiler house, engine house, rope race, water tower and powerhouse at Westwood Mills, Lowestwood Lane, Linthwaite, Huddersfield	Listed building Grade II*, CA	5	Very bad
Mill Dam, at Westwood Mills, Lowestwood Lane, Linthwaite, Huddersfield	Listed building Grade II*, CA	5	Poor
North Range at Westwood Mills, Lowestwood Lane, Linthwaite. Huddersfield	Listed building Grade II*, CA	5	Very bad
Offices and workshop ranges at Westwood Mills, Lowestwood Lane,	Listed building Grade II*	5	Very bad

Name	Designation	Catchment	Condition
Linthwaite, Huddersfield			
West Block at Westwood Mills, Lowestwood Lane, Linthwaite. Huddersfield	Listed building Grade II*	5	Very bad
Hopton Congregational Church, Calder Road, Mirfield	Listed building grade II*	3	Fair
Christ Church, Church Lane, Batley and Liversedge	Listed Place of Worship Grade II	2	Poor
Church of St Stephen, Lidget Street, Huddersfield	Listed Place of Worship Grade II	1	Poor
Church St Thomas, Manchester Road, Huddersfield	Listed Place of Worship Grade II*	5	Poor
Church of St John, St John's Road, Huddersfield	Listed Place of Worship Grade II*, CA	1	Poor
Church of St Mark St Marks Road, Huddersfield	Listed Place of Worship Grade II	5	Poor
Church of the Holy Trinity, Trinity Street, Huddersfield	Listed Place of Worship, Grade II*, CA	1	Poor
Christ Church, Woodhouse Hill, Huddersfield	Listed Place of Worship Grade II	1	Poor
Church of Emmanuel, Huddersfield Road, Kirkburton	Listed Place of Worship Grade II	14	Poor
Church of St Thomas, Marsh Hall Lane, Kirkburton	Listed Place of Worship Grade II, CA	6	Poor
Church of St Mary, Church Lane, Mirfield	Listed Place of Worship Grade II*	3	Poor
Emley Day Holes, 200m east of Churchill Farm, Denby Dale	Scheduled Monument	14	Generally unsatisfactory with major localised problems.
Medieval ironstone pits south of Bentley	Scheduled Monument	16	Generally unsatisfactory

Name	Designation	Catchment	Condition
Grange, Denby Dale			with significant localised problems
Crosland Lower Hall moated site, Meltham	Scheduled Monument	11	Generally satisfactory but with significant localised problems.
Birkby, Huddersfield	Conservation Area, 33 listed buildings	1	Poor
Dewsbury	Conservation Area, 41 listed buildings	3,4	Very bad
Holmfirth	Conservation Area, 38 listed buildings	12	Very bad
Huddersfield	Conservation Area, 214 listed buildings	1	Very bad

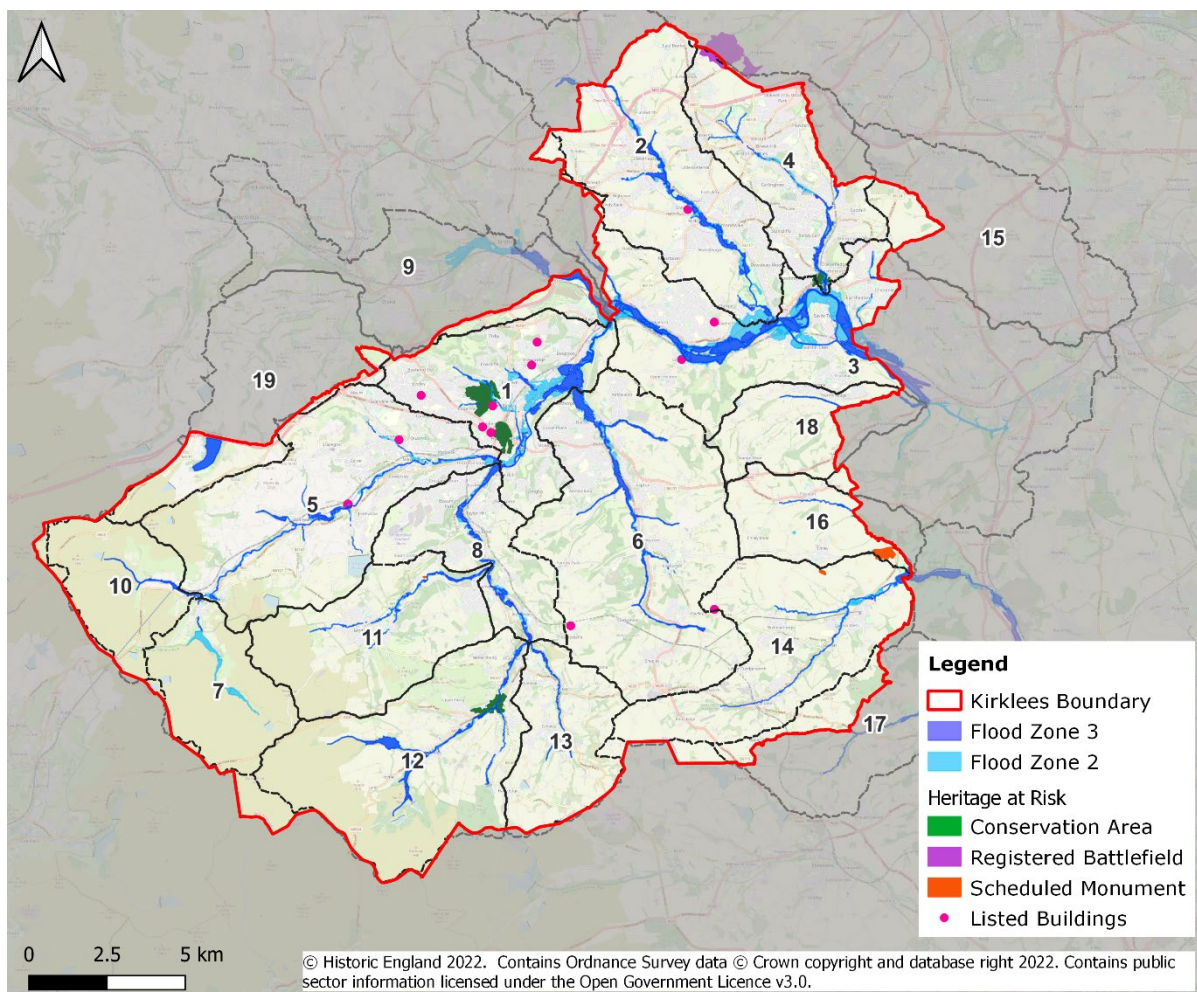


Figure 5-5 Location of Heritage at Risk in Kirklees Metropolitan Borough

The West Yorkshire Joint Services undertook the West Yorkshire Historic Characterisation Project between 2011 and 2017. This developed Historic Land Classification for Kirklees, which evaluates the changes in the historic landscape since 1066. The maps focus upon the key land use areas of commercial, communication, enclosed land, extractive, horticulture, industrial, institutional open land, parkland and recreation, residential, water and woodland (West Yorkshire Joint Services, 2017).

Historic England and Kirklees Metropolitan Council are working in collaboration to deliver a High Street Heritage Action Zone (HSHAZ) in the centre of Huddersfield. The overarching aim of the Action Zone is to rejuvenate the many of listed buildings around Huddersfield town centre which have been in decline.

The West Yorkshire Archaeology Advisory Service have produced a selection of research agenda documents on the:

- Palaeolithic & Mesolithic
- The Later Prehistoric
- Late Iron Age and Roman
- Post Roman to Conquest
- Industrial Archaeology
- Historic Buildings
- Medieval Rural Settlements.

These documents evaluate the historic record of West Yorkshire across the above periods.

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.
- Watercourses and their surrounding fluvial landscapes are important components 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.

POPULATION

In 2019, the population in Kirklees is 437,000 residents (Kirklees Metropolitan Borough Council, 2019). Only 9% of areas in Kirklees are in the most 10% deprived in England, down from 14% in 2010 and in contrast to rising deprivation in neighbouring areas (Kirklees Metropolitan Borough Council, 2019). Approximately 169,00 households in West Yorkshire are in fuel poverty which is equivalent to 17% (West Yorkshire Combined Authority, 2021).

In Kirklees, 18% of residents have local nature greenspace within 5 to 10 minutes walking distance, which is less than the regional average of 23% (West Yorkshire Combined Authority, 2021).

Kirklees Metropolitan Council are currently running a property Flood Resilience (PFR) Grant 2020-2022 which allows for any measures to be applied to building to make people and the property less vulnerable to the physical impacts of flooding to encourage resilience.

The most densely populated wards in Kirklees are Batley East, Batley West and Greenhead with 36.2 to 47.5 persons per hectare (Kirklees Metropolitan Borough Council, 2020).

The Living Environment domain measures the quality of the local environment. The domain consists of two sub-domains. The 'indoors' living environment measures the quality of housing; while the 'outdoors' living environment contains measures of air quality and road traffic accidents (Ministry of Housing, Communities & Local Government, 2019).

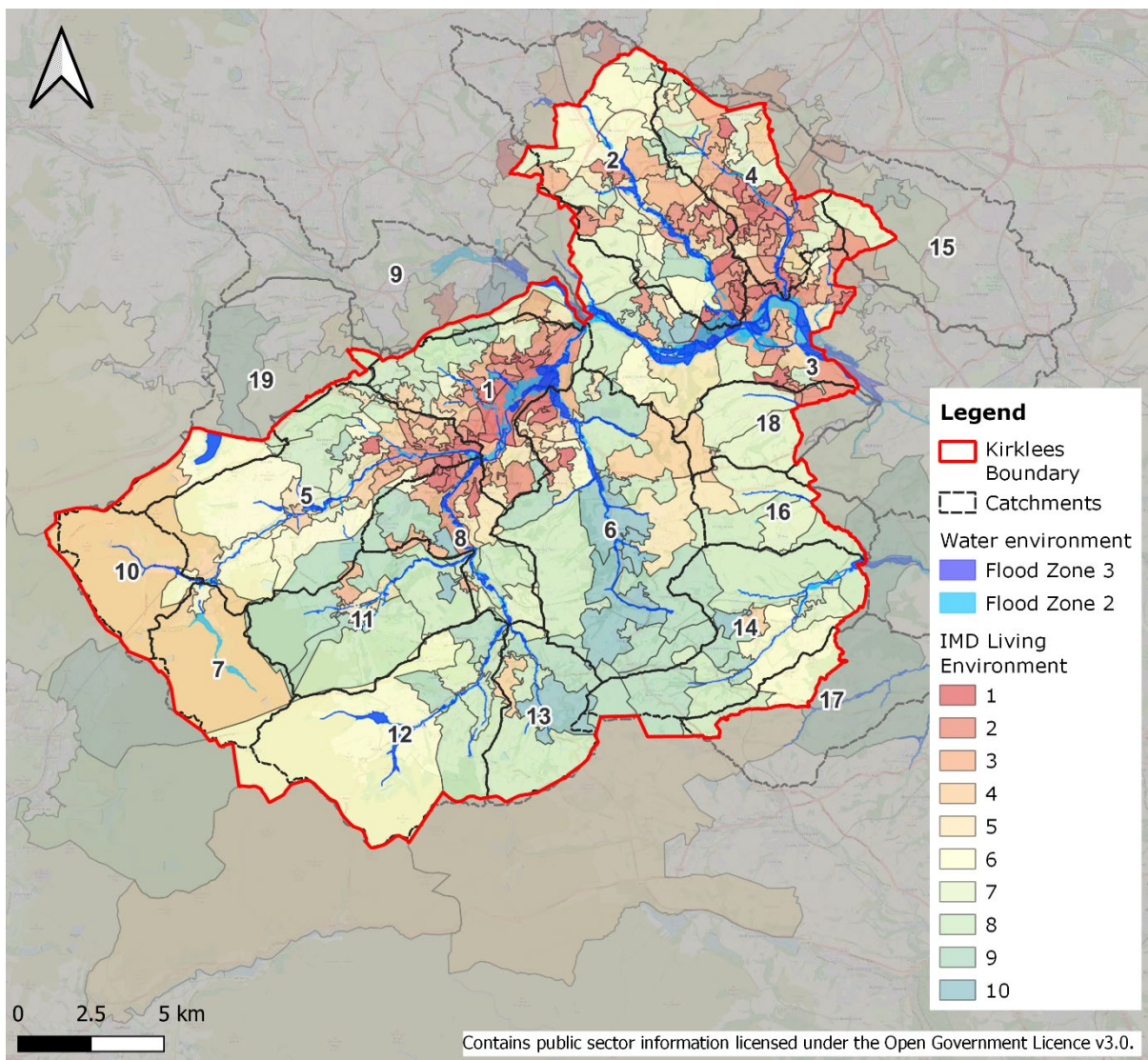


Figure 5-6 IMD Living Environment domain (2019) in Kirklees Metropolitan Borough

Figure 5-5 shows the Index of Multiple Deprivation (IMD) scores for Kirklees. It shows that the greatest deprivation is concentrated around catchments 1 and 4. These relate to the more urban areas of the Huddersfield and Dewsbury. Broadly the more rural areas of the borough experience relatively less deprivation.

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 borough.

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

MATERIAL ASSETS

There are 16 train stations in Kirklees, the main rail route is the East/West Trans Pennine Route which links Huddersfield and Dewsbury to Leeds, York, Manchester, and Manchester Airport. There are also local rail connections to Wakefield which provide a further connection to London. The Penistone Line makes a local connection to the Sheffield City Region and Midland Main Line railway (Kirklees Metropolitan Borough Council, 2015).

Between 2009/10 and 2014/25 the number of bus passengers fell from 169.2 million per annum to 156.8 million per annum across West Yorkshire. The current bus service in Kirklees is good, with services mainly focused between corridors of the main towns and urban areas. There are services operating in the rural south of the borough, but these are generally at a lower frequency and require greater public subsidy (Kirklees Metropolitan Borough Council, 2015).

At a regional level, the West Yorkshire transport strategy highlights a number of challenges. The investments in road and rail have not kept pace with economic and population growth, which is manifesting in the congestion and insufficient capacity on public services. At a wider scale, the current transport provision lacks resilience (West Yorkshire Combined Authority, 2017).

Figure 5-6 demonstrates some of the potential critical infrastructure at risk of flooding across the borough.

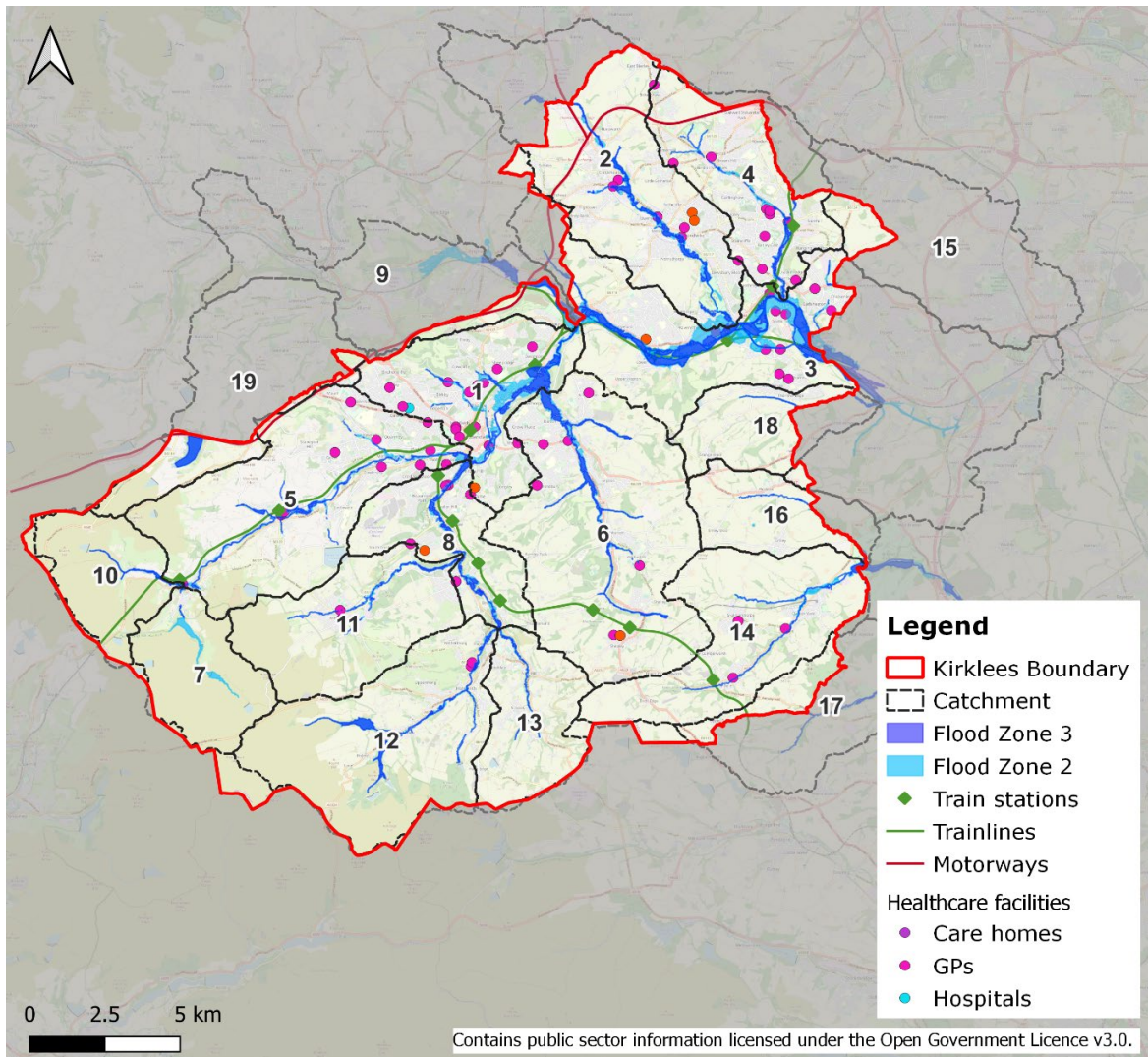


Figure 5-7 Material assets in Kirklees Metropolitan Borough

The overarching conclusion of the Kirklees Infrastructure Delivery Plan (2015) was that there is broadly sufficient infrastructure, either current or planned to support the housing and economic growth aspirations for Kirklees district up to 2031. Specific risks to infrastructure include:

KEY ISSUES

Kirklees Metropolitan Borough is large district with an established network of infrastructure, transport routes, including rural and urbanised areas. The associated 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.

CLIMATE

Recent data indicates that CO₂ end-user emissions in West Yorkshire are approximately 10.8 Mt CO₂ which is equivalent to 4.7 tonnes per capita, below the nation average of 4.9 tonnes. Whilst West Yorkshire's current rates of emissions is lower than the national average, a continuation of the emissions reduction will not achieve its existing target of net zero by 2038 (West Yorkshire Combined Authority, 2021).

Approximately 39% of energy used in the borough is for domestic purposes, domestic electricity uses account for around 8%. Around 2% of energy used is sourced from renewables and waste (Kirklees Metropolitan Borough Council, 2020).

Kirklees falls within one climate region, North-East England, as classified by the Met Office. The annual temperature range in low-lying areas are around 8.5 °C to around 10 °C, mean annual temperatures depend strongly on altitude with a decrease of about 0.5 °C for each 100m increase in altitude (Met Office, 2016).

Kirklees Metropolitan Council developed a Local Climate Impacts Profile (LCLIP) to support the West Yorkshire Adaptation Action Plan, where highlighted the impacts of a changing climate on citizens, businesses and partner organisations by detailing the extreme weather events between 2003-2010. Kirklees Council found that extreme weather events had cost the authority £283,030 - £1,255,200 a year, mainly through highway repair and maintenance (West Yorkshire Combined Authority, 2010). The results of LCLIP's across the West Yorkshire region have identified that the main impacts of extreme weather events are:

- Damage to infrastructure e.g., flooding of properties,
- Disruption to travel and accessibility across the region, e.g., traffic congestion and public transport cancellations, and.
- Difficulty or failure in delivering essential services e.g., provision of health and social care.
- Climatic change is likely to result in increased frequency and intensity of severe weather types already experienced across the Yorkshire and Humber region. These effects are likely to have significant implications for businesses and residents (West Yorkshire Combined Authority, 2010).

KEY ISSUES

The key issue relating to climate change is projected increased variability in precipitation events. This is likely to 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.

During the summer months, projected rain increases would have an impact on the capacity of drainage systems. More intense events would exceed the capacity of drainage systems and cause surface water runoff and flooding causing localised surface water runoff and flooding from smaller watercourses, particularly in urban areas.

During the winter months, projected rainfall increases are likely to cause saturation of clayey soils, resulting in wet antecedent conditions, which may result in greater vulnerability to further storms, particularly in rural areas.

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.

SEA FRAMEWORK

INTRODUCTION

The SEA framework, developed at the scoping stage, 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 means to measure the potential significance of the environmental issues and can also be used to monitor implementation of the LFRMS objectives. 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, Criteria and Targets

	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.

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 in light of any additional information 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.	Changes in the condition and extent of existing characteristic elements of the landscape. The condition and quality of new landscape features introduced to

Receptor	Objective	Sub-objective	Indicator	
			the environment (i.e. new flood defences).	
Biodiversity, Flora and Fauna	2	Maintain, and enhance and extend biodiversity, wildlife and habitat connectivity.	<p>Protect and enhance protected, important and notable habitats and species and designated nature conservation sites in the area.</p> <p>Increase biodiversity by enhancing, expanding and connecting existing natural areas and wildlife refuges.</p> <p>Increase biodiversity resilience to flood risk and climate change.</p>	<p>Recorded numbers of protected habitats and species.</p> <p>Percentage change in area of priority habitats.</p> <p>'Condition' of designated wildlife, geological sites, and habitats.</p> <p>Deliver measures which also improve the ecological status of WFD waterbodies.</p> <p>Biodiversity net gain and other enhancements achieved in projects delivered through the LFRMS.</p>
Water Environment	3	Protect and enhance the quality of water features and resources.	Do not inhibit achievement of WFD objectives and contribute to their achievement where possible.	WFD chemical or ecological status of water bodies within catchment.
Geology and Soils	4	Maintain soil quality and conserve geological designations.	<p>Reduce risk of contamination from all sources.</p> <p>Maintain soil quality and quantity.</p> <p>Conserve the condition of geological designated sites.</p>	<p>Number of contamination incidents.</p> <p>Risk levels of contamination.</p> <p>Soil quality.</p> <p>'Condition' of geological designated sites.</p>
Historic Environment	5	Preserve and where possible enhance important heritage assets.	<p>No adverse impact on designated and non-designated heritage assets as a result local flooding.</p> <p>No adverse impact on the integrity/setting of designated and non-designated heritage assets as a result of local flood risk management measures.</p>	<p>Number of designated and non-designated heritage sites at risk from local flooding.</p> <p>Number of heritage assets adversely impacted upon by local flood risk management measures.</p>
Population and Human Health	6	Protect and enhance human health and wellbeing.	Conserve and enhance open (including urban amenity areas) and natural green spaces including PRoW and recreation opportunities.	<p>Number of open and natural green spaces.</p> <p>Number and value of PRoW routes.</p>

Receptor	Objective	Sub-objective	Indicator
		Protect key social infrastructure assets and services from flooding and increase resilience to climate change.	Number of residential properties at risk from flooding. Number of key services at risk from local flooding. Health and wellbeing statistics.
Material assets	7	Minimise the impacts of flooding to 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/created or enhanced through implementation of the LFRMS.
	8	Minimise local and national contribution to climate change.	Number of flood management measures implemented that will also sequester carbon. Carbon dioxide equivalent emissions (CO ₂ e)

STAGE B: DEVELOPING AND REFINING OPTIONS AND ASSESSING EFFECTS

DEVELOPING ALTERNATIVES

The SEA Regulations require an assessment of the plan and its 'reasonable alternatives'. In order 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.

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 Kirklees Council Local Flood Risk Management Strategy (2012)- where 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 taken into account.
- 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		Options and Effects		
		Do Nothing	Do minimum: maintain current local flood risk strategy	Manage and reduce local 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, as a result 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 and enhance 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	Little/no change to baseline levels in the short to medium term. However, as a result 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 as a result of active management. Opportunities may arise to enhance biodiversity and notable habitats within the Council through the implementation of measures to reduce local flood risk, for example: natural flood management measures, improvements

SEA Objectives		Options and Effects		
		Do Nothing	Do minimum: maintain current local flood risk strategy	Manage and reduce local flood risk
		through flooding; deterioration of existing wildlife corridors; and detrimental impacts on habitats intolerant of increased inundation.		to fish passage; encouraging appropriate management of watercourses by riparian landowners; and undertaking watercourse maintenance.
3	Protect and enhance the quality of water features and resources.	Potential for both adverse and beneficial impacts.	Little/no change to baseline levels. However, potential deterioration of water quality during flooding incidents.	Potential for both adverse and beneficial impacts.
4	Maintain soil quality and conserve geological designations.	Potential negative effect resulting from increased erosion of soils as a result 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 as a result of 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 is maintained and the risk may increase in the future as a result of 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 flooding to the transport network and key critical infrastructure.	This option is likely to result in increased flood risk to key infrastructure, which would cause significant dis-	Maintains the current flood risk levels, although this risk may increase in the future due to climate change.	Managing and reducing local flood risk will minimise the impact of flooding on roads, railways and other infrastructure assets. This

SEA Objectives		Options and Effects		
		Do Nothing	Do minimum: maintain current local flood risk strategy	Manage and reduce local flood risk
		ruption to the county, impacting on human and economic activity and the environment.		will reduce disruption during flood events and enable a more effective response.
8	Minimise local and national contribution to 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, as a result of future climate change and associated increased flood risk, there may be 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.

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	0	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.
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.
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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 directly on a receptor or indirectly;
- 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 will also be considered.

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

LIMITATIONS AND ASSUMPTIONS

The LRFMS actions are 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.

ASSESSMENT

The assessment of the LFRMS objectives and actions against the SEA objectives is shown below in Table 8-3. Cumulative effects of the actions against the SEA objectives are shown in Table 8-4. These are qualitative assessments that identify the range of potential effects that the LFRMS may have on delivering the SEA objectives.

Strategic Theme	LFRMS Action	SEA Objectives								Comments
		1	2	3	4	5	6	7	8	
Place	Engage early with spatial planners and growth strategies to ensure new development and plans make best use of land in making space for surface water, fluvial water, sustainable drainage systems and promote the use of adaptive pathways to adapt to climate hazards. Share our understanding of flooding in the area to avoid inappropriate development.	+	+	+	+	+	+	+	+	Ensuring best use of land and incorporating adaptive pathways and sustainable drainage systems (SuDS) 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.
Place	Work with the Local Planning Authority, Highway Authority, Environment Agency, and water companies to ensure the planning process and development design account fully for land drainage and surface water managements issues. Ensure our practices secure sound management and maintenance regimes that are proportionate and appropriate to the flood risk in the area.	+	+	+	+	+	+	+	+	Ensuring ongoing involvement with consultees on land drainage and surface water management will have indirect positive benefits to material assets as a result of minimising surface water flooding impacts on infrastructure. As statutory consultee, the LLFA could promote the use of sustainable flood risk management measures, such as SuDS, which would indirectly positively impact several SEA objectives.
Place	As a Lead Local Flood Authority engage with others to advise on climate change allowances for sources of flooding from surface water, groundwater, and ordinary watercourses. To share and inform others of current guidance, research and best practice on sustainability and water management to inform decision making.	+	+	+	+	+	+	+	○	Incorporating climate change allowances will improve the accuracy of flood modelling and will allow for targeted flood alleviation options to be achieved. This action should improve flood management in the area and have multiple benefits to SEA objectives, such as enhancing the resilience of ecosystems, communities and infrastructure.

Strategic Theme	LFRMS Action	SEA Objectives								Comments
		1	2	3	4	5	6	7	8	
Place	Enhance our early engagement with developments and commit to targeted periodic inspections of new development to ensure compliance with drainage planning conditions and Land Drainage Act legislation. Seek 106 contributions where appropriate and promote environmental net gain.	+	+	+	+	○	+	+	+	Early consideration of flood risk in development proposals would result in benefits to human and material receptors by ensuring that developments appropriately consider flood risk management measures. Undertaking inspections will ensure these measures are met. Promoting environmental net gain will have positive impacts on a range of SEA objectives through the enhancement of habitats.
Place	Improve our asset data on drainage assets within the district including highway gullies, culverts, carrier drains, debris screens and others to build our evidence base. Where considered significant make this publicly available.	○	○	○	○	○	+	+	○	Collecting and maintaining asset data will not have any identified direct effect on SEA receptors, however this action 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.
Protect	Identify and develop flood risk improvement schemes for Kirklees to reduce the risk of surface water flooding and flooding from ordinary watercourses to better protect properties and the highway network in high-risk areas. Be open to new financing models. Promote a range of resilience actions and climate change scenarios.	?	?	?	?	?	+	+	?	Delivery of flood alleviation schemes will result in reduced risk to the local community for the benefit of population, human health and material assets. However, the 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.
Protect	Improve the awareness, understanding and delivery of Property Flood Resilience measures to manage local flood risk within our communities. Encourage homeowners and business owners to undertake Property Flood Surveys and seek grant funding to support resilience measure installations to support a build back better approach.	○	○	○	○	○	+	+	○	Improved resilience will reduce the impact of flood events on population and human health and material assets and will allow for faster recovery from floods.

Strategic Theme	LFRMS Action	SEA Objectives								Comments
		1	2	3	4	5	6	7	8	
Protect	Work with our partners, universities, and communities to develop integrated solutions and maintenance programmes to deliver multiple benefits to reduce flood risk and look to improve economic, social and environmental benefits. Be innovative in our approach.	+	+	+	+	+	+	+	+	Developing and implementing integrated approaches to flood management, incorporating input from multiple stakeholders will lead to benefits for all SEA objectives.
Protect	Engage with catchment partnerships and landowners to embrace land management techniques and natural flood management to help to manage surface water runoff. Seek out opportunities to use Working with Natural Processes in managing flood risk to promote multiple benefits such as environmental net gain.	+	++	+	+	+	+	+	+	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.
Protect	Support the severe weather incident management function the Council undertakes through technological advancements to ensure it is an intelligence led approach.	○	○	○	○	○	+	+	○	Improvements to the severe weather management function will have long-term positive benefits to population and human health and material assets through improved flood resilience.
Protect	Maintain assets based on a risk-based approach to ensure high flood risk assets are prioritised and allowances made for climate change projections are considered. Try new technological approaches. Assess which Council assets require capacity improvements as a last resort.	○	○	○	○	○	+	+	○	This action will ensure that funding will be provided 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 health and material assets.
Response	Provide intelligence to ensure policy frameworks and emergency plans are robust. Work with other services to establish the basis of the Council's response to severe rainfall events in supporting communities.	○	○	○	○	○	+	+	○	Improving flood event response through development of emergency plans and frameworks will help communities better recover from flood events respond more effectively to future flood events, leaving them less vulnerable to further events in the future.

Strategic Theme	LFRMS Action	SEA Objectives								Comments
		1	2	3	4	5	6	7	8	
Response	Work with the local communities to increase their awareness and preparedness for flooding in Kirklees to improve flood resilience in homes, businesses and communities through education campaigns with our partners. Enhance our online content to deliver a one-stop shop.	○	○	○	○	○	+	+	○	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.
Response	Encourage flood community action groups to be set up in key areas of flood risk and through this work, in conjunction with partners, provide a higher standard of community led resilience by developing a network of community resilience leads.	○	○	○	○	○	+	+	○	Community flood action groups will promote awareness of flood risk and understanding of response plans. This will not have any identified direct effect on the majority of SEA receptors. However, this action should promote better understanding of flood risk and management plans in the area, and should promote direct engagement of the community in flooding issues.
Response	Ensure flood risk management actions reach out and remain inclusive in our approach within our diverse communities and areas of deprivation.	○	○	○	○	○	+	○	○	Ensuring inclusivity will ensure all communities are involved in discussions around flood risk and will improve understanding and trust in flood risk management actions for all members of the population.
Response	Establish and maintain a Communication Plan in line with national and other Council services to provide coordinated and timely information to communities at flood risk.	○	○	○	○	○	+	+	○	Establishing a communication plan will indirectly benefit local communities and infrastructure through provision of alerts of likely flood risk, which will allow time for preparation for flood events, reducing flooding impacts.
Recovery	Provide follow up recovery support and advice to residents, business owners and communities that have been affected by flooding on funding, wellbeing support and signpost to affordable flood insurance to help them recover quicker.	○	○	○	○	○	+	+	○	Providing flood recovery support will help communities recover after flooding and respond more effectively to future flood events, leaving them less vulnerable to further events in the future.

Strategic Theme	LFRMS Action	SEA Objectives								Comments
		1	2	3	4	5	6	7	8	
Recovery	Investigate flood incidents of all sources and establish flood outlines with our partners to validate existing flood models to help inform future grant fundings and flood risk management projects.	+	+	+	+	+	+	+	+	Validating existing modelling 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.
Recovery	Work with Partners and health bodies to ensure mental health impacts from flooding are factored into long term recovery planning.	○	○	○	○	○	+	○	○	Ensuring mental health impacts are factored into planning will have major long-term positive impacts to communities.
Recovery	Support Review Briefings and feedback learning from communities to inform our plans and policies to ensure a more efficient and effective response in the future.	○	○	○	○	○	+	+	○	Understanding learnings from flood events to improve future response will have positive impacts to population and human health and material assets through reduced future flooding impacts.

Receptor	SEA Objective	Assessment Score	Justification
Landscape and Visual Amenity	Protect the integrity of local urban and rural landscapes in the area.	0	<p>The majority of LFRMS action 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.</p> <p>There is potential through the LFRMS to provide opportunities for landscape and visual enhancements through the implementation of natural flood management and SuDS, which may enable the protection and enhancement of green spaces, river corridors and woodland to enhance visitor experience and provide recreational amenity.</p> <p>However, there are uncertainties around the actions relating to the delivery of flood alleviation schemes. Without specific details of these projects adverse impacts to visual receptors cannot be ruled out. There is the potential for impacts to arise through the construction of new defence schemes. Schemes should be designed to avoid the potential for significant landscape impacts; including minimising hard engineering and encouraging nature-based solutions. Where impacts are identified, they should be mitigated appropriately.</p>

Receptor	SEA Objective	Assessment Score	Justification
Biodiversity, Flora and Fauna	Maintain and enhance biodiversity, wildlife and habitat connectivity.	0	<p>In general, many of the LFRMS actions will not have any identified direct effects on this SEA objective, however, 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.</p> <p>The LFRMS provides direct opportunities for ecological enhancements through the implementation of natural flood management schemes, 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.</p> <p>However, there are uncertainties around the 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.</p>

Receptor	SEA Objective	Assessment Score	Justification
Water Environment	Protect and enhance the quality of water features and resources.	0	<p>The majority of actions will 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.</p> <p>The LFRMS provides opportunities for enhancement to the water environment through the implementation of natural flood management, SuDS and drainage management schemes. Such schemes 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.</p> <p>However, there are uncertainties around the 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 in order to avoid the potential for significant impacts, and where impacts are identified, they should be mitigated appropriately.</p>

Receptor	SEA Objective	Assessment Score	Justification
Geology and Soils	Maintain soil quality and conserve geological designations.	0	<p>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.</p> <p>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.</p> <p>However, there are uncertainties around the 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.</p>

Receptor	SEA Objective	Assessment Score	Justification
Historic Environment	Preserve and where possible enhance important historic and cultural sites.	0	<p>The majority of actions will have a neutral impact upon this objective due to their nature, however, there is the potential for the LFRMS to benefit historic 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.</p> <p>There is the potential for adverse impacts to the water environment through the construction of flood defence schemes. Impacts may arise from damage to heritage assets and their setting during construction activities. New schemes should be constructed in line with industry best practice guidance in order to avoid the potential for significant impacts.</p>
Population and Human Health	Protect and enhance human health and wellbeing.	++	<p>The LFRMS actions 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.</p> <p>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.</p> <p>The construction of new flood defence schemes will improve infrastructure resilience to climate change.</p>

Receptor	SEA Objective	Assessment Score	Justification
Material assets	Minimise the impacts of flooding to the transport network and key critical infrastructure.	+	Overall, the LFRMS objectives are likely to have a significant positive impact in relation to this SEA objective as the LFRMS includes several actions that seek to improve the resilience of material assets in the borough. Reduction in flood risk will reduce impacts to key such as road, rail and power grid.
	Minimise local and national contribution to climate change.	0	The majority of LFRMS actions do not directly contribute to climate change objectives as they do not reduce local carbon emissions. However, reduction in flood risk may indirectly reduce emissions by reducing the requirement for rebuilding/redevelopment after large flood events. In addition, SuDS natural flood management and associated green space enhancement may improve local carbon sequestration.

MITIGATION

There were no negative effects identified in the assessment and therefore 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 the 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’.

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. 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.

Where possible, options to reduce flood risk whilst contributing to local carbon reduction targets should be considered, such as through natural flood management.

CONCLUSIONS AND RECOMMENDATIONS

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 so as 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 (2012)' 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 as a result 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 Kirklees Council 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 6 and 7. By actively managing the flood risk, there will be obvious benefits to the population, human health and material assets. 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 Kirklees 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.

At present the LFRMS actions relating to local flood risk improvements schemes has an unknown effect on the SEA objectives as the exact location, nature and scale is currently uncertain. Without a specific methodology for the implementation of these actions, potential beneficial/adverse effects cannot be determined for certain.

The LFRMS actions do not directly contribute to climate change objectives. It is important that climate change be factored into decision making around flood alleviation.

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 maximize 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.

MONITORING

As per the SEA Regulations, Kirklees Council 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 indicator/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 SEA objectives

Receptor	SEA Objective		Monitoring Indicator	Target as a result of local flood risk management measures	Possible Monitoring Partners
Landscape and Visual Amenity	1	Protect the integrity of local urban and rural landscapes in the area.	<p>Changes in the condition and extent of existing characteristic elements of the landscape.</p> <p>The condition and quality of new landscape features introduced to the environment (i.e., new flood defences).</p>	No adverse impacts on landscape character of the NCAs, LCAs or other locally important landscapes/features as a result of implementation of the LFRMS.	<p>Environment Agency</p> <p>Natural England</p>
Biodiversity, Flora and Fauna	2	Maintain and enhance biodiversity, wildlife, and habitat connectivity.	<p>Recorded numbers of protected habitats and species.</p> <p>Percentage change in area of priority habitats.</p> <p>'Condition' of designated wildlife, geological sites, and habitats.</p>	<p>No adverse impact on designated nature conservation sites as a result of changes to the current local flooding regime.</p> <p>No deterioration in the conservation status of designated</p>	<p>Environment Agency</p> <p>Natural England</p>

Receptor	SEA Objective		Monitoring Indicator	Target as a result of local flood risk management measures	Possible Monitoring Partners
			<p>Deliver measures which also improve the ecological status of WFD waterbodies.</p> <p>Biodiversity net gain and other enhancements achieved in projects delivered through the LFRMS.</p>	<p>sites as a result of implementation of the LFRMS.</p> <p>No adverse impact on designated nature conservation sites as a result of local flood risk management measures.</p> <p>Increase in the area of good wildlife habitat as a result of implementation of the LFRMS.</p> <p>No new impediments to fish and eel passage.</p>	

Receptor	SEA Objective		Monitoring Indicator	Target as a result of local flood risk management measures	Possible Monitoring Partners
Water Environment	3	Protect and enhance the quality of water features and resources.	WFD chemical or ecological status of water bodies within catchment.	No deterioration to the WFD status of water bodies within the catchment as a result of implementation of the LFRMS.	Environment Agency Natural England Severn Trent Water
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

Receptor	SEA Objective		Monitoring Indicator	Target as a result of local flood risk management measures	Possible Monitoring Partners
Historic Environment	5	Preserve and where possible enhance important historic and cultural sites.	<p>Number of designated heritage sites at risk from local flooding.</p> <p>Number of heritage assets adversely impacted upon by local flood risk management measures.</p>	<p>No adverse impact on designated heritage sites as a result of flooding.</p> <p>No adverse impact on the integrity/setting of designated heritage sites as a result of flood risk management measures.</p>	<p>Environment Agency</p> <p>Natural England</p> <p>Historic England</p>

Receptor	SEA Objective		Monitoring Indicator	Target as a result of local flood risk management measures	Possible Monitoring Partners
Population and Human Health	6	Protect and enhance human health and wellbeing.	<p>Number of open and natural green spaces.</p> <p>Number and value of PRow routes.</p> <p>Number of residential properties at risk from flooding.</p> <p>Number of key services at risk from local flooding.</p> <p>Health and wellbeing statistics.</p>	No increase in number of residential properties at risk from flooding.	<p>Environment Agency</p> <p>National Health Service</p>

Receptor	SEA Objective		Monitoring Indicator	Target as a result of local flood risk management measures	Possible Monitoring Partners
Material assets and Climate Change	7	Minimise the impacts of flooding to the transport network and key critical infrastructure.	<p>Length of road and rail infrastructure at risk from local flooding.</p> <p>Number of key infrastructure assets at risk from local flooding.</p> <p>Number of green infrastructure assets at risk from flooding/created or enhanced through implementation of the LFRMS.</p>	<p>No increase in length of road and rail infrastructure at risk from flooding.</p> <p>No increase in number of infrastructure assets at risk from flooding.</p> <p>An enhancement of current Green Infrastructure Assets in the Council area.</p>	<p>Environment Agency</p> <p>Network Rail</p> <p>National Highways</p>

Receptor	SEA Objective		Monitoring Indicator	Target as a result of local flood risk management measures	Possible Monitoring Partners
	8	Minimise local and national contribution to climate change.	Number of flood management measures implemented that will also sequester carbon.	Carbon dioxide equivalent emissions (CO2e) Number of flood management measures implemented that will also sequester carbon.	Environment Agency Natural England

NEXT STEPS

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 taken into account while finalizing 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.

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APPENDICES

A PLANNING POLICY CONTEXT

A.1 International Objectives

International Objectives		
Policy/Plan/ Programme/ Strategy	Key Objectives or Requirements relevant to SEA	Implications for LFRMS and SEA
EU Groundwater Directive – Directive 2006/118/EC on the protection of groundwater against pollution and deterioration, 2006	Protection of groundwater sources from pollution and deterioration.	The plan will need to ensure that and locally occurring groundwater storages will not be impacted by pollution or deterioration from proposed works.
EU Water Framework Directive - Directive 2000/60/EC, 2000	An EU directive which commits European Union member states to achieve good qualitative and quantitative status of all water bodies (including marine waters up to one nautical mile from shore).	The plan will need to ensure that the qualitative and quantitative status of local water bodies are not negatively impacted by any proposed works.
European Commission, Nitrates Directive 91/676/EEC, 1991	An EU directive which commits European Union members states to protect water bodies from agricultural nitrates.	The plan will need to ensure that the local water bodies are not negatively impacted by any proposed works involving agricultural nitrates

International Objectives		
European Landscape Convention: guidelines for managing landscape (2010)	The Convention highlights the need to develop policies dedicated to the protection, management and planning of landscape. Raising awareness of the landscape is an important thread running through all these areas. It also encourages the integration of landscape into all relevant areas of policies, including cultural, economic and social policies.	The plan should consider specific measures promoted by the Convention including improved consideration of and integration of landscape in future spatial policy and regulation.
Convention for the Protection of the Architectural Heritage of Europe (1985)	The main purpose of the Convention is to reinforce and promote policies for the conservation and enhancement of Europe's heritage.	The plan should consider the articles set out in the convention.
European Convention on the Protection of Archaeological Heritage (1995)	The aim of this Convention is to protect archaeological heritage all remains and objects and any other traces of mankind from the past epochs.	The plan should consider the articles set out in the convention.

A.2 NATIONAL POLICY

National Policy		
Policy/Plan/ Programme/ Strategy	Key Objectives or Requirements relevant to SEA	Implications for LFRMS and SEA
A Green Future: Our 25 Year Plan to Improve the Environment	A government plan to improve air and water quality in both rural areas and cities. The adoption of this plan commits to the following: Clean air Clean and plentiful water Thriving plants and wildlife	The plan will need to ensure that managed land is used sustainably, the beauty of landscapes is

National Policy

	<p>A reduced risk of harm from environmental hazards such as flooding and drought. Using resources from nature more sustainably and efficiently Enhanced beauty, heritage, and engagement with the natural environment.</p>	<p>enhanced, people are more connected to the environment, resources are used efficiently, and pollution and waste is reduced, the seas and oceans remain clean and biologically diverse, the global environment is protected. The plan also commits to the restoration of 75% of terrestrial and freshwater protected sites to favourable condition, creating or restoring 500,000 hectares of wildlife rich habitat, and recover threatened species.</p>
<p>Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations, 2019</p>	<p>A government policy which protects ambient air quality from the volatile organic compounds in paints, varnishes, and vehicle re-finishings.</p>	<p>The plan will need to ensure that ambient air quality will be protected from volatile organic compounds.</p>
<p>Ancient Monuments and Archaeological Areas Act, 1979 (as amended)</p>	<p>A government policy which protects monuments and archaeological areas from disturbances.</p>	<p>The plan will need to ensure that the local monuments are archaeological</p>

National Policy

		al areas are protected from any disturbances that proposed works could cause.
Biodiversity 2020: A Strategy for England's Wildlife and Ecosystems, 2011	A government policy which protects England's wildlife and ecosystems.	The plan will need to ensure that the local wildlife and ecosystems are not negatively impacted by any proposed works.
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.
Clean Air Strategy, 2019	A government policy aimed at reducing all sources of air pollution making our air healthier to breathe, protecting nature, and boosting the economy.	The plan will need to consider the impact it may have on air pollution.
Climate Change Act, 2008	A government policy aimed at reducing all sources of carbon and waste to minimise the impacts on climate change.	The plan will need to consider how it will minimise its carbon emissions and levels of waste.
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

National Policy		
		for operating at net zero.
Conservation of Habitats and Species Regulations (amendment - EU Exit), 2019	A government policy aimed at both preserving and restoring species and habitats to a favourable conservation status in a specified area of distribution.	The plan will need to consider how it will prevent any negative impacts on flora and fauna
Contaminated Land (England) Regulations, 2006 (as amended)	A government policy aimed at preserving natural landscapes and waterbodies by protecting them from pollution.	The plan will need to consider how it will prevent any land or water from being polluted.
Water Act, 2014	A government policy aimed at improving water resilience and the supply of water resources.	The plan will need to consider how it will avoid negatively impacting the supply of water resources.
England Biodiversity Framework, 2008	A government policy aimed at protecting the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.	The plan will need to consider how it will protect biodiversity during any proposed works.
Environment Act, 1995 (as amended)	A government act which gives power and rights to the government body The Environment Agency.	The plan must consider how it will abide by the Environment Agencies policies.
Fisheries Act 2020	A government act which regulates the management of fisheries to ensure the practice is sustainable.	The plan must consider how it will ensure the management of fisheries is not

National Policy		
		negatively impacted by any proposed works.
Floods and Water (Amendment - EU Exit) Regulations, 2019	A EU policy aimed at protecting inland surface waters (rivers and lakes), transitional waters, coastal waters and groundwater, in order to prevent and reduce pollution, promote sustainable water use, protect the aquatic environment, improve the status of aquatic ecosystems and mitigate the effects of floods and droughts.	The plan must consider how it will ensure inland surface, transitional, coastal and groundwaters will be protected from pollution unsustainable water usage as well as ensuring the protection of aquatic ecosystems and mitigate the effects of floods and droughts.
Flood Risk Regulations, 2009	Governmental regulations that 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 as 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 plan should include a PFRA, FRA, flood risk mapping and flood risk management .
Future Water: The Government's water strategy for England, 2008	A governmental strategy aimed at achieving sustainable delivery of secure water supplies and an improved and protected water environment.	The plan should consider how it will aid in achieving sustainable delivery of water supplies and protecting the water environment .

National Policy		
Heritage Protection for the 21st Century, White Paper, 2007	A government policy aimed at developing a unified approach to the historic environment; Maximising opportunities for inclusion and involvement; and supporting sustainable communities by putting the historic environment at the heart of an effective planning system.	The plan should consider how it will aid in supporting the policy aims, especially through the careful management of any proposed works to prevent disturbance of heritage assets.
Land Drainage Act 1991 (as amended)	An Act to consolidate the enactments relating to internal drainage boards, and to the functions of such boards and of local authorities in relation to land drainage, with amendments to give effect to recommendations of the Law Commission.	The plan should consider how it will prevent obstruction to water courses, as well as maintaining the water course to allow the natural flow of water.
Making Space for Nature: A Review of England's Wildlife Sites and Ecological Network, 2010	An independent report on wildlife sites in England and recommendations on how to achieve a healthy natural environment. It makes the following key points: Designated wildlife sites should be protected. New ecological restoration zones should be established. Non-designated wildlife sites should be protected.	The plan should consider how it will protect both designated and non-designated wildlife sites. It should also be aware of the potential for new ecological restoration zones.
Making Space for Water – taking	A governmental Act that places a statutory duty on the Environment Agency to develop a National Flood and Coastal Erosion Risk Management Strategy for England.	The plan should consider how it will

National Policy		
forward a new Government strategy for flood and coastal erosion risk management in England, 2005		develop national flood and coastal erosion risk management . Any proposed works should be assessed for their potential to increase flood and coastal erosion risk.
National Planning Policy Framework, 2021	A government framework which sets out the government's planning policies for England and how these are expected to be applied. Taking into consideration relevant international obligations and statutory requirements.	The plan should consider that any proposed works require prior planning permission
Natural Environment and Rural Communities (NERC) Act, 2006	A government act which created Natural England and the Commission for Rural Communities and, amongst other measures, it extended the biodiversity duty set out in the Countryside and Rights of Way (CROW) Act to public bodies and statutory undertakers to ensure due regard to the conservation of biodiversity.	The plan should consider what measure it will put in place in order to protect the conservation of biodiversity.
Planning (Listed Buildings and Conservation Areas) Act 1990	a UK Act of Parliament introduced in 1990 that changed laws relating to the granting of planning permission for building works, with a particular focus on listed buildings and conservation areas. It created special controls for the demolition, alteration or extension of buildings, objects or structures of particular architectural or historic interest, as well as conservation areas.	The plan should consider how it will avoid disturbing listed buildings and conservation areas where appropriate.
Safeguarding our Soils – A strategy for England, 2009	A government policy which aims to protect the integrity of soils for both agricultural and natural requirements	The policy should consider appropriate mitigation strategies for

National Policy		
		soil protection where appropriate.
Salmon and Freshwater Fisher Fisheries Act 1975	A law passed by the government, in an attempt to protect salmon and trout from commercial poaching, to protect migration routes, to prevent wilful vandalism and neglect of fisheries, ensure correct licensing and water authority approval.	The policy should consider its potential impact on salmon trout fisheries and include mitigation measures where necessary.
Securing the Future – the UK Government Sustainable Development Strategy, 2005	A government strategy for sustainable development, which aims to enable all people throughout the world to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations.	The plan should consider how it will use resources sustainably, especially the limitation of excessive use of limited resources and consumption of energy where not necessary.
The Carbon Plan, 2011	First published in December 2011, the Carbon Plan sets out the government's plans for achieving the emissions reductions it committed to in the first 4 carbon budgets. Emissions in the UK must, by law, be cut by at least 80% of 1990 levels by 2050.	The plan should consider how it will limit the production of carbon emissions where appropriate and applicable.
The Eels (England and Wales) Regulations 2009	On 15th January 2010, the Eels (England and Wales) Regulations 2009 came into force. These regulations afford new powers to the Environment Agency to implement measures for the recovery of European eel stocks and have important implications for operators of abstractions and discharges.	The plan should consider how it will mitigate any impacts it may have on European eel stocks.

National Policy		
The Environment Act, 2021	The Environment Act allows the UK to enshrine some environmental protection into law. It offers new powers to set new binding targets, including for air quality, water, biodiversity, and waste reduction.	The plan must consider mitigation strategies for reducing impacts on the environment, in particular, reducing negative impacts on air quality, water quality, biodiversity and waste reduction. The plan must also consider how to enhance the environment to ensure no net loss and overall biodiversity net gain in associated projects.
The National Flood and Coastal Erosion Risk Management Strategy for England, 2020	This strategy's long-term vision is for: a nation ready for, and resilient to, flooding and coastal change – today, tomorrow and to the year 2100. It has 3 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.
The National Flood Emergency Framework for England, 2011 (as amended)	Its purpose is to provide a forward-looking policy framework for flood emergency planning and response. It brings together information, guidance and key policies and is a resource for all involved in flood emergency planning at national, regional and local levels.	The plan must consider any emergency flooding strategies and responses where appropriate.
Water for	An Environment Agency report highlighting	The plan

National Policy

<p>Life, Water White Paper, 2011</p>	<p>the need for the sustainable provision of clean drinking water.</p>	<p>must consider potential mitigation strategies to minimise any possible negative impacts on clean drinking water that works may have, taking into consideration pollution and contamination of groundwater and freshwater sources.</p>
<p>Water for People and the Environment , Water Resources Strategy for England and Wales, 2009</p>	<p>A government strategy aimed at ensuring there is 'enough water for people and the environment'. The management and use of water and land must be shown to be sustainable - environmentally, socially and economically. We require the right amount of good quality water for people, agriculture, commerce and industry, and the environment.</p>	<p>The plan must consider potential mitigation strategies to minimise any possible negative impacts on local water resources.</p>
<p>Wildlife and Countryside Act 1981 (as amended)</p>	<p>Under the Wildlife and Countryside Act 1981 (as amended), the country nature conservation bodies have a duty to notify any area of land which in their opinion is 'of special interest by reason of any of its flora, fauna, or geological or physiographical features' – these areas are known as Sites of Special Scientific Interest (SSSI).</p>	<p>The plan must consider the extent of SSSIs, avoiding disturbing the area or if appropriate any relevant mitigation strategies required to minimise negative impacts on the area.</p>

A.3 REGIONAL AND LOCAL PLANS AND PROGRAMMES

REGIONAL AND LOCAL PLANS AND PROGRAMMES		
POLICY/PLAN/ PROGRAMME/ STRATEGY	KEY OBJECTIVES OR REQUIREMENTS RELEVANT TO SEA	IMPLICATIONS FOR LFRMS AND SEA
REGIONAL		
WEST YORKSHIRE CLIMATE ENVIRONMENT PLAN 2021-2024	A PLAN PUT IN PLACE BY WEST YORKSHIRE COMBINED AUTHORITY WHEREBY THE MAYOR OF WEST YORKSHIRE AND WEST YORKSHIRE LEADERS HAVE DECLARED A CLIMATE EMERGENCY AND SET AN AMBITIOUS SCIENCE-BASED TARGET FOR THE REGION TO BE NET ZERO CARBON BY 2038, WITH SIGNIFICANT PROGRESS BY 2030. REDUCING HARMFUL CARBON AND AIR QUALITY EMISSIONS, HELPING NATURE TO RECOVER AND IMPROVE LONG-TERM CLIMATE RESILIENCE IS CRITICAL AND ACTION ACROSS ALL PARTS OF THE ECONOMY AND SOCIETY IS REQUIRED.	THE PLAN MUST CONSIDER MITIGATION STRATEGIES FOR REDUCING IMPACTS ON THE ENVIRONMENT, IN PARTICULAR; REDUCING NEGATIVE IMPACTS ON AIR QUALITY, WATER QUALITY, BIODIVERSITY AND WASTE REDUCTION.
WEST YORKSHIRE COMBINED AUTHORITY (2017)	THE WEST YORKSHIRE COMBINED AUTHORITY IS A DEMOCRATICALLY-LED AUTHORITY AND IS GOVERNED BY A CROSS-PARTY, POLITICALLY BALANCED GROUP OF ELECTED COUNCILLORS NOMINATED BY EACH PARTNER COUNCILS: BRADFORD, CALDERDALE, KIRKLEES, LEEDS, WAKEFIELD, AND YORK.	THE PLAN WILL NEED TO CONSIDER POLICIES PUT IN PLACE BY THE WEST YORKSHIRE COMBINED AUTHORITY, AND ANY MITIGATIONS STRATEGIES THAT MAY BE REQUIRED.

REGIONAL AND LOCAL PLANS AND PROGRAMMES

<p>WHITE ROSE FOREST ACTION PLAN 2021-2025</p>	<p>AN ENVIRONMENTAL BODIES' PLAN TO REGENERATE THE NATURAL ENVIRONMENT, IT IS SUPPORTED BY A PARTNERSHIP OF LOCAL AUTHORITIES, NATIONAL PARKS, NATIONAL AND LOCAL CHARITIES, DEFRA ORGANISATIONS AND COMMUNITY ENTERPRISES</p>	<p>THE PLAN MUST CONSIDER MITIGATION STRATEGIES FOR REDUCING IMPACTS ON FORESTED AREAS AND POTENTIAL FOR INCREASING THE FORESTED COVERAGE.</p>
<p>LOCAL</p>		
<p>CALDER CATCHMENT FLOOD MANAGEMENT PLAN (2010)</p>	<p>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.</p>	<p>THE PLAN WILL NEED TO CONSIDER THE MEASURES AND POLICIES INCLUDED IN THE PLAN.</p>
<p>PEAK DISTRICT BIODIVERSITY ACTION PLAN (2011-2020)</p>	<p>ACTION PLAN TO CONSIDER THE ENHANCEMENT OF HABITATS, LANDSCAPES AND CONCENTRATE EFFORTS ON THE BUFFERING AREAS OF HIGH-QUALITY SITES.</p>	<p>THE PLAN SHOULD CONSIDER THE LOCATION OF HIGH-QUALITY ENVIRONMENTAL SITES, AND CONSIDER POTENTIAL ENHANCEMENT OPPORTUNITIES.</p>
<p>KIRKLEES METROPOLITAN BOROUGH COUNCIL RESOURCES AND WASTE STRATEGY 2021-2030</p>	<p>ACHIEVE A RECYCLING RATE OF AT LEAST 70% AT OUR HOUSEHOLD WASTE AND RECYCLING CENTRES BY 2025. RECYCLE AT LEAST 55% OF MUNICIPAL WASTE BY 2025. REUSE OR RECYCLE AS MUCH OF THE RESOURCES COLLECTED VIA OUR BULKY WASTE COLLECTIONS AS POSSIBLE</p>	<p>THE PLAN WILL NEED TO CONSIDER METHODS FOR THE APPROPRIATE RECYCLING AND DISPOSAL OF WASTE.</p>
<p>KIRKLEES METROPOLITAN BOROUGH COUNCIL BIODIVERSITY STRATEGY</p>	<p>A LOCAL GOVERNMENT STRATEGY TO HALT THE DECLINE OF BIODIVERSITY.</p>	<p>THE PLAN WILL NEED TO CONSIDER HOW IT WILL PREVENT THE LOSS BIODIVERSITY AS A RESULT OF DIRECT OR INDIRECT IMPACTS FROM ANY PROPOSED WORKS.</p>

REGIONAL AND LOCAL PLANS AND PROGRAMMES

<p>KIRKLEES METROPOLITAN BOROUGH COUNCIL LOCAL PLAN 2019</p>	<p>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.</p>	<p>THE PLAN WILL NEED TO CONSIDER THE EXTENT OF THESE DESIGNATIONS AND PREVENT ANY DEVELOPMENT IN THESE AREAS.</p>
<p>KIRKLEES METROPOLITAN BOROUGH COUNCIL NET-ZERO ASSESSMENT FOR KIRKLEES (2021)</p>	<p>A LOCAL GOVERNMENT PLAN WHICH SETS NET ZERO TARGETS FOR THE BOROUGH.</p>	<p>THE PLAN SHOULD CONSIDER CARBON MANAGEMENT SOLUTIONS AND AIM TO REDUCE EMISSIONS AS MUCH AS POSSIBLE BEFORE THE NET ZERO DEADLINE IN 2038.</p>
<p>KIRKLEES DRAFT HERITAGE STRATEGY</p>	<p>THE STRATEGY SETS OUT THE OBJECTIVES AND KEY PRINCIPLES TO HELP DELIVER THE COUNCIL'S VISION FOR HERITAGE IN KIRKLEES FORM 2022-2032.</p>	<p>THE STRATEGY SHOULD CONSIDER THE COUNCIL'S DRAFT ACTION PLAN AND PRINCIPLES.</p>

B LOCAL NATURE RESERVES IN KIRKLEES METROPOLITAN BOROUGH – ADDITIONAL DETAIL

LOCAL WILDLIFE SITE	ADDRESS
LWS1	ARKENLEY LANE, ALMONDBURY
LWS2	CASTLE HILL, HUDDERSFIELD
LWS3	GAWTHORPE LOWER WOOD, LEPTON
LWS4	LEPTON GREAT WOOD, LEPTON
LWS5	GRIMESCAR WOOD, BIRKBY
LWS6	HUDDERSFIELD BROAD CANAL (SIR JOHN RAMSDEN CANAL), HUDDERSFIELD
LWS7	BRADLEY WOOD, BRADLEY
LWS8	PARK HILL, BRADLEY
LWS9	DEAN WOOD, NETHERTON
LWS10	DELVES WOOD & BUTTER NAB SPRING, HUDDERSFIELD
LWS11	DALTON BANK LOCAL NATURE RESERVE, DALTON
LWS12	LANESIDE QUARRY, KIRKHEATON
LWS13	ROUND WOOD, WATERLOO
LWS14	GLEDHOLT WOODS LOCAL NATURE RESERVE, HUDDERSFIELD
LWS15	LONG HILL PLANTATION, LOWERHOUSES
LWS16	PARK WOOD, BERRY BROW
LWS17	UPPER PARK WOOD LOCAL NATURE RESERVE, HONLEY
LWS18	HOWROYD BECK FIELDS, WHITLEY LOWER
LWS19	SPARROW WOOD, DEWSBURY
LWS20	LOWER SPEN LOCAL NATURE RESERVE, RAVENSTHORPE
LWS21	BRIERY BANK WOOD, LOWER HOPTON
LWS22	COVEY CLOUGH WOOD, MIRFIELD
LWS23	GREGORY SPRING WOOD, MIRFIELD
LWS24	JORDAN WOOD & OLIVER WOOD, MIRFIELD
LWS25	LILEY WOOD, LOWER HOPTON
LWS26	SUNNY BANK PONDS LOCAL NATURE RESERVE, MIRFIELD
LWS27	WHITLEY WOOD, LOWER HOPTON (INCLUDES HAGG WOOD)
LWS28	DOGLOITCH WOOD, SHAW CROSS
LWS29	DUNN WOOD, DEWSBURY
LWS30	SCARGILL WOOD, DEWSBURY
LWS31	SOOTHILL WOOD, BATLEY
LWS32	OAKWELL HALL COUNTRY PARK, BIRSTALL
LWS33	TONG MOOR LOCAL NATURE RESERVE, EAST BIERLEY
LWS34	COCKLESHAW WOOD, EAST BIERLEY
LWS35	HANGING WOOD, CLECKHEATON
LWS36	HUNSWORTH LITTLE WOOD, HUNSWORTH
LWS37	DROP CLOUGH, MARSDEN
LWS38	HUDDERSFIELD NARROW CANAL

LWS39	LOW WESTWOOD POND, LINTHWAITE
LWS40	SHAW WOOD, OUTLANE
LWS41	GREEN HILL CLOUGH, MARSDEN
LWS42	BLACKER WOOD, SCISSETT
LWS43	DEFFER WOODS, DENBY DALE
LWS44	DENBY DELPH, UPPER DENBY
LWS45	HIGH BRIDGE WOOD, SCISSETT
LWS46	KIRKBY WOOD, FLOCKTON
LWS47	LOWER JANE WELL, UPPER CUMBERWORTH
LWS48	PARK GATE DYKE, SKELMANTHORPE
LWS49	RIDING WOOD, CLAYTON WEST
LWS50	TURPIN HILL, UPPER CUMBERWORTH
LWS51	HOB ROYD & MIRY GREAVES SHROGG
LWS52	BANK WOOD, MELTHAM
LWS53	CLIFF WOOD, BROCKHOLES
LWS54	HALL HAYES WOOD, MELTHAM
LWS55	HEY WOOD & WEST WOOD, FARNLEY TYAS
LWS56	HONLEY WOOD, HONLEY
LWS57	ROUND WOOD, BROCKHOLES
LWS58	SPRING WOOD, HONLEY
LWS59	HAGG WOOD, HONLEY
LWS60	CARR GREEN MEADOWS, HOLMBRIDGE
LWS61	DIGLEY RESERVOIR & MARSDEN CLOUGH, HOLMBRIDGE
LWS62	HOLME HOUSE GRASSLANDS, NEW MILL
LWS63	HOLME HOUSE WOOD, NEW MILL
LWS64	HOLMROYD WOOD, NETHERTHONG
LWS65	MALKIN HOUSE WOOD, HOLMFIRTH
LWS66	MORTON WOOD, HEPWORTH
LWS67	NEW LAITH FIELDS, HOLMBRIDGE
LWS68	RAKES WOOD, HEPWORTH
LWS69	WILD BOAR CLOUGH, HADE EDGE
LWS70	YATEHOLME RESERVOIRS & PLANTATIONS, HOLME
LWS71	ALLEN WOOD, SHELLEY
LWS72	ALMONDBURY COMMON WOODS, HUDDERSFIELD
LWS73	ARTHUR WOOD, HUDDERSFIELD
LWS74	BIRKS WOOD, STOCKSMOOR
LWS75	BROWN'S KNOLL MEADOWS, STOCKSMOOR
LWS76	CARR WOOD, HUDDERSFIELD
LWS77	CLOUGH WOOD, STOCKSMOOR
LWS78	GELDER WOOD, KIRKBURTON
LWS79	HUTCHIN WOOD, HOUSES HILL, HUDDERSFIELD
LWS80	LUMB HOUSE, STOCKSMOOR
LWS81	MOLLY CARR WOOD, KIRKBURTON
LWS82	ROAF WOODS, KIRKBURTON
LWS83	SHELLEY WOOD, SHELLEY
LWS84	SHEPLEY MILL WOOD, SHELLEY
LWS85	THUNDERBRIDGE MEADOWS, THUNDERBRIDGE
LWS86	UPPER & LOWER STONE WOODS, SHEPLEY
LWS87	WOODVIEW MEADOWS (RANGE DIKE), FARNLEY TYAS
LWS88	YEW TREE WOOD, SHEPLEY